

THE IAS GAZETTE

A House Journal of **APTI PLUS**

JANUARY 2021



APTI PLUS

Academy For Civil Services Pvt. Ltd.

Eastern India's Best IAS Academy since 2006

An ISO 9001:2008 Certified Institute

Creating Civil Servants for the Nation



ND EDITION



**GLOBAL
CLIMATE
SUMMIT
2020**

E20 FUEL



SCO SUMMIT



PRESSURE GROUP

A Monthly Periodical for aspirants of UPSC Examination

JANUARY 2021

THE IAS GAZETTE

A House Journal of **APTI PLUS**

Sources

The Hindu | The Indian Express
Live mint | The Economic Times
PIB | PRS | ET
Government & World Reports
(NITI Aayog, Budget, WEF
Economic Survey etc.)
Hindu Business Line | NCERTs
All standard reference books

HEAD OFFICE & KOLKATA CAMPUS

Office no. 803, "AMP Mall Vaisaakkhi"
8th floor, Salt Lake Sector – II,
Salt Lake City - AG 112, Kolkata-700091
Ph: +91-8820341777

BHUBANESHWAR CAMPUS

Plot No. 2280, Biju Pattanaik
College Road, Jaydev Vihar,
Bhubaneswar, Odisha-751013
Phone: 099383 86166

ELGIN ROAD

Elgin Chambers, 3rd Floor, Room No. 302,
1A, Ashutosh Mukherjee Road, Kolkata-20
mail: apti.plus@gmail.com,
Ph: (033)-40645777, +91-8100765577

E-mail

apti.plus@gmail.com
theiasgazette@gmail.com
Website: <http://www.aptiplus.in>



CONTENTS

GS-I

1-25

HORNBILL FESTIVAL	1
HAMPI	2
SUBRAMANIYA BHARATHI	3
INDIGENOUS GAMES	4
SENTINELESE & ANDAMAN ISLAND	6
NETAJI SUBHASH CHANDRA BOSE	9
INTANGIBLE CULTURAL HERITAGE	10
PT. MADAN MOHAN MALAVIA	12
AITUC	12
UNESCO'S WORLD HERITAGE CITIES	13
GURU NANAK JAYANTI	15
ADOPT A HERITAGE SCHEME	17
FROM OUR HOME TO YOUR HOME CAMPAIGN	18
MOUNT EVEREST	20
ANTARCTICA	20
DIGITAL OCEAN	21
NORTHERN LIGHTS	22
SOLAR ECLIPSE	24
METEOR SHOWER	25

GS-II

26-57

NOTA AND REPOLLS	26
PRESSURE GROUPS	27
CANDIDATURE OF CONVICTED LAGISLATORS	28
MAJOR DRUG SEIZURES FROM 4 STATES	30
4800 NON CITIZENS IN NRC	31
KARNATAKA PREVENTION OF SLAUGHTER AND PRESERVATION OF CATTLE BILL (2020)	32
DELIMITATION SHOULD BE BASED ON 2031 CENCUS	34
MORE TAKERS FOR PRIVATE HEALTHCARE UNDER PMJAY	35
SC COLLEGIUM MOOTS TRANSFER OF HC JUDGES	37
SC COMPARES POLITICS, CORPORATE GOVERNANCE	39
INDIA GOES DOWN TWO RANKS IN HDI	39
SC FINDS HC ORDER ON A.P. GOVT. DISTURBING	40
INNER-LINE PERMIT	42



Disclaimer:

The views and opinions expressed in this Journal are of the authors' and do not necessarily reflect the views of the Government or the organization they work for.

Arise, awake and stop not till the goal is reached.

- Swami Vivekananda



CONTENTS

GS-II

26-57

CLASSIFYING TRANSGENDERS	44
PANDEMIC, POVERTY SPUR CHILD MARRIAGE IN M.P.	45
41 ARRESTED FOR PEDDLING CHILD PORN MATERIAL	46
SCO SUMMIT	48
JOINT USE OF CHABAHAR PORT	49
MOROCCO-ISRAEL DEAL	51
STRENGTHENING INDIA-BANGLADESH TIES	53
IRAN'S CALCULATED RISK	56

GS-III

58-112

PMI SHOWS MANUFACTURING LOSING STEAM	58
ECONOMY FIRMLY ON THE PATH OF A V-SHAPED RECOVERY	58
GOVT. TO PROMOTE AYUSH EXPORTS	59
SC ON ECONOMY	61
SCRAPPAGE POLICY	62
SUGAR INDUSTRY	62
BOLSTERING GAS INFRASTRUCTURE	64
E20 FUEL	66
NEW IRRIGATION MODEL	67
CABINET NOD FOR 100% FDI IN DTH SERVICE	68
GOVT. DEFENDS NEW RULE UNDER GST	70
STATES BORROW 43% MORE, GET DEEPER IN DEBT	71
BOOST GIVEN FOR ETHANOL PRODUCTION	72
PROJECT LOON	74
THE "GREAT CONJUNCTION"	75
RT-LAMP	76
GIANT METREWAVE RADIO TELESCOPE	82
C32LH2	83
QUANTUM COMPUTING	85
CANCER GENOME ATLAS	87
LAB-GROWN MEAT	89
INTENTIONAL GENOMIC ALTERATION	90
ARTPARK	91
SHINE TRIAL	94
NARROW BAND-INTERNET OF THINGS	96
HYPOTHERMIA	98
ONE-TIME VOLUNTARY DISCLOSURE SCHEME	100
GLOBAL CLIMATE SUMMIT 2020	101
GREAT INDIAN BUSTARD	103
WESTERN GHATS CONSERVATION	104
THE SOLAR WINDS HACK	107
QKD TECHNOLOGY	108
NETRA & NATGRID SURVEILLANCE SYSTEMS	109
CAATSA SANCTIONS ON TURKEY FOR S-400 PURCHASE	111
KA-226T DEAL	112

GS-IV

113-117

THE MORAL AND LEGAL ISSUE OF MARITAL RAPE	113
---	-----

SHORT NEWS ARTICLES

118-160

BHAGYALAKSHMI TEMPLE	118
ANNAPURNA IDOL	118
RAMAYAN CRUISE TOUR	118
AADI MAHOTSAV	119
NISARG GRAM	119
THARU TRIBE	119
BAKSHALI SCROLL	120
KHUDIRAM BOSE (BIRTH ANNIVERSARY)	120
ABDUR RAHIM KHAN-E-KHANAN	121
ZOMI ETHNIC GROUP	121
ZARI-ZARDOZI	121
NAMGHAR	122
MOUNT ILI LEWOTOLOK	122
BUREVI	122
BHASHAN CHAR	123
WESTERN SAHARA DISPUTE	123
PRATAS ISLANDS	123
KOILWAR BRIDGE	124
ESWATINI	124
HALDIBARI-CHILAHATI RAIL LINK	124
FORDOW FUEL ENRICHMENT PLANT	125
CHILLAI KALAN'	125
KILAUEA VOLCANO	125
INDIA METEOROLOGICAL DEPARTMENT'S CENTRE	125
SEA OF GALILEE	125
ICEBERG 'A68A'	126
LOTTERY, GAMBLING AND BETTING TAXABLE UNDER GST ACT: SC	126
INNER-LINE PERMIT	126
UN ALLIANCE OF CIVILIZATIONS (UNAOC)	127
INDIA-NEPAL TIES	128
CHINA AND PAKISTAN SIGNED MILITARY DEAL	129
INDIA'S NEIGHBOURHOOD FIRST POLICY	129
BANGLADESH SIGNS FIRST PREFERENTIAL TRADE AGREEMENT (PTA) SINCE ITS INDEPENDENCE	130
PURCHASING MANAGERS INDEX (PMI)	131
PUBLIC WIFI ACCESS NETWORK INTERFACE (PM-WANI)	131
HAYABUSA2	131
'DAMARU' INSPIRED LATTICE	131
ARECIBO TELESCOPE	132
HL-2M TOKAMAK	132
ASKAP	133

JANUARY 2021

THE IAS GAZETTE

A House Journal of **APTI PLUS**



CONTENTS

SHORT NEWS ARTICLES

118-160

MUCORMYCOSIS FUNGUS	134
PLASMODIUM OVALE	134
SHIGELLA BACTERIAL INFECTION	135
MOCK EGG	135
DIGIBOXX	135
FULLY-AUTOMATED DRIVERLESS TRAIN	136
TAU BOOTES	136
LEPROSY	136
NAEGLERIA FOWLERI	137
ANTIMATTER	137
AMMONIA	138
APEX COMMITTEE FOR IMPLEMENTATION OF PARIS AGREEMENT	138
2020 ONE OF THREE HOTTEST YEARS EVER RECORDED: U.N.	139
PLASTIC POLLUTION	140
MOUSE DEER OR INDIAN SPOTTED CHEVROTAIN	140
MALAYAN GIANT SQUIRREL	141
30,000 MW (MEGAWATT) HYBRID RENEWABLE ENERGY PARK	141
TWO NEW ZOOS GRANTED RECOGNITION BY CENTRAL GOVERNMENT	142
MALLANA CREAM	142
STEPPE EAGLE, TAWNY EAGLE	143
PINK BLOOM	143
BAN ON SALE AND USE OF FIRECRACKERS	144
CHANGE PERFORMANCE INDEX (CCPI) 2021	145
NOVEL SPECIES OF MURAINGRASS	145
IN INDIA, OVER 75% DISTRICTS HOTSPOTS OF EXTREME WEATHER EVENTS	146
INDIAN GAUR	147
RARE MYRISTICA SWAMP TREE FROG	147
HIMALAYAN SEROW	148
AMUR FALCON	149
NATIONAL HYDROLOGY PROJECT	149
E20 FUEL	150
INDIAN SHARKS, RAYS AND CHIMAERAS FACE HIGH RISK OF EXTINCTION	150
'STATUS OF LEOPARDS IN INDIA 2018' REPORT	151
GASTRODIA AGNICELLUS	152
BLUE WHALES	152
'MINI KAZIRANGA'	152
"SWACHHATA ABHIYAN" APP	152
LADAKH'S TSO KAR	153
JAPAN ADOPTS GREEN GROWTH PLAN	153
NEW SPECIES OF SUN ROSE	154
KOLAR LEAF-NOSED BAT	154

SHORT NEWS ARTICLES

118-160

SHOOLPANESHWAR WILDLIFE SANCTUARY	155
DZUKOU VALLEY	155
NAVAL VERSION OF BRAHMOS MISSILE	156
PROJECT 17A SHIP 'HIMGIRI'	156
DRDO SYSTEMS	157
COASTAL RADAR NETWORK	157
MEDIUM RANGE SURFACE TO AIR MISSILE (MRSAM)	158
AKASH SHORT-RANGE SURFACE TO AIR MISSILE (SAM) SYSTEM	158
SAHAYAK-NG	159
INDIAN COAST GUARD INTERCEPTOR BOAT	159
ADVANCED HYPERSONIC WIND TUNNEL TEST FACILITY	160

MCQs

161-165

Context

- Recently, Nagaland celebrated the Hornbill Festival 2020 in a complete virtual mode only through various audio visual media channels and Social Media platforms.

About the Festival

- It is also called the 'Festival of Festivals'.
- Organized every year in the first week of December.
- It hosts a colorful mixture of dances, performances, crafts, parades, games, sports, food, fairs and religious ceremonies.

Importance

- It highlights the tradition of tribal people and boosts the state's tourism potential.
- It reinforces Nagaland's identity as a unique state in India's federal union.
- It fosters understanding of Nagaland's resourceful architecture and its ethnic cuisine.

Great Hornbill

- IUCN Red List Status-** Vulnerable
- Found in the Indian subcontinent and Southeast Asia.
- State bird of Kerala and Arunachal Pradesh.
- Schedule I of the Wildlife Protection Act, 1972

Do you know?

Hornbills were once hunted for their beaks. They were used to make the traditional headgears by the Nyishi tribe men. (To symbolize manhood and valor) Hornbills were also hunted for their oil (believed to relieve pain) and for their meat. However, a new conservation movement is in motion to save the fast disappearing hornbills of northeast India. The tribes – who once hunted the exotic birds in large numbers – are now protecting their nests to help their numbers rebound.

Festivals of Northeast

Losar	Arunachal Pradesh	Anthurium	Mizoram
Saga Dawa	Sikkim	Kharchi Puja	Tripura
Ambubachi Mela	Assam	Chapchar Kut	Mizoram
Dree Festival	Arunachal Pradesh	Wangala Festival	Meghalaya
Moatsu Mong	Nagaland	Ziro Festival of Music	Arunachal Pradesh
Rass Mahutsav	Assam	Kang Chingba	Manipur
Cheiraoba	Manipur	Myoko Festival	Arunachal Pradesh
Aoling festival	Nagaland	Judima Festival	Assam
Shillong Autumn Festival	Meghalaya	Yaoshang	Manipur
Lui-ngai-ni	Manipur	Torgya Festival	Arunachal Pradesh
Sanken Festival	Arunachal Pradesh	Dehing Patkai Festival	Assam
Bihu Festival	Assam	Majuli Festival	Assam
Losoong	Sikkim	Behdienkhlam	Meghalaya
Nongkrem Dance Festival	Meghalaya	Junbeel Mela	Assam

Major Naga Tribes

Tribes	Country	Recognized as Scheduled Tribe in	Tribes	Country	Recognized as Scheduled Tribe in
<u>Angami</u>	India	Nagaland	<u>Monsang</u>	India	Manipur
<u>Anāl</u>	India, Myanmar	Manipur	<u>Moyon</u>	Myanmar, India	Manipur
<u>Ao</u>	India	Nagaland	<u>Nocte (or Nokte)</u>	India	Arunachal Pradesh
<u>Chakhesang</u>	India	Nagaland	<u>Para</u>	Myanmar	
<u>Chang</u>	India	Nagaland	<u>Phom</u>	India	Nagaland
<u>Chirr</u>	India	Nagaland	<u>Pochury</u>	India	Nagaland
<u>Chiru</u>	India	Manipur	<u>Poumai</u>	India	Manipur
<u>Chothe</u>	India	Manipur	<u>Rengma</u>	India	Assam, Nagaland
<u>Inpui</u>	India	Manipur	<u>Rongmei</u>	India	Assam, Manipur and Nagaland
<u>Kharam (also Purum)</u>	India	Manipur	<u>Sangtam</u>	India	Nagaland
<u>Khamniungan (or Khamnungam)</u>	Myanmar, India	Nagaland	<u>Sumi (or Sema)</u>	India	Nagaland
<u>Konyak</u>	Myanmar, India	Nagaland	<u>Tangkhu</u>	India, Myanmar	Manipur
<u>Lamkang</u>	India	Manipur	<u>Tangsa (or Tase in language coding name)</u>	India, Myanmar	Arunachal Pradesh
<u>Lainong</u>	Myanmar		<u>Tarao</u>	India	Manipur
<u>Liangmai</u>	India	Nagaland, Manipur	<u>Thangal</u>	India	Manipur
<u>Lotha</u>	India	Nagaland	<u>Tikhir</u>	India	Nagaland
<u>Makury (sometimes spelt Makuri)</u>	Myanmar, India		<u>Tutsa</u>	India	Arunachal Pradesh
<u>Mao (also Ememei)</u>	India	Manipur	<u>Wancho</u>	India	Arunachal Pradesh
<u>Maram</u>	India	Manipur	<u>Yimchunger</u>	Myanmar, India	Nagaland
<u>Maring</u>	India	Manipur	<u>Zeme</u>	India	Nagaland, Assam & Manipur

HAMPI

GS-I ART & CULTURE

Context

- The Archaeological Survey of India (ASI) has placed wooden barricades around the famous stone chariot at Vijaya Vittala Temple Complex in Hampi for protection.

About Hampi

Hampi	UNESCO World Heritage Site in Karnataka
Capital of	Vijayanagar Empire (14th century)
Location	On the banks of Tungabhadra River
Prosperity	World's second-largest medieval-era city after Beijing,
In ruins	1600 surviving remains

Vitthala Temple in Hampi	Built by Devaraya II. Dedicated to Lord Vishnu.
Achyutaraya temple Complex in Hampi	Dedicated to Vishnu. Other name: Tiruvengalanatha temple
Pattabhirama temple complex	Dedicated to Rama.
Virupaksha temple in Hampi	Oldest shrine. Contains monastery dedicated to Vidyanarya of Advaita Vedanta tradition; Shiva, Pampa and Durga temples.
Ganagitti temple complex in Hampi	Jain Temple. Dated to Hindu king Harihara II. Dedicated to Tirthankara Kunthunatha (17 th Tirthankara)
Hemkunta Hill in Hampi	Contains monolithic Ganesha, Narasimha & Jain temples.
Other Monuments in Hampi	Ahmad Khan Tomb; Hemkutta Hill Monuments; Krishna Temple; Mahanavmi Platform; Kodandarama Temple.

Note: Hampi contains remains of monuments belonging to Hindu, Jain as well as Muslim religion



SUBRAMANIAM BHARATHI

GS-I MODERN HISTORY

Context

- December 11 was the birth anniversary of Subramanian Bharati.

Who was Subramaniam Bharathi?

- He was a writer, poet, Indian independence activist and a social reformer.
- Popularly known as "**Mahakavi Bharathi**", he is considered one of the greatest Tamil literary figures of all time.



Contribution

As a poet

- Through his patriotic poems he exhorted the people to join the independence struggle and work vigorously for the liberation of the country.
- "Sudesa Geethangal", "Kannan Pattu" "Nilavum Vanminum Katrum" "Panchali Sabatam" "Kuyil Pattu" are some of his greatest works.

As a Nationalist

- His vision of nationalism was one that was secular, against casteism and sexism, and pan-Indian.
- Bharathi used to attend the Annual sessions of Indian National Congress and discuss national issues with extremist Indian National Leaders like Bipin Chandra Pal, Tilak and V.V.S. Iyer.

- His participation and activities in Benaras Session (1905) and Surat Session (1907) of the Indian National Congress showcased his patriotic fervor.
- His wise suggestions and steadfast support to the cause of nationalism rejuvenated many national leaders.
- Thus, Bharathi played a pivotal role in the freedom of India.

As a Journalist

- Bharathi, began his career as a journalist and as a sub-editor in “**Swadesamitran**” in 1904.
- He also published and edited in journals like “**Vijaya**” and “**India**”.
- His writings induced and influenced the patriotic spirit of the Tamil youth.

As a social reformer

- Bharathi was against caste system. He declared that there were only two castes-men and women and nothing more than that.
- Above all, he himself had removed his sacred thread and adorned many Dalits with sacred thread.
- He advocated temple entry of Dalits.
- Bharathi was very clear that unless Indians unite as children of Mother India, they could not achieve freedom.
- He believed in women’s rights, gender equality and women emancipation.
- He opposed child marriage, dowry and supported widow remarriage.

Conclusion

- Bharathi did not live for himself but for the people and nation. That is why he is respectfully called as Bharathiyar.

Swadesamitran was founded by Indian nationalist G. Subramaniam Iyer four years after he had started - The Hindu.

INDIGENOUS GAMES

GS-I ART & CULTURE

What is in news?

- Recently, the Sports Ministry has approved the inclusion of four Indigenous Games to be a part of Khelo India Youth Games 2021, scheduled to take place in Haryana.
- The games include: Gatka, Kalaripayattu, Thang-Ta and Mallakhamba.

Gatka

- Gatka is an Indian martial art associated with the Sikhs of the Punjab.
- It is a style of stick-fighting, with wooden sticks intended to simulate swords.
- This traditional fighting style of the Nihang Sikh Warriors is used both as self-defense as well as a sport.



Kalaripayattu

- Also known simply as Kalari, is an Indian martial art that originated in modern-day Kerala.
- The word Kalari is also found in **Sangam literature**.
- The combat techniques of the Sangam period were the earliest precursors to Kalaripayattu.
- It is considered to be among the oldest martial arts still in existence, dating back to at least the 3rd century BCE.
- Kalaripayattu contains rituals and philosophies inspired by Hinduism.
- The art also bases medical treatments upon concepts found in the ancient Indian medical text, the Ayurveda.



- Practitioners of Kalaripayattu possess intricate knowledge of pressure points on the human body and healing techniques that incorporate the knowledge of Ayurveda and Yoga.

Thang-ta (Component of Huyen langlon)

- Huyen langlon is an Indian martial art from Manipur. In the Meitei language, huyen means war while langlon or langlong can mean net, knowledge or art.
- Huyen langlon consists of two main components: **thang-ta** (armed combat) and **sarit sarak** (unarmed fighting).
- The primary weapons of huyen langlon are the thang (sword) and ta (spear).
- Other weapons include the shield and the axe.
- The thang-ta aspect of Huyen langlon can be practiced in three ways: ritual, demonstration, and combat.
- The first way is **related to tantric practices** and is entirely ritualistic in nature.
- The second way consists of a spectacular **performance involving sword and spear dances**.
- These routines can be converted into actual fighting practices.
- The third way is the **true combat application**.



Mallakhamb

- Mallakhamb is a traditional sport, in which a gymnast performs aerial yoga or gymnastic postures and wrestling grips in concert with a vertical stationary or hanging wooden pole, cane, or rope.
- The word Mallakhamb also refers to the pole used in the sport.
- The pole is usually **made from sheesham** (Indian rosewood) polished with castor oil.
- Three popular versions of Mallakhamb are practiced using a sheesham pole, cane, or rope.

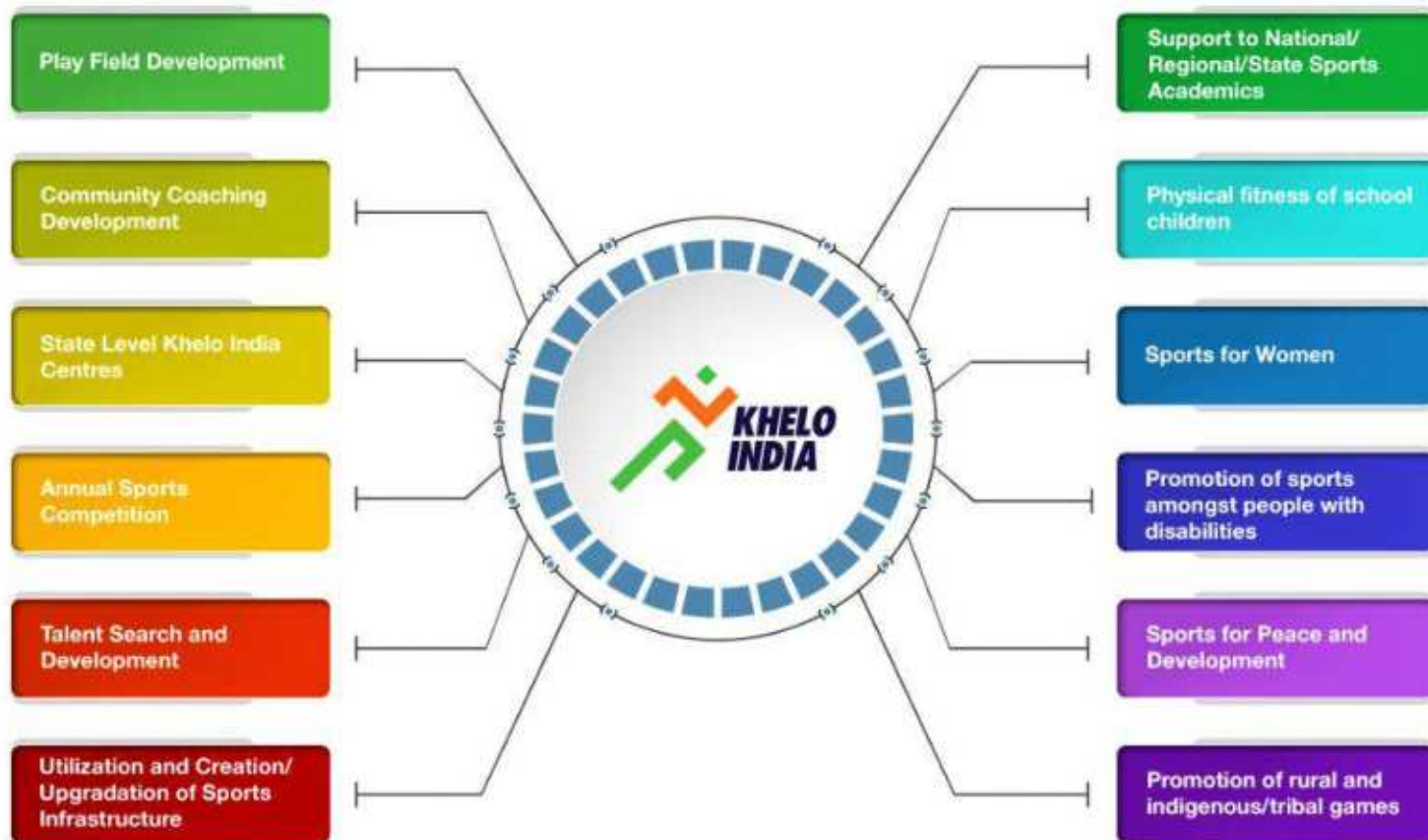


Khelo India Youth Games

- Khelo India Youth Games (KIYG), is held annually in January or February.
- These are the national level multidisciplinary grassroot games in India held for two categories, namely under-17 years school students and under-21 college students.
- Ministry of Youth Affairs and Sports is implementing it.

Aim

- The Khelo India Scheme aims at promoting culture of sports as well as attaining excellence in sports.
- The Khelo India programme has been introduced to revive the sports culture in India at the grass-root level by building a strong framework for all sports played in our country and establish India as a great sporting nation.



Significance of promoting Indigenous Games

- Indigenous games are a very important part of a people's heritage and culture.
- Agility, strength, balance, reflexes, hand-eye coordination, accuracy, strategy, intuition, patience. These are skills Indigenous hunters and fishermen relied on to feed their communities. And those skills were learned at an early age through games and maintained throughout adulthood through play.
- Also, Geoclimatic regions influenced the types of games. For example: Games in the Arctic developed the mental and physical strength necessary to survive in a harsh climate with extended periods of darkness.
- Traditional Indigenous games not only teach valuable skills but also combined mental and physical wellbeing. Run and Scream is a great example.
- Thus, Indigenous Sport is an extremely important component for the overall development of our nation.
- India, in the last few years has made steady progress in the field of sports.
- This tremendous potential needs to be showcased at a global platform.
- It's important to inspire young talent, give them top-notch infrastructure and training of the highest level.
- We need to inculcate a strong spirit of participation in sports that enables players to demonstrate their true potential.
- Only then can India realize its dream of becoming a sports super power.

SENTINELESE & ANDAMAN ISLAND

GS-I CULTURE AND HERITAGE

Context

- Recently, Anthropological Survey of India has warned of threat to Sentinelese the endangered group from commercial activity in the North Sentinel Island.

About Sentinelese

Sentinelese	Indigenous people who inhabit North Sentinel.
Status	Particularly Vulnerable Tribal Group, Complete isolation
Population	Between 50 and 200
Inhabiting	Since 30,000 years
Occupation	Hunter-gatherers
Language	Unintelligible
North Sentinel Island	Declared as a Tribal reserve in 1956 by GOI. Prohibited travel within 3 nautical miles. Constant armed patrolling & Photography prohibited.

Tribals in A & N Islands

The tribe-wise population of Scheduled Tribes in Andaman and Nicobar Islands as per Census 2011 is given below: -

Tribes	Population
Andamanese, Chariar, Chari, Kora, Tabo, Bo, Yere, Kede, Bea, Balawa, Bojigiyab, Juwai, Kol	44
Jarawas	380
Nicobarese	27168
Onges	101
Sentinelese	15
Shom Pens	229

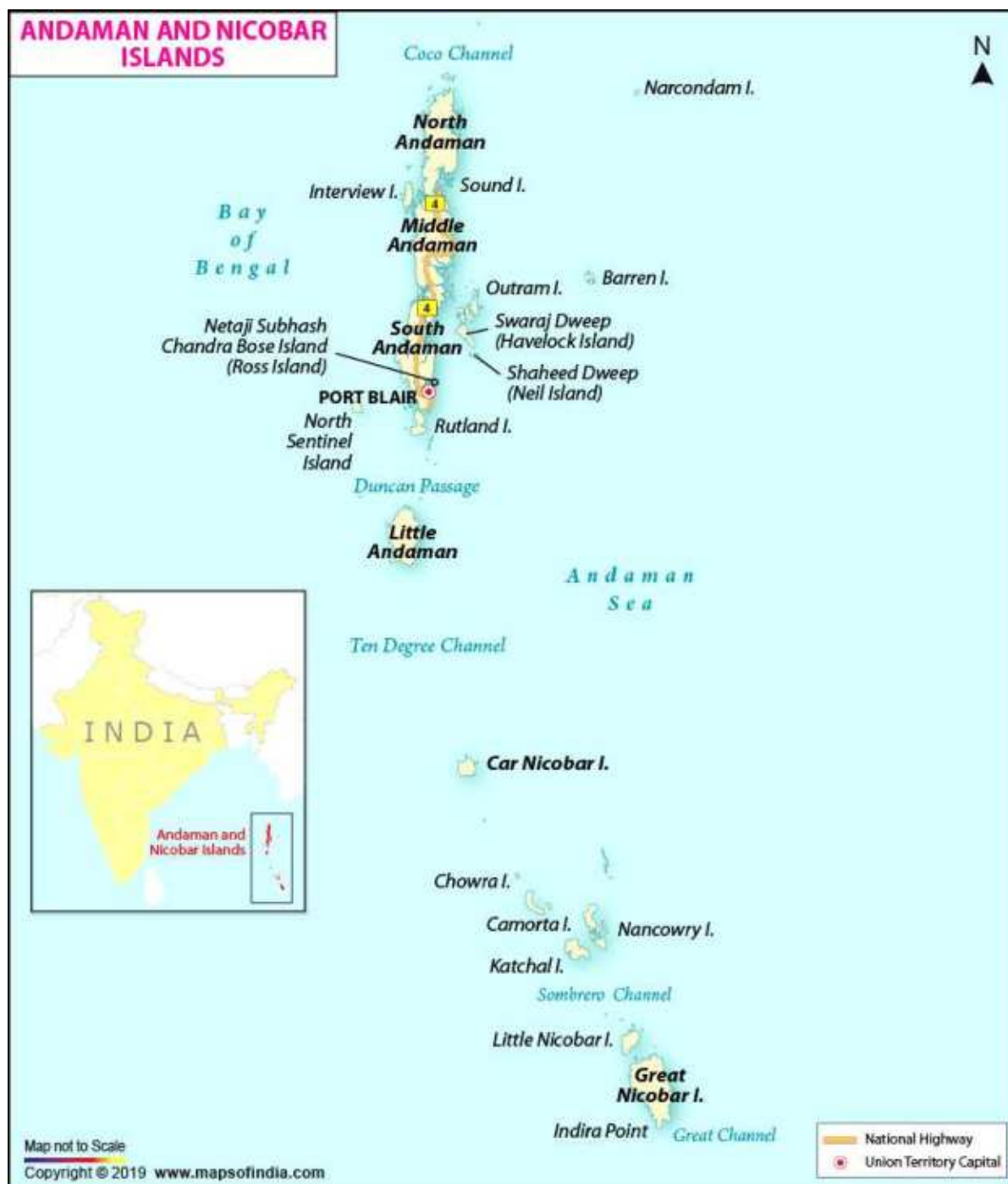
Tribes	Race	Islands
Onges	Negroid	Little Nicobar
Sentinelese	Negroid	Sentinel Islands
Jarawa	Negroid	Middle and South Andaman
Andamanese	Negroid	Strait Island
Shompen	Mongoloid	Great Nicobar
Nicobarse	Mongoloid	Great Nicobar

GIVE YOURSELF THE RIGHT EXPOSURE
TO CRACK MAINS WITH

**MAINS ASSESSMENT
PROGRAMME**

**TEST SERIES FOR CSE
MAINS 2021**

₹12,000



- * Arrange the Islands from North to South.
- * Locate the Channels and the Passages.

Facts about Andaman and Nicobar Islands

- The Andaman and Nicobar Islands, a union territory of India, are a group of **572 islands** of which 38 are inhabited at the juncture of the Bay of Bengal and the Andaman Sea.
- The Andaman Islands and the Nicobar Islands, are separated by the 150 km wide **Ten Degree Channel** (on the 10°N parallel).
- The territory is divided into three districts: the Nicobar District with Car Nicobar as its capital, the South Andaman district with Port Blair as its capital and the North and Middle Andaman district with Mayabunder as its capital.

- Andamanese and Nicobarese are NOT the widely spoken languages. Contrary to popular beliefs, the most widely spoken language on the islands is actually Bengali along with Hindi, Tamil, Telugu, and Malayalam.
- Katchal Island received the first sun rise of the year 2000.
- Leatherback (Dermochelys Coriacea) the largest sea turtles in the world nest in Andaman and Nicobar Islands.
- North Sentinel Island is home to one of the most isolated Paleolithic tribes of the world.
- Dugong, the gentle sea cow, is the state animal of Andaman and Nicobar Islands.
- Pandanus or Nicobar Breadfruit is a rare fruit found and widely eaten in Nicobar.
- Commercial fishing is banned in the Andaman and Nicobar Islands.
- The only active volcano in India, the Barren Island, is present in Andaman Islands.
- The largest living arthropod in the world, **Birgus Latro or Robber crab**, resides here.
- Jal Hans, India's first commercial seaplane was launched in the Andaman Islands.
- India's southernmost point, the Indira Point, subsided by 4.25 meters during the 2004 Tsunami.
- Dugong, the gentle sea cow, is the state animal of Andaman and Nicobar Islands. (IUCN Status: **Vulnerable**)
- The extremely narrow limestone Alfred Caves are home to Swiftlet birds that make edible nests.
- The Kala Pani Jail (Cellular Jail), was established here by the British after the revolt of 1857.
- Baratang in Andaman is the only place in India with mud volcanoes.
- Andaman and Nicobar Island has India's first and only joint tri-service defense command.

NETAJI SUBHASH CHANDRA BOSE

GS-I MODERN HISTORY

Context

- The Government has decided to constitute a High Level Committee to commemorate the 125th Birth Anniversary of Netaji Subhas Chandra Bose.

Contribution of Netaji Subhash Chandra Bose

Political leadership

- Bose supported idea of comprehensive independence and with his support Jawahar Lal Nehru has passed resolution of Poorna Swaraj in 1929.
- He organised the All-Bengal Young Men's Conference.
- Elected as Congress President in 1938 when annual session was convened at Haripura in Bengal.
- During this session Subhash Chandra Bose established National Planning Committee to ensure equal distribution of wealth among diverse section.
- He established a separate political party known as "Forward Bloc." His aim was to liberate India from the colonial yokes.
- He is known for his militant approach that he used to gain independence and for his socialist policies.

Collaboration with foreign countries

- In 1943, Singapore, Subhash Chandra Bose reorganized and expanded the INA. This force was renamed as "Azad Hind Fauj."
- Founded the Provisional Government of Free India at Singapore on 21 October 1943. The government was recognized by nine governments including Germany, Italy, Japan and Myanmar.
- The Provisional Government of Free India acquired its first territories when Japan handed over the Andaman and Nicobar Islands to it.
- In early 1944, three units of the Azad Hind Fauj (INA) took part in the attack on the north-eastern parts of India to oust the British from India.
- On the Indian mainland, an Indian Tricolour, modelled after that of the Indian National Congress, was raised for the first time in the town of Moirang, in Manipur by the INA.
- Dilli Chalo ("On to Delhi!") This was the call he used to give the INA armies to motivate them.

- In a nutshell, Bose worked tirelessly to secure German and Japanese support in freeing his beloved homeland from the foreign rule.

Mobilization of women in the National Movement

- A women's regiment of Azad Hind Fauj was formed, which was under the command of Captain Lakshmi Swaminathan. It was called the Rani Jhansi regiment.

Conclusion

- Netaji Subhas Chandra Bose was a fierce nationalist, whose defiant patriotism made him one of the greatest freedom fighters in Indian history.

"Give me blood and I will give you freedom!"

"One individual may die for an idea, but that idea will, after his death, incarnate itself in a thousand lives."

INTANGIBLE CULTURAL HERITAGE

GS-I CULTURE AND HERITAGE

Context

- Singapore's most popular attractions, its vibrant street hawker culture, was designated an Intangible Cultural Heritage by the UNESCO.

List of UNESCO Intangible Cultural Heritages from India

Name	Characteristics
Kutiyattam	<ul style="list-style-type: none"> Traditional performing art form in the state of Kerala . Combination of ancient Sanskrit theatre with elements of Koothu, an ancient performing art from the Sangam era.
The tradition of Vedic chanting	<ul style="list-style-type: none"> Expressed in the Vedic language, which is derived from classical Sanskrit, the verses of the Vedas were traditionally chanted during sacred rituals and recited daily in Vedic communities.
Ramlila	<ul style="list-style-type: none"> Ramlila is any dramatic folk re-enactment of the life of Rama according to the ancient Hindu epic Ramayana or secondary literature based on it such as the Ramcharitmanas. It particularly refers to the thousands of Hindu god Rama-related dramatic plays and dance events that are staged during the annual autumn festival of Navratri in India.
Ramman	<ul style="list-style-type: none"> Ramman is a religious festival and ritual theatre of the Garhwal region. The festival and the eponymous art form are conducted as an offering to the village deity, Bhumiya Devta, in the courtyard of the village temple. The Ramman is unique to the village and is neither replicated nor performed anywhere else in the Himalayan region.
Mudiyettu	<ul style="list-style-type: none"> It is a traditional ritual theatre and folk dance drama from Kerala that enacts the mythological tale of a battle between the goddess Kali and the demon Darika. The ritual is a part of the bhagavathi or bhadrakali cult. Mudiyettu is performed annually in 'Bhagavati Kavus', the temples of the goddess, in different villages along the rivers Chalakkudy Puzha, Periyar and Moovattupuzha between February and May after the harvesting season.
Kalbelia folk songs and dances	<ul style="list-style-type: none"> A dance from Rajasthan, performed by the tribe of the same name. The dance is an integral part of their culture and performed by men and women. The male participants play musical instruments, such as the pungi, a woodwind instrument traditionally played to capture snakes, the dufli, been, the khanjari - a percussion instrument, morchang, khuralio and the dholak to create the rhythm on which the dancers perform.

	<ul style="list-style-type: none"> Women dance replicating the movements of serpent.
Chauu Dance	<ul style="list-style-type: none"> It is a semi classical Indian dance with martial, tribal and folk traditions, with origins in eastern India. It is found in three styles named after the location where they are performed, i.e. the Purulia Chau of Bengal, the Seraikella Chau of Jharkhand, and the Mayurbhanj Chau of Odisha. The dance ranges from celebrating martial arts, acrobatics and athletics performed in festive themes of a folk dance, to a structured dance with religious themes found in Shaivism, Shaktism and Vaishnavism. The costumes vary between the styles, with Purulia and Serakeilla using masks to identify the character. The stories enacted by Chhau dancers include those from the Hindu epics the Ramayana and the Mahabharata, the Puranas and other Indian literature. Folk music played on reed pipes "mohuri" and "shehnai."
Buddhist chanting of Ladakh	<ul style="list-style-type: none"> It is the recitation of sacred Buddhist texts.
Sankritana	<ul style="list-style-type: none"> It is a form of performing art involving ritual singing, drumming and dancing performed in the temples of Manipur. Theme: stories of Krishna
Crafts of Thatheras Of Punjab	<ul style="list-style-type: none"> The Thathera is a Hindu artisan caste in India, who traditional occupation is the making of brass and copper utensils. In 2014, the craft of the Thathera community of Jandiala Guru were included in UNESCO's List of Intangible Cultural Heritage
Nowruz	<ul style="list-style-type: none"> Nowruz is the Iranian New Year, also known as the Persian New Year, which is celebrated worldwide by various ethno-linguistic groups usually around March 21. It is a secular holiday for most celebrants that is enjoyed by people of several different faiths, but remains a holy day for Zoroastrians, Bahá'ís, and some Muslim communities. Nowruz is the day of the vernal equinox, and marks the beginning of spring in the Northern Hemisphere.
Yoga	<ul style="list-style-type: none"> A group of physical, mental, and spiritual practices or disciplines which originated in ancient India. Yoga is one of the six Āstika (orthodox) schools of Indian philosophical traditions. It consists of a series of poses, meditation, controlled breathing, word chanting and other techniques. Yoga is mentioned in the Rigveda, and also referenced in the Upanishads.
Kumbh Mela	<ul style="list-style-type: none"> Major festival in Hinduism. It is celebrated in a cycle of approximately 12 years at four river-bank pilgrimage sites: the Allahabad (Prayag) (Ganges-Yamuna Sarasvati rivers confluence), Haridwar (Ganges), Nashik (Godavari), and Ujjain (Shipra) During the festival pilgrims bathe or take a dip in the Ganga River It takes place every third year at one of the above four places by rotation. The festival is traditionally credited to the 8th-century Hindu philosopher and saint Adi Shankara.

The United Nations Educational, Scientific and Cultural Organization is a specialised agency of the United Nations (UN) aimed at promoting world peace and security through international cooperation in education, the sciences, and culture. It has 193 member states and 11 associate members, as well as partners in the nongovernmental, intergovernmental, and private sector. UNESCO was founded in 1945 as the successor to the League of Nations' International Committee on Intellectual Cooperation.

Context

- Recently, Prime Minister Narendra Modi paid tribute to Pt. Madan Mohan Malaviya on his 159th birth anniversary.

Madan Mohan Malviya and his contributions

- Pandit Madan Mohan Malaviya was an Indian educationist and politician notable for his role in the Indian independence movement.
- Rabindranath Tagore gave him the title "**Mahamana**" – "luminous mind, magnanimous heart".

Political

- He was four times president of Indian National Congress (1909, 1918, 1932 and 1933).
- He was a Member of the Imperial Legislative Council from 1910 to 1926.
- He opposed separate electorates to Muslims and the Lucknow Pact as well.
- He also opposed Congress' participation in the Khilafat Movement.
- Along with Mahatma Gandhi, he represented Indian National Congress at the Round Table Conference held in 1931 in London.
- During the Civil Disobedience Movement in India, he was arrested twice.
- He participated in Gandhi's Salt Satyagraha and courted arrest.

Education and Economic

- He strived to promote modern education among Indians and eventually founded **Banaras Hindu University (BHU) at Varanasi in 1916**.
- In 1932, he launched the "**All India Swadeshi Sangh**" and issued a manifesto for "**Buy Indian**". It was a means of easing India's economic suffering and reducing the poverty of the masses.

Journalism

- He **founded** a highly influential, English-newspaper, "**The Leader**" in 1909.
- He was also the **Chairman of Hindustan Times from 1924 to 1946**. His efforts resulted in the launch of its Hindi edition named **Hindustan Dainik** in 1936. He had also started the Hindi paper '**Maryada**'.
- His poems were published under the pseudonym of '**Makrand**' in 'Harischandra Chandrika' magazine.

Social

- In 1913, he started an organisation called **All India Seva Samiti**.
- Malaviya made massive efforts to ensure the entry of so-called untouchables into any Hindu temple.
- In the presence of priests of Kalaram Temple, he gave diksha to the assembled people and gave them entry into the temple.
- The slogan "Satyameva Jayate" (Truth alone triumphs) was popularised by Pandit Malaviya. He said that this slogan from the Mundak Upanishad should be the slogan for the nation.
- Malviya founded **Ganga Mahasabha to oppose the damming of Ganges**.

Context

- Recently, All India Trade Union Congress (AITUC) turned 100.

About AITUC

- The All India Trade Union Congress (AITUC) is the oldest trade union federation in India.
- It is associated with the Communist Party of India.
- It was founded on 31 October 1920 with Lala Lajpat Rai as its first president. First general Secretary was V.M. Pawar.
- Aim: To represent India at the International Labour Organisation of the League of Nations.
- Founders- Lala Lajpat Rai, Joseph Baptista, N. M. Joshi, Diwan Chaman Lall.
- AITUC is a founder member of the World Federation of Trade Unions.
- AITUC in its second session in 1921 in Jharia had adopted a resolution of Swaraj (Complete independence from British rule), almost eight years before the platform of freedom struggle- the Indian National Congress adopted such resolution in 1929.

History of Trade Unions in India

Earliest trade union

- The earliest trade union was formed in Bombay when textile mills were established in 1851.
- Trade unions also emerged in Calcutta in 1854 with the establishment of jute mills there.
- Shorabji Shapuri Bengali and C.P. Mazumdar were among the pioneers of these early labour uprisings in the country.

Factory Commissions and Trade Unions

- The first factory Commission was set up in 1879 to study the problems of workers. In 1891, the first factory act- The Indian factory Act was passed but it remained ineffective.
- The Second Factory Commission was formed in 1884 to which a memorandum signed by Narayan Meghji Lokhande. Thus Lokhande emerged as the first trade union leader of India.
- Accordingly, the first trade union called 'Bombay Millhands Association' was formed.
- This was followed by the formation of other trade unions across the country and organized strikes started taking place. Trade unions like Ahmedabad Weavers (1895), Jute Mills, Calcutta (1896), Bombay Mill workers (1897) and the Social League (1910) were formed.
- The Madras Labour Union was formed in 1918 with B.P. Wadia as the president. Wadia, an ex-member of the Indian Home Rule League, was the president of five trade unions in Madras.
- In 1921, NM Joshi was quite influential in persuading the Government of India for the legislation for the registration and protection of trade unions. It was after 5 years that the Trade Unions Act of 1926 was enacted.
- The International Labour Organization (ILO) was formed soon after the first World War in 1919.
- The formation of ILO inspired the leaders of India towards the formation of All India Trade Union Congress (AITUC), the first national-level trade union in India in 1920.
- Other national-level trade unions were also formed subsequently.
- The most notable among these were Indian National Trade Unions Congress (INTUC) in 1947, the Hind Mazdoor Sabha (HMS) in 1948 and the Centre of Indian Trade Unions (CITU) in 1970.

UNESCO'S WORLD HERITAGE CITIES

GS-I CULTURE AND HERITAGE

Context

- Gwalior and Orchha in Madhya Pradesh have been included in the list of UNESCO's world heritage cities under its urban landscape city programme.

Gwalior

- Gwalior was established in the 9th century and ruled by Gurjar Pratihara Rajvansh, Tomar, Baghel Kachvaho and Scindias.
- Gwalior was one of the major sites of rebellion during the 1857 uprising.
- Gwalior is known for its palaces and temples, including the intricately carved Sas Bahu Ka Mandir temple.

- The Gwalior Fort occupies a sandstone plateau overlooking the city and is accessed via a winding road lined with sacred Jain statues.
- Within the forts, high walls are the 15th-century Gujar Mahal Palace, now an archaeological museum.

Orchha

- Orchha (or Urchha) is a town in Madhya Pradesh.
- The town was established by Rudra Pratap Singh some time after 1501, as the seat of princely state in the Bundelkhand region.
- Orchha lies on the Betwa River.
- Orchha is popular for its temples and palaces and was the capital of the Bundela kingdom in the 16th century.
- The famous spots in the town are Raj Mahal, Jehangir Mahal, Ram Raja Temple, Rai Praveen Mahal, and Laxminarayan Mandir.

World Heritage Cities Programme

- The World Heritage Cities Programme is one of six thematic programmes formally approved and monitored by the World Heritage Committee.
- It aims to assist States Parties in the challenges of protecting and managing their urban heritage.



Context

- Recently, the 551st birth anniversary of Guru Nanak Dev was celebrated all over the world.

Guru Nanak Dev

- First of the 10 Sikh Gurus and the **founder of Sikhism**, **Guru Nanak** was born in a village, Talwandi, near Lahore (it was renamed later as Nankana Sahib).
- He rejected sacrifices, rituals, image worship, austerities and the scriptures of both Hindus and Muslim.
- He advocated the '**Nirguna**' (devotion to and worship of formless divine) form of bhakti.
- Guru Nanak's hymns known as "Gurbani" were included in the **Adi Granth** compiled by Guru Arjan (1563-1606), the fifth Sikh guru.
- The book also contains teachings of Bhakti saints like Kabir, Ramananda, Namdev and a Sufi saint Sheikh Farid.
- Adi Granth** came to be known as "**Guru Granth Sahib**" after the tenth Sikh guru- **Guru Gobind Singh**, included the compositions of the ninth guru, **Guru Tegh Bahadur** in the scripture.

Guru Nanak (1469 to 1539)	<ul style="list-style-type: none"> Founder of Sikhism. Contemporary of Mughal emperor Babur. Introduced the concept of one God. Started the institution of "Langar"—common kitchen where food is served to everyone without any discrimination. Emphasized the equality of women Rejected the path of renunciation rejected the authority of the Vedas
Guru Angad (1539 to 1552)	<ul style="list-style-type: none"> Invented and introduced the Gurmukhi script . Visited by Humayun. Popularized and expanded the institution of "Langar"
Guru Amardas (1552 to 1574)	<ul style="list-style-type: none"> Institutionalised the Sikh faith. Picked the site for the Golden Temple, Amritsar. Contemporary of Mughal emperor - Akbar. Introduced the Anand Karaj marriage ceremony for the Sikhs, replacing the Hindu form. Established Manji & Piri system of religious missions for men and women respectively. Abolished Sati and purdah system among the Sikhs.
Guru Ram Das (1574 to 1581)	<ul style="list-style-type: none"> Founded the city of Amritsar Started the construction of Golden Temple at Amritsar.
Guru Arjan Dev (1581 to 1606)	<ul style="list-style-type: none"> Compiled the Adi Granth . completed construction of Sri Darbar Sahib/Golden Temple Executed by Jahangir.
Guru Hargobind (1606 to 1644)	<ul style="list-style-type: none"> Introduced the Akal Takht (seat of power). First Guru to take up arms to defend the faith. Waged wars against Jahangir and Shahjahan
Guru Har Rai Sahib (1644 to 1661)	<ul style="list-style-type: none"> Supported Dara Shikoh (son of Shah Jahan) against Aurangzeb.
Guru Har Kishan (1661 to 1664)	<ul style="list-style-type: none"> Contemporary of Aurangzeb Was the Guru from age 5 till his death before reaching 8 years.
Guru Tegh Bahadur (1665 to 1675)	<ul style="list-style-type: none"> Was publicly beheaded by Aurangzeb for refusing to convert to Islam in 1675.
Guru Gobind Singh (1675 to 1708)	<ul style="list-style-type: none"> Established the Khalsa in 1699 Organised the Sikhs into a martial sect.

Relevance of Guru Nanak Dev's teachings in present day context

Building a classless and casteless society

- Today, India is one of the emerging superpowers of the world. Despite this fact, caste system is still engrained in its societal structure. Guru Nanak Dev's vision of a classless and casteless society can help us to establish an egalitarian society.
- His idea of equality can be presumed from his innovative social institutions:
 - **Langar (Common kitchenette):** Collective cooking.
 - **Pangat (Holy congregation):** sharing food without distinction and discrimination of caste.
 - **Sangat (General Assembly):** Collective decision-making.
- These practices had directly challenged the ill practices like untouchability and the caste system in the 16th century and continue to do so even today.

Communal harmony and social stability

- Increased cases of communal intolerance, riots, mob lynching etc has affected the secular fabric of the Indian society.
- Guru Nanak Dev's concept of "Sabna Jiya Ka Ek Data " is relevant even today and can tackle these issues in the society. "Sabna Jiya Ka Ek Data "means the whole world is God's creation and all are born equal. There is only one universal God i.e. "Ik Omkaar Satnaam."
- This concept clearly re-emphasizes the fact that there is no distinction between a Hindu and a Muslim.
- Further, forgiveness, patience, forbearance, and kindness are the core of Guru Nanak Dev's teachings.

Gender Equality

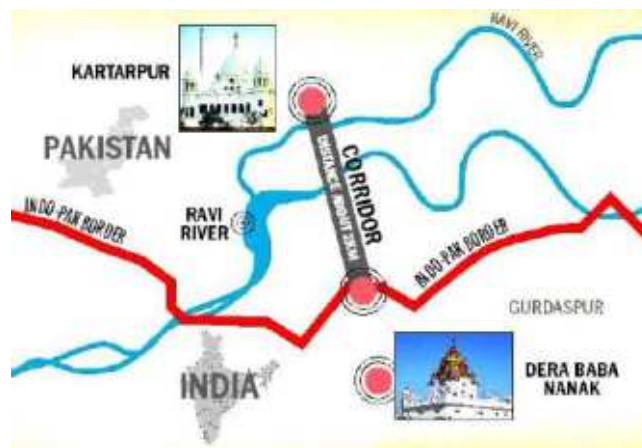
- Oppression of women in the form of violence, rape, acid attacks, female infanticide and customary practices has been failing our society like never before.
- Respect for women and gender parity are perhaps the most important lessons that need to be learnt from Guru Nanak Dev's teachings.
- Guru Nanak Dev's argument "How can women be inferior when they give birth to men?" and his words "Women as well as men share the grace of God and are equally responsible for their actions to him." are of huge significance in the present context and can help in building gender parity.

Neighborhood Peace

- Due to cross border terrorism and Kashmir issue, relationship between India and Pakistan has been grim since decades.
- Both the countries kept their political issues aside and inaugurated the Kartarpur corridor. This clearly demonstrates the influence of Guru Nanak Dev's teachings and appears to be a point of normalization between the two countries that will have a huge influence in maintaining peace and order in South Asia.

Kartarpur Corridor

- The Kartarpur Corridor is a visa-free border crossing and a secure corridor connecting the Gurdwara Darbar Sahib in Pakistan to the border with India.
- The crossing will allow Sikh devotees from India to visit the gurdwara in Kartarpur, 4.7 kilometers from the India-Pakistan border.
- Previously, Sikh pilgrims from India had to travel 125 kilometers to reach Kartarpur.
- Pakistani Sikhs will not be able to use the border crossing and cannot access the Gurdwara Dera Baba Nanak without first obtaining an Indian visa.



Contribution of Sikhism to the world

- Sikh teaching propagates **equality among all human beings**
- It rejects discrimination on the basis of caste and creed.
- Sikhs regard men and women as equal in all spheres of life.
- More than religious and ascetic practices as a means to attain salvation, Sikhism stresses on leading life as an honest and upright human being.
- There are three core tenets of the religion: meditation upon and devotion to the Creator, truthful living, and service to humanity.

ADOPT A HERITAGE SCHEME

GS-I CULTURE AND HERITAGE

Context

- Recently, the Minister of State for Tourism and Culture, took a review meeting of the “Adopt a Heritage: Apni Dharohar, Apni Pehchaan” project in New Delhi.

About the “Adopt a Heritage” Scheme

- The ‘Adopt a Heritage: Apni Dharohar, Apni Pehchaan’ scheme is an initiative of the Ministry of Tourism, in collaboration with the Ministry of Culture and the Archaeological Survey of India.
- It was launched in 2017 on World Tourism Day.

Mandate of the Scheme

- Under it, the government invites entities, including public sector companies, private sector firms as well as individuals, to develop selected monuments and heritage and tourist sites across India.
- Development of these tourist sites calls for providing and maintaining basic amenities, including drinking water, ease of access for the differently abled and senior citizens, standardised signage, cleanliness, public conveniences and illumination, along with advanced amenities such as surveillance systems, night-viewing facilities and tourism facilitation centres.

Selection of Sites

- The sites/monument are selected on the basis of tourist footfall and visibility and can be adopted by private and public sector companies and individuals — known as Monument Mitras — for an initial period of five years.

Monument Mitras

- The Monument Mitras are selected by the ‘oversight and vision committee,’ co-chaired by the Tourism Secretary and the Culture Secretary.
- Selection is on the basis of the bidder’s ‘vision’ for development of all amenities at the heritage site.
- There is **no financial bid involved**.
- The corporate sector is expected to use **corporate social responsibility (CSR) funds** for the upkeep of the site.
- The Monument Mitras, in turn, will get limited visibility on the site premises and on the Incredible India website.
- The oversight committee also has the power to terminate a memorandum of understanding in case of non-compliance or non-performance.

Some examples

Monument Mitras	Adopted Monuments
SBI Foundation	<ul style="list-style-type: none"> Jantar Mantar, Delhi.
TK International Limited	<ul style="list-style-type: none"> Sun Temple, Konark Raja Rani Temple, Bhubaneswar Ratnagiri Monuments, Jaipur, Odisha
Yatra Online Pvt. Limited	<ul style="list-style-type: none"> Hampi, Karnataka Leh Palace, Jammu & Kashmir Qutub Minar, Delhi Ajanta Caves, Maharashtra
Travel Corporation of India Ltd.	<ul style="list-style-type: none"> Mattancherry Palace Museum, Kochi Safdarjung Tomb, Delhi
Adventure Tour Operator Association of India	<ul style="list-style-type: none"> Gangotri Temple Area and Trail to Gaumukh Mt. Stok Kangri, Laddakh, Jammu and Kashmir
Special Holidays Travel Pvt. Ltd. (With) Rotary Club of Delhi	<ul style="list-style-type: none"> Agrasen ki Baoli, Delhi
NBCC	<ul style="list-style-type: none"> Purana Quila, Delhi.

Rationale behind the Scheme

- India has always been renowned for its rich cultural heritage.
- India's rich heritage is abundantly reflected in the form of numerous temples, palaces, monuments, forts etc.
- This has led to the increase in India's tourism particularly in the heritage sites.
- The heritage sites are however facing common challenges primarily related to the creation and operations and maintenance of the various infrastructural as well as service assets.
- There is a need to develop a robust mechanism for the provision of basic amenities on an immediate basis and advanced amenities on a long term basis.
- This project is envisioned to synergize with other Infrastructure development schemes in collaboration with Ministry of Culture and other Ministries, with the idea of
 - positioning tourism as a driving force for targeting more Foreign Tourist Arrivals as well as Domestic Tourist Arrivals,
 - building synergy in the development of amenities across the identified heritage sites,
 - enhancing overall tourist experience and
 - economic development of the region.
- And in this venture, Corporate Houses in the form of Monument Mitras can play a key role in the proper development and maintenance of Heritage sites.

FROM OUR HOME TO YOUR HOME CAMPAIGN

GS-I CULTURE AND HERITAGE

Context

- More than 35 new, attractive, immunity-boosting tribal products have found a new home in Tribes India outlets and website in the 8th edition of "From Our Home to your Home" campaign.

Who launched it?

- The campaign was recently launched by TRIFED under Ministry of Tribal Affairs.

Aim

- To source many effective, natural, and attractive products from diverse indigenous tribes across the country so that they can reach a wide variety of audience.

Key products

- Natural, fresh, organic produce from the Malayali tribes of Tamil Nadu, such as Giant Rock Bee Honey, honey, variants of millet rice, tamarind and black pepper.
- Other products include organic varieties of dals and spices locally sourced from the Vasava tribes of Gujarat and an assortment of produce – such as honey, jams and two unique variants of rice from the Kharwar and Oraon tribes of Jharkhand.

Where are the products available?

- All new products are available in 125 Tribes India outlets, Tribes India mobile vans and on online platforms such as the Tribes India E-marketplace (tribesindia.com) and e-tailers.

About Tribes India e-marketplace

- The recently launched Tribes India e-marketplace is India's largest handicraft and organic products marketplace.
- It aims to connect 5 lakh tribal enterprises to national and international markets; showcases tribal produce and handicrafts, making them accessible to customers across the country.

Malayali

- The Malayali is a tribal group found in the Eastern Ghats of northern Tamil Nadu.
- They are the largest Scheduled Tribe in Tamil Nadu, with a population of around 358,000.

Pateliya

- The Pateliya is a scheduled tribe. They are found in Gujarat, Madhya Pradesh, Rajasthan and some parts of Maharashtra and Karnataka.
- The term 'Pateliya' has been derived from the term Patel which locally means 'headman'.

TRIFED

- Tribal Co-operative Marketing Federation of India (TRIFED) is a national level cooperative body under the administrative control of **Ministry of Tribal Affairs**.
- It was established under the **Multi-state co-operative societies act 1984** under the former Ministry of Welfare. Later it came under the control of Ministry of Tribal affairs.
- In order to empower the downtrodden tribal community it started the procurement of tribal art and craft items firstly in 1999 through its retail outlet called TRIBES INDIA.
- The objective of TRIFED is socio-economic development of tribal people in the country by way of marketing development of the tribal products on which the lives of tribals depends heavily.
- The basic mandate is to bring about socio-economic development of tribals of the country by institutionalizing the trade of Minor Forest Produce (MFP) & Surplus Agricultural Produce (SAP) collected/ cultivated by them.
- The philosophy behind this approach is to empower tribal people with knowledge, tools and pool of information so that they can undertake their operations in a more systematic and scientific manner.

Programs under TRIFED

- | | |
|------------------------------|----------------------------|
| • Non Timber Forest Produces | Retail Marketing |
| • PM Van Dhan Yojana | Corporate affairs Division |
| • Research & Development | TRIFOOD |

MOUNT EVEREST

GS-I GEOGRAPHY

Context

- Nepal and China recently, jointly announced that the revised height of the world's highest peak Mount Everest was 8,848.86 metres, about 86 centimetres more than the previous measurement done by India in 1954.
- Until now, Mt Everest's erstwhile official height of 8,848m has been widely accepted since 1956, when the figure was measured by the Survey of India.

About Everest

- Located in the **MahalangurHimal sub-range of the Himalayas**. The China-Nepal border runs across its summit point.
 - MahālangūrHimāl is a section of the Himalayas in northeast Nepal and south-central Tibet of China extending east from the pass Nangpa La between Rolwaling Himal and Cho Oyu, to the Arun River.
 - It includes Mount Everest, Lhotse, Makalu, and Cho Oyu – four of Earth's six highest peaks.
- In 1865, Everest was given its official English name by **the Royal Geographical Society**, as recommended by Andrew Waugh, the British Surveyor General of India, who chose the name of his predecessor Sir George Everest.
- Everest, like the rest of the Himalayas, rose from the floor of the ancient Tethys Sea.
- The range was created when the **Eurasian continental plate collided with Indian sub-continental plate** about 60 million years ago.
- Mount Everest **grows about a half-inch taller each year** as the Himalaya Mountains are pushed up by the creeping collision between the Indian and Asian land masses. The resulting Earth strains make the entire region vulnerable to large earthquakes.

Survey of India

- Survey of India is the **National Survey and Mapping Organization** of the country under the Department of Science & Technology.
- It is the oldest scientific department of the Govt. of India. It was set up in 1767 and is headquartered at Dehradun.

ANTARCTICA

GS-I GEOGRAPHY

Context

- At least 36 people at a Chilean research station in Antarctica have been found infected with the novel coronavirus.

About Antarctica

- Antarctica is the Earth's southernmost continent. It contains the geographic South Pole and is situated in the Antarctic region of the Southern Hemisphere, almost entirely south of the Antarctic Circle, and is surrounded by the Southern Ocean.
- At 14,200,000 square kilometres it is the fifth-largest continent and nearly twice the size of Australia.
- It is the least densely populated continent. About 98% of Antarctica is covered by ice.

Indian Antarctic Program

- The Indian Antarctic Program is a multi-disciplinary, multi-institutional program under the control of the **National Centre for Polar and Ocean Research, Ministry of Earth Sciences**.
- It was initiated in 1981 with the first Indian expedition to Antarctica.

Indian Research Stations in Antarctic

- DakshinGangotri was the first scientific base station of India situated in Antarctica. It was established in 1983–84.

- It is located at a distance of 2,500 kilometres from the South Pole.
- It is currently being used as a supply base and transit camp.

Maitri

- Maitri, also known as Friendship Research Center is India's second permanent research station in Antarctica.
- Maitri is situated in the rocky mountainous region called Schirmacher Oasis. It is only 5 km away from the Russian Novolazarevskaya Station.
- The station has modern facilities to research in various disciplines, such as biology, earth sciences, glaciology, atmospheric sciences, meteorology, cold region engineering, communication, human physiology, and medicine.
- Freshwater is provided through a freshwater lake built by India named **Lake Priyadarshini**, in front of Maitri.

Bharati

- Bharati is a permanent Antarctic research station commissioned by India.
- Bharati's research mandate focuses on oceanographic studies and the phenomenon of continental breakup.
- It also facilitates research to refine the current understanding of the Indian subcontinent's geological history.

NCPOR

- The National Centre for Polar and Ocean Research, (NCPOR) is an Indian research and development institution, situated in Goa.
- It is an **autonomous Institution** of the Department of Ocean Development (DOD), Ministry of Earth Sciences.
- It is responsible for administering the Indian Antarctic Programme and maintains the Indian government's Antarctic research stations, Bharati and Maitri.
- NCPOR was established on 25 May 1998.
- NCPOR is known for its participation in global experiments, hosting of international conferences and in the leadership of international committees concerned with Antarctic science.
- **The NCPOR operates in different fields:**
 - storing ice core samples, from Antarctica and the Himalayas.
 - operating the Himadri and IndARC Arctic research stations in Svalbard, Norway.
 - managing the oceanic research vessel ORV SagarKanya, the flagship of India's fleet of oceanographic study vessels. This ship has contributed significantly to India's study of the Arabian Sea, the Bay of Bengal, and the Indian Ocean.

Himadri is India's first permanent Arctic research station located at Spitsbergen, Svalbard, Norway. It is located at the International Arctic Research base, Ny-Alesund. It was inaugurated in 2008 by the Minister of Earth Sciences. It was set up during India's second Arctic expedition in June 2008. It is located at a distance of 1,200 kilometres from the North Pole.

IndARC is India's first underwater moored observatory in the Arctic region. It was deployed in 2014 at Kongsfjorden fjord, Svalbard, Norway which is midway between Norway and North Pole. Its research goal is to study the Arctic climate and its influence on the monsoon.

DIGITAL OCEAN

GS-I GEOGRAPHY

Context

- Recently, The Minister of Earth Sciences, Science & Technology and Health & Family Welfare inaugurated "Digital Ocean".

About

- Digital Ocean is a web-based application developed by INCOIS of M/o Earth sciences.
- It is a **first of its kind digital platform** for Ocean Data Management.

Function

- It will facilitate an online interactive web-based environment for data integration, 3D and 4D data visualization, data analysis to assess the evolution of oceanographic features obtained from multiple sources like on site monitoring devices, remote sensing and model data.
- It is a one stop-solution for all data related needs of a wide range of users, including research institutions, operational agencies, strategic users, academic community, maritime industry, and the public.

Significance

- Digital Ocean is expected to bring a sea-change in how the oceanographic data is served for a better understanding of oceans surrounding us.
- Ocean is a storehouse of infinite knowledge and 'Digital Ocean' helps to share this knowledge about the ocean with a wide range of users including research institutions, operational agencies, strategic users, academic community, maritime industry and policy makers.
- It will play a central role in sustainable management of our oceans and expanding our 'Blue Economy' initiatives.
- Digital Ocean will also provide free access to information to the general public and the common man.

Conclusion

- Digital Ocean is a big step towards Prime Minister's vision of Digital India i.e to transform India into a digitally empowered society and knowledge economy.

INCOIS

- Indian National Center for Ocean Information Services (INCOIS) is **an autonomous organization** and a unit of the Earth System Science Organization (ESSO) under the **Ministry of Earth Sciences**
- ESSO-INCOIS was established in **2007**.
- ESSO- INCOIS is mandated to provide the best possible ocean information and advisory services to society, industry, government agencies and the scientific community.
- It **provide information** about Potential Fishing Zone (PFZ) advisories, Ocean State Forecast (OSF), high wave alerts, tsunami early warnings, storm surge and oil-spill advisories, among others through sustained ocean observations and constant improvements through systematic and focused research.
- The institute has been **serving as the National Argo Data Centre and Regional Argo Data Centre** of the International Argo Programme.

NORTHERN LIGHTS

GS-I GEOGRAPHY

Context

- Parts of the US was recently expected to see the Northern Lights

What are the northern lights?

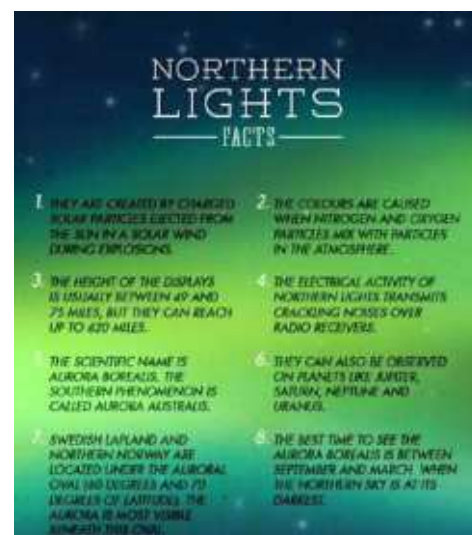
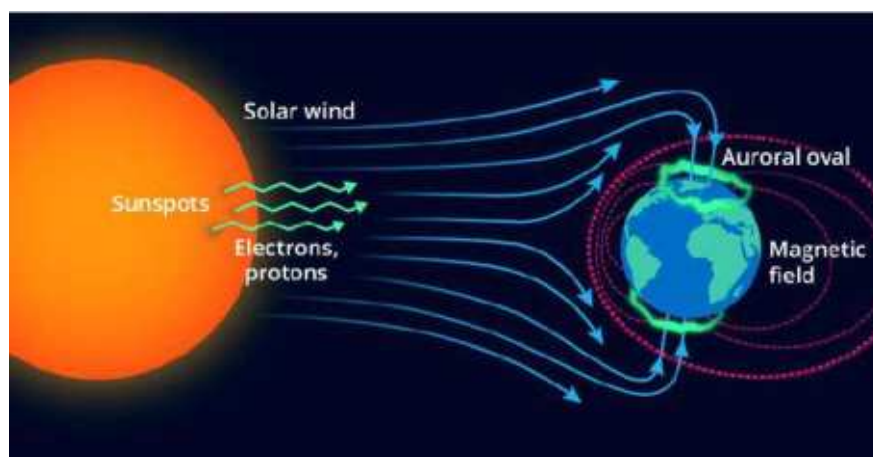
- The northern lights, one of several astronomical phenomena called polar lights (aurora polaris), are shafts or curtains of colored light visible on occasion in the night sky.
- Polar lights (aurora polaris) are a natural phenomenon found in both the northern and southern hemispheres.
- Northern lights are also called by their scientific name, aurora borealis, and southern lights are called aurora australis.



What causes an aurora?

- Auroras occur when charged particles ejected from the Sun's surface — called the solar wind — enter the Earth's atmosphere.

- While flowing toward Earth, the fast-moving solar wind carries with it the Sun's magnetic field, which disrupts the magnetosphere — the region of space around Earth in which the magnetic field of our planet is dominant.
- When the Sun's magnetic field approaches Earth, the protective magnetic field radiating from our planet's poles deflects the former, thus shielding life on Earth.
- However, as this happens, the protective fields couple together to form funnels, through which charged solar wind particles are able to stream down to the poles.
- At the north and south poles, the charged particles interact with different gases in the atmosphere, causing a display of light in the sky.
- This display, known as an aurora, is seen from the Earth's high latitude regions (called the auroral oval), and is active all year round.



- In the northern part of our globe, the polar lights are called aurora borealis or Northern Lights, and are seen from the US (Alaska), Canada, Iceland, Greenland, Norway, Sweden and Finland.
- In the south, they are called aurora australis or southern lights, and are visible from high latitudes in Antarctica, Chile, Argentina, New Zealand and Australia.
- Generally, the auroral oval is confined to the Polar Regions. But occasionally, the oval expands, and the lights become visible at lower latitudes. This happens during periods of high solar activity, such as the arrival of solar storms.

Sunspots and Solar Flares

- Sunspots are areas that appear dark on the surface of the Sun.
- They appear dark because they are cooler than other parts of the Sun's surface.
- Solar flares are a sudden explosion of energy caused by tangling, crossing or reorganizing of magnetic field lines near sunspots.
- Solar flares release a lot of radiation into space. If a solar flare is very intense, the radiation it releases can interfere with our radio communications here on Earth.
- Solar flares are sometimes accompanied by a coronal mass ejection (CME for short).
- CMEs are huge bubbles of radiation and particles from the Sun.
- They explode into space at very high speed when the Sun's magnetic field lines suddenly reorganize.

SOLAR ECLIPSE

GS-I GEOGRAPHY

Context

- The total solar eclipse on December 14, was the last eclipse of the year.

What is a solar eclipse?

- A solar eclipse takes place when the Moon moves between the Sun and the Earth, blocking out the Sun's rays and casting a shadow on parts of the Earth.

How does solar eclipse occur?

- For a solar eclipse to take place, the Sun, the Moon, and the Earth must be aligned in a perfect or near-perfect straight line – an alignment astronomers call syzygy.
- This happens around new Moon every lunar month.

Types of solar eclipse

- There are four types of solar eclipses. How much of the Sun's disk is eclipsed – the eclipse magnitude – depends on which part of the Moon's shadow falls on the Earth.

Partial solar eclipse

- A **partial solar eclipse** occurs when the Moon only partially obscures the Sun's disk and casts only its penumbra on the Earth.

Annular solar eclipse

- An **annular solar eclipse** takes place when the Moon's disk is not big enough to cover the entire disk of the Sun, and the Sun's outer edges remain visible to form a ring of fire in the sky. An annular eclipse of the Sun takes place when the Moon is near apogee, and the Moon's antumbra falls on the Earth.

Total solar eclipse

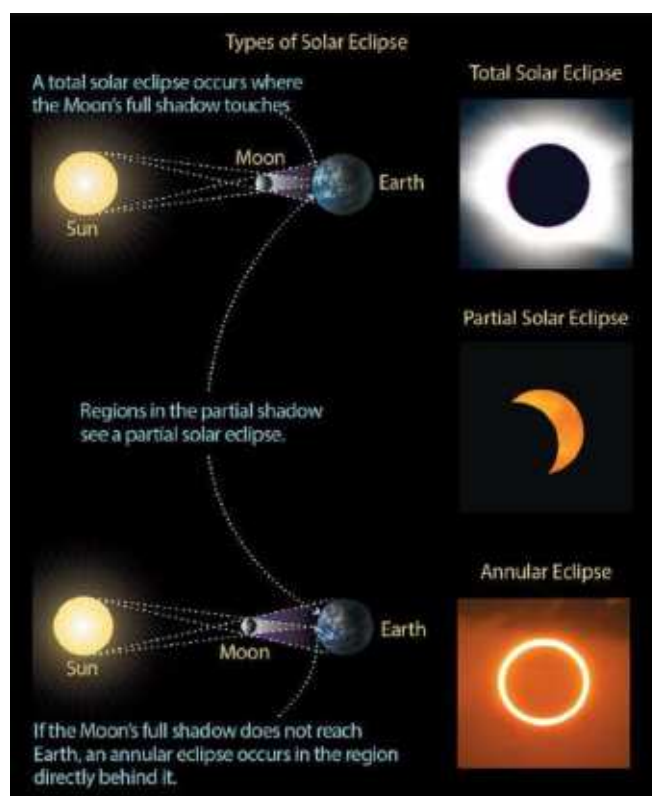
- A **total solar eclipse** happens when the Moon completely covers the Sun. It can take place only when the Moon is near perigee, the point of the Moon's orbit closest to the Earth. You can see a total solar eclipse only if you are in the path where the Moon casts its darkest shadow, the umbra.

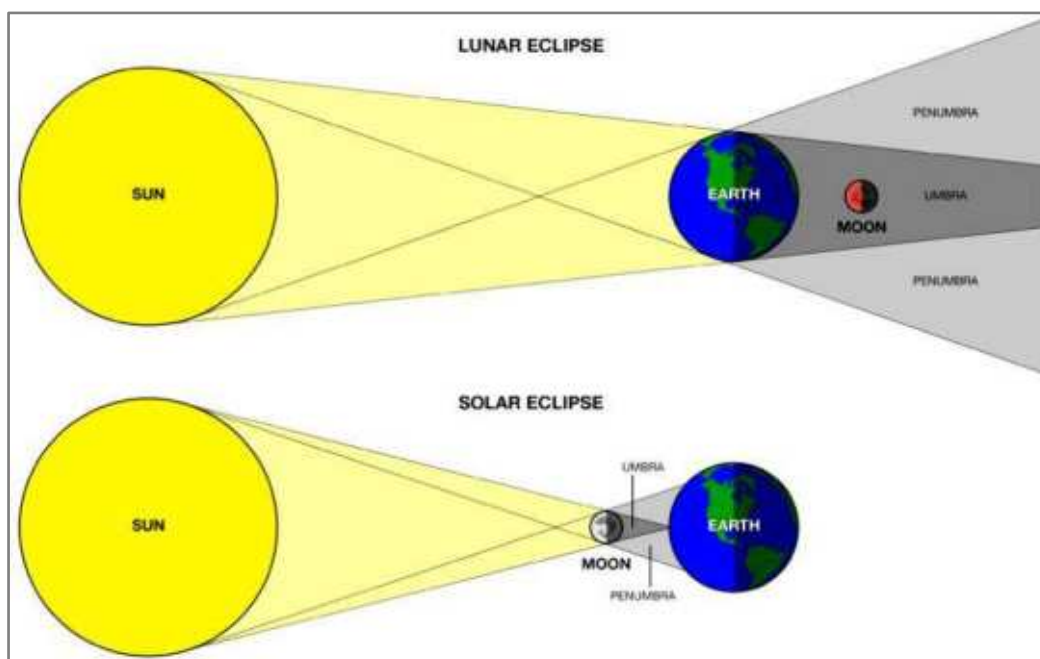
Hybrid solar eclipse

- A **hybrid solar eclipse**, also known as an annular-total eclipse, is the rarest type. It occurs when the same eclipse changes from an annular to a total solar eclipse, and/or vice versa, along the eclipse's path.

Difference between solar eclipse and lunar eclipse

- A lunar eclipse occurs when the Earth passes between the Moon and the Sun, and the Earth's shadow obscures the Moon or a portion of it.
- A solar eclipse occurs when the Moon passes between the Earth and the Sun, blocking all or a portion of the Sun.





METEOR SHOWER

GS-I GEOGRAPHY

Context

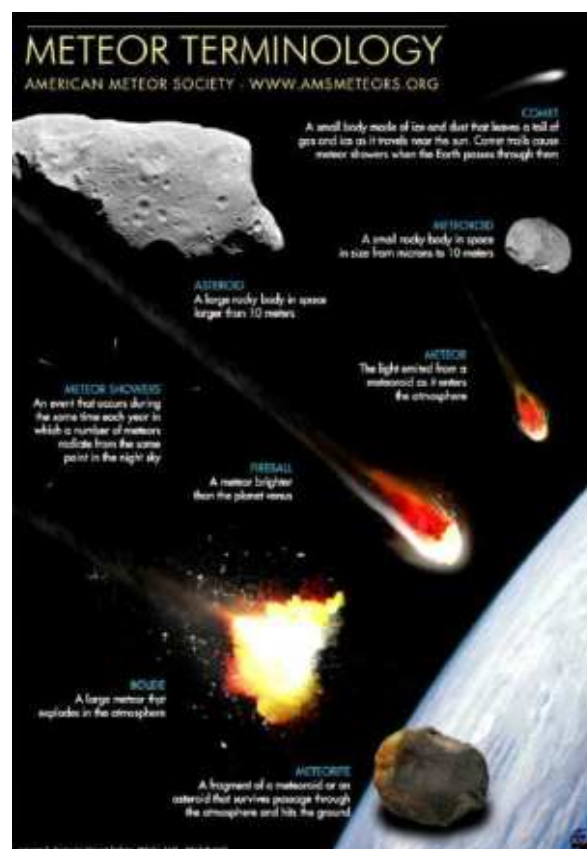
- The Geminids meteor shower, was active from December 4-December 20.

What are Meteor Showers?

- Meteors are bits of rock and ice that are ejected from comets as they manoeuvre around their orbits around the sun.
- For instance, the Orionids meteors emerge from the comet 1P/Halley and make their yearly presence in October. Meteor showers are witnessed when Earth passes through the trail of debris left behind by a comet or an asteroid.
- When a meteor reaches the Earth, it is called a meteorite and a series of meteorites, when encountered at once, is termed a meteor shower.
- According to NASA, over 30 meteor showers occur annually and are observable from the Earth.
- As meteors fall towards the Earth, the resistance makes the space rocks extremely hot and, as meteorites pass through the atmosphere, they leave behind streaks of glowing gas that are visible to the observers and not the rock itself.

Why is the Geminid meteor shower unique?

- The Geminids meteor showers are unique because their origin does not lie in a comet, but what is believed to be an asteroid or an extinct comet.
- The Geminids emerge from 3200 Phaethon, which meteor scientists consider to be an asteroid.
- Geminids travel at a speed of 78,000 mph or 35 km/s, which is about 40 times faster than a speeding bullet.
- Meteors are best visible on a cloudless night and when the Moon is not extremely bright.



Context

- An advocate has moved the Supreme Court for a direction that fresh elections should be held in a constituency where NOTA ('None of the above' option) garnered the maximum number of votes.
- Besides, none of the candidates who lost to NOTA should be allowed to contest the fresh polls.

A "truly undemocratic" process

- **Political parties** choose candidates **without consulting the voters**, which was a "truly undemocratic" process.
- In turn, if the electorate has **rejected these candidates by voting for NOTA**, the parties should be barred from fielding them again in the fresh polls.
- The parties should accept that the voters have already made their discontent loud and clear.
- **Right to reject** and elect a new candidate will give power to the people to express their discontent.
- Right to reject will **check corruption, criminalisation, casteism, communalism**.
- Parties would be forced to give tickets to honest and patriotic candidates.

Proposals in the past

- The '**right to reject**' was first proposed by the **Law Commission in 1999**. It also **suggested** that the candidates be declared elected only if they have **obtained 50%+1** of the valid votes cast.
- Similarly, the **Election Commission** endorsed 'Right to Reject', first in 2001, under **James Lyngdoh [the then CEC]**, and then in 2004 under **T.S. Krishnamurthy [the then CEC]**, in its Proposed Electoral Reforms.
- The '**Background Paper on Electoral Reforms**', prepared by the Ministry of Law in 2010, had proposed that if a certain percentage of the vote was negative, then the election result should be nullified and a new election held.

The NOTA system of India

- **In 2013**, India became the **14th country** to institute negative voting through NOTA. However, it is **not a "right to reject"**.
- Even if there are 99 NOTA votes out of a total of 100, and candidate X gets just one vote, X is the winner, having obtained the only valid vote.
- The rest of the NOTA votes will be treated as invalid or 'no votes'.
- NOTA enfeebles the electorate as it does not empower to "select" either.
- It provides democratic means to express resentment anonymously rather than boycotting the polls outright.

Will NOTA bring any significant change?

- While introducing NOTA, the **Supreme Court** anticipated that there will be a systemic change.
- It also predicted that the political parties will be forced to accept the will of the people and field candidates who are known for their integrity.
- NOTA percentage should either increase to enforce the political parties to field candidates with "**integrity**".
- In contrast, the share of NOTA votes in India remained around a meagre level of 1% on an average; 1.11% in the 2014 Lok Sabha, and 1.08% in 2019, if we consider constituency-wise averages.
- This perhaps **represents a confused state** of mind of the electorate.

Way forward

- The **ECI** may state that the candidates securing lesser votes than NOTA are **barred** from contesting in the **next election** from that constituency.
- An experiment can be conducted by using **NOTB ('none of the below')** instead of NOTA, after changing the rule suitably, can be attempted.

- This may help us whether such an option as the first on the electronic voting machine might produce a significantly different outcome or not.

PRESSURE GROUPS

GS-II POLITY

Context

- One week after they began protests on the borders of Delhi, farmers' groups have demanded that the Centre call a special session of Parliament to repeal the three new agriculture reform laws.
- A truckers' confederation also threatened a strike in northern India from December 8 in support of the farmers.

Pressure Groups

- A pressure group is a group of people who are organised actively for promoting and defending their common interest.
- The pressure groups are also called interest groups or vested groups. They are **different from the political parties**, as they neither contest elections nor try to capture political power
- They are **concerned with specific programmes and issues** and their activities are confined to the protection and promotion of the interests of their members by influencing the government.
- The pressure groups **influence the policy-making and policy implementation** in the government through legal and legitimate methods like lobbying, correspondence, publicity, propagandizing, petitioning, public debating, maintaining contacts with their legislators and so forth.

Characteristics of Pressure Groups

- **Based on Certain Interests:** Each pressure group organises itself keeping in view certain interests and thus tries to adopt the structure of power in the political systems.
- **Use of Modern as well as Traditional Means:** They adopt techniques like financing of political parties, sponsoring their close candidates at the time of elections and keeping the bureaucracy also satisfied. Their traditional means include exploitation of caste, creed and religious feelings to promote their interests.
- **Resulting Out of Increasing Pressure and Demands on Resources:** Scarcity of resources, claims and counterclaims on the resources from different and competing sections of the society leads to the rise of pressure groups.
- **Inadequacies of Political Parties:** Pressure groups are primarily a consequence of inadequacies of the political parties.
- **Represent Changing Consciousness:** For instance the increase in the food production or industrial goods does bring a change in the way individuals and groups look at the world. The stagnation in production leads to fatalism but increase in production leads to demands, protests and formation of new pressure groups.

Types of Pressure Groups

1. Institutional Interest Groups

- These groups are formally organised which consist of professionally employed persons.
- They are a part of government machinery and try to exert their influence. These groups include political parties, legislatures, armies, bureaucracies, etc.
- Whenever such an association raises protest it does so by constitutional means and in accordance with the rules and regulations.
- Example: IAS Association, IPS Association, State civil services association, etc.

2. Associational Interest Groups

- These are organised specialised groups formed for interest articulation, but to pursue limited goals.
- These include trade unions, organisations of businessmen and industrialists and civic groups.
- Some examples of Associational Interest Groups in India are Bengal Chamber of Commerce and Industry, Indian Chamber of Commerce, Trade Unions such as AITUC (All India Trade Union Congress), Teachers Associations, Students Associations such as National Students Union of India (NSUI) etc.

3. Anomic Interest Groups

- By anomie pressure groups we mean more or less a spontaneous breakthrough into the political system from the society such as riots, demonstrations, assassinations and the like.

4. Non-Associational Interest Groups

- These are the kinship and lineage groups and ethnic, regional, status and class groups that articulate interests on the basis of individuals, family and religious heads.
- These groups have informal structure. These include caste groups, language groups, etc

Importance of Pressure Groups

- Pressure groups **help in improving the quality of government**. Consultation with affected groups is the rational way to make decisions in a free society.
- It **makes government more efficient** by enhancing the quality of the decision making process - the information and advice provided by these groups helps to improve the quality of government policy and legislation.
- Freely operating pressure groups are essential to the effective **functioning of liberal democracy**.
 - They serve as **vital intermediary** institutions between government and society;
 - They assist in the dispersal of political power;
 - They provide important counterweights to balance the concentration of power.
- Pressure groups **increase social cohesion** and political stability by providing a 'safety-valve' outlet for individual and collective grievances and demands.
- Pressure groups **improve the accountability** of decision makers to electorates.
- Pressure groups **help to educate people, compile data and provide specific information** to policy makers, thus they work as an informal source of information.
- Active constructive participation of numerous groups in polity helps to reconcile general interest with individual group interests.

Shortcomings of Pressure Groups

- **Narrow selfish interests:** Unlike the pressure groups in the developed countries of the West, where these are invariably organised to safeguard economic, social, cultural interests, etc. in India these groups are organised around religious, regional and ethnic issues.
- **Many time factors of caste and religion** eclipse the socioeconomic interests. The result is that instead of serving a useful purpose in the political administrative process, they are reduced to work for narrow selfish interests.
- **Misuse of power:** Instead of the pressure groups exerting influence on the political process, they become tools and implements to sub serve political interests.
- **Instability:** Most pressure groups do not have autonomous existence;
 - they are unstable and lack commitment, their loyalties shift with political situations which threaten general welfare.
 - They many times resort to unconstitutional means like violence.
 - The Naxalite movement started in 1967 in West Bengal is one such example.
- **Propagating extremism:** Pressure groups can allow too much influence over the government from unelected extremist minority groups, which in turn could lead to unpopular consequences.

CANDIDATURE OF CONVICTED LEGISLATORS

GS-II POLITY

Context

- The **Central government has told the Supreme Court that it rejected the idea** of barring convicted legislators for life from contesting elections, forming or becoming an office-bearer of a political party.
- The **Union Ministry of Law and Justice** said an elected representative of the people cannot be equated with public servants who are banned for a lifetime on conviction.

Disqualification under the Representation of the People Act of 1951

- The government said disqualification under the **Representation of the People Act of 1951** for the period of the prison sentence and **six years** thereafter was enough for legislators.
- The case is based on a plea by a Supreme Court advocate who argued that a life ban on conviction should **uniformly apply for members of the judiciary, executive and the legislature**. There should not be any discrimination of one from the other.
- An MP or MLA convicted for offences enumerated in **Section 8 of the Representation of the People Act should be banned for life**.
- The advocate argued that **while a public servant or a government employee is debarred for life on conviction for offences** under the Indian Penal Code, money laundering law, foreign exchange violation, UAPA or cheque cases, among other laws, **a legislator is "only disqualified for the same offences for a specified period"**.
- **The Ministry** however **countered that legislators are not bound by specific "service conditions"**. They are bound by their oath to serve citizens and country. They are bound by propriety, good conscience and interest of the nation.

Disqualification of MPs and MLAs

- The Representation of the People Act of 1951 lays down certain rules for disqualification of MPs and MLAs.
- **Section 8 (3) of the Act** states that if an MP or MLA is convicted for any other crime and is sent to **jail for 2 years or more**, he/ she will be **disqualified for 6 years** from the time of release.
- Even if a person is on bail after the conviction and his appeal is pending for disposal, he is disqualified from contesting an election.
- **Section 8(4) allowed convicted MPs, MLAs and MLCs to continue in their posts**, provided they appealed against their conviction/sentence in higher courts within 3 months of the date of judgment by the trial court.
- **The Supreme Court in July 2013 struck down section 8(4) of the RPA, 1951 and declared it ultra vires** and held that the disqualification takes place from the date of conviction.

Should convicted legislators be barred for life?

Yes

- **Law breakers become law makers:** There is a study that around 39% Member of Parliaments are facing criminal charges. And these people are law makers. What good laws can we expect from the people who themselves have been convicted for breaking the laws?
- **Low credibility of the contestants** as the voters find it difficult to trust such self acclaimed people's representatives resulting in larger voting in favour of NOTA as seen in the recent elections.
- **No deterrence:** Legislators without the fear of losing their chance to run for the elections conveniently take the laws in their hands.
- **Muscle power:** This is the reason why political parties often nominate candidates with criminal backgrounds to stand for election because, simply put, they win by threatening the voters.
- **Affects parliament/state legislature's functioning** as it affects the healthy debates, discussions, policy formulation and implementation.

No

- Legislators are not bound by specific "service conditions".
- Disqualification under the RPA 1951 for the period of the prison sentence and six years thereafter is enough for legislators.
- This will not debar some promising candidates to contest in the elections and contribute their mind for the nation.
- No one should be deprived of a second chance to reform oneself and to have a new beginning.
- This may encourage political parties to start a political vendetta against the promising candidates framing them into false cases to narrow down the competition.

MAJOR DRUG SEIZURES FROM 4 STATES

GS-II POLITY

Context

- **Uttar Pradesh, Maharashtra, Telangana and Tamil Nadu** accounted for most of the drug seizures during 2019-20.
- The annual report of the Directorate of Revenue Intelligence said 72 seizures of substances covered under the Narcotic Drugs and Psychotropic Substances Act were made across India.

Findings of the report

- In 2018-19, most seizures were reported from Bihar, Andhra Pradesh, Maharashtra and Assam.
- From the **seizure data, it is observed that activities related to illicit manufacturing and trafficking of such psychotropic substances are mostly prevalent in Maharashtra, Andhra Pradesh, Telangana and Tamil Nadu.**
- These States have a large base of small and medium chemical and pharma industries “which can be easily used by drug cartels to manufacture such illicit drugs”.
- The northeastern States face the problem of synthetic drugs due to their borders with Myanmar, which is one of the major producers, especially methamphetamine.

India and Illicit Drug Trade

- According to a report by the **United Nation Office on Drugs and Crime (UNODC)**, India is one of the major hubs of illicit drug trade ranging from age-old cannabis to newer prescription drugs like tramadol, and designer drugs like methamphetamine.
- India is in the middle of two major illicit opium production regions in the world,
 - The **Golden Crescent (Iran-Afghanistan-Pakistan)** in the west and
 - The **Golden Triangle (South-East Asia)** in the east.

Golden Triangle

- It represents the region coinciding with the rural mountains of **Myanmar, Laos, and Thailand.**
- It is Southeast Asia's main opium-producing region and one of the oldest narcotics supply routes to Europe and North America.

Golden Crescent

- This region of South Asia is a principal global site for opium production and distribution.
- It comprises **Afghanistan, Iran, and Pakistan.**



Associated Challenges

- **Easy and porous Borders:** The borders are porous and difficult to control in the lower Mekong region so cross-border movements in many places are not significantly hindered by Covid-19 measures.
- **Evolving Ways of Trafficking:** The methods of containerised trafficking, couriers and body-packing have reduced due to shutting down of borders and trade. However, dealers might come up with other ways limiting the impact of reduced trade.
- **Limited Control:** There is limited government control in the Golden Triangle, trafficking would continue at high volumes.
- **Unaffected Supply:** The supply of precursor chemicals is not likely to be disrupted because major organised crime groups source chemicals through direct diversion from industry and not diversion from illicit overseas trade channels.

Steps taken by the government

- The government constituted the **Narco-Coordination Centre (NCORD)** in November, 2016 and revived the scheme of “Financial Assistance to States for Narcotics Control”.
- In 2017, the government approved new Reward Guidelines with increased quantum of reward for interdiction or seizure of different illicit drugs.
- For effective coordination with foreign countries, **India has signed 37 Bilateral Agreements/Memoranda of Understanding.**
- Narcotics Control Bureau has been provided funds for developing a **new software i.e. Seizure Information Management System (SIMS)** which will create a complete online database of drug offences and offenders.
- The government has constituted a **fund called “National Fund for Control of Drug Abuse” to meet the expenditure incurred in connection with combating illicit traffic** in Narcotic Drugs; rehabilitating addicts, and educating the public against drug abuse, etc.
- **The Narcotic Drugs and Psychotropic Substances Act, 1985**, prohibits a person to produce, possess, sell, purchase, transport, store, and/or consume any narcotic drug or psychotropic substance.

4,800 NON CITIZENS IN NRC

GS-II POLITY

Context

- The National Register of Citizens (NRC) authorities have submitted to the Gauhati High Court an affidavit reportedly containing the details of “illegal foreigners” whose names had crept into the updated list of citizens released in 2019.
- **Some 19.06 lakh out of 3.3 crore applicants were excluded from the complete draft NRC published on August 31, 2019.**
- It was later found that some “ineligible people” - those without papers establishing their domicile in Assam before March 24, 1971 - had been included in the citizens’ list.

4,800 ineligible people

- There are about **4,800 ineligible people erroneously figuring in the NRC.**
- The NRC authority had on February 19 written to the Deputy Commissioner and District Registrar of Citizen Registration of all the districts, seeking details of all such ineligible people, often referred to as “Bangladeshi” in Assam.
- The ineligible persons were specified as -
 - DV (doubtful voters),
 - DF (declared foreigners),
 - PFT (cases pending in Foreigners’ Tribunal or FT),
 - DVD (DV’s descendants),
 - DFD (DF’s descendants) and
 - PFTD (descendants of cases pending in the FT).

Background

- The **NRC was created in 1951** to determine who was born in Assam and is therefore Indian, and who might be a migrant from erstwhile East Pakistan, now Bangladesh.
- The demand for updating the NRC was first raised in 1980 during the anti-foreigners Assam agitation spearheaded by the All Assam Students’ Union.
- **A 2009 petition before the Supreme Court by the NGO Assam Public Works** led to the updating exercise through a notification in December 2013.
- The **apex court-monitored** exercise that cost at least ₹1,600 crore saw some 55,000 officials sifting the applications of 3.3 crore people across 2,500 NRC Seva Kendras on the basis of documents to establish them as residents of Assam.

National Register of Citizens

- NRC is a **register prepared in respect of each village**, showing the houses or holdings in a serial order and indicating against each house or holding the number and names of persons staying therein.
- The register was **first prepared after the 1951 Census of India** and since then it has not been updated until recently.
- It has been updated in Assam only for now and the government plans to update it nationally as well.
- **Purpose:** To separate “illegal” immigrants from “legitimate” residents.
- **Nodal Agency:** Registrar General and Census Commissioner India.

Assam Firm on NRC Re-verification

- The Assam government remains firm on its demand of 10-20% re-verification of the nationality claims made by some of the people included in the final National Register of Citizens (NRC), published in 2019.
- The state government’s plea for the re-verification is lying pending in Supreme Court (SC) for more than a year and the apex court is yet to stamp its approval on it.
- The NRC 2019 is yet to be approved by the Registrar General of India.

Current Scenario

- The state government of Assam has provided the latest data regarding ‘foreigner’ detection in the state.
- **1,36,149 people have been declared ‘foreigners’ by the state’s** 100 functioning Foreigners’ Tribunals, whereas only 227 ‘foreigners’ have been deported from 13th March 2013 to 31st July 2020.
- A total of **425 people are currently lodged in the six detention centres** in the state.
- There is a need for re-verification because people of Assam want a correct NRC.
- The **rejection slips would carry the reason of rejection**, which would differ from person to person and based on the reason they would be able to challenge their exclusion in the Foreigners’ Tribunals.
- Every individual, whose name does not figure in the final NRC, can represent his/her case in front of the **Foreigners Tribunals**.

KARNATAKA PREVENTION OF SLAUGHTER AND PRESERVATION OF CATTLE BILL (2020)

Context

- The controversial Karnataka Prevention of Slaughter and Preservation of Cattle Bill, 2020, was passed in the Assembly amid protest by the Congress.

The highlights of Karnataka’s new anti-cow slaughter bill

- The BJP-led government in Karnataka passed the **Karnataka Prevention of Slaughter and Preservation of Cattle Bill (2020)** in the Assembly on December 9 amid strong opposition from the Congress and the Janata Dal (Secular).
- The Bill envisages a **ban on all forms of cattle slaughter** and stringent punishment for offenders.

Is the Bill completely new by itself?

- The 2020 Bill is a revised version of a law passed by the BJP when it was in power in 2010.
- It was presented in a bid to ban all forms of cattle slaughter by recommending stringent punishment for violators.
- However, as cited by top leaders of the ruling party in Karnataka, prescribed punishments have been intensified and a complete ban on any kind of cattle slaughter is being stressed upon in the new Bill.

What happened to the 2010 Bill?

- The 2010 Bill was passed when BJP was in power.
- **It was shelved in 2013** by the Siddaramaiah-led Congress government after the Bill failed to get the Governor’s assent.

- The Congress had then reverted to the less-stringent Karnataka Prevention of Cow Slaughter and Preservation of Animals Act, 1964, that allowed cow slaughter with certain restrictions.

How is 'beef' and 'cattle' defined in the latest Karnataka Bill?

- While '**beef**' is defined as the **flesh of cattle** in any form, the word '**cattle**' is defined as "**cow, calf of a cow and bull, bullock**, and he or she buffalo below the age of thirteen years".
- The Bill also terms shelters established for the protection and preservation of cattle registered with the Department of Animal Husbandry and Fisheries as 'gau shalas'.

Who has the power to conduct searches?

- **Police officers ranked sub-inspector and above** or a competent authority will have the power to **search premises and seize cattle and materials** used or intended to use to commit the offence.
- Such seizures, if any, will then be reported before the Sub-Divisional Magistrate without unreasonable delay.

Prevention of Cruelty to Animals (Regulation of Livestock Market) Rules

- It **allows only farmland owners to trade at animal markets**. Both seller and buyer will have to produce identity and farmland ownership documents.
- The cattles bought **cannot be resold within six months**.
- **District Animal Market Monitoring Committee** be set up in each which will be headed by a Magistrate, for regulation of animal markets in the district.
- It also **mandates the AMC to ensure** that the buyer of cattle does not further sell the animals for slaughter.
- The local authority is then directed to make a list of animal markets functional prior to the commencement of the rules.
- It banned setting of animal markets within 50 km of an international border and 25 km of a state border.
- **Taking animals outside the State will require special approval** of the State Government nominee.
- The Rules go on to prohibit several practices as "cruel and harmful". These include
 - Animal identification methods such as hot branding and cold branding;
 - Shearing and painting of horns, bishoping in horses and ear cutting in buffaloes;
 - Casting animals on hard ground without adequate bedding;
 - Use of any chemicals or colors on body parts of animals.

Criticism

- The new regulation such as, cattle bought cannot **be resold for six months will hurt the business of cattle traders**
- It **introduced a lot of paperwork** for cattle traders who are predominantly illiterate and poor.
- Traders are of the view that this **definition of animal markets makes it very difficult for them to procure animals**.
- The industry fears that it will **lead to huge losses** as most of the cattle trade for slaughter takes place through animal markets.
- The new rules will **make it difficult for farmers to dispose of their spent cattle** as traders usually buy buffaloes from farmers in cattle markets and then transport them to slaughterhouses.
- The ban has **hurt mostly Muslim meat and leather traders** who face mounting violence by cow vigilante groups.
- **Farmers have also been deprived of a traditional source of income** from selling non-milch and ageing cattle.
- It is argued that the **rules were violative of the fundamental right to carry on trade and the Prevention of Cruelty to Animals (PCA) Act of 1960**, under which the rules were notified, itself does not ban cattle slaughter.

DELIMITATION SHOULD BE BASED ON 2031 CENSUS

GS-II POLITY

Context

- A paper released by the Pranab Mukherjee Foundation (PMF) on the eve of the late President's birth anniversary suggested that the next delimitation exercise should be a two-step process:
 - First a Delimitation Commission should be set up to redraw boundaries of constituencies on the basis of the 2031 Census and
 - Then a State Reorganisation Act be passed to split States into smaller ones.

Key findings

- **The 84th Amendment to the Constitution in 2002** had put a freeze on the delimitation of Lok Sabha and State Assembly constituencies till the **first Census after 2026**.
- While the current boundaries were drawn on the basis of the 2001 Census, **the number of Lok Sabha seats and State Assembly seats remained frozen on the basis of the 1971 Census**.
- The **population** according to the last census preceding the freeze was 50 crore, which in 50 years has grown to **130 crore**.
- This has caused a massive asymmetry in the political representation in the country.

Population criteria

- It added that a Delimitation Commission be set up to draw the boundaries as per the 2031 Census and recommend the reorganisation of States based on population.
- A State Reorganisation Act should be brought to give effect to the Delimitation Commissions' recommendations "by splitting States into smaller ones".

Delimitation

- Delimitation literally means the act or process of fixing limits or boundaries of territorial constituencies in a country to represent changes in population -
- Objectives -
 - To provide equal representation to equal segments of a population.
 - Fair division of geographical areas so that one political party doesn't have an advantage over others in an election.
 - To follow the principle of "One Vote One Value".

How delimitation is carried out?

- Under **Article 82**, the Parliament enacts a Delimitation Act after every Census.
- Under **Article 170**, States also get divided into territorial constituencies as per Delimitation Act after every Census.
- Once the Act is in force, the Union government sets up a Delimitation Commission.
- The first delimitation exercise was carried out by the President (with the help of the Election Commission) in **1950-51**.
- The Delimitation Commission Act was enacted in 1952.
- Delimitation Commissions have been set up **four times - 1952, 1963, 1973 and 2002 under the Acts of 1952, 1962, 1972 and 2002**.
- There was no delimitation after the 1981 and 1991 Censuses.

Delimitation Commission

- The Delimitation Commission is **appointed by the President** of India and works in collaboration with the Election Commission of India.

- **Composition:** It is usually composed of the retired Supreme Court judge, Chief Election Commissioner and Respective State Election Commissioners.

Functions

- It determines the number and boundaries of constituencies to make the population of all constituencies nearly equal.
- It also identifies the seats reserved for Scheduled Castes and Scheduled Tribes, wherever their population is relatively large.
- In case of difference of opinion among members of the Commission, the opinion of the majority prevails.
- The Delimitation Commission in India is a high power body whose orders have the force of law and cannot be called in question before any court.

Problems with Delimitation

- States that take little interest in population control could end up with a greater number of seats in Parliament.
- The southern states that promoted family planning faced the possibility of having their seats reduced.
- In 2008, Delimitation was done based on the 2001 census, but the total number of seats in the Assemblies and Parliament decided as per the 1971 Census was not changed.
- The constitution has also capped the number of Lok Sabha & Rajya Sabha seats to a maximum of 550 & 250 respectively and increasing populations are being represented by a single representative.

Steps to be taken

- A national consensus exercise should be started to sort out issues much before 2026.
- The weightage given by the Finance Commission to the population can be reduced to 10%, or even 5%.

Way Forward

- Although the freeze on the number of seats in Lok Sabha and Assemblies should have been lifted after the 2001 Census, another amendment has postponed this until 2026.
- This was justified on the ground that a uniform population growth rate would be achieved throughout the country by 2026.

MOORE TAKERS FOR PRIVATE HEALTHCARE UNDER PM-JAY

GS-II POLITY

Context

- Patients seeking care at private hospitals tend to be older and a larger share consist of men compared with those seeking medical care at public hospitals, show data released by the National Health Agency (NHA).

Reach of PM-JAY to underserved areas

- They **account for over half of the empanelled hospitals**, nearly two-thirds of claim volumes, and three-quarters of claim outlays in the Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (PM-JAY).
- This, when private hospitals are making a smaller contribution in extending the geographic reach of PM-JAY to underserved areas.
- The top PM-JAY packages by value - including knee replacement, cataracts, haemodialysis and cardiovascular surgeries - are overwhelmingly provided by private hospitals .

Rising fraud

- **Medical audits** have also **revealed that private hospitals are more likely to indulge in fraud** and abuse than public hospitals and more likely to discharge patients early post-surgery to cut costs.
- **Ensuring the accountability of private hospitals** to provide efficient and high-quality care is a **pre-eminent challenge** for scheme implementation.

- Offering a robust public sector alternative in the form of high-performing government hospitals serving as a market anchor will be one element of such an approach.
- The agency's survey also found that over 72% of private empanelled hospitals are located in just seven States: Uttar Pradesh, Rajasthan, Tamil Nadu, Gujarat, Maharashtra, Punjab and Karnataka.

Better infrastructure

- There is huge State-wise variation in the share of empanelled private hospitals from less than 25% in most of the northeastern and hill States to 80% in Maharashtra.
- It also notes that private hospitals have fewer beds than public hospitals and are more likely to be empanelled for surgical packages and super-specialties.
- They also report better infrastructure for clinical and support services than their government counterparts, though data is incomplete.
- As per the data, private hospitals account for 63% of all PM-JAY claims and 75% of the total claim value.
- Previous survey evidence shows that prior to the launch of PM-JAY, patients often paid out-of-pocket for private hospital care, citing quality, trust, and availability of services as the major reasons for doing so.

PMJAY Affected by Lockdowns

- According to the **"Pradhan Mantri Jan Arogya Yojana (PMJAY) Policy Brief (8): PMJAY Under Lockdown: Evidence on Utilization Trends"**, the nationwide lockdown has had a significant negative impact on inpatient care utilisation under the scheme.

Key findings

- Demographic groups, women, younger and older populations (under 20 and over 60) reduced their utilisation by more than men, young adults or the middle-aged.
- Among procedures, planned surgeries such as cataract operations and joint replacements suffered a decline of over 90%, while hemodialysis (also known as dialysis which is a process of purifying the blood) declined by only 20%.
- The steepest decline (over 75%) was registered in Assam, followed by Maharashtra and Bihar, while much smaller declines (about 25% or less) were observed in Uttarakhand, Punjab and Kerala.
- There was a small but perceptible shift in PMJAY utilisation from the public to private hospitals.
- The utilisation of neonatal packages declined by 24%.
- There was a slight shift from public to private hospitals for neonatal care and the largest declines have been observed in the public sector in Tamil Nadu and Madhya Pradesh.
- In the public sector, which plays a smaller role in oncology care under PMJAY, there was a 90% decline in claims in Maharashtra and a 65% decline in Tamil Nadu.

Access to medical facilities

- While access to medical facilities was one of the few exceptions to stay-at-home orders during the lockdown, care-seeking behaviours and healthcare provision were nevertheless significantly affected, due to the following reasons:
- **On the Supply Side**
 - Hospitals may be preoccupied with Covid-19 preparations or caseloads, resulting in fewer resources for non-Covid-19 cases.
 - This may be particularly relevant in public hospitals, which have been the primary focus of the policy response and could extend to activities such as submitting pre-authorisation requests or claims documents as required under PMJAY.
 - Private hospitals may reduce services out of fear among health workers that they will become infected.
- **On the Demand Side**
 - PMJAY beneficiaries might delay or forego treatment due to fear of infection at a hospital.

- They may not be able to reach hospitals due to public transport shutdowns and mobility constraints.
- The economic crisis may affect financial considerations related to seeking care.

Pradhan Mantri Jan Arogya Yojana

- It offers a sum insured of **Rs. 5 lakh per family for secondary care** (which doesn't involve a super-specialist) as well as tertiary care (which involves a super-specialist).
- It is an entitlement-based scheme that targets the beneficiaries as identified by the latest Socio-Economic Caste Census (SECC) data.
- The insurance cost is shared by the centre and the state mostly in the ratio of 60:40.
- These are flexible but the hospitals can't charge the beneficiary more once fixed.
- The National Health Authority (NHA) has been constituted as an autonomous entity under the Society Registration Act, 1860 for effective implementation of PMJAY in alliance with state governments.
- The State Health Agency (SHA) is the apex body of the State Government responsible for the implementation of PMJAY in a State.

SC COLLEGIUM MOOTS TRANSFER OF HC JUDGES

GS-II POLITY

Context

- The Supreme Court collegium has recommended the transfer of judges of several High Courts.
- The top court's recommendations are yet to be sent to the Law Ministry.
- Recently the Andhra Pradesh HC was dragged into a controversy as the Chief Minister had alleged that a senior judge of the Supreme Court was interfering in the functioning of the High Court.

Transfer of judges

- The **Chief Justices of AP and Sikkim** may swap places, with Chief Justice J.K. Maheshwari moved to Gangtok and Chief Justice Arup Kumar Goswami moved south.
- **Justice S. Muralidhar**, who is currently a judge of Punjab and Haryana High Court, is being recommended for **elevation as the Chief Justice of Orissa High Court**.
- **Justice Pankaj Mithal** with the Allahabad High Court, is being recommended as the next Chief Justice of Jammu and Kashmir.
- Justice Hima Kohli of the Delhi HC is being recommended for elevation as the Chief Justice of Telangana High Court.

Collegium of Supreme Court judges

- The Collegium of judges **does not figure in the Constitution**. It is the Supreme Court's invention.
- **Article 124(2)** says judges of the Supreme Court and High Courts are **appointed by the President** and speaks of a process of consultation.
- Therefore, Collegium is a system under which judges are appointed by an institution comprising judges.
- Collegium also recommends the transfer of Chief Justices and other judges.

A JURY OF JUDGES		
WHAT IS THE COLLEGIUM SYSTEM?	CRITICISMS	
<ul style="list-style-type: none"> • A forum which decides on appointments, transfers (A/Ts) of judges. • Comprised of Chief Justice of India, 4 Supreme Court judges • President merely approves CJI's choice 	<ul style="list-style-type: none"> • Born from 'Three Judges Cases' which gave primacy to CJI's call on A/Ts • Judiciary gets greater say than Executive on A/Ts 	<ul style="list-style-type: none"> • Administrative burden of checking professional background data • Closed-door affair, lacks transparency • Exclusivity sidelines talented junior judges, advocates
SOME OF THE CHANGES SOUGHT:		
<ul style="list-style-type: none"> • CJI cannot make unilateral choice • Consulted judges' views need to be in writing • Non-compliance must make CJI choice non-binding • Transfer of Judges reviewable only in case of non-compliance 		

Landmark Judgements

- **First Judges Case (1981)** ruled that the “consultation” with the CJI in the matter of appointments must be full and effective. However, the CJI’s opinion should have primacy.
- **Second Judges Case (1993)** introduced the Collegium system, holding that “consultation” really meant “concurrence”. It added that it was not the CJI’s individual opinion, but an institutional opinion formed in consultation with the two senior-most judges in the Supreme Court.
- **Third Judges Case (1998):** SC on President’s reference expanded the Collegium to a five-member body, comprising the CJI and four of his senior-most colleagues.

Procedure followed by the Collegium

- The **President of India appoints** the CJI and the other SC judges.
- For other judges of the top court, the proposal is initiated by the CJI.
- The **CJI consults the rest of the Collegium members**, as well as the senior-most judge of the court hailing from the High Court to which the recommended person belongs.
- The consultees must record their opinions in writing and it should form part of the file.
- The Collegium sends the recommendation to the Law Minister, who forwards it to the Prime Minister to advise the President.
- **The Chief Justice of High Courts is appointed as per the policy of having Chief Justices from outside the respective States.**
- The Collegium takes the call on the elevation.

Appointment of CJI for High Courts

- High Court judges are recommended by a Collegium comprising the CJI and two senior-most judges.
- The proposal, however, is initiated by the Chief Justice of the High Court concerned in consultation with two senior-most colleagues.
- The recommendation is sent to the Chief Minister, who advises the Governor to send the proposal to the Union Law Minister.

Criticism made against the Collegium system

- Opaqueness and a lack of transparency.
- Scope for nepotism.
- Embroilment in public controversies.
- Overlooks several talented junior judges and advocates.

Attempts to reform

- The attempt made to replace it by a ‘National Judicial Appointments Commission’ was struck down by the court in 2015 on the ground that it posed a threat to the independence of the judiciary.

Reforms needed

- A transparent and participatory procedure, preferably by an independent broad-based constitutional body guaranteeing judicial primacy but not judicial exclusivity.
- It should ensure independence, reflect diversity, demonstrate professional competence and integrity.
- Instead of selecting the number of judges required against a certain number of vacancies, the collegium must provide a panel of possible names to the President to appoint in order of preference and other valid criteria.

Context

- The Supreme Court drew a parallel between politics and corporate governance when minority shareholders complained of undue interference from Tata trustees in the running of Tata Sons, giving the board hardly any independence.

SC's observations

- The situation was akin to a Chief Minister opting to consult his party colleagues before a Cabinet meeting.
- Shapoorji Pallonji Group** alleged interference by the stakeholder trustee-directors in the running of Tata Sons.
- Politics was different from corporate governance.
- In the commercial world, money is equivalent to power. Money is a kind of power.
- If in order to preserve money in a company, somebody seeks assistance from someone outside respected by him or a former chairman, does it amount to loss of independence of board.
- In politics, majoritarianism accounts for everything. This is not the case under the Companies Act.

Corporate governance

- Corporate governance** is a concept which revolves around the appropriate management and control of a company.
- It includes the rules relating to the power relations between owners, the board of directors, management and the stakeholders such as employees, suppliers, customers as well as the public at large.
- Sustained growth of any organization** requires the cooperation of all stakeholders, which requires adherence to the best corporate governance practices.

Corporate Governance Initiatives in India

- In India, corporate governance initiatives have been undertaken by the Ministry of Corporate Affairs (MCA) and the **Securities and Exchange Board of India (SEBI)**.
- The first formal regulatory framework for listed companies specifically for corporate governance was established by the SEBI in February 2000, following the recommendations of **Kumar Mangalam Birla Committee Report**. It was enshrined as **Clause 49 of the Listing Agreement**.
- The Ministry of Corporate Affairs had appointed a Naresh Chandra Committee on Corporate Audit and Governance in 2002** in order to examine various corporate governance issues.
 - It made recommendations in two key aspects of corporate governance: financial and non-financial disclosures: an independent auditing and board oversight of management.
 - It is making all efforts to bring transparency to the structure of corporate governance through the enactment of Companies Act and its amendments.
- India's SEBI Committee on Corporate Governance defines corporate governance as the "acceptance by management of the inalienable rights of shareholders as the true owners of the corporation and of their own role as trustees on behalf of the shareholders.
- It has been suggested that the Indian approach is drawn from the Gandhian principle of trusteeship and the Directive Principles of the Indian Constitution, but this conceptualization of corporate objectives is also prevalent in Anglo-American and most other jurisdictions.

Context

- India dropped two ranks in the **United Nations' Human Development Index** this year, standing at **131 out of 189 countries**.

- However, if the Index were adjusted to assess the planetary pressures caused by each nation's development, India would move up eight places in the ranking.

Key findings

- **For the first time**, the United Nations Development Programme **introduced a new metric to reflect the impact caused by each country's per-capita carbon emissions and its material footprint, which measures the amount of fossil fuels, metals and other resources used to make the goods and services it consumes.**
- This paints a "less rosy, but clearer assessment" of human progress.
- **Norway, which tops the HDI, falls 15 places if this metric is used, leaving Ireland at the top of the table.**
- The oil and gas-rich Gulf States also fell steeply.
- **China would drop 16 places** from its current ranking of 85.
 - China's net emissions (8 gigatonnes) are 34% below its territorial emissions (12.5 gigatonnes) compared with 19% in India and 15% in Sub-Saharan Africa.

Strain on resources

- No country has yet been able to achieve a very high level of development without putting a huge strain on natural resources.
- UNDP India's representative praised India's record in achieving its carbon emissions goals so far, and urged Indian policy makers to take the path of sustainable development.
- The HDI itself is an assessment of a nation's health, education and standards of living.
- Although this year's report covers 2019 only, and does not account for the impact of COVID, it projected that in 2020, global HDI would fall below for the first time in the three decades since the Index was introduced.

Dimensions

- The HDI combines three dimensions:
 - A long and healthy life: Life expectancy at birth
 - Education index: Mean years of schooling and Expected years of schooling
 - A decent standard of living: GNI per capita (PPP US\$)

Criticism

- The Human Development Index has been criticized on a number of grounds, including -
 - Alleged lack of consideration of technological development or contributions to the human civilization,
 - Focusing exclusively on national performance and ranking,
 - Lack of attention to development from a global perspective,
 - Measurement error of the underlying statistics, and on the UNDP's changes in formula which can lead to severe misclassification in the categorization of "low", "medium", "high" or "very high" human development countries.

SC FINDS HC ORDER ON A.P. GOVT. DISTURBING

GS-II POLITY

Context

- The Supreme Court stayed the Andhra Pradesh High Court order intending to embark on a judicial inquiry into whether there is a constitutional breakdown in the **State machinery under the Jagan Mohan Reddy government, requiring a declaration of President's rule.**

SC's observations

- The government said it was not up to the High Court to enquire and recommend President's rule in a State.
- It is **Article 356** that deals with failure of constitutional machinery in a State.
- This power (to impose President's rule exclusively) vests in the Executive.

- The power in this regard, like sending a report either to the Hon'ble President or to the Hon'ble Governor or to record a finding in that regard, cannot be exercised by the judiciary.

Unprecedented order

- **Habeas corpus** petitions filed by relatives of persons remanded in judicial custody or out on bail.
- The High Court had summoned the State counsel to assist it in deciding "whether in circumstances prevailing in the State of Andhra Pradesh, the court can record a finding that there is constitutional breakdown in the State or not".
- The government said the **High Court's observation violated the Basic Structure doctrine of the Constitution.**
- Under the constitutional framework, it is not for the courts to decide as to whether there is a constitutional breakdown in a State.
- The said power has been specifically conferred upon a different constitutional authority - and rightly so.
- It is needless to mention that the constitutional courts do not have any judicially discoverable and manageable standards to determine if there has been a constitutional breakdown.

Judicial Activism

- The judiciary performs an active role to uphold constitutional values and ethics under the constitutional pattern.
- For addressing civic dilemmas, the judiciary applies its intellect and creativity to fill the gap between the positive and normative aspects of legislation. For this reason judicial activism has emerged.
- The term "Judicial Activism" refers to the court's decision, based on the judges personal wisdom that do not go rigidly within the text of the statutory passed by the legislature and the use of judicial power broadly to provide remedies to the wide range of social wrongs for ensuring proper justice.

Doctrine of separation of Power

- The Constitution, under various provisions, has clearly drawn the line between Legislature and the Judiciary to maintain their independence in their respective functioning.
- Where Article 121 and 211 forbid the legislature from discussing the conduct of any judge in the discharge of his duties, Articles 122 and 212, on the other hand, prevent the courts from sitting in judgment over the internal proceedings of the legislature.
- Article 105(2) and 194(2) protect the legislators from the interference of the Courts with regards to his/her freedom of speech and freedom to vote.

Examples where the judges may have encroached upon the legislature

- **Arun Gopal v. Union of India (2017):** the Supreme Court fixed timings for bursting Diwali fireworks and prohibited the use of non-green fireworks, although there are no laws to that effect.
- **M.C. Mehta v. Union of India (2018):** the court annulled the statutory Rule 115(21) of the Central Motor Vehicle Rules, 1989, when it directed that no BS-4 vehicle should be sold after March 30, 2020, and that only BS-6 vehicles can be sold after that date.
- **Subhash Kashinath Mahajan v. State of Maharashtra (2018):** the court amended the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989, by annulling Section 18 which said that no anticipatory bail will be granted to persons accused under the Act; by requiring a preliminary enquiry; and by prohibiting arrest under the Act except with permission in writing by the appropriate authority.
- **Rajesh Sharma v. The State of Uttar Pradesh (2017):** The court felt that Section 498A of the Indian Penal Code was being misused. So it amended that Section by requiring complaints under that provision to be sent to a Family Welfare Committee constituted by the District Legal Services Authority, although there is no such requirement in Section 498A.
- **National Green Tribunal (NGT):** ordered that no 15-year-old petrol-driven or 10-year-old diesel-driven vehicle will ply in Delhi, and the Supreme Court has directed impounding such vehicles, though neither the NGT nor the Supreme Court are legislative bodies.

President's Rule

- President's Rule implies the suspension of a state government and the imposition of direct rule of the Centre.
- It is also known as 'State Emergency' or 'Constitutional Emergency'.
- The Supreme Court in the Bommai case (1994) enlisted the situations where the exercise of power under Article 356 could be proper.
- One such situation is that of 'Hung Assembly', i.e. where after general elections to the assembly, no party secures a majority.

Constitutional Provisions

- The President's Rule is imposed through the invocation of Article 356 of the Constitution by the President on the advice of the Union Council of Ministers.
- Under Article 356, President's Rule is imposed if the President, upon receipt of the report from the Governor of the State or otherwise, is satisfied that a situation has arisen in which the government of the State cannot be carried on in accordance with the provisions of the Constitution.
- A proclamation imposing President's Rule must be approved by both the Houses of Parliament within two months from the date of its issue.
- The approval takes place through simple majority in either House, that is, a majority of the members of the House present and voting.
- Initially valid for six months, the President's Rule can be extended for a maximum period of three years with the approval of the Parliament, every six months.

INNER LINE PERMIT

GS-II POLITY

Context

- Union Home Minister said the Inner-Line Permit (ILP) had been the Centre's biggest gift to Manipur since its statehood.
- Implemented under the British-era Bengal Eastern Frontier Regulation, the ILP is an official document issued to let an Indian citizen enter a protected area for a limited period.

A long-standing demand

- Pressure groups in the northeast view this permit as a shield against the entry of illegal immigrants.
- ILP was a long-standing demand of the people of Manipur.
- Apart from Manipur, ILP is needed in Arunachal Pradesh, Mizoram and Nagaland.
- Several groups in Meghalaya have been demanding the implementation of ILP.

Inner Line Permit (ILP) & 6th Schedule

- In December 2019, the Meghalaya Assembly unanimously adopted a resolution urging the Centre to implement Inner Line Permit in the state.
- Earlier, the inner line permit regime was extended to Manipur with the President signing the order to this effect.

ILP

- It is a document required by non-natives to visit or stay in a state that is protected under the ILP system.
- At present, four Northeastern states are covered, namely, Arunachal Pradesh, Mizoram, Manipur and Nagaland.
- Both the duration of stay and the areas allowed to be accessed for any non-native are determined by the ILP.
- The ILP is issued by the concerned state government and can be availed both by applying online or in person.

Background

- The Inner Line Permit is an extension of the Bengal Eastern Frontier Regulation Act 1873.
- The Britishers framed regulations restricting entry in certain designated areas.
- This was done to protect the Crown's interest in certain states by preventing "British subjects" (Indians) from trading within these regions.
- In 1950, the term 'British subjects' was replaced with 'Citizens of India'.
- Today, all non natives require the permit. This was done to protect the indigenous tribal communities of these states from exploitation.
- In addition, the Sixth Schedule of the Constitution provides for the administration of tribal areas in Assam, Meghalaya, Tripura and Mizoram to safeguard the rights of the tribal population in these states.

Valid for domestic tourists

- An ILP is only valid for domestic tourists.
- For foreign tourists in:
 - Manipur: No permit is required. But, have to register themselves.
 - Mizoram: No permit is required. But, need to register.
 - Nagaland: No permit is required. However, they need to register.
 - Arunachal Pradesh: Tourists need a Protected Area Permit (PAP) or Restricted Area Permit (RAP) from the Ministry of Home Affairs, Government of India.

Need for ILP

- Preservation of indigenous culture and tradition.
- Prevents illegal migrants and encroachment by outsiders.

How is it connected to the Citizenship Amendment Act?

- The CAA, which relaxes eligibility criteria for certain categories of migrants from three countries seeking Indian citizenship, exempts certain categories of areas, including those protected by the Inner Line system.
- Amid protests against the Act, the Adaptation of Laws (Amendment) Order, 2019, issued by the President, amended the BEFR, 1873, extending it to Manipur and parts of Nagaland that were not earlier protected by ILP.

OUR MAINS PROGRAMME

- MAINS ASSESSMENT PROGRAMME TEST SERIES FOR CSE MAINS 2021
- MAINS 2021 ANSWER WRITING EVALUATION PROGRAMME
- UPSC MAINS 2021 CAPSULE MODULE

Context

- The Delhi High Court asked the National Crime Records Bureau (NCRB) to explain what step has been taken to recognise and classify transgenders as a separate third gender in its annual publication of Prison Statistics India.

The sex-wise statistics

- The plea filed by a law graduate has claimed that NCRB continued to fail to include the third gender or transgenders in the sex-wise statistics of the prison inmates all over India in its annual Prison Statistics India, since the past seven years.

Recognition of transgenders

- In 2013, the government set up an expert committee to study the problems of transgenders and recommend solutions.
- In 2014, the Supreme Court of India declared transgender people to be a 'third gender' in National Legal Services Authority v. Union of India case.
- It also affirmed that the fundamental rights granted under the Constitution of India will be equally applicable to transgender people, and gave them the right to self-identification of their gender as male, female or third-gender.
- In 2014, a private member Bill, the Rights of Transgendered Persons, was introduced in the Rajya Sabha.
 - The bill looked at a range of entitlements of such persons, providing specifically for them in health, education sectors, skill development and employment opportunities, and protection from abuse and torture.
 - However, this Bill got lapsed.
- In 2019, the Parliament passed the Transgender Persons (Protection of Rights) Bill, 2019.
- In 2020, Government establishes the National Council for Transgender Persons.

Features of Transgender Persons Act, 2019

- Seeks to establish National Council for Transgender persons.
- **Definition of a Transgender Person:** The Act defines a transgender person as one whose gender does not match the gender assigned at birth.
 - It includes transmen and trans-women, persons with intersex variations, gender-queers, and persons with socio-cultural identities, such as kinnar and hijra.
- **Certificate of Identity:** The Act states that a transgender person shall have the right to self-perceived gender identity.
 - A certificate of identity can be obtained at the District Magistrate's office and a revised certificate is to be obtained if sex is changed.
- The Act has a provision that provides transgender the right of residence with parents and immediate family members.
- **Prohibition Against Discrimination:** The Act prohibits discrimination against a transgender person in various sectors such as education, employment, and healthcare etc.
- **Punishment:** It states that the offences against transgender persons will attract imprisonment between six months and two years, in addition to a fine.

National Council for Transgender Persons

- It has been a requirement under the Transgender Persons (Protection of Rights) Act, 2019.
- The Social Justice Minister would be the chairperson of the Council.
- The members would include officials of the Ministries of Health, MHA, MoHUA, Minority Affairs, HRD etc. among others.

- The council also includes five nominated members from the transgender community.
- The council would work with States to ensure that transgender welfare boards are set up in all States and essential needs of the community, like housing, food, healthcare and education are met.

PANDEMIC, POVERTY SPUR CHILD MARRIAGE IN M.P.

GS-II SOCIAL JUSTICE

Context

- The COVID-19 pandemic and the subsequent lockdown have proved to be new drivers of **child marriages in rural Madhya Pradesh**, with several reports of such ceremonies from different parts of the State during the ongoing marriage season.
- Madhya Pradesh recorded **46 child marriages between November 2019 and March 2020**, a figure that jumped to **117 in just three months** of the lockdown from April to June, data provided by ChildLine India.
- According to **ChildLine India, across India, 5,214 child marriages were reported in the first four months of the lockdown between March and June.**

'Worried about safety'

- Parents are worried about the safety of their daughters during the prolonged lockdown and are convinced that marrying her minor daughter would ensure the child's well-being.
- **Despite the official vigilance**, child marriages remain a challenge in Madhya Pradesh.
- **Increased economic pressures** due to the pandemic has pushed parents to marry off girls early.

Child marriage a social evil

- Around 15 million girls become victims of child marriage every year across the world.
- The United Nations says that more than 21% young women and 4% young men the world over were married before they turned 18.
- At present, 650 million girls and women alive were married before their 18th birthday.
- Massive efforts have been undertaken by countries as well as the United Nations to prevent the menace that has far reaching implications for children.
- In the last decade, the proportion of women who were married as children decreased by 15%, from 1 in 4 to approximately 1 in 5.
- Around 25 million child marriages were prevented in the last 10 years, with South Asia showing the largest decline in the prevalence of child marriages.

Socio-economic factors are largely responsible for child marriages

- **Age Factor:** Some parents consider the age period of 15-18 as unproductive, especially for girls, so they start finding a match for their child during this age period.
 - Underaged girls are more prone to child marriage than boys.
 - The RTE Act makes education free and compulsory up to the age of 14 only. Research shows that after a girl is taken out of school at the age of 15, there is a strong possibility of her getting married at an early age.
- **Insecurity:** Law and Order of different countries are still not able to provide a secure environment for the girls in adolescent age, so some parents get their girl child married at a young age.
- **Lack of Education:** Girls are often seen as a liability with limited economic roles.
 - Women's work is confined to the household and is not valued. In addition, there is the problem of dowry.
 - Despite the fact that dowry has been prohibited for five decades (Dowry Prohibition Act, 1961), it is still common for parents of girls in India to give gifts to the groom and /or his family either in cash or kind.
- **Legal Factor:** Some countries have a law for prohibiting child marriage but do not have the provision of invalidating the child marriage i.e. if a child marriage has occurred; it is not considered as void.

Consequences

- The harmful consequences of child marriage are **segregation from family and friends**, limiting the child's interactions with the community and peers, lack of opportunities for education.
- **Early maternal and infant deaths**
- Adolescent mothers give **birth prematurely or to low weight babies**. The health of the child and mother are at risk and often they do not survive.
- **Infant mortality rates are higher** than the national average in the states where child marriage is highly prevalent.
- Because of lack of protection child brides are often exposed to serious health risks, **early pregnancy, and various STDs especially HIV/AIDS**.
- Girl children often face situations of bonded labour, enslavement, commercial sexual exploitation and violence as a result of child marriage.
- She is forced to take up roles that she isn't mentally prepared for. It eventually leads to isolation and depression.

41 ARRESTED FOR PEDDLING CHILD PORNOGRAPHIC MATERIAL

GS-II SOCIAL JUSTICE

Context

- A month-long covert online surveillance operation in **Kerala, code-named P-Hunt_20.2**, ended in the arrest of 41 persons from across the State on the charge of 'seeking, collecting, browsing and downloading' child pornography.

Findings of the operation:

- The confiscated content included videos and images captured furtively, mostly on mobile phones, in domestic environs during the COVID-19 period in Kerala.
- The distressing part is that many of the videos/pictures appear to be of local children in the 6-15 age group.
- The police also found child sexual abuse material sourced from security cameras at homes and flats and images and videos of children harvested from webcams.
- Child abuse could go unreported these days since children had little contact with their classmates or teachers due to the restriction on in-person schooling.
- The material was possibly from households hit by domestic violence, parental alcohol or drug addiction, or impaired adult supervision.

Pornography - Impact on Children and society

- It has psychological, emotional, and physical effects on a survivor.
- It may lead to inescapable repercussions which include general symptoms of depression, flashbacks, and post-traumatic stress disorder.
- It may also lead to self-harm, sexually transmitted infections (STIs), substance abuse, dissociation, eating disorders, pregnancy, sleep disorders, and suicide, among others.
- The psychological damage encompasses disruptions in sexual development, self-image, and developing trusting relationships in the future.
- These children live with pain and suffering because pedophiles took advantage of them.
- It also promotes aggression in the children.

The Adhoc Committee of the Rajya instituted by Chairman M. Venkaiah Naidu has broadly sought to address two main issues viz.,

- Access of children to pornographic material on social media.
- Circulation of pornographic material on social media in which children are abused.

Measures recommended by the Committee to deal with the menace:**Legislative measures**

- A clause to be inserted in the POCSO Act, 2012 under which advocating or counseling sexual activities with a person under the age of 18 years through any written material, visual representation or audio recording or any characterization is made an offence under the Act.
- Another clause to be inserted in the POCSO Act, 2012 prescribing a Code of Conduct for intermediaries (online platforms) for maintaining child safety online, ensuring age appropriate content and curbing use of children for pornographic purposes.
- Under the POCSO Act, 2012, school management should be responsible for safety of children within schools, transportation services and any other programmes with which the school is associated.

Technology measures

- Law enforcement agencies be permitted to brake end to end encryption to trace distributors of child pornography. Apps that help in monitoring children's access to pornographic content shall be made mandatory on all devices sold in India.
- Such Apps or similar solutions to be developed and made freely available to ISP, companies, schools and parents.
- Ministry of Electronics and IT and Ministry of Home Affairs shall coordinate with Blockchain analysis companies to trace identities of users engaging in crypto currency transactions to purchase child pornography online.
- Online payment portals and credit cards are prohibited from processing payments for any pornographic website.

Institutional measures

- The Committee recommended an upgraded and technologically empowered National Commission for Protection of Child Rights (NCPCR) to be designated as the nodal agency to deal with the issue of child pornography. NCPCR should have necessary technological, cyber policing and prosecution capabilities.
- The National Crime Records Bureau (NCRB) shall mandatorily record and report annually cases of child pornography of all kinds.
- A national Tipline Number should be created where child sexual abuse as well as distribution of child pornographic material can be reported by concerned citizens.

Social and Educational measures

- Ministries of Women and Child Development and Information and Broadcasting shall launch campaigns for greater awareness among parents to recognize early signs of child abuse, online risks and improving online safety for their child.
- Schools shall undertake training programmes for parents at least twice a year, making them aware of hazards for children of free access to smartphones, internet at an early age.
- Based on the experiences of other countries, a proper practicable policy for restricting use of smart phones by under aged kids needs to be considered.

State level implementation

- The committee recommended that each State and Union Territory shall have empowered the State Commission for the Protection for Child Rights mirroring capabilities and capacities of the NCPCR.
- E-safety Commissioners be appointed at state level to ensure implementation of social media and website guidelines relating to removal of pornographic content, age verification, issuing warnings etc.



Introduction

- Vice President of India M Venkaiah Naidu chaired the **19th meeting of the SCO Council of Heads of Government hosted by India** in virtual format.
- He underlined India's brave fight against the Covid 19 pandemic and economic recovery, condemned terrorism.
- It was the **first time that India chaired a summit-level meeting of the SCO** since it gained full-membership of organisation in 2017.
- India **assumed the Chairmanship of the SCO Council of Heads of Government** as per rotation from the previous Chair – Uzbekistan and will complete its year -long tenure.
- This Summit is held annually at the level of Prime Ministers of SCO and deals primarily with the trade and economic agenda of the organization.

Major takeaways from the summit

M Venkaiah Naidu addressed that

- India considers the Shanghai Cooperation Organization (SCO) as an important regional organization to **promote cooperation in the areas of peace, security, trade, economy and culture.**
- India is committed to widening our cooperation with SCO by playing a **proactive, positive and constructive role in the organization.**
- India has particularly focused on creating **three new pillars of cooperation: Startups and Innovation, Science and Technology and Traditional Medicine** and also proposed many other concrete initiatives.
- India has offered to create and Chair a **new Special Working Group on Startups and Innovation** and to set up a new **Expert Working Group on Cooperation in Traditional Medicine.**
- India has also organized in the virtual format, the **first-ever**
 - **SCO Young Scientists Conclave** in which more than 200 young scientists participated
 - Consortium of SCO Economic Think Tanks and the first-ever SCO Startup Forum.
- In the B2B format, FICCI has convened the first SCO Business Conclave with special emphasis on Cooperation in MSMEs through the national chapters of the SCO Business Council.
- On the cultural- humanitarian side, India has implemented **hosting the first-ever SCO Digital Exhibition on Shared Buddhist Heritage by the National Museum** and the translation of 10 classics of Indian regional literature into Russian and Chinese languages.
- India has also proposed to host the **SCO Food Festival in 2021.**
- India hopes to further strengthen greater trade, economic and cultural cooperation within SCO by putting human beings at the center of SCO activities and to foster greater peace and prosperity in the region.

What is SCO?

- It is a **Eurasian political, economic, and security alliance.**
- The original five nations, with the exclusion of Uzbekistan, were previously members of the **Shanghai Five group.**
- Since then, the organisation has expanded its membership to eight countries when **India and Pakistan joined SCO as full members on 9 June 2017 at a summit in Astana, Kazakhstan.**
- The **Heads of State Council (HSC)** is the supreme decision-making body in the SCO.
- It is the **largest regional organisation** in the world in terms of **geographical coverage and population, covering three-fifths of the Eurasian continent** and nearly half of the human population.



- The SCO is widely regarded as the "**alliance of the East**", due to its growing centrality in Asia-Pacific, and has been the primary security pillar of the region.
- The **Regional Anti-Terrorist Structure (RATS)**, headquartered in Tashkent, Uzbekistan, is a **permanent organ of the SCO**, which serves to **promote cooperation of member states against the three evils of terrorism, separatism and extremism**.

Criticisms of the SCO

- It is used by member states to **shield each other from international criticism regarding human rights violations**.
- Even after 19 years, the SCO is struggling to emerge as a cohesive organisation because it **lacks coherence on account of China's pre-pondering influence**.

India-SCO

- It is the only regional grouping in the vast Eurasian space.
- The specific advantage for India lies in the SCO **providing a robust platform for connecting with countries of Central Asia**, which comprise our extended neighbourhood and with whom India shares millennia of vibrant, multifaceted linkages.
- Central Asia and Afghanistan are vital for India's security, meeting its energy requirements, connectivity, trade and economic progress and growth.
- India through its active participation has strengthened greater trade, economic and cultural cooperation within SCO by putting **human beings at the center** of SCO activities.
- It has fostered greater peace and prosperity in the region.
- India's initiatives have emphasised its commitment to expanding its partnership with SCO by playing a proactive, positive and constructive role in the organisation.



JOINT USE OF CHABAHAR PORT

GS-II INTERNATIONAL RELATIONS

Introduction

- The **first Trilateral Working Group Meeting** between **India, Iran and Uzbekistan** on joint use of Chabahar Port was held virtually.
- India welcomed **interest of Uzbekistan** to use the Chabahar port as a **transit port**. It will open up economic opportunities for the traders and business community of the region.
- Besides Uzbekistan, other Central Asian countries have also shown interest in using this port.
- India wants to cooperate closely with regional countries on this issue. India's keenness to explore this option comes



from its **desire to extend connectivity into Eurasia**.

- The port is being **developed by India, Iran and Afghanistan** to **boost trade ties** among the three countries in the wake of Pakistan denying transit access to New Delhi.
- Located in the **Sistan-Balochistan province** on the energy-rich **Iran's southern coast**, the port can be easily accessed from India's western coast, bypassing Pakistan.
- It is considered to be a **major transit point to connect with several Central Asian countries**.

Chabahar Port

- It is a seaport in Chabahar located in southeastern Iran, on the **Gulf of Oman**.
- It serves as **Iran's only oceanic port**, and consists of two separate ports named Shahid Kalantari and Shahid Beheshti, each of which has five berths.
- The port is partly intended to **provide an alternative for trade between India and Afghanistan** as it is 800 kilometers closer to the border of Afghanistan than Pakistan's Karachi port.
- Being close to Afghanistan and the Central Asian countries of Turkmenistan, Uzbekistan and others, it has been termed the "**Golden Gate**" to these landlocked countries.

Central Asian Connectivity

- The Iranian port of Chabahar has the **potential to shift some of the regional dynamics in India's favor**.
- **Double landlocked Uzbekistan** has been interested in using the port to expand its trade and transit options.
- Uzbekistan has already developed **rail connectivity into Afghanistan** as a means to link with Iranian railway lines reflects Tashkent's seriousness.
- Other Central Asian states like Kazakhstan have also been interested in exploring such options.
- Given the **geostrategic location of Central Asia**, the region is also witnessing a fair share of great power competition.
- The region is viewed as **Russia's immediate backyard** and Moscow has traditionally maintained a dominant role in relations with Central Asia, **China has steadily strengthened its footprint**. India has also been **pursuing both geopolitical and economic ties** with the region.

What Chabahar can offer?

- Chabahar has the potential to **shift** some of the regional **dynamics in India's favor**.
- First, it could prove to be a **gateway to Central Asia and Eurasia**, which can, most importantly, avoid Pakistan.
- It is seen as an effort at **exploring an alternate option for Central Asia to China's Belt and Road Initiative (BRI)**.



Measures taken to improve ties:

- India has made consistent efforts to re-establish linkages with this region and consider Central Asia a part of the **India's extended neighborhood**. But lack of physical connectivity has proven to be a major hurdle in building trade and economic ties.
- Modi became the first Indian leader to travel to all five Central Asian republics – Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan – in 2015.
- In addition to energy security cooperation, India and Central Asia have both shunned Islamic terrorism and extremist ideology. Fighting cross-border terrorism has become an important common issue shaping their agenda.

- India has also been stepping up defense cooperation with the region, with a defense attaché posted in each of the Indian missions in Central Asia.
- India and Uzbekistan signed a **civil nuclear agreement** in January 2019, under which Uzbekistan **agreed to supply India with uranium**.
- Both countries signed nine agreements including on counterterrorism & infrastructure-related issues and agreed to pursue connectivity projects via the **International North-South Transport Corridor (INSTC)**.



INSTC

- INSTC is a **multi-modal infrastructure initiative** spanning around 7,200 km.
- It encompasses a network of ship, rail and road routes for transporting freight between **India, Iran, Afghanistan, Central Asia, Azerbaijan, and Europe**, with the goal of creating transport linkages among major cities including Astrakhan, Baku, Bandar Abbas, Moscow, and Mumbai.
- Feasibility studies undertaken so far has shown significant reduction of transportation costs, to the tune of \$2,500 per 15 tons of cargo.
- India is “pitching for” Uzbek participation in the INSTC connectivity project.

Conclusion

- India’s push with the trilateral arrangement for Uzbekistan to use Chabahar port is important in the context of **expanding bilateral, trilateral**, as well as broader **regional cooperation**.
- But more significantly, it is a **geopolitical move aimed at countering growing Chinese influence** in the region.
- India has capacity issues in this regard compared to China, but New Delhi is planning on cashing in on existing projects to expand its reach and linkages so that the Central Asian republics have an alternative to China’s BRI.

MOROCCO ISRAEL DEAL

GS-II INTERNATIONAL RELATIONS

Context

- Morocco has become the fourth Arab country to normalise ties with Israel in five months.
- On December 10, U.S. President Donald Trump announced the deal, claiming that the series of normalisation agreements between Arab countries (the **UAE, Bahrain, Sudan and now Morocco**) and the Jewish state was bringing peace to West Asia.
- In return for Morocco’s decision to establish formal ties with Israel, the U.S. has **recognised Moroccan sovereignty over Western Sahara**, a disputed territory in northwestern Africa, which has been under Moroccan control for decades.
- Morocco has long been campaigning internationally, using economic pressure and diplomacy, for recognition of its claims to Western Sahara.

What is the dispute?

- Western Sahara is a large, arid and sparsely populated region that shares a **border with Morocco, Algeria and Mauritania** and has a long Atlantic coast was a Spanish colony.
- The region is home to the **Sahrawi tribe**.
- In the 1970s, when international and local pressure mounted on Spain to vacate its colonies in Africa.

- Libya and Algeria helped found a Sahrawi insurgency group against the Spanish rule in Western Sahara.
- The Popular Front for the Liberation of Saguia el Hamra and Rio de Oro, known as the Polisario Front, started guerilla warfare against Spanish colonialists.
- In 1975, as part of the **Madrid Accords with Morocco and Mauritania**, Spain decided to leave the region, which was then called **Spanish Sahara**.
- According to the accords, Spain would exit the territory before February 28, 1976 and until then, the Spanish Governor General would administer the territory, with help from two Moroccan and Mauritanian Deputy Governors.
- The Polisario Front and Algeria opposed the agreements.
- Both Morocco and Mauritania moved troops to Western Sahara to assert their claims.
- Polisario, backed by Algeria, continued the guerilla resistance, demanding their withdrawal.
- On February 27, 1976, a day before Spain ended its presence, the Polisario Front declared the Sahrawi Arab Democratic Republic (SADR) in Western Sahara.
- The SADR has been recognised by several African countries and is a member of the African Union.



What is Morocco's claim?

- Morocco and Mauritania had laid claims to Western Sahara even when it was a Spanish colony.
- In 1974, the **International Court of Justice** was asked by the U.N. General Assembly to look into the legal ties, if any existed between Western Sahara and Morocco and Mauritania at the time of its colonisation by Spain in the 19th century.
- The court found **no evidence "of any ties of territorial sovereignty" between the Western Sahara and either Morocco or Mauritania.**
- But stated that there were "indications" that some tribes in the territory were loyal to the Moroccan Sultan.
- In its conclusion, the court endorsed the **General Assembly Resolution 1541** that affirmed that to ensure decolonisation, complete compliance with the **principle of self-determination** is required.
- But King Hassan II of Morocco moved troops across the northern border to Western Sahara.
- Mauritania joined in later. It set the stage for a three-way fight with the Polisario Front resisting both countries.

What's the current status of the conflict?

- The three-way conflict lasted for almost four years.
- In August 1979, Mauritania signed a **peace treaty** with Polisario, bringing the country's military involvement in Western Sahara to an end.
- When Mauritanian forces withdrew from the southern part of the desert that they had occupied, Morocco swiftly advanced troops.
- The war continued between Moroccan troops and the Polisario Front.
- In 1991, when a ceasefire was finally achieved, upon the promise of holding an independence referendum in Western Sahara, **Morocco had taken control of about 80% of the territory.**
- The war had forced almost 200,000 Sahrawis to flee the territory to neighbouring Algeria, where Polisario is running squalid refugee camps.
- The SADR is operating largely from the eastern flank of Western Sahara and the refugee camps.
- Moroccan troops have built a huge sand wall called **Berm**, from the Atlantic coast of Western Sahara to the mountains of Morocco, dividing the territories they control from that of Polisario.

What impact will the Israel deal have on the conflict?

- The normalisation deal between Morocco and Israel itself **will not have any direct bearing on Western Sahara**.
- But the concession the U.S. has given to Morocco – **Washington's recognition of Moroccan occupation of Western Sahara in return for Rabat's agreement with Israel** – could flare up the conflict.
- The independence referendum, promised in the 1991 ceasefire, is yet to take place.
- Last month, Morocco launched an offensive into the U.N.-controlled buffer zone between the two sides and in return, Polisario said it would resume armed conflict.
- After the Trump administration's recognition of Morocco's claim, Polisario said it would continue fighting until Moroccan troops are forced to withdraw.
- The U.S. move would **upset Algeria**, the biggest backer of Polisario.
- Among the countries that condemned the U.S. decision is Russia, which said the recognition of Moroccan sovereignty over Western Sahara "is a violation of international law".

STRENGTHENING INDIA BANGLADESH TIES

GS-II INTERNATIONAL RELATIONS

Introduction

- In a reflection of their rapidly growing ties, India and Bangladesh sealed seven agreements to expand cooperation in diverse areas, and restored a cross-border rail link, which was in operation till 1965.
- The restoration of the **Chilahati-Haldibari railway link** and signing of the pacts, providing for **cooperation in areas of hydrocarbons, agriculture and textiles** among others.
- In his initial remarks, PM Modi said **Bangladesh is a key pillar of India's "Neighbourhood First" policy** and it has been a key priority to strengthen ties between the two countries.
- In her statement, PM Hasina described **India as a "true friend"**.
- The ties between India and Bangladesh have witnessed an upswing in the last few years.
- Both sides have scaled up trade and economic engagement besides implementing a number of connectivity and infrastructure projects.

"Relations between Bangladesh and India are based on fraternal ties and reflective of an all-encompassing partnership based on sovereignty, equality, trust and understanding that transcends a strategic partnership".

Chilahati-Haldibari rail link

- The Chilahati-Haldibari rail link is a trans-border railway line and it has been restored after 55 years.
- It is the fifth pre-1965 railway link between the two countries that has been made operational again.
- This rail link will help to **improve connectivity between Bangladesh and Indian states of Assam and West Bengal**.
- The rail link was originally part of the broad gauge main route that **connected Kolkata and Siliguri**.
- The restore trans-border rail link will initially facilitate the movement of goods cargo. Later, passenger movement will also begin on the route after the necessary infrastructure is put in place on both sides of the border.

Key highlights of meet

Cooperation in Health Sector- addressing the global public health challenge

- India assured that vaccines would be made available to Bangladesh as and when produced in India.
- India also offered collaboration in therapeutics and partnership in vaccine production.
- Bangladesh appreciated India's conducting capacity building courses for medical professionals in Bangla language.

Cultural Cooperation - Joint Celebration of Historical Links

- The two Prime Ministers jointly unveiled a commemorative postal stamp issued by the Government of India on the occasion of **birth centenary of Bangabandhu Sheikh Mujibur Rahman**.

- Prime Minister Narendra Modi thanked the Government of Bangladesh for issuing a stamp in honour of **Mahatma Gandhi on the occasion of Gandhiji's 150th birth anniversary** celebrations earlier in September 2020.
- Commemoration of the two great leaders of the 20th century, Mahatma Gandhi and Bangabandhu, will inspire values of **justice, equality and non-violence, particularly amongst the youth.**
- **2021 will be historic in India Bangladesh bilateral relations** as they would be commemorating the **fiftieth anniversary of the Liberation War** and the establishment of diplomatic relations between India and Bangladesh.

Border Management and Security Cooperation

- Both sides agreed to facilitate **completion of border fencing at all pending sectors** at the international border between both the countries at the earliest beginning from the Tripura (India)- Bangladesh sector.
- Both leaders directed the border forces concerned **to enhance coordinate measures to work towards bringing border death incidents to zero.**
- The leaders stressed on **full implementation of the ongoing Coordinated Border Management Plan.**

Trade Partnership for Growth

- Duty Free and Quota Free access is given to Bangladeshi exports by India under SAFTA since 2011.
- Recognizing the immense potential of bilateral economic and commercial ties, both country are prospecting of entering into a bilateral **Comprehensive Economic Partnership Agreement (CEPA).**

Connectivity for Prosperity

- Welcomed the recent initiatives including the signing of the second addendum to the Protocol on Inland Water Transit and Trade (PIWTT), trial run of trans-shipment of Indian goods from Kolkata to Agartala via Chattogram and operationalization of Sonamura-Daudkandi Protocol route.
- To facilitate better connectivity and simplify movement of passengers and goods between both the countries, both leaders agreed to an early operationalization of the BBIN (Bangladesh, Bhutan, India and Nepal) Motor Vehicles Agreement through MoU.
- Bangladesh expressed keen interest in the ongoing India Myanmar Thailand trilateral highway project and sought support of India for enabling Bangladesh to connect with this project with a view to enhance connectivity between the regions of South and South East Asia.
- In the same spirit, the Indian side requested Bangladesh to allow connectivity from West Bengal (Hilli) to Meghalaya (Mahendraganj) via Bangladesh.

Cooperation in Water Resources, Power and Energy:

- Prime Minister Sheikh Hasina highlighted the need for early signing of interim agreement for sharing of the **Teesta waters**, as agreed upon by both the governments in 2011.
- The two leaders underscored the need for early conclusion of Framework of Interim Agreement on sharing of waters of six joint rivers, namely, **Manu, Muhuri, Khowai, Gumti, Dharla and Dudhkumar.**

Forcibly Displaced Persons from the Rakhine State of Myanmar

- India appreciated the generosity of Bangladesh in sheltering and providing humanitarian assistance to the 1.1 million forcibly displaced persons from the Rakhine State of Myanmar.

Partners in the Region and the World

- India thanked Bangladesh for supporting India in its election to the **United Nations Security Council.**
- Both countries agreed to continue working together towards achieving **early reforms of the UN Security Council, combating climate change, attainment of the Sustainable Development Goals (SDGs) and protection of the rights of migrants.**

Signing of Bilateral Documents and Inauguration of Projects

- Framework of Understanding (FOU) on Cooperation in Hydrocarbon Sector;
- Protocol on Trans-boundary Elephant Conservation;
- MOU regarding Indian Grant Assistance for Implementation of High Impact Community Development Projects (HICDPs) through Local Bodies and other Public Sector Institutions;
- The following bilateral development partnership projects were also inaugurated:
- Beautification and city development project in Rajshahi City;
- Construction of Khalishpur Collegiate Girl's School in Khulna;

"The India and Bangladesh relationship is considered to be a copybook example of a neighborly relationship".

How has India's relationship with Bangladesh played out over the years?

- India and Bangladesh are two countries bound together with the **commonality of history, geography, language and culture**.
- The **1971 Liberation War** has been foundational to the India and Bangladesh friendship, which has withstood the test of time over the past 50 years.
- India has a robust relationship with Dhaka, carefully cultivated since 2008, especially with the Sheikh Hasina government at the helm.
- Notably, the **joint communique** issued after Prime Minister Hasina's visit in 2010 played a **significant role in setting the present trajectory of the relationship**. The annual consultation between foreign ministers of the two countries to supervise the development of the relationship is an outcome of the visit.
- India has benefited from its **security ties with Bangladesh**, whose **crackdown against anti-India outfits has helped the Indian government maintain peace in the eastern and North-east states**.
- Bangladesh has **benefited from its economic and development partnership**.
- India is a major development partner in Bangladesh with a **promised assistance of US\$10 billion**.
- Bangladesh is **India's biggest trade partner in South Asia**. Bilateral trade has grown steadily over the last decade: India's exports to Bangladesh in 2018-19 stood at \$9.21 billion, and imports from Bangladesh at \$1.04 billion.
- India also **grants 15 to 20 lakh visas every year to Bangladesh nationals for medical treatment, tourism, work, and just entertainment**.
- For India, Bangladesh has been a key partner in the **neighbourhood first policy** — and possibly the success story in bilateral ties among its neighbours.

What are irritants in INDO-Bangladesh relationship?

- Proposed countrywide **National Register of Citizens (NRC) and the Citizenship Amendment Act (CAA)** passed last year.
- Bangladesh had cancelled visits by ministers, and Hasina has expressed reservations about CAA. She commented that the CAA and the proposed nationwide NRC are **"internal matters"** of India, the CAA move was **"not necessary"**.
- Issues like **water sharing agreement on the Teesta**, which has been pending since 2011.

How has India been engaging with Bangladesh post CAA?

- In the wake of the Ladakh standoff, **India has become more sensitive to Chinese defence inroads into Bangladesh**.
- India and Bangladesh have cooperated on pandemic-related moves. Hasina contributed \$1.5 million in India's regional emergency fund for fighting Covid-19 and India **provided medical aid to Bangladesh**.
- The two countries have also **cooperated in railways**, with India giving 10 locomotives to Bangladesh.
- The **first trial run for trans-shipment of Indian cargo through Bangladesh to Northeast states under a pact on the use of Chittagong and Mongla ports took place** in July.
- However, in recent weeks, Pakistan PM call to Hasina raised eyebrows in Delhi. While Islamabad portrayed it as a **conversation on Kashmir**, Dhaka said it was about **cooperating to deal with Covid-19**.

How has India sought to address China's latest move?

- During recent diplomats meeting with Hasina, **"security-related issues of mutual interest"** were discussed.
- The visit tried to address **issues on areas that have emerged as potential irritants in the relationship**.
- Bangladesh expressed **"deep concern"** at the rise in killings at the Indo-Bangladesh border by **"BSF or Indian nationals"** during the first half of this year, and the Indian side assured that the BSF authorities have been sensitised of the matter.

Among other issues

- The two sides **agreed that Implementation of projects should be done in a timely manner**, and that greater attention is required to development projects in Bangladesh under the Indian Lines of Credit.
- Bangladesh **sought return of the Tablighi Jamaat members impacted by the lockdown in India**, and early release of the 25 Bangladeshi fishermen in custody in Assam. India assured Bangladesh that its nationals would be able to return soon.
- Bangladesh requested for **urgent reopening of visa issuance from the Indian High Commission in Dhaka**, particularly since many Bangladeshi patients need to visit India.
- India was also requested to **reopen travel through Benapole-Petrapole land port, which has been halted by the West Bengal government in the wake of the pandemic**.
- Bangladesh told that it is ready to collaborate in the development of a Covid-19 vaccine, including its trial, and looks forward to early, affordable availability of the vaccine when ready.

What is the way ahead?

- While the **Teesta project is important and urgent from India's point of view**, it will be difficult to address it before the West Bengal elections due next year.
- Now, the test will be if India can implement all its assurances in a time-bound manner.
- Or else, the latent anti-India sentiment in Bangladesh —, which has been revived after India's CAA -NRC push — threatens to damage Dhaka-New Delhi ties.

IRAN'S CALCULATED RISK

GS-II INTERNATIONAL RELATIONS

Context

- Iran is enhancing its nuclear programme, which can be reversed if talks with the U.S. are revived.

Background

- The **P5+1 nations (China, France, Russia, the U.K. and the U.S., plus Germany)** reached an agreement with Iran in 2015 to scuttle the country's nuclear programme.
- It was expected that the agreement would lead to a new beginning in West Asia. However, this did not happen.

The Iran problem

- The Barack Obama administration's calculation was that denying Iran a path to the bomb was in the best interest of everyone, including Iran's rivals in the region.
- Washington saw Iran's nuclear programme, which was at an advanced stage in 2015, as a national security problem and tackled it via diplomacy.
- But Iran's regional rivals, mainly **Israel and Saudi Arabia**, who are also America's allies, saw the Iran problem differently.
- For them, Iran's nuclear programme was not the problem but Iran itself.
- As Tehran's influence across West Asia, its backing for non-state militias, and its ambition to emerge as a dominant pillar in the region based on the political heft of the **Shia community**.
- Mr. Obama's nuclear **deal lifted sanctions** and allowed Iran to move towards claiming its natural economic and political might. This upset the Israelis and the Saudis.

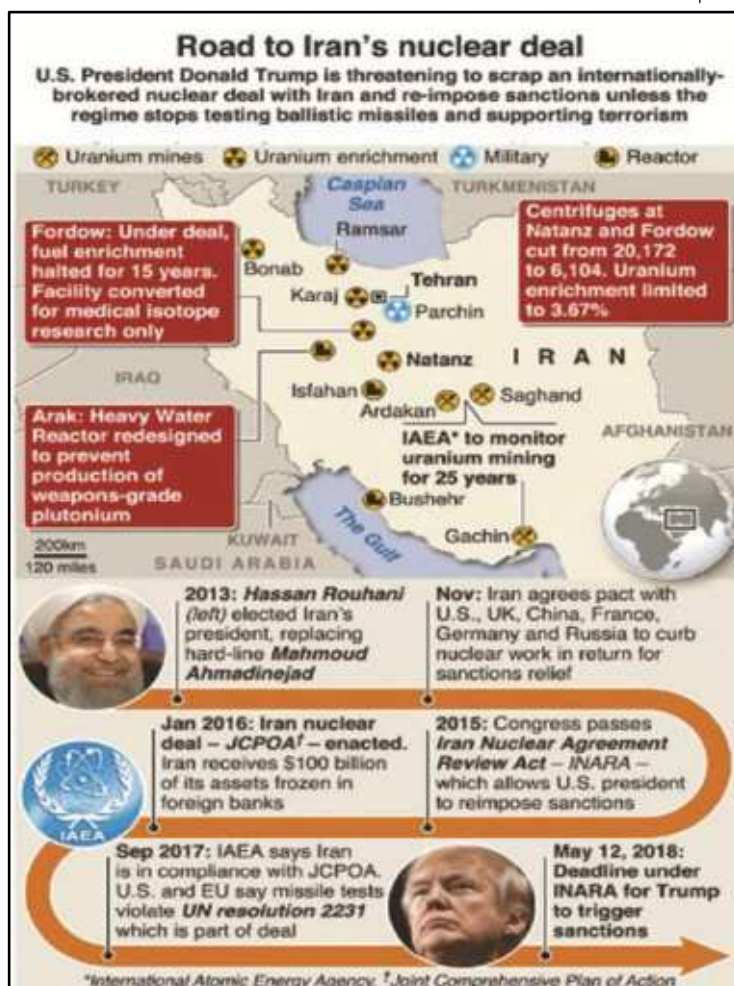
Change in policy

- The Donald Trump administration took an entirely different line towards Iran.
- It **pulled the U.S. out of the nuclear deal**, despite United Nations certification that Iran was compliant with its terms, and **reimposed sanctions on Tehran**.
- In practical terms, Mr. Trump's approach towards Iran had aligned with that of Israel and Saudi Arabia.

- The Trump years gave Israel a window of opportunity to step up its covert and overt operations.
- In 2018, Israeli spies carried out a daring mission at a warehouse inside Iran and stole thousands of documents related to Iran's nuclear programme. Iranian nuclear scientists came under attacks.

Chance to relook

- Newly elected President Joe Biden has promised to take the **U.S. back to the nuclear deal** – with more riders and would leave the regional issues to the regional players to settle.
- Iran have passed a Bill that **obliges the government to enrich uranium to a higher level**, from less than 5% **now to 20%**, which is a technical step away from the weapons-grade level of 90% – and stop access for UN inspectors to the country's top nuclear facilities in two months if sanctions relief is not given.
- Within two months, Mr. Biden will be in the White House. So, Iran is taking a calculated risk by enhancing its nuclear programme, which can be reversed if talks are revived.
- Israel wants Iran to be contained, not just Iran's nuclear programme. This leaves the region vulnerable to a prolonged crisis.



India-Iran

- Iran-India relations are of vital importance for India strategically because of **Iran's Chabahar port**, which plays a fundamental role in India's trade connectivity with Afghanistan, Central Asia, Eurasia and Europe.
- India being the **second largest importer of crude oil from Iran** has begun to effectuate a plan to ensure that there is no shortage in supply by increasing imports from other countries.
- The immediate impact of the sanctions on India was that it can no longer use US dollars for transactions with Iran.
- Investment by Indian companies in Iran's oil and gas development projects and pipeline projects, not permitted to open new US bank accounts and facing restrictions on loans, licences and Ex-Im credit.
- In December 2018, India and Iran agreed to revive its **2012 rupee-rial payment mechanism** to receive payments in Indian rupee, where half of the payments would be used to import products from India.

Impacts of sanctions on India

- Cutting down crude imports from Iran will **impair India's energy-security needs** affecting inflation and **slow down economic growth**.
- In the absence of Indian infrastructural development projects in Iran, the **vacuum created** is likely to be **filled by China** amid fast-changing geopolitics.
- India's policy towards Iran and developments in the Middle East has been largely reactive.
- In the backdrop of tensions between US and Iran, India has had to re-adjust its own relations with Iran while maintaining strategic ties with US and Israel.
- India needs to emerge out with a **clear foreign policy** and choose an alliance to not only safeguard its interests but also to play an active role on the international stage.

PMI SHOWS MANUFACTURING LOSING STEAM

GS-III ECONOMY

Context

- The Purchasing Managers' Index (PMI) for India's manufacturing touched 56.3 in November, signaling that even as an improvement in wider industrial activity continued, the sector's expansion as well as the pace of new orders slowed down while employment declined further as business optimism faded during the month.

Purchasing Managers Index(PMI)

- PMI is an indicator of business activity in the manufacturing and services sectors.
- It is a survey-based measure that asks the respondents about changes in their perception about key business variables as compared with the previous month.
- The PMI is usually released at the start of every month.
- It is, therefore, considered a good leading indicator of economic activity.

Calculation of PMI

- It is calculated separately for the manufacturing and services sectors and then a composite index is constructed.
- The PMI is a number from 0 to 100.
- PMI above 50 represents an expansion when compared to the previous month;
- PMI under 50 represents a contraction, and
- A reading at 50 indicates no change.
- If PMI of the previous month is higher than the PMI of the current month (as is the case mentioned above), it represents that the economy is contracting.

Purpose

- To provide information about current and future business conditions to company decision-makers, analysts, and investors.
- As the official data on industrial output, manufacturing and GDP growth comes much later, PMI helps to make informed decisions at an earlier stage.

ECONOMY FIRMLY ON THE PATH OF A V SHAPED RECOVERY

GS-III ECONOMY

Context

- India's economy is firmly on the path of a **V-shaped recovery** after the collapse in the first quarter, and further improvement is expected in the third quarter, 'notwithstanding some moderation' in November's indicators.

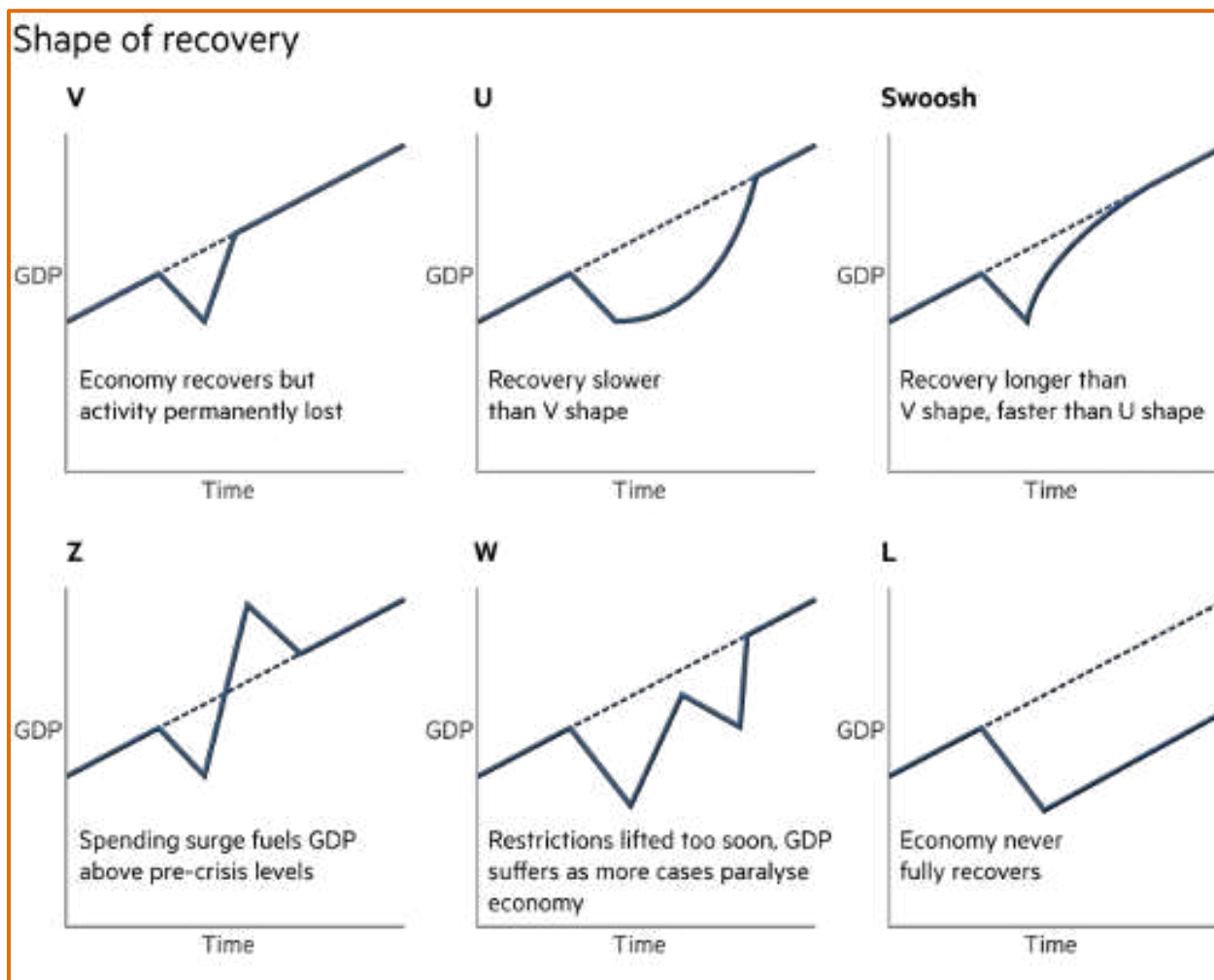
Monthly economic report

- The prospects of a second wave of COVID-19 infections remains the key downside risk to the economy, with 'Gujarat, Madhya Pradesh, Rajasthan, Uttar Pradesh and Delhi probably facing their second and third waves' in November.
- Arguing that inflation, which had risen to 7.61% in October, may have peaked, the Department of Economic Affairs in the ministry said consumer price inflation was likely to 'decelerate gradually' as base effects would kick in, and food inflation was expected to cool thanks to a good kharif harvest.

Shapes of Economic Recovery

- Economic recovery can take many forms, which is depicted using alphabetic notations. For example, a Z-shaped recovery, V-shaped recovery, U-shaped recovery, elongated U-shaped recovery, W-shaped recovery and L Shaped recovery.
- The alphabets generally denote the graph of growth rate, which resembles the shape of the letter.

- The fundamental difference between the different kinds of recovery is the time taken for economic activity to normalize.
- The time taken is often a factor of multiple things such as the depth of the economic crisis. e.g deeper the recession, longer is the time to get back to normal.
- The other aspect of economic recovery includes the effect of pandemic on jobs and household incomes, and the kind of policy response taken by the government that determines how quickly economic growth will recover.



GOVT. TO PROMOTE AYUSH EXPORTS

GS-III ECONOMY

Context

- Citing the rise in exports of Ayurveda-related products since the beginning of the COVID-19 pandemic, the government has decided to **set up an export promotion council** for AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy) products.
- The **Ministries of Finance, Commerce and Industry, and AYUSH** will work together to facilitate more exports of such products, by standardizing their HS (Harmonised System) codes for global trade.

Set up an export promotion council

- The decision to set up an export promotion council to **boost AYUSH exports** was taken at a joint review meeting of the sector by the Commerce and Industry Minister and AYUSH Minister.
- There was a growing global interest in AYUSH-based solutions for disease resistance and treatment amid the pandemic and players in the sector needed to upscale quickly in order to meet overseas and domestic demand.

- The recent spurt in exports of AYUSH products was a direct reflection of their **growing popularity in many countries**.
- The minister urged the industry to spruce up their quality standards and cost-competitiveness.
- The **Bureau of Indian Standards** will be roped in to help **develop international standards** for AYUSH products and services.

Benefits of Promoting Ayush Exports

- **Global Health:** The trade and commerce in the AYUSH sector are required to upscale quickly in order to meet the growing demands from India and abroad and also to serve the larger number of people looking up to these systems for maintaining their health.
- **Export Value/Earnings:** The export value of India's ayurvedic and herbal products increased from \$354.68 million in FY15 to \$446.13 million in FY19, as per statistics portal Statista.
- **Brand India Initiative:** AYUSH sector is working on ensuring quality and standards of AYUSH products as well as price-competitiveness, and AYUSH figuring in the Brand India activities. Export promotion of Ayush products will give an impetus to promote Brand India Initiative.
- **Opportunities:** It will provide the existing and new entrepreneurs to take this opportunity and open their clinics/outlets in different parts of the world and support export.

Challenges

- The first major challenge, both in terms of scientific reliability and trust amongst end-users that yoga and Ayurveda, do provide proper cure for a range of conditions by helping in maintaining overall fitness.
- In spite of the fact that there are as many qualified Vaidyas as allopathic doctors (700,000), opportunities for these Vaidyas are limited. these Vaidyas do not get opportunities to improve their training, clinical skills and research capabilities.
- Unani and Siddha branches of alternative medicines have very few credible peer-reviewed medical evidence that prove their efficacy and safety.
- The thrust on making AYUSH an adjunct to the medical community has been opposed by doctors associations.
- The questions about the credibility of the evidence to support the efficacy of alternative medicine have not found conclusive rebuttals.

National AYUSH Mission

- It was launched by the Department of AYUSH under the Ministry of Health and Family Welfare, during the 12th Plan for implementation through States/UTs.

Objectives

- To promote AYUSH medical systems through cost effective AYUSH services.
- To strengthen the educational systems.
- To facilitate the enforcement of quality control of Ayurveda, Siddha, Unani and Homoeopathy (ASU&H) drugs and sustainable availability of the raw-materials needed in them.
- It envisages flexibility of implementation of the programmes which will lead to substantial participation of the State Governments/UT.

Elements of the National AYUSH Mission

Obligatory Components

- AYUSH Educational Institutions.
- AYUSH Services.
- Medicinal Plants Quality Control of ASU&H Drugs.
- Flexible Components
- AYUSH Wellness Centres comprising Yoga and Naturopathy.
- Tele-medicine

Context

- The Supreme Court orally said it would not pass any order that would risk the economy going “haywire” after the Union government revealed that a **blanket waiver of interest** on debts incurred by all classes and categories of borrowers for the moratorium period would mean forgoing an estimated over **₹6 lakh crore**.

The government's response

- If the banks were to bear this burden, it would necessarily wipe out a substantial and a major part of their net worth, rendering most of the banks unviable and raising a very serious question mark over their very survival.
- Reserve Bank of India (RBI)** said the discretion to frame a resolution plan should be with the bank and not the borrower.
- The Supreme Court is hearing the government's response to separate pleas made by industry, real estate and power sectors and others for debt relief, including waiver of interest, during the moratorium.

Crippling effect

- A possible crippling of the banking sector was one of the main reasons for “not even contemplating waiver interest” and **restricting relief to “deferment of payment of instalments”**.
- For every loan account, there were about 8.5 deposit accounts in the Indian banking system.
- It was necessary for the Centre to “rationalise any kind of financial relief”.
- The government cannot do anything which would topple the economic scenario.
- The health sector required huge expenditure and it was necessary to ensure that the common man got his livelihood at the earliest.

Proactive actions taken

- The Ministry of Finance, under the Disaster Management Act, and the RBI have acted proactively.
- The overriding objective was to -
 - prevent financial markets from freezing up;
 - ensure normal functioning of financial intermediaries;
 - ease the stress faced by households and businesses;
 - and Keep the life blood of finance flowing
- The government had sanctioned over **₹90,800-crore liquidity** injection for the **power distribution companies**. This would enable them to pay their outstanding dues to power producers and transmission companies.
- In the real estate sector**, the Centre said a government advisory was issued allowing the extension of registration and completion dates of projects under Real Estate Regulatory Authorities by treating COVID-19 as an event of force-majeure.
- The government spelt relief for **Micro, Small and Medium Enterprises (MSME)** sector by launching an emergency credit line of up to **₹3 lakh crore**, backed by 100% government guarantee to enable the MSMEs to get back to regular operations.
- The resolution framework announced by the RBI took care of the apprehensions raised about the possible downgrading of loan accounts from standard to **non-performing assets (NPA)** and consequent impact on ratings.
- The **Kamath Committee** set up by the RBI has recommended financial parameters for debt restructuring of 26 sectors affected by COVID-19.

Some instances where SC orders had lead to an adverse impact on the economy

- Cancellation of the 2G spectrum licences:** In 2012 judgment the court quashed 122 licences belonging to nine companies. Today, the telecom sector is buried under a debt of Rs 7 lakh crore and is starting at “bankruptcy-driven shrinkage, burdening banks with a fresh load of bad loans, and leaving consumers to the tender mercies of a virtual duopoly.

- In its **August 2014 'coal scam' judgment**, the top court declared all 218 coal block allocations from 1993 to 2011 illegal and arbitrary. By June 2017, gross non-performing assets in the power sector were at Rs 37,941 crore.
- **Highway liquor ban:** December 2016 Judgement, banning the sale of alcohol within a distance of 500 metres on national and state highways across the country. It adversely affect the tourism sector and result in the loss of a great many jobs.

SCRAPPAGE POLICY

GS-III ECONOMY

Context

- A scrappage scheme for **commercial vehicles (CVs)** is one of the most sought-after measures in the upcoming Union Budget for 2020-21.

What is it?

- Scrappage policy refers to the provision of financial incentives to the owners of vehicles to get them to scrap outdated models and replace them with newer vehicles.
- When it was originally conceived in May 2016 as the Voluntary Vehicle Fleet Modernisation Programme, it was decided that vehicles, mainly trucks, older than 10 years or those below BS IV emission standards would be eligible for incentives if they were scrapped and replaced with new ones.
- A 50 per cent waiver on excise duty on new vehicles and discounts from the auto manufacturers were envisaged as incentives.
- In March 2018, the age of vehicles to be scrapped was increased to 20 years and the implementation date was set to April 2020.
- With this deadline nearing, expectations that the government will come out with the contours of the final scheme in the Budget run high.

Why is it important?

- India imports 6 million tonnes of scrap steel, which can be managed from proper dismantling treatments of automobiles.
- The transport sector is the second largest contributor to air pollution in India at 28 per cent. The older fleet contributes hugely to vehicular pollution.
- The vehicles sent to scrap yards will provide the owner with some monetary benefits such as financial aid for the owners .
- Vehicle owners opting to buy new vehicles post scrapping their old one, which could boost demand.
- An organized scrappage process can also improve resource efficiency by imbuing circularity in automobile manufacturing through the reuse and recycling of parts.
- The scrapping of old trucks seems to be a short-cut to expedite a recovery in the CV cycle by bumping up demand for new trucks.

Challenges

- The most challenging task is to bring a modern and compliant infrastructure to dismantle the vehicles
- The challenge may be to define the set process and to get rid of parts that cannot be used once again in an environment-friendly manner.
- this provision of Extender Producer Responsibility(EPR) has been unacceptable to the Indian manufacturers as they express their inability to handle such tasks. Needless to say, this is where things are stuck.

SUGAR INDUSTRY

GS-III ECONOMY

Context

- The sugar industry has welcomed the Centre's decision on the export plan for 2020-2021 season.

- According to the Indian Sugar Mills Association (ISMA), the industry should be able to fulfil the export target of six million tonnes in 2020-2021 sugar season.
- Several large importing countries have been enquiring about Indian sugar this season.
- With a **drop in production in Thailand, there is an opportunity for India to export to traditional markets such as Indonesia and Malaysia.**

Sugar Industry in India

- India is the **world's largest producer** of sugarcane and second largest producer of sugar after Cuba.
- The sugar industry contributes significantly to socio-economic development of the rural population.
- This industry remains highly regulated and is a source of livelihood for **50 million farmers** and their families; and provides direct employment to over 5 lakh skilled and semi-skilled labour in sugar mills and allied industries across the country.

Problems of Sugar Industry

- **Low Yield of Sugarcane**
 - Although India has the largest area under sugarcane cultivation, the yield per hectare is extremely low as compared to some of the major sugarcane producing countries of the world.
 - This leads to low overall production and results in short supply of sugarcane to sugar mills.
- **Short crushing season**
 - Manufacturing of sugar is a seasonal phenomena with a short crushing season varying normally from 4 to 7 months in a year.
 - The mills and its workers remain idle during the remaining period of the year, thus creating financial problems for the industry as a whole.
- **Fluctuating Production Trends**
 - Sugarcane has to compete with several other food and cash crops like cotton, oil seeds, rice, etc.
 - Consequently, the land available to sugarcane cultivation is not the same and the total production of sugarcane fluctuates.
 - This affects the supply of sugarcane to the mills and the production of sugar also varies from year to year.
- **Low rate of recovery**
 - Average rate of recovery in India is less than ten per cent which is quite low as compared to other major sugar producing countries.
- **High cost of Production**
 - High cost of sugarcane, inefficient technology, uneconomic process of production and heavy excise duty result in high cost of manufacturing. Small and uneconomic size of mills
 - Most of the sugar mills in India are of small size with a capacity of 1,000 to 1,500 tonnes per day.
 - This makes large scale production uneconomic. Many of the mills are economically not viable.
- **Old and obsolete machinery**
 - Most of the machinery used in Indian sugar mills, particularly those of Uttar Pradesh and Bihar is old and obsolete, being 50-60 years old and needs rehabilitation.
 - But low margin of profit prevents several mill owners from replacing the old machinery by the new one

Steps taken by the government to address the issues of sugar industry

- **Export subsidy on raw sugar**
 - The Government announces export subsidies from time to time in order to make Indian raw sugar competitive in the international market and ease the liquidity crisis of sugar mills.
 - In February 2015, the Government granted a uniform rate of subsidy of Rs.4,000 per tonne up to 1.40 million tonnes of raw sugar export during current SS14- 15.
- **Ethanol Blended Petrol (EBP) Programme**

- Ethanol is an agro-based product, produced from the by-product of the sugar industry, viz, Molasses.
- The EBP programme, besides lowering pollution levels, ensures utilisation of molasses produced as a by-product during manufacture of sugar and improves the revenue stream of the sugar mills.
- The Government of India (GoI) has mandated a minimum ethanol blending of 5% with petrol from June 2013 and has set an aggressive target of increasing the blending ratio up to 20% by 2017 to be in line with other major sugar producing countries.
- **Sugar Development Fund (SDF)**
 - The Government has set up SDF under SDF Act, 1982 for financing the sugar industry .
 - The sugar mills are required to pay for levy of cess, which currently is Rs.250 per quintal of sugar manufactured to the Consolidated Fund of India.
 - The GoI uses the SDF primarily for advancing loans to facilitate the rehabilitation and modernisation of any sugar factory. Fund can also be used to build up and maintain buffer stocks of sugar
- **Proposal for Reinsertion of Release Order (RO) mechanism**
 - The GoI is also considering bringing back the RO mechanism for sale of sugar in the domestic market.
 - Under the RO mechanism, the government decides the quantity of sugar that can be sold by each sugar mill in the open market every month.
 - It is expected to help undue slippage of sugar prices in the domestic market during the peak season.
- **Creation of buffer stock**
 - The GoI is also proposing to create a buffer stock of 10% of current year's expected sugar production so that the surplus can be absorbed from the market to some extent and amount due to cane growers can be paid directly to the farmers.
 - This will benefit the sugar industry in two ways, the part of excess supply will be absorbed and sugar industry's debt burden will come down significantly.

Way Forward

- **Cane quality measurement system** – Success of development of cane quality measurement systems, which could be used for a large number of mills and farmers in a cost effective manner will influence cane pricing regulations in India and globally.
- **Alternative sweeteners** – Adoption of alternative sweeteners in India both for household and industrial consumption could increase the substitution risk for sugar.
- **Contract farming** – The future success of contract farming in India can redefine the farmer miller relationship for cane cultivation.
- **Specific incentives for by-products** - Greater revenues from by-products can partially enable the sector to deal with cyclicity. The government would need to provide financial incentives for investments in byproduct capacities, while developing a policy environment that stimulates the demand for ethanol.

BOLSTERING GAS INFRASTRUCTURE

GS-III ECONOMY

Context

- The government had planned a **\$60-billion investment** for creating **gas infrastructure** in the country till **2024**, and that gas's share in the **energy mix is expected** to rise to **15% by 2030**.
- Currently, gas accounts for 6% in the country's total energy mix.

First automated national-level gas trading platform

- India's first automated national-level gas trading platform was unveiled in June this year to promote and sustain an efficient and robust gas market and foster gas trading in the country.
- Coverage of CGD projects is being expanded to 232 geographical areas spread over 400 districts, with potential to cover about **53% of the country's geography and 70% of population**.

- The government is adopting clean mobility solutions with greater use of LNG (liquefied natural gas) as a transportation fuel, including long-haul trucking.
- The plan is to have **1,000 LNG fuel stations across the country**.
- This year, the country was able to fully fill all petroleum reserves with a capacity of 5.33 million tonnes constructed at Visakhapatnam, Mangalore and Padur.

Gas infrastructure in India

- The Ministry of Petroleum & Natural Gas (MOPNG) is concerned with exploration and production of Oil & Natural Gas, refining, distribution and marketing, import, export and conservation of petroleum products.
- Various initiatives have been taken by the Ministry for increasing production and exploitation of all domestic petroleum resources to address the priorities like Energy Access, Energy Efficiency, Energy Sustainability and Energy Security.

Pradhan Mantri Ujjwala Yojana (PMUY)

- The Government launched PMUY in May 2016, with an objective to provide clean cooking fuel to poor households, especially in rural areas ensuring universal coverage of LPG as cooking gas in the country.
- An initial target of 5 crore connections to an adult woman of poor households was later revised to 8 crore connections by March, 2020.
- The target has already been achieved in September, 2019 i.e. 7 months ahead of the completion date.

PAHAL

- **PAHAL (Pratyaksh Hanstantrit Labh)** or the Direct Benefit Transfer of LPG (DBTL) scheme is a well targeted system of subsidy delivery to LPG consumers aimed at rationalizing subsidies, based on an approach to cut subsidy leakages, but not subsidies themselves.
- **PAHAL** Scheme was launched on 15th November 2014, initially in 54 districts and subsequently extended to the rest of the country from January 2015.
- The scheme has helped in identifying 'ghost' connections, multiple connections and inactive connections which in turn has resulted in curbing diversion of subsidized LPG to commercial purposes.

Hydrocarbon Exploration and Licensing Policy (HELP)

- This is a paradigm shift from Production Sharing Contract (PSC) regime to Revenue Sharing Contract (RSC) regime based on the principle of **ease of doing business**.
- It provides for a **single License for exploration** and production of conventional as well as non-conventional Hydrocarbon resources; Pricing and Marketing Freedom; reduced rate of royalty for offshore blocks.
- **Open Acreage Licensing Policy (OALP)** means an option to select the exploration blocks without waiting for a formal bid round. Expression of Interest can be submitted round the year and Bidding is carried out every 6 months.
- **Petroleum Exploration Licenses (PELs)**: Central Government has granted PELs for all the offshore blocks and also recommended to all the concerned State Governments to grant PELs for all on-land blocks allocated under Hydrocarbon Exploration and Licensing Policy (HELP) regime.

Reforms in Exploration And Licensing Policy

- The Government has notified 'Reforms in Exploration and Licensing Policy, for enhancing domestic exploration and production of oil and gas', with the objective to intensify exploration activities, attract foreign and domestic investment and enhance domestic production.
- Some of the salient features of Policy Reforms are as under:
- Shifting of focus from 'revenue' to 'production maximisation'.
- Boost to exploration activities by assigning greater weightage to exploration work programme.
- Shorter exploration period for early development.
- Fiscal concessions for early monetization and commercial production.
- Marketing and Pricing freedom for natural gas.

National Gas Grid

- In order to promote the usage of natural gas as a fuel/feedstock across the country and move towards a gas based economy a **National Gas Grid** was proposed.
- It aims to connect gas sources to major demand centres and ensure availability of gas to consumers in various sectors and remove regional imbalance within the country with regard to access to clean fuel.

New pipeline projects being implemented by Government are as under

- **Pradhan Mantri Urja Ganga Project** (Jagdishpur – Haldia and Bokaro – Dhamra Pipeline Project): It will cater to the energy requirements of five states, namely Uttar Pradesh, Bihar, Jharkhand, Odisha and West Bengal.
- **Barauni to Guwahati Pipeline:** It is being implemented as an integral part of JHBDPL project to connect North East Region (NER) with the National Gas Grid.
- **North East Gas Grid:** A joint venture of five oil and gas enterprises (GAIL, IOCL, OIL, ONGC and NRL) named as “Indradhanush Gas Grid Ltd” (IGGL) has been entrusted for the development of Natural Gas Pipeline Grid in North-East, i.e. North East Gas Grid (NEGG).
- **Kochi-Koottanad- Bangalore-Mangalore Pipeline Project** (KKBMPL): The efforts are underway for development of pipeline projects and providing accessibility of natural gas sources (domestic and imported both) to southern cities.

E20 FUEL

GS-III ECONOMY

Context

- The government proposed the adoption of **E20 fuel - a blend of 20% of ethanol and gasoline** - as an automobile fuel in order to reduce vehicular emissions as well as the country's oil import bill.
- The Ministry of Road Transport and Highways has published a draft notification and invited comments from the public for adoption of the fuel.

Permissible level of blending

- The current permissible level of blending is 10% of ethanol through India reached only 5.6% of blending in 2019.
- The notification facilitates the development of E20-compliant vehicles.
- It will also help in reducing emissions of carbon dioxide, hydrocarbons, etc.
- It will help reduce the oil import bill, thereby saving foreign exchange and boosting energy security.

Vehicle compatibility

- It added the compatibility of vehicles with the percentage of ethanol in the blend would be defined by the vehicle manufacturer, which would have to be displayed on the vehicle with a sticker.
- Ethanol is a biofuel and a common by-product of biomass left by agricultural feedstock such as corn, sugarcane, hemp, potato, etc.

Biofuels

- Any hydrocarbon fuel that is produced from an organic matter (living or once living material) in a short period of time (days, weeks, or even months) is considered a biofuel.
- These can be used to replace or can be used in addition to diesel, petrol or other fossil fuels for transport, stationary, portable and other applications. Also, they can be used to generate heat and electricity.
- Some of the main reasons for shifting to biofuels are the rising prices of oil, emission of the greenhouse gases from fossil fuels and the interest for obtaining fuel from agricultural crops for the benefit of farmers.

Recent Initiatives

- Initiatives by Department of Biotechnology, Ministry of Science and Technology:

- The 2018 Biofuel Policy has the objective of reaching 20% ethanol-blending and 5% biodiesel-blending by the year 2030.
- The Government has reduced **GST** on ethanol for blending in fuel from **18% to 5%**.
- The Ministry of Petroleum & Natural Gas is making all efforts to increase ethanol supply for petrol.
 - **GOBAR (Galvanizing Organic Bio-Agro Resources) DHAN scheme**, 2018: It focuses on managing and converting cattle dung and solid waste in farms to useful compost, biogas and bio-CNG, thus keeping villages clean and increasing the income of rural households. It was launched under Swachh Bharat Mission (Gramin).
 - **Repurpose Used Cooking Oil (RUCO)** launched by Food Safety and Standards Authority of India (FSSAI) aims for an ecosystem that will enable the collection and conversion of used cooking oil to biodiesel.

GS-III ECONOMY

Context

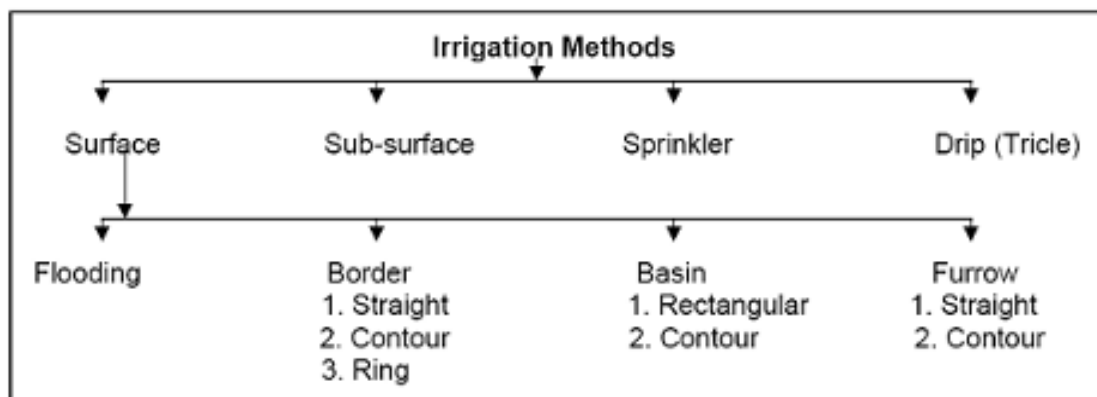
- A new model of minor irrigation through subsurface porous vessels (SSPV) being developed here is set to benefit the farmers with small land holdings in the villages of the Thar desert.
- Experiments have indicated a higher yield of farm produce and improvement in the nutrient value of soil after the installation of frustum-shaped vessels at the mounds formed on land.

To address the issues of non-availability of food material

- The initiative, supported by **Indian Institute of Technology-Delhi's Rural Technology Action Group**, was taken up earlier this year, after the COVID-19 lockdown was announced, to address the issues of non-availability of food material, malnutrition among children and the villagers' inability to earn livelihood in the cities.
- The model has effectively **modified watering by pitchers** and competes with drip irrigation.
- At the small Mokalwas village in Jodhpur district, the vegetable farming through SSPV has started on the campus of '**Arna Jharna**', which functions as the desert museum showcasing the arid landscape.
- The local villagers have created heaped piles of earth and are growing vegetables such as brinjal, tomato, spinach and lady's fingers with the new model.
- A **SSPV is made of location-specific clay and sawdust**, mixed in a proportion to suit the desert sand, press-formed to the frustum shape and baked at a temperature of 750-800 degree Celsius with the addition of a carbon layer in its structure.
- A team of local potters has been identified in Jodhpur for manufacturing the vessels in the open-hearth furnaces at their households.
- **Jodhpur-based Rupayan Sansthan**, entrusted with the task of knowledge dissemination of the irrigation model, has obtained technical assistance from the experts of IIT Jodhpur for manufacturing the vessels with the porosity required for different locations to suit the farming of vegetables and fruits.

Irrigation methods

- India's irrigated area accounts for nearly 49% of the total agricultural land. The remaining 51% is rainfed and doesn't have any irrigation Infrastructure.



Micro-irrigation

- Micro-irrigation is a type of irrigation process with lower pressure and flow than a traditional sprinkle system.
- It is used in agriculture for row crops, horticulture in wholesale nurseries, orchards.
- It minimizes the surface runoff of the soil and more absorption of water.

Drip irrigation

- Drip irrigation is a kind of micro-irrigation arrangement with the potential to save water and nutrients by slow dripping of the water to the roots of plants, either from above the soil surface or buried below the surface.
- The method of drip irrigation is considered one of the most efficient methods.
- It became the world's most valued innovation in agriculture since its introduction of the modern system in the 1930s like the impact sprinkler, which offered the first alternative to surface irrigation.

CABINET WOD FOR 100% FDI IN DTH SERVICE

GS-III ECONOMY

Context

- The Union Cabinet approved **100% Foreign Direct Investment (FDI) in direct-to-home (DTH) services**, extension of the license period from 10 years to 20 and a reduced license fee.

To increased operations and higher growth

- The **Commerce Ministry** had already spoken of 100% FDI in the DTH sector but because of the guidelines issued by the Information and Broadcasting [I&B] Ministry, the FDI was limited to 49%.
- The license fee had been reduced in keeping with the rates in the telecom sector.
- The proposed reduction was intended to align the licence fee regime applicable to the telecom sector and would be prospectively applied.
- The difference may also enable DTH service providers to invest for more coverage, leading to increased operations and higher growth and thereby enhanced and regular payment of license fee by them.
- Currently, **India has 18 crore television sets**.

Foreign Direct Investment (FDI) in India

- Foreign Direct Investment (FDI) is considered as a significant source of non-debt financial resource for economic development.
- A non-resident entity can invest in India except in those sectors/activities which are prohibited. • A person resident outside India may hold a foreign investment in any particular Indian company either as Foreign Direct Investment (FDI) or as Foreign Portfolio Investment (FPI).

Foreign Direct Investment (FDI)

- 'FDI' or 'Foreign Direct Investment' means investment through capital instruments by a person resident outside India -
 - in an unlisted Indian company OR

- in 10 % or more of the post-issue paid-up equity capital on a fully diluted basis of a listed Indian company
- In case an existing investment by a person resident outside India in capital instruments of a listed Indian company falls to a level below 10 %, of the post issue paid-up equity capital on a fully diluted basis, the investment shall continue to be treated as FDI.

Types of foreign investment

- **Automatic Route:** Under the Automatic Route, the non-resident investor or the Indian company does not require any approval from the Government of India for the investment.
 - Reserve Bank of India is in charge of the Automatic Route.
- **Government Approval Route:** Under the Government Approval Route, prior to investment, approval from the Government of India is required.
 - Proposals for foreign direct investment under Government route, are considered by respective Administrative Ministry/ Department.
- Earlier the Foreign Investment Promotion Board (FIPB) and Secretariat for Industrial Assistance (SIA) was in charge of recommending Foreign Direct Investment (FDI) which does not come under the automatic route.
- However, FIPB was abolished in 2017, and its power was given to the respective Administrative Ministries/ Departments.
- Acquisition of shares and amounts remitted through RBI's NRI Schemes are also considered as FDI.

FDI Policy of India

- FDI policy is an enabling policy which is uniformly applicable in the country across all scales of industries including micro, small and medium enterprises (MSMEs).
- Government has put in place a liberal and transparent policy for Foreign Direct Investment (FDI), wherein most of the sectors are open to FDI under the automatic route.
- The Government reviews the FDI policy and makes changes from time to time, to ensure that India remains an attractive and investor-friendly destination.

Sectors in which FDI is prohibited

FDI is prohibited in:

- Lottery Business including Government/private lottery, online lotteries, etc.
- Gambling and Betting including casinos etc.
- Chit funds
- Nidhi company
- Trading in Transferable Development Rights (TDRs)
- Real Estate Business or Construction of Farm Houses
- Manufacturing of cigars, cheroots, cigarillos and cigarettes, of tobacco or of tobacco substitutes
- Activities/sectors not open to private sector investment e.g.(I) Atomic Energy and (II) Railway operations (other than permitted activities).

Foreign Direct Investment in India

Top Countries (2000-2019)

- Mauritius (31%)
- Singapore (20%)
- Japan (7.2%)
- Netherlands (6.7%)
- USA (6.2%)

Latest trends (2019-20): Singapore > Mauritius > Netherlands > Cayman Islands > USA

Government Initiatives to attract Foreign Direct Investment

- Invest India was set up in 2009 as the national investment promotion and facilitation agency.

- In some other cases, the tax department has found that promoters of certain companies have **routed fake invoices** through a series of **shell companies** and transferred input tax credit from one company to another in circular transactions to increase the turnover of the company.
- This helped them not only evade GST but also avail higher bank loans and credit facilities due to increased turnover.

What motivates fraudsters to use fake invoices?

- Fake invoices are used because it not only **helps evade GST on taxable output** supplies by availing undue ITC and converting excess ITC into cash but also helps in inflating turnover using these invoices, booking fake purchases to evade income tax, diversion of funds and money laundering.
- According to official data, in 2018-19, the central GST authorities registered 1,602 cases of fake ITC involving an amount of Rs 11,251 crore and arrested 154 people.

What is the reason for a surge in such cases?

- According to tax officials one of the primary reasons for an increase in companies availing ITC fraudulently is the **lack of due diligence** during the GST registration.
- The process of registration was made easy and hassle free by the government so that businesses could be easily on-boarded to the system.
- However, this meant that a number of **dummy companies** too obtained the GST registration in the absence of scrutiny or physical verification of the registered address of the companies.
- The existing **GST system needs to be more robust** to detect such frauds.

How is the government planning to curb such cases?

- The government is planning to **tighten the GST registration process** and legal measures to deal with the rising cases of fake invoicing.
- Last month the legal committee of the GST Council met to discuss the tightening of the GST registration process and work out other legal measures including necessary law amendments required in the GST Act.
- Apart from this, the Directorate General of Analytics and Risk Management, the data wing of GST, has identified and issued a list of 9,757 companies that have either issued or availed fake ITC across the country between July 2017 and March 2020.

STATES BORROW 43% MORE, GET DEEPER IN DEBT

GS-III ECONOMY

Context

- At ₹5,55,900 crore, the States whose finances have been ravaged by the pandemic, have snapped up as much as 43.5% more debt from the market during the first nine months of the current fiscal with the conclusion of the last auction when 13 of them borrowed ₹18,900 crore.

Steep fall

- According to an analysis by rating agency **ICRA**, States had borrowed ₹3,87,400 crore in the first nine months of FY20.
- But given the steep fall in redemptions to ₹95,400 crore during the first three quarters from ₹1,06,800 crore of FY20, net issuance rose by an even higher 64.1% during the first three quarters of FY21 to ₹4,60,400 crore.

Centre allows five states to Borrow

- In September, the Centre permitted five States to borrow an additional ₹9,913 crore through open market borrowings to meet expenditure requirements amid falling revenues due to the COVID-19 crisis.
- These States are A.P., Telangana, Goa, Karnataka and Tripura.

- BORROWING AMOUNT ALLOWED** (₹ cr)
-
- | State | Borrowing Amount (₹ cr) |
|----------------|-------------------------|
| Karnataka | 4,509 |
| Andhra Pradesh | 2,525 |
| Telangana | 2,508 |
| Goa | 223 |
| Tripura | 148 |
| Total | ₹ 9,913 cr |

Karnataka	Andhra Pradesh	Telangana	Goa	Tripura
-----------	----------------	-----------	-----	---------

- ordance with the **recommendations of the Finance**

Under this provision?

- or is there any judicial precedent that one could rely on?
- terms of reference of the 15th Finance Commission, in which the Government has asked the Commission to consider the need for state borrowing, and it can only give such

- Centre was to protect its interests in the capacity of
also discernible, since state indebtedness negatively

GS-III ECONOMY

- at subvention for ethanol production, expanding the
ses-based ones.
s like barley, maize, corn and rice.

- which ₹4,573 crore was approved.
- to 1,000 crore litres and help in meeting the goal of
- years including one year moratorium against the loan
- in or 50% of the rate of interest charged by banks

- of petrol by 2022 and to raise it to 20% by 2030 under
 ry, 2018.
 nding in petrol in order to reduce vehicle exhaust
 crude petroleum.

- Currently, the bioethanol blending in petrol stands at 5%. Reasons for Ethanol Blending
- It is estimated that a 5% blending can result in replacement of around 1.8 million Barrels of crude oil.
- As the **ethanol molecule contains oxygen**, it allows the engine to more completely combust the fuel, resulting in fewer emissions and thereby reducing the occurrence of environmental pollution.
- The renewable ethanol content, which is a **by-product of the sugar industry**, is expected to result in a net reduction in the emission of carbon dioxide, carbon monoxide (CO) and hydrocarbons (HC).

Pradhan Mantri JI-VAN (Jaiv Indhan- Vatavaran Anukool fasal awashesh Nivaran) Yojana

- Recently, the Cabinet Committee on Economic Affairs (CCEA) has approved Pradhan Mantri JI-VAN (Jaiw Indhan- Vatavaran Anukool fasal awashesh Nivaran) Yojana to create an ecosystem for setting up commercial projects and boost to Research and Development in 2G Ethanol sector.
- 1G bioethanol plants utilise sugarcane juice and molasses, byproducts in the production of sugar, as raw material, while 2G plants utilise surplus biomass and agricultural waste to produce bioethanol.
- This scheme is promoting Second Generation (2G) Biofuels Technology moving away from food crops used in First Generation(1G) to feed stocks, nonfood crops agricultural residues or waste.
- The three public OMCs Indian Oil Corporation Ltd. Bharat Petroleum Corporation Ltd. and Hindustan Petroleum Corporation Ltd. are currently in the process of setting up 2G bioethanol plants.
- India celebrated World Biofuel Day on 10th August 2020 with the theme “Biofuels towards Atmanirbhar Bharat”.

Challenges in Ethanol Blending

- **Less Production:** Currently, domestic production of bioethanol is not sufficient to meet the demand for bioethanol for blending with petrol at Indian OMCs.
 - **Sugar mills**, which are the key domestic suppliers of bio-ethanol to OMCs, were able to supply only **57.6%** of the total demand.
 - Sugar mills do not have the financial stability to invest in biofuel plants.
 - **Water Footprint:** While India has become one of the top producers of ethanol but it lags top producers, the USA and Brazil, by a huge margin and remains inefficient in terms of water usage.
 - Water footprint, that is water required to produce a litre of ethanol, includes rainwater at the root zone used by ethanol-producing plants such as sugarcane, and surface, ground water, and fresh water required to wash away pollutants.
- **Limited Sugarcane Availability:** Sugarcane is another limited resource that affects the ethanol blending in the country.
 - In order to achieve a **20%** blend rate, almost **one-tenth of the existing net sown area** will have to be diverted for sugarcane production. Any such land requirement is likely to put a stress on other crops and has the potential to increase food prices.
 - India's biofuel policy stipulates that **fuel requirements must not compete with food** requirements and that only surplus food crops should be used for fuel production, if at all.
- **Lack of Alternatives:** Producing ethanol from crop residue can be a good alternative but the annual capacity of biorefinery is still not enough to meet the 5% petrol-ethanol blending requirement.
 - Other biofuels such as Jatropa have often proven to be commercially unviable.
- **Handling issues:** Ethanol being a highly flammable liquid marks obligatory safety and risk assessment measures during all phases of production, storage and transportation, thus increasing the cost and risk factor.



Context

- Google's Project Loon which comprises of helium-filled balloons set a new record by staying in the stratosphere for 312 days, which means almost a year.

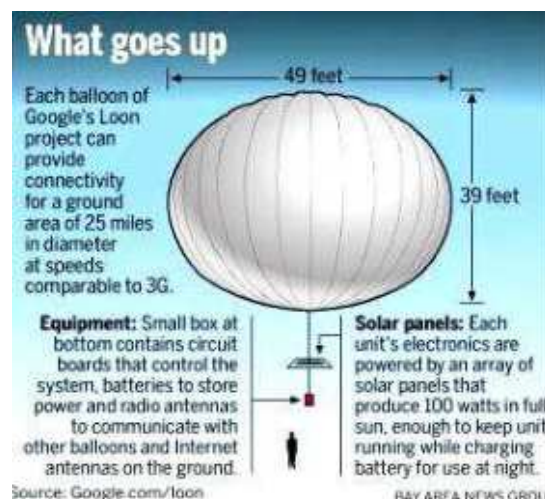
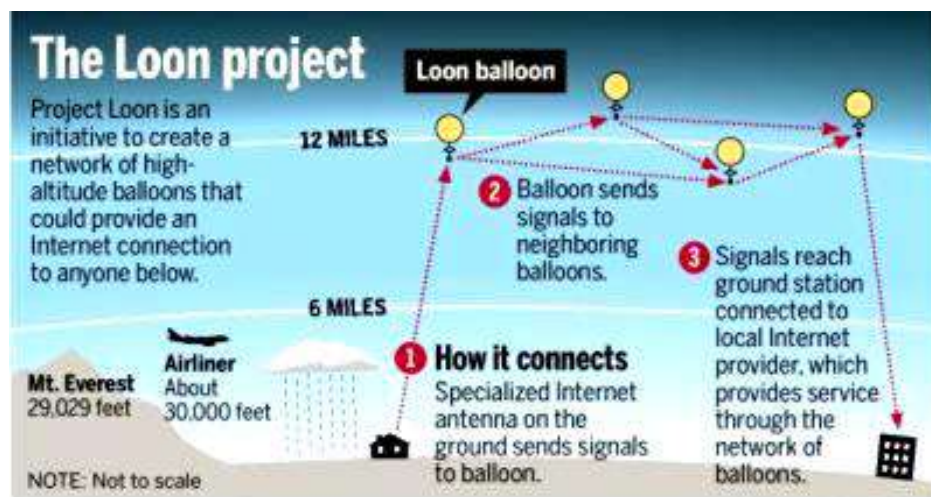
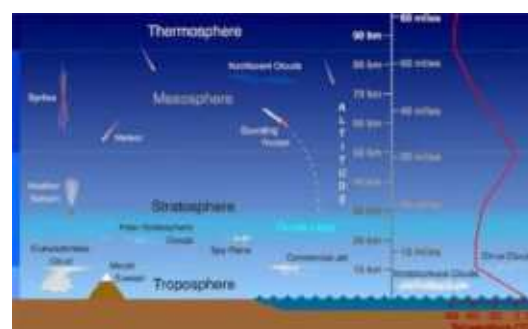
What is Loon?

- Loons are high altitude balloons that provide internet to remote areas.
- It is the third layer of connectivity ecosystem to help places with minimum reach receives connectivity with the rest of the world.
- These balloons that reach the stratosphere and provide internet connections to regions that were once thought unservable.



About Loon

- These are manufactured by Alphabet, Google's parent company.
- These tennis courts sized balloons reach up to 20 km above the Earth into the stratosphere. It's floating and direction is based on the wind movement.
- They are powered by solar panels (so no electricity is used) and are controlled by software on the ground.
- The balloons beam internet down to the earth to provide connectivity to remotest of areas
- It delivers 4G LTE and 5G connectivity and is capable of covering 200 times more areas than land cell towers and provides internet connection to approximately a diameter of 40 kms in ground areas
- As of now, it is tested and launched in countries like Sri Lanka, USA, Brazil, New Zealand and now in India too.



Do you know?

- Kenya has already received the first commercial deployment of Loon this year. It would initially provide a 4G LTE network connection spread across 31,000-square-mile of central and western Kenya, including Nairobi.
- Soon, Loon would begin its journey in the Amazon with the collaborative efforts of Telefónica.
- The balloons have previously been used only in emergency situations. These were used successfully in Puerto Rico in 2017 after Hurricane Maria destroyed all the land cell towers.
- By allowing phone companies to extend their coverage wherever needed, Loons would be able to offer countries with a cheaper option than laying cables or building cell towers.
- This could be effective in third world countries like Africa, where only 28 per cent of the continent's 1.3 billion people were registered to be using the internet in 2019.

Significance

- In the current era of World Wide Web, internet covers only one third of the whole world population.
- Still over 60% of the entire population is yet to enjoy internet facilities. Google's Project loon is true solution to this!
- The technology used for connectivity is wireless networks known as LTG (4G). Hence, it can cover almost all rural areas within our globe. This enables people with uninterrupted internet services at a fast speed!
- Google's balloon internet is a good source of Wi-Fi internet facilities. This can be used by anyone to get a Wi-Fi facility, either corporate or individuals.
- Loon's solution makes it possible for mobile network operators to cover these populations, unlocking new customers and business opportunities.

THE 'GREAT CONJUNCTION'

GS-III SCIENCE & TECHNOLOGY

Context

- On December 21, almost all the viewers across the world could see the "great conjunction" is popularly referred to as the "Christmas Star."

What is a Great Conjunction?

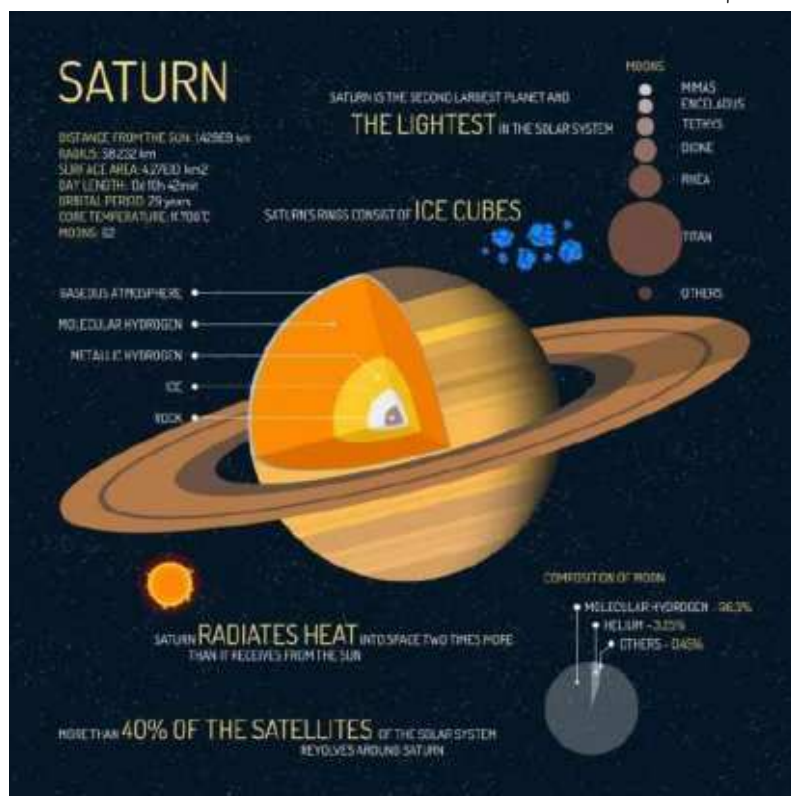
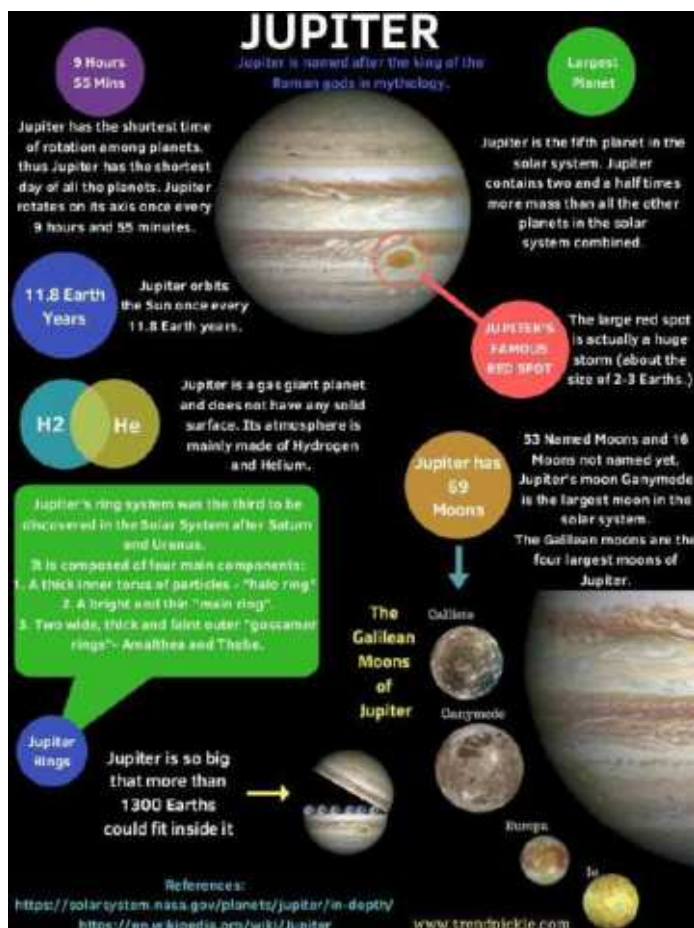
- A pairing between any pair of planets is a conjunction.
- Jupiter and Saturn are the two largest planets visible to the naked eye, hence the expression 'Great Conjunction'.
- Great conjunctions occur approximately every 20 years when Jupiter "overtakes" Saturn in its orbit.
- Jupiter orbits the Sun once in 12 years, and Saturn once in 30.



- In 60 more years i.e. in 2080, the two planets will align at roughly the same place where stargazers watched them on December 21, 2020.
- In these 60 years, Jupiter will have orbited the Sun five times, while Saturn will have done so twice.
- The spacing between the planets varies from conjunction to conjunction with most events being 0.5 to 1.3 degrees (30 to 78 arcminutes, or 1 to 2.5 times the width of a full moon).

Last Conjunction

- The last Great Conjunction happened in 1623.
- Galileo had discovered four of Jupiter's moons with his telescope a few years previously.
- From an Indian context, Jahangir was ruling the Mughal Empire at the time.
- The last time the two planets were close enough to be viewed in the night sky was in 1226. This was just a year before the death of the Mongol ruler Genghis Khan.



RT LAMP

GS-III SCIENCE & TECHNOLOGY

Context

- The RT LAMP technology has been recently validated by the Indian Council of Medical Research for COVID-19 testing.

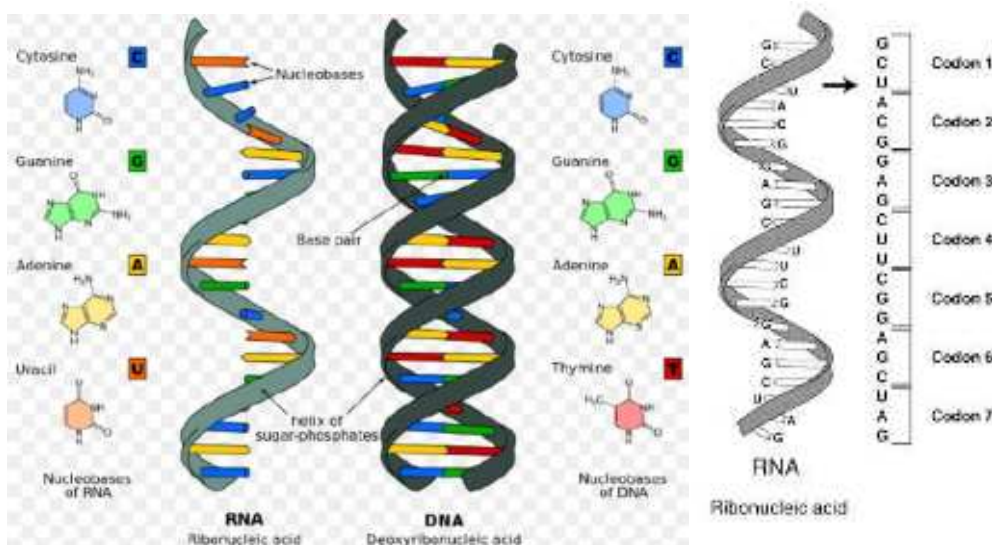
What is RT-LAMP Technology?

- Reverse transcription loop-mediated isothermal amplification (RT-LAMP) is a one step nucleic acid amplification method to multiply specific sequences of RNA.
- It is used to diagnose infectious disease caused by RNA viruses.
- RT-LAMP is used to multiply specific sequences of RNA of the virus.
- It is basically used in the detection of RNA viruses of Groups II, IV, and V on the Baltimore Virus Classification system, such as the SARS-CoV-2 virus and the Ebola virus.
- Here, the RNA is first made into cDNA (copy DNA) by the usual reverse transcription. Then, the DNA is amplified by the LAMP technique.



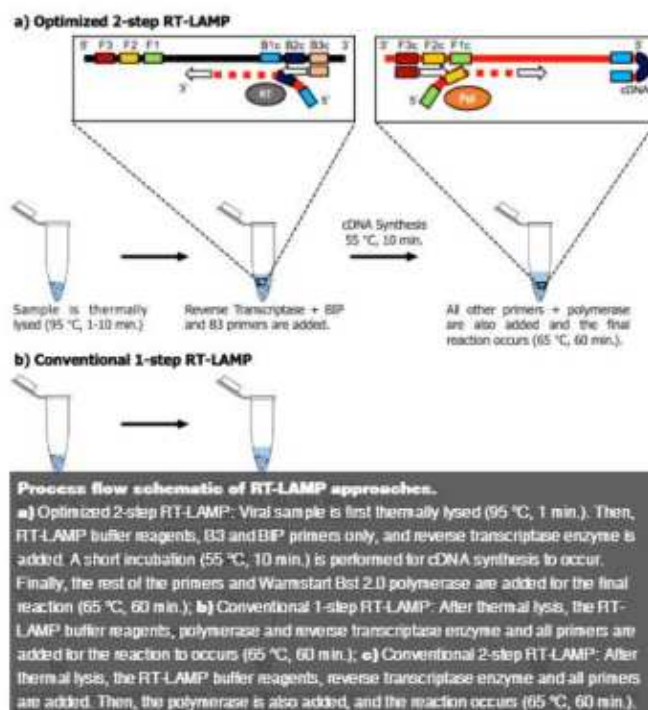
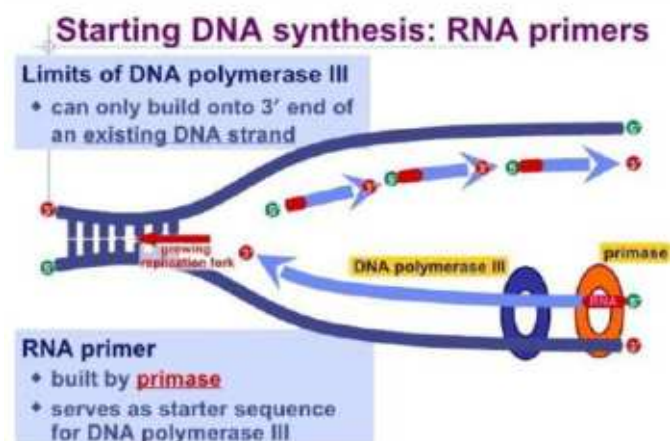
Nucleic Acid Amplification and Test

- Nucleic acids are the main information-carrying molecules of the cell, and, by directing the process of protein synthesis, they determine the inherited characteristics of every living thing. The two main classes of nucleic acids are deoxyribonucleic acid (DNA) and ribonucleic acid (RNA).
- A nucleic acid sequence is a succession of bases signified by a series of a set of five different letters that indicate the order of nucleotides forming alleles within a DNA (using GACT) or RNA (GACU) molecule.
- A nucleic acid test (NAT) is a technique used to detect a particular nucleic acid sequence to identify a particular species of organism, often a virus or bacteria that acts as a pathogen in blood, tissue, urine, etc.
- NATs differ from other tests in that they detect genetic materials (RNA or DNA) rather than antigens or antibodies.
- Detection of genetic materials allows an early diagnosis of a disease because the detection of antigens and/or antibodies requires time for them to start appearing in the bloodstream.
- Since the amount of a certain genetic material is usually very small, many NATs include a step that amplifies the genetic material—that is, makes many copies of it. Such NATs are called nucleic acid amplification tests (NAATs).

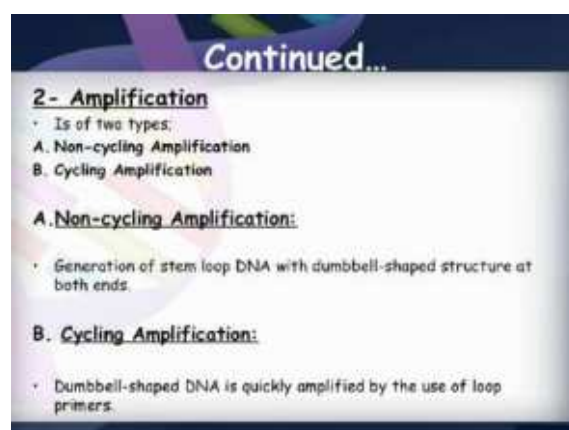
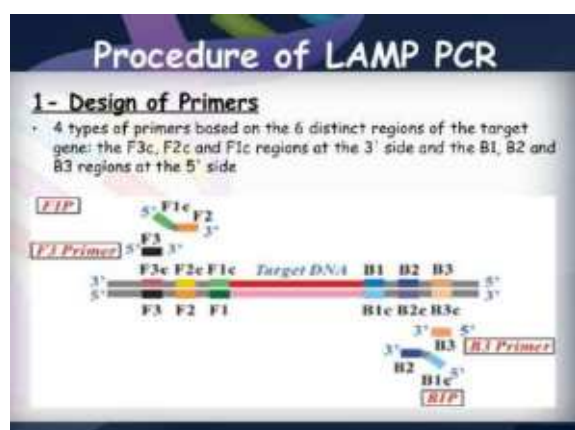
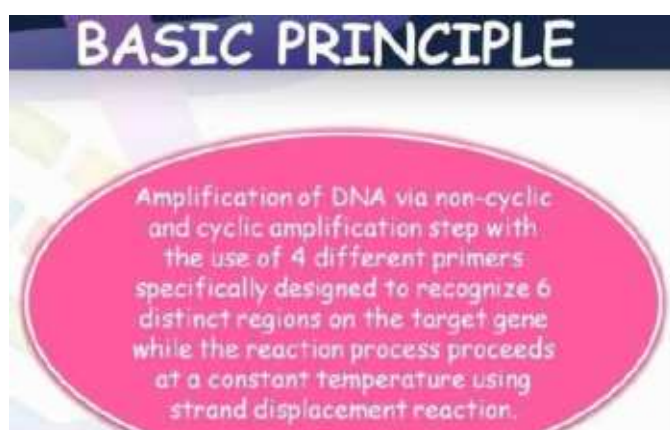


How does RT-LAMP work?

- The methodology for RT-LAMP was based on the mechanism behind auto cycling strand displacement DNA synthesis.
 - A polymerase carries out the reaction, and the polymerase has high strand displacement activity.
 - There are also two pairs of primers used; one pair of inner and one of the outer primers. These primers are specially designed for the reaction.
- A polymerase is an enzyme that synthesizes long chains of polymers or nucleic acids.
 - DNA polymerase and RNA polymerase are used to assemble DNA and RNA molecules, respectively, by copying a DNA template strand
 - During strand displacement synthesis, the enzyme needed to open one base pair of the DNA in order to incorporate one nucleotide resulting in a large increase in molecular extension, of nucleotide.
 - A primer is a short nucleic acid sequence that provides a starting point for DNA synthesis. In living organisms, primers are short strands of RNA. A primer must be synthesized by an enzyme called primase.



- RT-LAMP can achieve high specificity due to the target sequences. Unlike other technologies, RT-LAMP recognizes the target sequence using six independent sequences at the start and by four independent sequences towards the latter stages.
- Primer recognition of the target genome leads to a strong colorimetric reaction, which allows for detection without highly specialized or costly instrumentation.
- Similar methods rely on the turbidity of the sample, which increases with the amount of genetic material, to measure viral content. Amplification and detection can also be done by agarose gel analysis.



NON-CYCLING AMPLIFICATION

Step-1

- One of the LAMP primers anneal to the complimentary sequence of double stranded target DNA.
- Initiates DNA synthesis using the DNA polymerase with strand displacement activity, displacing and releasing a single stranded DNA.
- Unlike PCR, no need for heat denaturation of ds DNA.

Continued...

Step-2

- Through the strand displacement activity of DNA polymerase, a DNA strand complementary to the template DNA is synthesized, starting from the 3' end of the F2 region of the FIP.

Step-3

- The F3 Primer anneals to the F3c region, outside of FIP, on the target DNA and
- Initiates strand displacement DNA synthesis, releasing the FIP-linked complementary strand.

Continued...

Step-4

- A double strand is formed from the DNA strand synthesized from the F3 Primer and the template DNA strand.

Step-5

- The FIP-linked complementary strand is released as a single strand because of the displacement by the DNA strand synthesized from the F3 Primer.
- Released single strand forms a stem-loop structure at the 5' end because of the complementary F1c and F1 regions.

Continued...

Step-6

- BIP-initiated DNA synthesis and subsequent B3-primed strand displacement DNA synthesis.

Step-7

- Double stranded DNA is produced through the processes described in Step-6.

Step-8

- The BIP-linked complementary strand and forms a structure with stem-loops dumbbell structure at each end, serving as the starting structure for LAMP cycling.

3- Detection

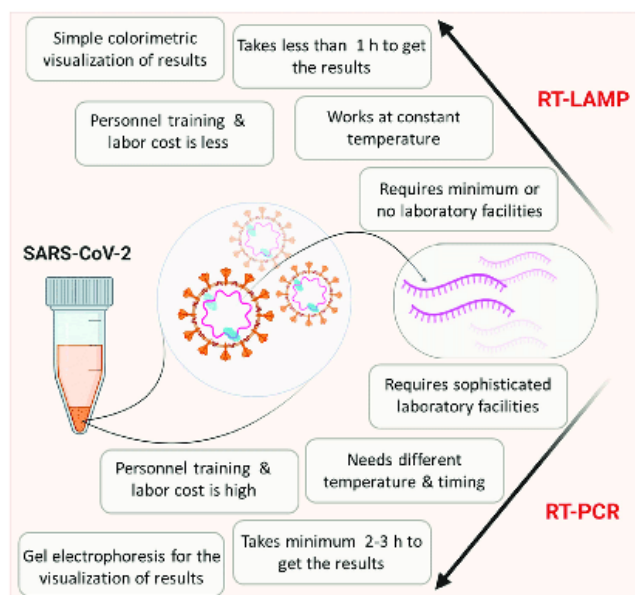
i. Visual Detection

- Turbidity - Magnesium pyrophosphate
- Fluorescence - Calcein

ii. Gel Electrophoresis

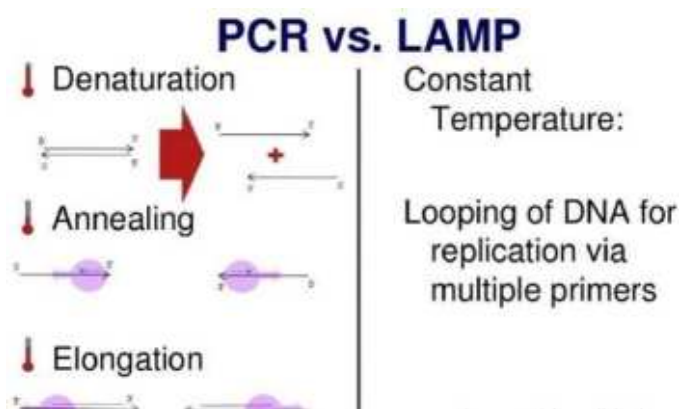
- Lane 1 and 3 has target DNA.
- Lane 2 and 4 has non-target DNA.
- Lane M has DNA Ladder.

RT LAMP VS PCR



PCR vs. LAMP

- | PCR | LAMP |
|--|---|
| Method of amplifying DNA, using a change in temperature to separate and anneal the primers | Method of amplifying DNA using a uniform temperature and specialized DNA polymerase |
| It requires one forward and one reverse primer | It requires six different primers |
| | More specific |



LAMP vs. PCR	
Loop-mediated Isothermal Amplification - LAMP	Polymerase Chain Reaction - PCR
<ul style="list-style-type: none"> • Isothermal Reaction. • Isothermal Temperature (60-65°C). • Doesn't require expensive thermocycler. • Detection limit is greater. • Amplification specificity is higher as uses 4/6 oligonucleotides. • Visualization of DNA could be done through eyes, gel electrophoresis and turbidimeter. 	<ul style="list-style-type: none"> • Cyclic Reaction. • Variable Temperature. Denaturation (95°C) Annealing (50-60°C) Polymerization (72°C). • Require thermocycler. • Detection limit is lower. • Amplification specificity is lower than that of LAMP. • Visualization of DNA is done through gel electrophoresis.

LAMP vs. PCR	
Loop-mediated Isothermal Amplification - LAMP	Polymerase Chain Reaction - PCR
<ul style="list-style-type: none"> • Could be done using crude DNA samples. • Loop primers accelerate reaction rate. 	<ul style="list-style-type: none"> • Need pure DNA samples for amplification. • No loop primer.

Uses and benefits of RT-LAMP

- **Amplification of genetic material is done quickly** under isothermal conditions, which removes the requirements for a thermal cycle.
- **Higher amplification efficiency**, because there is no need to wait for thermal changes, and thus no time is lost.
- Whereas a traditional PCR can take around 3 to 4 hours, RT-LAMP takes less than an hour.
- High specificity and selectivity for the genetic material in question.
- RT-LAMP is 10 times more sensitive than normal RT-PCR assays. RT-LAMP also has higher specificity, with no false-positive results reported.



COVID 19 - LAMP and PCR

Shortcomings of RT-PCR method

- The test requires complex and costly equipment.
- It requires extensive training for potential users.

- As the specificity and sensitivity of the test is about 95%, there is a possibility of false negative results.
- The turnaround time is about 10 hours, so that the result will be available only by the next day.
- In remote places, the turnaround time further increases depending on the distance the samples need to travel.
- In short, the RT-PCR does not have the capacity to keep pace with the increasing demand.

COVID-19 serology tests are also in use to detect antigens that are associated with the virus infection. These tests are easy to use with rapid results, as well as have minimal expenses. However, serology immunoassay lacks the necessary accuracy to be a reliable diagnostic test due to its low sensitivity and high false negative/positive rates.

LAMP- The superior technique

- The LAMP technology has many advantages over RT-PCR technology.
- The RT-PCR test needs different temperatures in one cycle.
- The temperature of the solution has to be changed from 92 degrees C to 56 degrees C and again to 72 degrees C every two minutes, and this cycle has to be repeated.
- Thus, the PCR test needs expensive thermal cycler as well as the real time PCR machines.
- On the other hand, the new RT-LAMP technology is done at 65 degrees C, where the DNA amplification is done at a constant temperature (isothermal), so that expensive thermal cycler is not required.
- The quantity of DNA amplified in the LAMP technology is hundred thousand times more than that is taking place in PCR. Therefore the final assay is possible with a simple colour reaction, removing the need for very costly real time PCR machines.
- The assay in LAMP is so fast that results can be obtained within 30 minutes and positive samples are amplified as early as 10 minutes. This may be compared with the PCR technique which needs 8-10 hours for completion.
- In LAMP the reagents are to be stored at 4 degree C (ordinary fridge), whereas the PCR-based reagents are to be stored and transported at -20 degrees C, which needs deep freezers that escalate the cost.
- The LAMP technology does not need laborious preparation as in the case of RT-PCR.
- LAMP is cost effective and does not need complex expensive equipment.
- Assays can be performed with minimum skill and minimum infrastructure.

SARS-CoV-2 Test C	Advantages	Disadvantages	Indications
rt-PCR	<ul style="list-style-type: none"> • Widely used • High sensitivity and specificity 	<ul style="list-style-type: none"> • Needs for infrastructure • Expensive • Medium turnaround time • Qualified personnel • Incorrect sampling • Restrictions on sample transportation 	<ul style="list-style-type: none"> • Currently the gold standard in symptomatic and asymptomatic patients
RT-LAMP	<ul style="list-style-type: none"> • Lowest turnaround time considering direct methods • High sensitivity • Less bias in the analytical phase 	<ul style="list-style-type: none"> • Needs for infrastructure • Expensive • Qualified personnel • Incorrect sampling • Restrictions on sample transportation 	<ul style="list-style-type: none"> • Substitute for rt-PCR where possible in order to reduce the turnaround time

Recent Findings

- The LAMP technology has been recently validated by the Indian Council of Medical Research with sensitivity 98.7% and specificity 100%.
- Thus, the LAMP technology is superior to the PCR technology-based COVID-19 kits where specificity is around 95% only.

- In the case of LAMP-based kits, the Positive predictive value is 100% and Negative predictive value is 98.8% with accuracy of 99.38%.

GIANT METREWAVE RADIO TELESCOPE

GS-III SCIENCE & TECHNOLOGY

Context

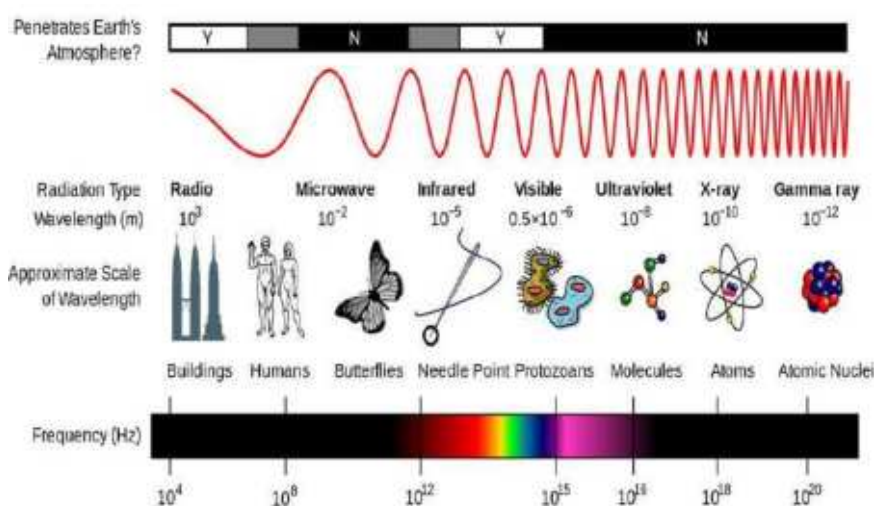
- The Giant Metrewave Radio Telescope (GMRT) has been selected as a 'Milestone' facility by the U.S.-based Institute of Electrical and Electronics Engineers (IEEE).

About GMRT

- The **Giant Metrewave Radio Telescope (GMRT) Observatory**, located near Pune is an array of thirty fully steerable parabolic [radio telescopes](#) of 45 metre diameter, observing at metre [wavelengths](#).
- It is operated by the National Centre for Radio Astrophysics (NCRA), a part of the Tata Institute of Fundamental Research, Mumbai.



A radio telescope is a specialized antenna and radio receiver used to detect radio waves from astronomical radio sources in the sky. Radio telescopes are the main observing instrument which studies the radio frequency portion of the electromagnetic spectrum emitted by astronomical objects. **Note:** Optical telescopes are the main observing instrument used in traditional optical astronomy which studies the light wave portion of the spectrum coming from astronomical objects. Unlike optical telescopes, **radio telescopes can be used in the daytime as well as at night.**



Aim of GMRT

- To search for radiation from primordial neutral hydrogen clouds in order to determine the date of galaxy formation in the universe.
- Astronomers from all over the world regularly use this telescope to observe many different astronomical objects such as HII regions, galaxies, pulsars, supernovae, and Sun and solar winds.
- In August 2018, the most distant galaxy ever known, located at a distance of 12 billion light years, was discovered by GMRT.
- In February 2020, it helped in the observation of the biggest explosion in the history of the universe, the **Ophiuchus Supercluster explosion**.

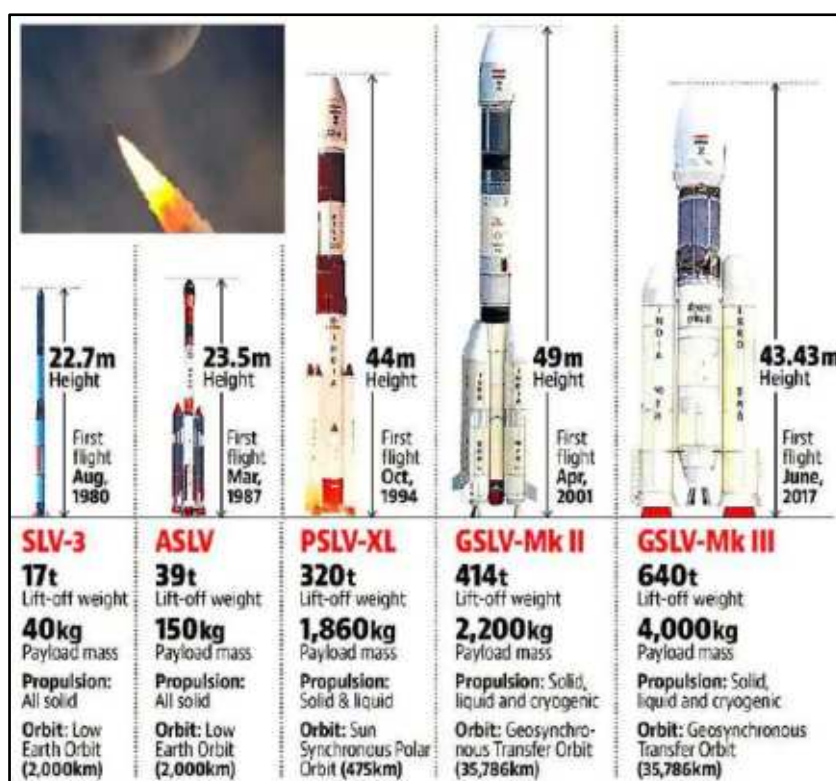
The Institute of Electrical and Electronics Engineers (IEEE) is a professional association for electronic engineering and electrical engineering) with its corporate office in New York City. It was formed in 1963 from the amalgamation of the American Institute of Electrical Engineers and the Institute of Radio Engineers.

Context

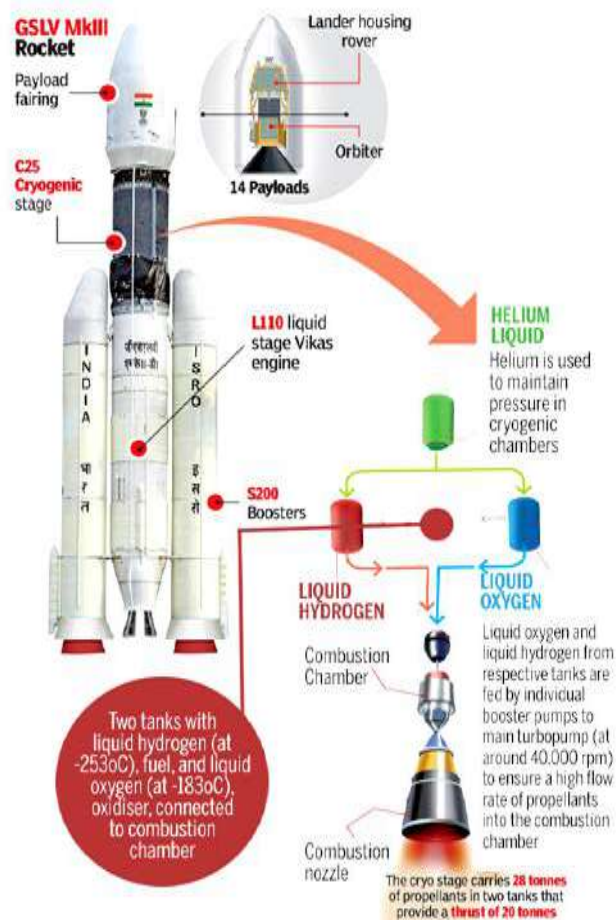
- Hindustan Aeronautics Limited has delivered the biggest cryogenic propellant tank (C32 LH2) ever fabricated by the company to ISRO.

About

- The C32-LH2 tank is a developmental cryogenic propellant tank of aluminium alloy designed for improving the payload capability of GSLV MK-III launching vehicle.
- The four metre diametric tank is of eight-metre length to load 5,755 Kg propellant in the 89 cubic-metre volume.
- A cryogenic engine/ cryogenic stage are the last stage of space launch vehicles which makes use of Cryogenics.
- Cryogenics is the study of the production and behavior of materials at extremely low temperatures (below -150 degree centigrade) to lift and place the heavier objects in space.
- Cryogenic stage is technically a much more complex system with respect to solid or liquid propellant (stored on earth) stages due to the usage of propellants at extremely low temperatures.
- A cryogenic engine provides more force with each kilogram of cryogenic propellant it uses compared to other propellants, such as solid and liquid propellant rocket engines and is more efficient.
- Cryogenic engine makes use of Liquid Oxygen (LOX) and Liquid Hydrogen (LH2) as propellants which liquefy at -183 deg C and -253 deg C respectively. LOX and LH2 are stored in their respective tanks.
- From there they are pumped in to turbo pump by individual booster pumps to ensure a high flow rate of propellants inside the combustion/thrust chamber.
- The major components of a cryogenic rocket engine are combustion/thrust chamber, igniter, fuel injector, fuel cryo pumps, oxidizer cryo pumps, gas turbine, cryo valves, regulators, the fuel tanks and a rocket engine nozzle.
- Cryogenic fuels are fuels that require storage at extremely low temperatures in order to maintain them in a liquid state. These fuels are used in machinery that operates in space (e.g. rocket ships and satellites) because ordinary fuel cannot be used their due to the very low temperatures often encountered in space, and due to absence of an environment that supports combustion (on Earth, oxygen is abundant in the atmosphere, whereas human-explorable space is a vacuum where oxygen is virtually non-existent). Cryogenic fuels most often constitute liquefied gases such as liquid hydrogen.
- Quite often, liquid oxygen is mistakenly called cryogenic fuel, though it is actually an oxidizer and not a fuel.



THE ABC OF CRYOGENIC UPPER STAGE

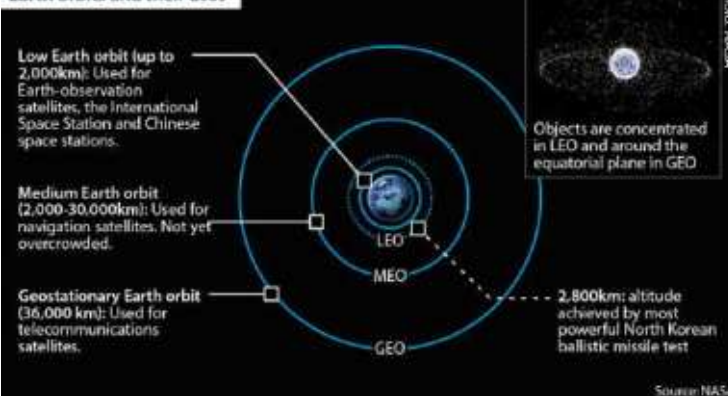


- Two small steering engines provide for control of stage during its thrusting phase
- Thrust control and mixture ratio control are

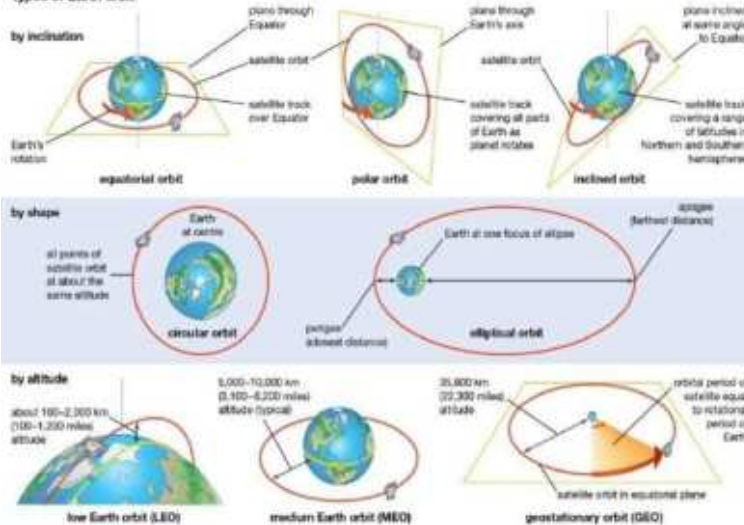
MAIN PROBLEMS

- Due to large temperature difference, heat transfer is very high. Therefore, lot of insulation needed
- Boiling causes sudden pressure rise in tanks. So proper venting is required
- Material properties vary at low temperatures. Most materials become brittle. So if valve seats or seals become brittle and break, it causes leaks

Earth orbits and their uses



Types of Earth orbit



Significance of C32 LH2

- Until now, India was dependent on French Guiana for launching communication satellites which are heavy i.e of 5 to 6 tonnes.
- With C32 LH2 India's dependency on a foreign country will come to an end. It will mark an era of self reliance.

Why is Cryogenic Technology important for India?

- **Crucial for the advancement of the Space Programme** - Cryogenic Engine is used by ISRO for its GSLV Programme.
- **Lighter weight** - High energy per unit mass is released which makes it Economical.
- **Missile Programme for the Defense**- Cryogenic technology is useful for the development of futuristic rocket engines.
- **Clean technology** - Cryogenic technology uses Hydrogen and oxygen as fuel and releases water as a by-product. This is one of its greatest achievements as no pollution is caused by its use.

- **Edge over other countries** - Earlier India was refused to be helped with technology by other countries. Only the US, Japan, France, Russia & China had this technology. Now, India stands neck to neck with them.

Applications of Cryogenic Technology

- In Rocket Engine
- Frozen Food
- Blood Banking
- Infrared Sensors
- Electronics
- X-Rays
- Preservation of Bodies
- Grinding
- Superconductivity

QUANTAM COMPUTING

GS-III SCIENCE & TECHNOLOGY

Context

- Chinese scientists claim to have built a quantum computer that is able to perform certain computations nearly 100 trillion times faster than the world's most advanced supercomputer.

What is quantum computing?


Let's start with the basics.

- An ordinary computer chip uses bits. These are like tiny switches that can either be in the off position – represented by a zero – or in the on position – represented by a one.
- Every app we use, website we visit and photograph we take is ultimately made up of millions of these bits in some combination of ones and zeroes.
- This works great for most things, but it doesn't reflect the way the universe actually works.
- In nature, things aren't just on or off. They're uncertain. And even our best supercomputers aren't very good at dealing with uncertainty. That's a problem.
- So, for scientists to accurately simulate any of those things, they need a better way of making calculations that can handle uncertainty. Enters - Quantum Computers.

How do quantum computers work?

- Instead of bits, quantum computers use qubits. Rather than just being on or off, qubits can also be in what's called 'superposition' – where they're both on and off at the same time, or somewhere on a spectrum between the two.
- Take a coin. If you flip it, it can either be heads or tails. But if you spin it – it's got a chance of landing on heads, and a chance of landing on tails. Until you measure it, by stopping the coin, it can be either.
- Superposition is like a spinning coin, and it's one of the things that make quantum computers so powerful. A qubit allows for uncertainty.
- If you ask a normal computer to figure its way out of a maze, it will try every single branch in turn, ruling them all out individually until it finds the right one.
- A quantum computer can go down every path of the maze all at once. It can hold uncertainty in its head.
- The other thing that qubits can do is called entanglement. Normally, if you flip two coins, the result of one coin toss has no bearing on the result of the other one. They're independent. In entanglement, two particles are linked together, even if they're physically separate. If one comes up heads, the other one will also be heads.
- Quantum computing can be used to perform complex calculations. And if multiple qubits are strung together, one can tackle problems that would take our best computers millions of years to solve.

Basic Concepts in Quantum Mechanics



Uncertainty Principle
Measurement on a system means Disturbing the system

State Decoherence
Coherent states behaves like a single statesystem

State Superposition
Basis states + Every possible Combination of states.

Quantum Entanglement
EPR Paradox – There's a relationship among the features of entangled particles.

Fields of Application



Cryptography
*Quantum computers have the potential to keep private data safe from snoops and hackers, no matter where it is stored or processed.

Medicine & Materials
*A quantum computer mimics the computing style of nature, allowing it to simulate, understand and improve upon natural things—like molecules, and their interactions.

Machine Learning
*Research indicates that quantum computing could significantly accelerate machine learning and data analysis tasks.

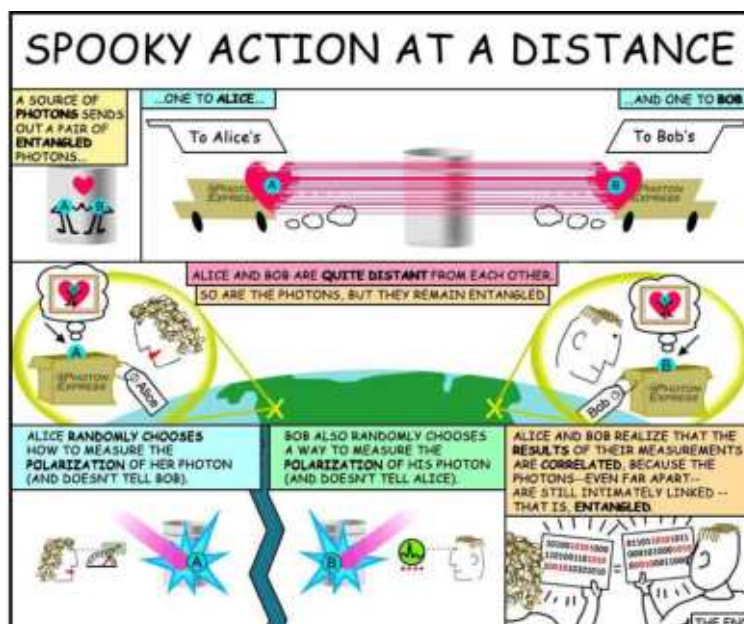
Searching Big Data
*Quantum computing can search the ever-growing amount of data being created, and locate connections within it, significantly faster than classical computers, that will have tremendous impact across many industries.

Classical Computer	Quantum Computer
It is large scale integrated multi-purpose computer(CPU)	It is high speed parallel computer based on quantum mechanics.
Information storage is bit based on voltage/charge etc.	Information storage is Quantum bit based on direction of an electron spin.
Computer runs on bits that have a value of either 0 or 1.	Quantum bits or "qubits" are similar in that for practical purposes we read them as a value of 0 or 1, but they can also hold much more complex information, or even be negative values. Before we read their value they are in an indeterminate state called superposition and can be influenced by other qubits(this is called entanglement). Qubits can be Infinite (continuous) number of possible states.
Discrete number of possible states: 0 or 1. Deterministic: repeated computations on the same input will lead to the same output.	Probabilistic: measurements on superposed states yield probabilistic answers (our confidence in these answers builds up through repeated computations) then reduced to 0 or 1.
Information processing is carried out by logic gates e.g. NOT, AND, OR etc in sequential basis	Information processing is carried out by Quantum logic gates in parallel basis
Only specifically defined results are available, inherently limited by an algorithm's design	Quantum answers (which are in quantity called amplitudes) are probabilistic, meaning that because of superposition and entanglement multiple possible answers are considered in a given computation.
Circuit behaviour is governed by classical physics.	Circuit behaviour is governed explicitly by quantum mechanics.
Operations are defined by Boolean Algebra.	Operations are defined by linear algebra over Hilbert Space and can be represented by unitary matrices with complex elements.
No restrictions exist on copying or measuring signals	Severe restrictions exist on copying and measuring signals
Circuits are easily implemented in fast, scalable and macroscopic technologies such as CMOS.	Circuits must use microscopic technologies that are slow, fragile and not yet scalable e.g. NMR (Nuclear magnetic resonance).

Quantum Entanglement

- Quantum entanglement is a physical phenomenon that occurs when a pair or group of particles is generated, interact, or share spatial proximity in a way such that the quantum state of each particle of the pair or group cannot be described independently of the state of the others, including when the particles are separated by a large distance.
- Measurements of physical properties such as position, momentum, spin, and polarization performed on entangled particles can, in some cases, be found to be perfectly correlated.
- Quantum entanglement has direct application in Quantum Computing.

SPOOKY ACTION AT A DISTANCE



A SOURCE SENDS OUT A PAIR OF ENTANGLED PHOTONS.

ONE TO ALICE. AND ONE TO BOB.

To Alice's To Bob's

ALICE AND BOB ARE QUITE DISTANT FROM EACH OTHER. SO ARE THE PHOTONS, BUT THEY REMAIN ENTANGLED.

ALICE RANDOMLY CHOOSES HOW TO MEASURE THE POLARIZATION OF HER PHOTON (AND DOESN'T TELL BOB).

BOB ALSO RANDOMLY CHOOSES A WAY TO MEASURE THE POLARIZATION OF HIS PHOTON (AND DOESN'T TELL ALICE).

ALICE AND BOB REALIZE THAT THE RESULTS OF THEIR MEASUREMENTS ARE CORRELATED, BECAUSE THE PHOTONS—EVEN FAR APART—ARE STILL INTIMATELY LINKED -- THAT IS, ENTANGLED.

THE END

Context

- The Minister of Science and Technology virtually inaugurated the 2nd Cancer Genome Atlas (TCGA) 2020 conference.

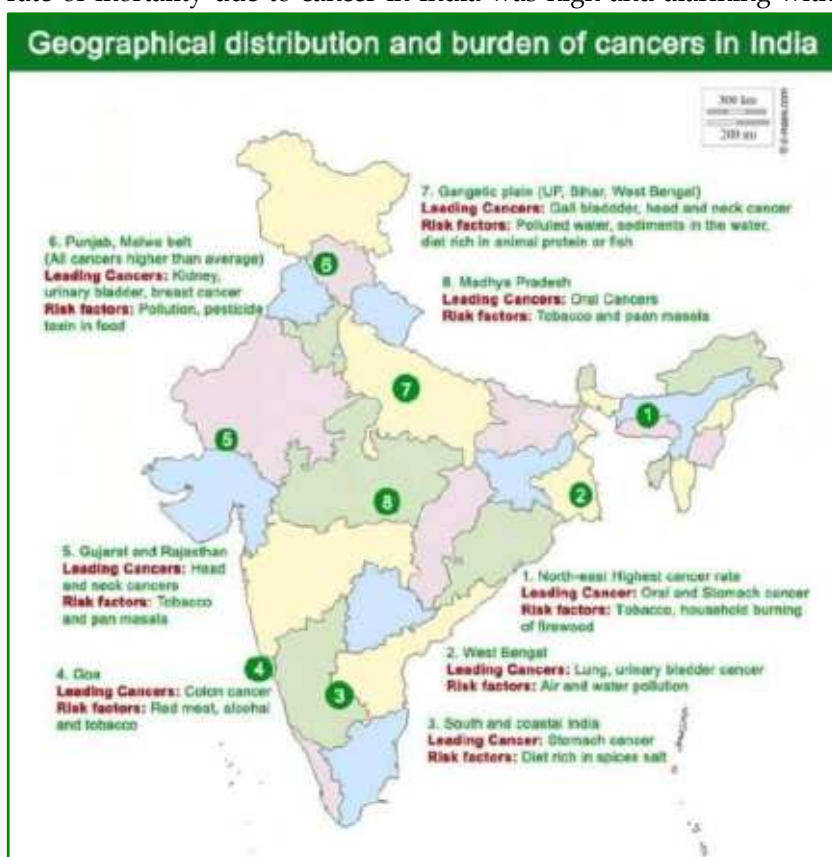
About TCGA

- The Cancer Genome Atlas (TCGA) is a project to catalogue genetic mutations responsible for cancer, using genome sequencing and bioinformatics.
- TCGA applies high-throughput genome analysis techniques to improve the ability to diagnose, treat, and prevent cancer through a better understanding of the genetic basis of this disease.

TCGA cancer genomics program has molecularly characterized over 20,000 primary cancer and matched normal samples spanning 33 cancer types. This joint effort between the US- National Cancer Institute and the National Human Genome Research Institute began in 2006, bringing together researchers from diverse disciplines and multiple institutions. Over the years, TCGA generated over 2.5 petabytes of genomic, epigenomic, transcriptomic, and proteomic data. The data, which has already led to improvements in the ability to diagnose, treat, and prevent cancer, will remain publicly available for anyone in the research community to use. On similar lines, the establishment of an 'Indian Cancer Genomics Atlas (ICGA)' has been initiated by a consortium of key stakeholders in India led by CSIR, Government of India in which several government agencies, cancer hospitals, academic institutions and private sector partners.

Cancer Statistics in India

- Cancer mortality in India has doubled from 1990 to 2016.
- According to the National Cancer Registry Programme of the India Council of Medical Research (ICMR), more than 1300 Indians die every day due to cancer.
- India's cancer incidence is estimated at 1.15 million new patients in 2018 and is predicted to almost double as a result of demographic changes alone by 2040.
- As per Indian population census data, the rate of mortality due to cancer in India was high and alarming with about 806000 existing cases by the end of the last century.
- Cancer is the second most common disease in India responsible for maximum mortality with about 0.3 million deaths per year.
- This is owing to the poor availability of prevention, diagnosis and treatment of the disease.
- All types of cancers have been reported in Indian population including the cancers of skin, lungs, breast, rectum, stomach, prostate, liver, cervix, oesophagus, bladder, blood, mouth etc.
- The causes of such high incidence rates of these cancers are both internal (genetic, mutations, hormonal, poor immune conditions) and external or environmental factors (food habits, industrialisation, over growth of population, social etc.).



- The National Cancer Registry Programme Report 2020, released by the Indian Council of Medical Research (ICMR) estimates there will be 13.9 lakh cases of cancer in India in 2020, and that this number is likely to rise to 15.7 lakh by 2025.
- The Report finds that highest incidence of cancer in India was observed in the Northeastern region.
- Cancers of the lung, mouth, stomach and oesophagus were the most common among men, while cancers of breast and cervix uteri were the most common among women, finds the report.
- It also says incidence of breast cancer is on the rise while cervical cancer is on the decline.
- The highest burden of breast cancer was observed in metropolitan cities such as Hyderabad, Chennai, Bengaluru and Delhi.

Cancer Facts

- Cancer is the second leading cause of death globally after cardiovascular diseases.
- One woman dies of cervical cancer every 8 minutes in India.
- For every 2 women newly diagnosed with breast cancer, one woman dies of it in India.
- Mortality due to tobacco use in India is estimated at upwards of 3500 persons every day.
- Tobacco (smoked and smokeless) use accounted for 3,17,928 deaths (approx) in men and women in 2018
- Estimated number of people living with the disease: around 2.25 million
- Every year, new cancer patients registered: Over 11,57,294 lakh
- Risk of developing cancer before the age of 75 years : Male- 9.81% & Female- 9.42%
- Total deaths due to cancer in 2018 – 7,84,821
- Cancers of oral cavity and lungs account for over 25% of cancer deaths in males and cancer of breast and oral cavity account for 25% cancers in females .

Way ahead

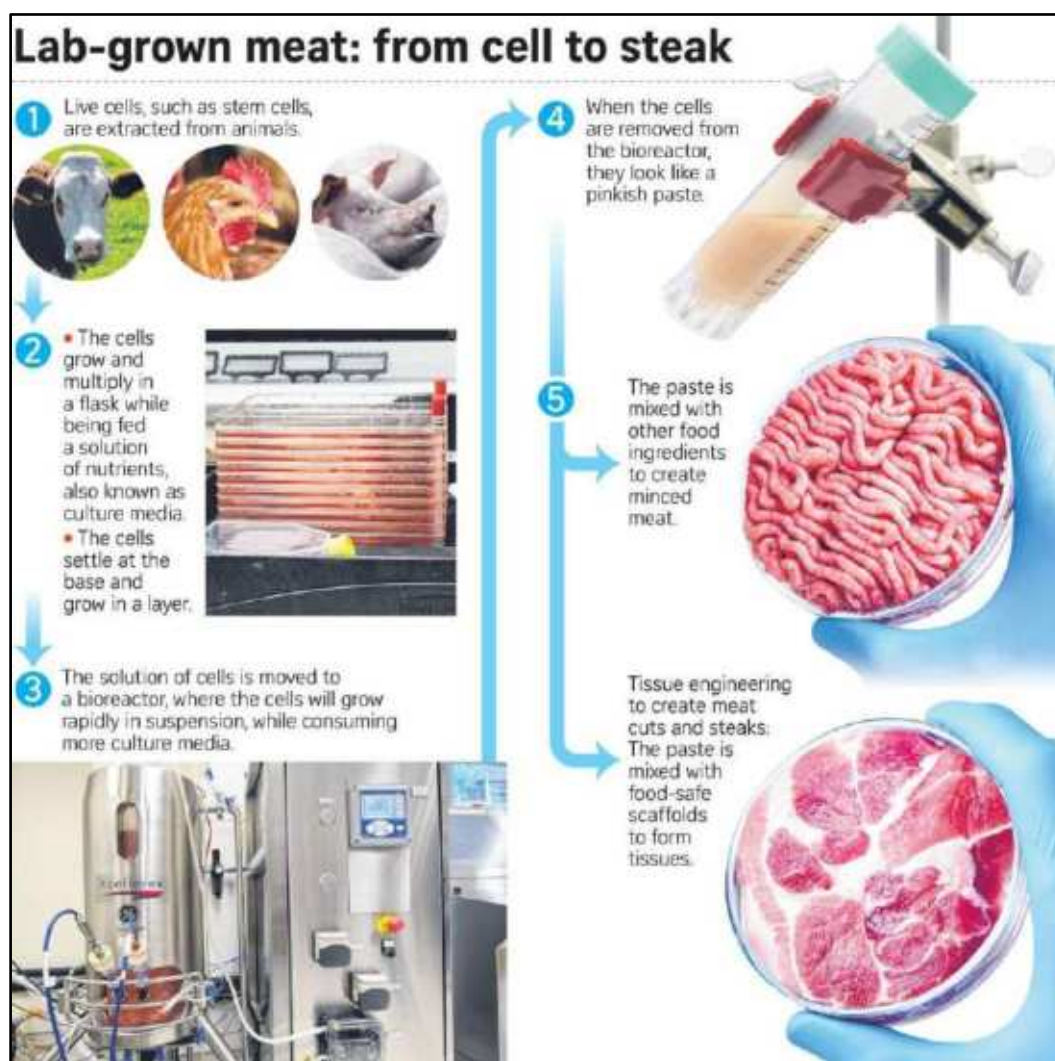
- The increasing prevalence of cancer demands a planned approach to reduce its burden on both individuals and society. Strategies which may be effective in reducing the incidence of new cancer cases include:
 - Continued and sustained effort in tobacco control.
 - Focus on early diagnosis of cancers (including innovative health communication strategies to increase awareness).
 - Engaging and enhancing skills of dentists and professionals complementary to dentistry (PCDs) for prevention of oral cancer in India.
 - Policies to reduce exposure to key environmental pollutants that are known carcinogens (e.g. indoor emissions from household combustion, outdoor air pollution, asbestos) .
 - Strengthen health promotion strategies through existing health programs to include cancer risk factors.
 - Identify potentially carcinogenic occupational exposures and regulate their use to protect workers from occupational hazards.
 - Include secure spaces and facilities for exercise in urban design and planning.
 - Continued efforts and focus on social determinants (such as education) to reduce inequalities in cancer prevalence in India.
 - Continue to strengthen and widen cancer registration and registries, including the strengthening of death certification.
 - Strengthening of the current health system and utilizing community and rural health workers in cancer prevention programs.
 - Cancer research to be given more importance and value at both the central and state government levels.
 - Cancer prevention and the control of risk factors need to be an integral part of the risk-benefit analysis of cross-sectoral and international trade agreements, as well as public policy directed at the Indian agro-economy.

Context

- The Singapore Food Agency (SFA) has approved the sale of a lab-grown meat product. This is the first time cultured meat has been cleared for sale anywhere in the world.

Lab-grown or cultured meat VS plant-based meat

- Plant based meat is made from plant sources such as soy or pea protein, while cultured meat is grown directly from cells in a laboratory.
- Both have the same objective: to offer alternatives to traditional meat products that could feed a lot more people, reduce the threat of zoonotic diseases, and mitigate the environmental impact of meat consumption.
- In terms of cellular structure, cultured or cultivated meat is the same as conventional meat – except that cultured meat does not come directly from animals.
- According to the Good Food Institute (GFI)'s 2019 State of the Industry Report on cultivated meats, compared to conventional meat could reduce land use by more than 95%, climate change emissions by 74-87% and nutrient pollution by 94%.
- The report adds that since cultivated meat is created in clean facilities, the risk of contamination by pathogens such as salmonella and E coli, which may be present in traditional slaughterhouses and meat-packing factories, is significantly reduced.
- It does not require antibiotics either, unlike animals raised for meat, thereby reducing the threat posed to public health by growing antibiotic resistance.



Context

- Recently, the US Food and Drug Administration (FDA) approved a first-of-its-kind intentional genomic alteration (IGA) in a line of domestic pigs referred to as GalSafe pigs.

What is intentional genomic alteration?

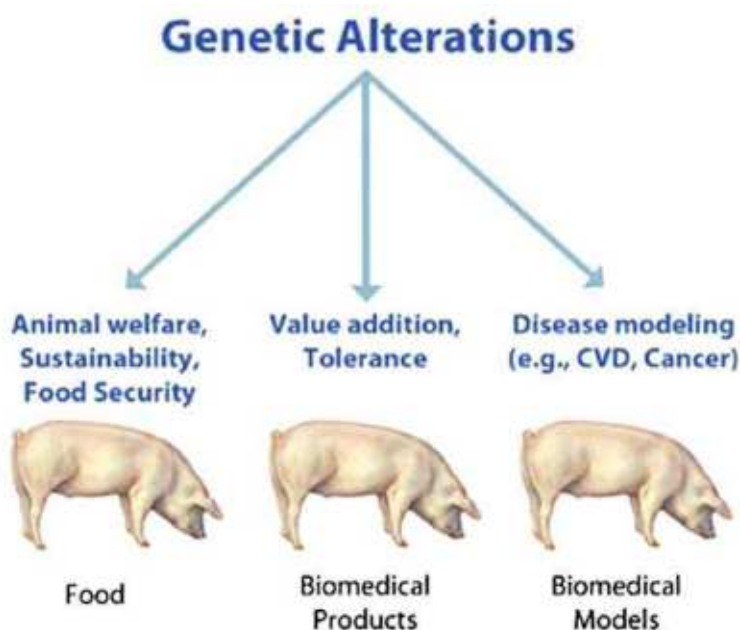
- Intentional genomic alteration in animals means making specific changes to the genome of the organism using modern molecular technologies that are popularly referred to as “**genome editing**” or “**genetic engineering**”.
- Such changes in the DNA sequence of an animal may be carried out
 - ✓ for research purposes
 - ✓ to produce healthier meat for human consumption and
 - ✓ to study disease resistance in animals among other reasons.
- One example is of using IGAs to make an animal more susceptible to certain diseases such as cancer, which helps researchers get a better understanding of the disease and develop new therapies to treat it.

Normal animal vs IGA animal

- The FDA maintains that the only difference between an animal with an IGA and one that does not have an IGA is that the IGA gives them a new trait or characteristic, such as faster growth or resistance to certain diseases.
- Essentially, an IGA is inserted into an animal to change or alter its structure and function.

Significance of FDA’s recent approval

- The FDA allowed IGA in GalSafe pigs to eliminate a type of sugar found in mammals called alpha-gal.
- This sugar is present on the surface of these pigs’ cells and when they are used for products such as medicines or food (the sugar is found in red meats such as beef, pork and lamb), the sugar makes some people with Alpha-gal Syndrome (AGS) more susceptible to developing mild to severe allergic reactions.
- Since GalSafe pigs may potentially be used to produce human medical products, IGA will help eventually free these products from detectable alpha-gal sugar, thereby protecting their human consumers from potential allergies.
- According to the FDA, GalSafe pigs may be used to make the blood-thinning drug heparin.



Context

- An AI & Robotics Technologies Park (ARTPARK) set up in Bengaluru will promote technology innovations in AI (Artificial Intelligence) & Robotics leading to societal impact by executing ambitious mission mode R&D projects in healthcare, education, mobility, infrastructure, agriculture, retail and cyber-security focusing on problems unique to India.

About ARTPARK

- ARTPARK, is a unique not-for-profit foundation established by Indian Institute of Science (IISc), Bengaluru with support from AI Foundry in a public-private model.

Function

- ARTPARK will develop AI & Robotics facilities to support technology innovations as well as capacity building through advanced skills training of students and professionals in these areas.
- Some of these facilities will be key enablers for whole new sets of technologies, products and services.
- It will develop DataSetu - that will enable confidentiality and privacy-preserving framework to share data and run analytics spurring the data-sharing ecosystem and create a data marketplace, boosting AI applications and solutions. One such service will be BhashaSetu.

BhashaSetu

- BhashaSetu will enable real-time Indic language translation, both of speech to speech and speech to text.
- This will further unlock the economic potential of the country, and enable all Indian citizens to equitably participate in the economic progress, regardless of their language.

Some other initiatives under ARTPARK

Avtaar Robotics

- Avtaar robotics allows emotive robotic nurses such as "Asha" to transport healthcare professionals' skills across the globe. Connecting avatar robots to remote human workflows with 5G & Wifi 6 can create jobs in the developing world.

Akashmarg

- Drone Skyways, roads in the skies for autonomous drones, just like we have roads on the ground. We are building the open standards for such drone-skyways.

Project Eklavya

- Remote Learning Labs for millions of school kids in India who don't have access to good schools and labs. Enabled by tele robotics, this can create equal access to learning for millions of young learners in the developing world.




Significance

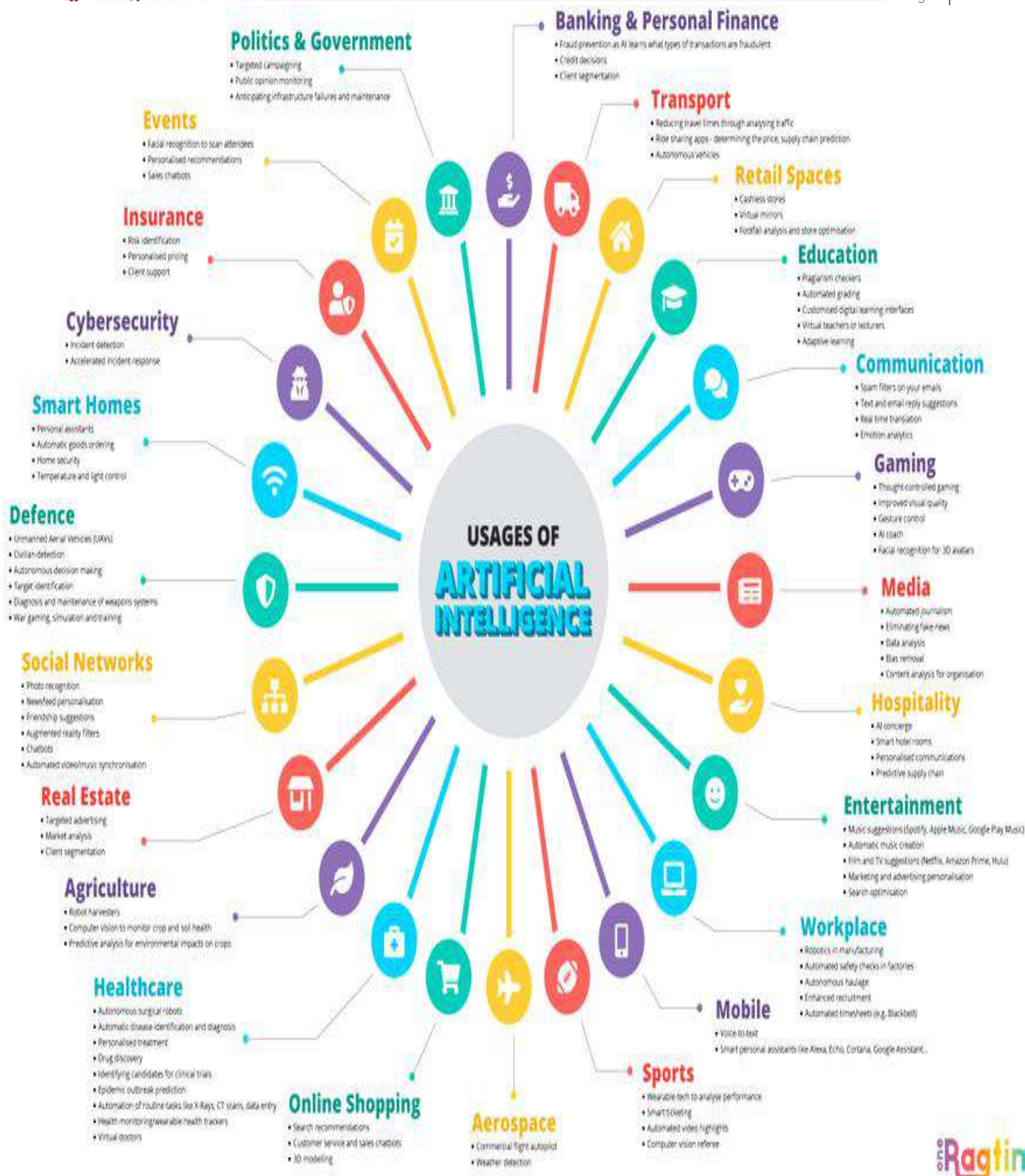
- This will lead to cutting edge innovations in terms of new technologies, standards, products, services and intellectual properties.

Robots & Artificial Intelligence

Comparison Chart

Robots	Artificial Intelligence
Robots are machines designed to execute one or more simple to complex tasks automatically with utmost speed and precision.	AI is like a computer program that typically demonstrates some of the behaviors associated with human intelligence.
Robotics is a field of artificial intelligence that makes use of AI to improve their functions.	AI is the bridge between human intelligence and machine learning.
Robots are autonomous or semi-autonomous machines that use computer systems for their control and information processing.	AI is human intelligence that complements human mind to enhance its ability to perform tasks and it self-improves.
Used in assembly and packing, space and earth exploration, medical surgical applications, laboratory research, weaponry, and so on.	Applications that use AI are Netflix, Google's DeepMind, Apple's Siri, Spotify, and games such as Tic-Tac-Toe, etc.

		
Artificial Intelligence	Machine Learning	Deep Learning
Artificial intelligence originated around 1950s.	Machine learning originated around 1960s.	Deep learning originated around 1970s.
AI represents simulated intelligence in machines.	Machine Learning is the practice of getting machines to make decisions without being programmed.	Deep Learning is the process of using Artificial Neural Networks to solve complex problems.
AI is a subset of Data Science.	Machine learning is a subset of AI & Data Science	Deep learning is a subset of Machine learning, AI & Data Science.
Aim is to build machines which are capable of thinking like humans.	Aim is to make machines learn through data so that they can solve problems.	Aim is to build neural networks that automatically discover patterns for feature detection.



Context

- According to health officials, a four-month long treatment regimen of drugs works as effectively as a six-month one for children with mild cases of TB.

What is SHINE?

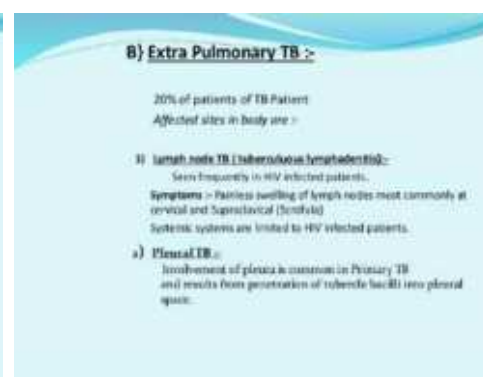
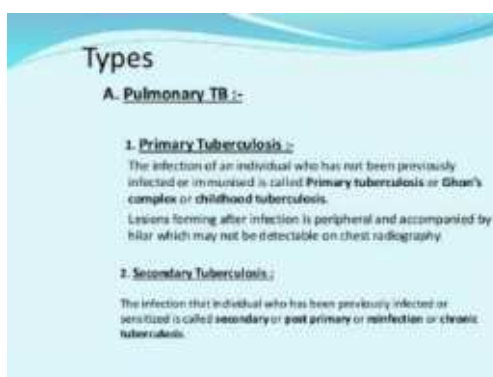
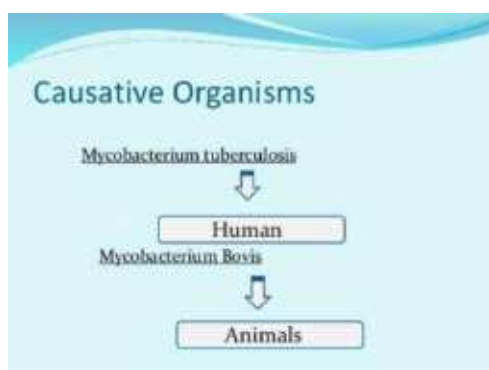
- SHINE stands for "Shorter Treatment for Minimal Tuberculosis in Children"
- SHINE is the first randomized controlled trial to assess the length of treatment needed for children with TB.
- Until now, treatment for children with TB has been based on trials in adults.
- However, two thirds of children with TB have a less severe form of the disease.
- This led researchers to run the SHINE trial, to find out if these children could have a shorter treatment.

TB and Children

- More than a million children develop TB each year, and more than 205,000 children die from the disease.
- TB treatments involve taking a combination of drugs for several months. Current guidelines recommend that children with drug-sensitive TB are treated for six months.
- However, taking several pills every day for six months can be difficult for children.
- Some TB drugs interact with other drugs, such as those used for treating HIV, making treatment even more complicated.
- Reducing the length of time that children need to take pills could make treatment easier for children, as well as reducing costs to patients and the health system.
- Hence, the SHINE trial took place to reduce the treatment time.

Outcomes

- The SHINE results show that children with minimal TB do very well on treatment.
- SHINE found that the four month treatment was as good as the standard six month treatment for children with minimal TB.
- There was no difference between the six months and four months groups in terms of proportion with an unfavorable outcome, or deaths. Side-effects related to treatment were few.
- 93% of children were successfully treated and confirmed alive and well at the end of the trial.
- Less than 3% of children in the trial had unfavorable outcomes.



3) TB of Upper airways:-
Involvement of larynx, pharynx and epiglottis.
Symptoms -> Dysphagia, chronic productive cough.

4) Genitourinary TB:-

- 15% of all Extra pulmonary cases.
- Any part of the genitourinary tract get infected.
- Symptoms -> Urinary frequency, Dysuria, Hematuria.

5) Skeletal TB:-

- Involvement of weight bearing parts like spine, hip, knee.
- Symptoms -> Pain in hip joints or knees, swelling of knees, trauma.

6) Gastrointestinal TB:-
Involvement of any part of GI Tract.
Symptoms -> Abdominal pain, diarrhea, weight loss.

7) TB Meningitis & Tuberculoma:-
5% of All Extra pulmonary TB
Results from Hematogenous spread of 1st & 2nd TB.

8) TB Pericarditis:-

- 1-8% of All Extra pulmonary TB cases.
- Spreads mainly in mediastinal or hilar nodes or from lungs.

9) Miliary or disseminated TB:-

- Results from Hematogenous spread of Tubercle bacilli.
- Spread is due to entry of infection into pulmonary vein producing lesions in different extra pulmonary sites.

10) Less common Extra Pulmonary TB
urethritis, paropharyngitis, parotid Hypersensitivity related pharyngeal conjunctivitis.

Tuberculosis

SYMPTOMS

COMPLICATIONS

TB generally affects the lungs (pulmonary TB), but it can also infect:

- Brain - membrane swelling
- Bones - spinal pain, joint damage
- Gut - intestinal TB
- Liver/Kidney problems

TREATMENT

- A multiple drug regimen for 6-9 months

PREVENTION & PRECAUTIONS

- BCG vaccination (in the National Immunisation Programme) starting at birth

Tuberculosis (TB)
is an infectious disease affecting the lungs by direct airborne transmission from person to person (i.e. coughing, sneezing, talking). Not everyone infected with TB bacteria becomes sick. The bacteria in people with latent TB infection remains inactive without causing disease or showing any symptoms. But in people with weak immune system, it causes TB disease.

Drug-resistant TB

A dangerous variant of the tuberculosis (TB) bacteria

Extensively drug-resistant TB (XDR-TB)

- ▶ Resistant to the two most powerful anti-TB drugs of the four first line (standard) drugs against TB
- ▶ Resistant to three or more of six classes of second-line drugs (more expensive, less effective drugs used when first line fails)
- ▶ First described in 2006 after an outbreak in South African town of Tugela Ferry
- ▶ More than 5,000 cases reported worldwide

Multi-drug resistant TB (MDR-TB)

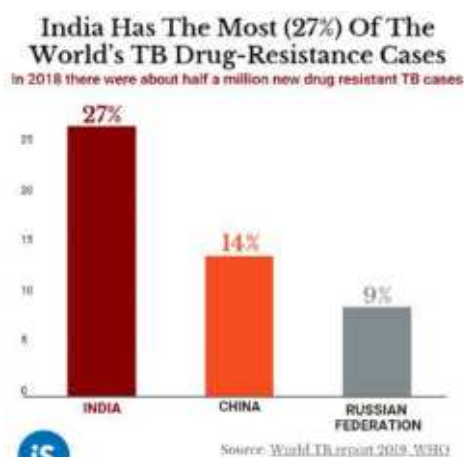
- ▶ Strain that thwarts the two most powerful of first line drugs

Drug resistance is caused by :

- Incorrect prescription
- Erratic supply of drugs
- Poor quality drugs
- Patient non-adherence

Regular TB kills around 2 million people a year, mostly in poor countries lacking access to medicine

Source: WHO/NIH 261007 AFP



As per WHO Global TB Report 1/4 of Global Incident occur in India annually

National Strategic Plan target for India to eliminate TB by 2025 5 years before the global target

[f](#)
[t](#)
[v](#)
[MyGovIndia](#)
[www.transformingindia.mygov.in](#)
 Date: 28th Mar, 2018

Approaches to end TB

1. INTEGRATED, PATIENT-CENTRED CARE AND PREVENTION

- A. Early diagnosis of tuberculosis including universal drug-susceptibility testing, and systematic screening of contacts and high-risk groups
- B. Treatment of all people with tuberculosis including drug-resistant tuberculosis, and patient support
- C. Collaborative tuberculosis/HIV activities, and management of comorbidities
- D. Preventive treatment of persons at high risk, and vaccination against tuberculosis

2. BOLD POLICIES AND SUPPORTIVE SYSTEMS

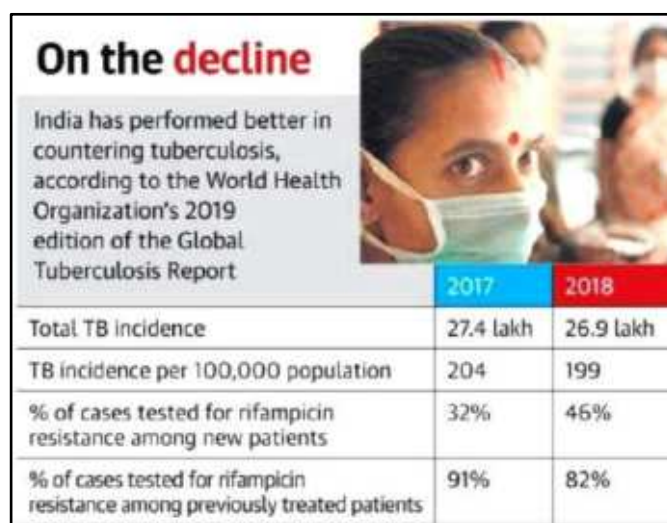
- A. Political commitment with adequate resources for tuberculosis care and prevention
B. Engagement of communities, civil society organizations, and public and private care providers
C. Universal health coverage policy, and regulatory frameworks for case notification, vital registration, quality and rational use of medicines, and infection control
D. Social protection, poverty alleviation and actions on other determinants of tuberculosis

3. INTENSIFIED RESEARCH AND INNOVATION

- A. Discovery, development and rapid uptake of new tools, interventions and strategies
- B. Research to optimize implementation and impact, and promote innovations

To end TB by 2025 requires

- Expanding the scope and reach of interventions for TB care and prevention, with a focus on high-impact, integrated and patient-centered approaches.
- Eliciting full benefits of health and development policies and systems, through engaging a much wider set of collaborators across government, communities and the private sector.
- Pursuing new scientific knowledge and innovations that can dramatically change TB prevention and care.
- To ensure full impact, these actions must build on principles of government stewardship, engagement of civil society, human rights and equity, and adaptation to the unique context of diverse epidemics and settings.
- Proper implementation of “The National Strategic Plan (NSP)” for India 2017 – 2025 is the right way forward.



NARROW-BAND INTERNET OF THINGS

GS-III SCIENCE & TECHNOLOGY

In news

- BSNL has partnered with Skylotech India for satellite-based NB-IoT (Narrow Band-Internet of Things).
- This will enable it to provide connectivity for millions of unconnected machines, sensors and industrial IoT devices across the country.
- This solution, will connect with BSNL's satellite-ground infrastructure and provide pan-India coverage, including Indian seas.

What is Narrowband IoT?

- Narrowband IoT (also known as NB-IoT or LTE-M2) is a Low Power Wide Area Network (LPWAN) radio technology standard developed by 3GPP to enable a wide range of cellular devices and services. It doesn't operate in the licensed LTE construct. Instead, it works in one of three ways:
 - ✓ Independently
 - ✓ In unused 200-kHz bands that have previously been used for GSM (Global System for Mobile Communications)
 - ✓ On LTE base stations allocating a resource block to NB-IoT operations or in their guard bands.

- GSM and related 2G and 2.5G standards, including GPRS and EDGE
- UMTS and related 3G standards, including HSPA and HSPA+
- LTE and related 4G standards, including LTE Advanced and LTE Advanced Pro
- 5G NR and related 5G standards



	LTE-M	NB-IoT
Also known as	eMTC, LTE Cat-M1	LTE Cat-NB1
Specification	Based on LTE	Based on a subset of LTE
Bandwidth	1.38 MHz (equivalent to an LTE channel)	180 kHz (fits into a GSM channel)
Max throughput	360 kbps	30/60 kbps
Network deployment	Relatively easy for operators to add to existing LTE networks	Easier for operators with GSM networks to incorporate
Frequency deployment	LTE in-band	LTE in-band, LTE guard band and GSM repurposing
Voice/data support	Voice and data	Data only
Range	Up to 4x	Up to 7x
Mobility/cell reselection	Yes	Limited
Module size	Suitable for wearables	
Power consumption	Up to 10 years of battery lifetime	

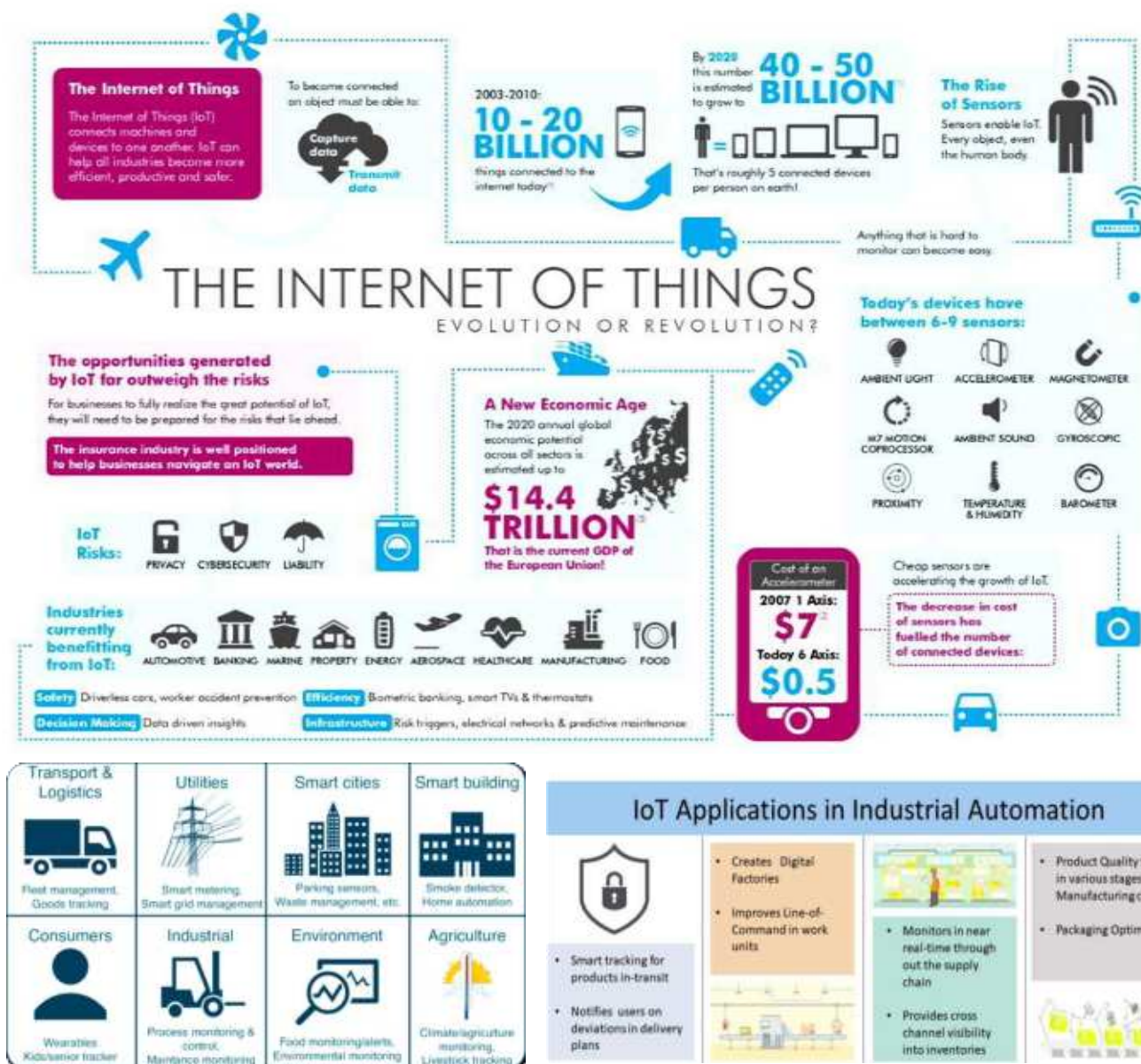
- LTEM (Long Term Evolution for Machines) and NBIoT (narrowband Internet of Things) are standards that fall under the category of machine-to-machine (M2M) communication, also known as machine-type communications (MTC).
- They help enable applications such as smart cities, environmental monitoring, asset tracking and more.
- But LTEM and NBIoT are different because they're specifically designed and optimized for IoT devices that communicate small amounts of data over long periods of time.
- So they're simpler than other cellular standards, with much less overhead.
- This translates into:
 - ✓ Very low power consumption, allowing device battery life of up to 10 years. That's why these networks are also sometimes called low power wide area networks (LPWANs).
 - ✓ Long range and very wide coverage — several times better than LTE.
 - ✓ Low-cost hardware, due to the reduced complexity and economies of scale.
 - ✓ Up to 100,000 or even more devices per base station, because each device has very low data-throughput requirements and because optimized software techniques let base stations communicate with very large numbers of IoT devices.



NB-IoT Applications

NB-IoT applications can cross many service categories. These include:

- Smart metering (electricity, gas, and water)
- Facility management services
- Intruder and fire alarms for homes & commercial properties
- Connected personal appliances measuring health parameters
- Tracking of persons, animals or objects
- Smart city infrastructures such as street lamps or dustbin.
- Connected industrial appliances such as welding machines or air compressors.



HYPOTHERMIA

GS-III SCIENCE & TECHNOLOGY

Context

- In an impact-based advisory, the IMD urged residents of India's northernmost states to protect themselves from the biting cold by avoiding alcohol.

Why avoid alcohol?

- According to a study jointly conducted by the Thermal Physiology and the Medicine Division, US Army Research Institute of Environmental Medicine, alcohol can decrease the core temperature of the body and increase the risk of hypothermia during cold exposure.

What is Hypothermia?

- Hypothermia is a severe medical condition where the body loses heat before it can generate it, resulting in a dangerously low body temperature.
- While normal body temperature lies at around 37 degrees Celsius, the body temperature of a person suffering from hypothermia drops to below 35 degrees Celsius.
- Common signs include shivering, slow rate of breathing, slurred speech, cold skin and fatigue.



Alcohol and Hypothermia

- Heavy alcohol consumption is often linked to an increased risk of hypothermia and other conditions linked to extreme cold weather.
- Alcohol has psychological and behavioural effects, which can impact a person's ability to correctly perceive how cold it is.
- Hence, cases of people succumbing to hypothermia after drinking heavily and passing out outdoors are very commonly reported in places with extreme cold weather.
- According to the American Association of Family Physicians, a retrospective study in 2004 showed that alcohol consumption is associated with 68 per cent of accidental hypothermia cases.

Alcohol and Body Temperature

- Alcohol is a vasodilator, which means that it causes blood vessels to relax and dilate or open.
- So after consuming alcohol, the volume of blood brought to the skin's surface increases, making us feel warmer as a result.
- This is also what causes an intoxicated person to look flushed.
- As the body begins to believe that it is warm, we also start to sweat — a reaction that automatically reduces overall body temperature.
- Drinking copious amounts of alcohol may affect our body's ability to detect the cold properly, which is in place to protect you from frostbite and hypothermia.
- However, experts say drinking moderately in temperate environments does not significantly affect the core temperature of the body.

A cold wave is a weather phenomenon that is distinguished by a cooling of the air. A cold wave is a rapid fall in temperature within a 24-hour period requiring substantially increased protection to agriculture, industry, commerce, and social activities. The precise criterion for a cold wave is determined by the rate at which the temperature falls, and the minimum to which it falls. This minimum temperature is dependent on the geographical region and time of year.

In Indian context, a cold wave occurs when the minimum temperature dips to 10 degrees Celsius or less and the departure from normal temperature is 4.5 degrees Celsius or lower. In severe cold wave conditions, departure from normal temperature is 6.5 degrees or lower.

ONE TIME VOLUNTARY DISCLOSURE SCHEME

GS-III ENVIRONMENT

Context

- The Ministry of Environment, Forest and Climate Change (MoEFCC) has come out with an advisory on a **one-time voluntary disclosure scheme** that allows **owners of exotic live species that have been acquired illegally, or without documents, to declare their stock to the government.**
- The Supreme Court upheld an Allahabad High Court order granting immunity from investigation and prosecution if one declared illegal acquisition or possession of exotic wildlife species between June and December.
- The High Court had said that whoever declares the stock of exotic species and submits to registration under the amnesty scheme, **"shall have immunity from any inquiry into the source of licit acquisition or possession of the voluntarily declared stock of exotic species"**.

What is the government's voluntary disclosure scheme?

- It allows owners of exotic live species that have been acquired illegally, or without documents, to declare their stock to the government between June and December 2020.
- With this scheme, the government **aims to address the challenge of zoonotic diseases, develop an inventory of exotic live species** for better compliance under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and regulate their import.
- In its current form, however, the **amnesty scheme is just an advisory, not a law.**

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

- CITES is an **international agreement between governments** to ensure that international trade in wild animals, birds and plants does not endanger them.
- **India is a member.**
- **Appendices I, II and III** of CITES list 5,950 species as protected against over-exploitation through international trade.
- Many of these animals, such as iguanas, lemurs, civets, albino monkeys, coral snakes, tortoises, are popular as exotic pets in India.

What kind of exotic wildlife are covered?

- The advisory has defined exotic live species as animals named under the **Appendices I, II and III of the CITES.**
- It does not include species from the **Schedules of the Wild Life (Protection) Act 1972.** So, a plain reading of the advisory excludes exotic birds from the amnesty scheme.

What is the process for disclosure under the scheme?

- The disclosure has to be done online through MoEFCC's **Parivesh portal.**

PARIVESH -Pro Active Responsive facilitation by Interactive and Virtuous Environmental Single window Hub

- **It is a Ministry of Environment, Forests and Climate Change initiative for single window clearances of Environment, Forests and Wildlife and Coastal Regulation Zone (CRZ) Clearances.**
- PARIVESH is a web based, role based workflow application which has been developed for online submission and monitoring of the proposals submitted by the proponents for seeking Environment, Forest, Wildlife and CRZ Clearances from Central, State and district level authorities.
- It automates the entire tracking of proposals, which includes **online submission of a new proposal, editing/updating the details of proposals and displays status of the proposals at each stage of the workflow.**

- The owner of the animal(s) will have to declare the stock as on January 1, 2020 to the Chief Wildlife Warden (CWLW) of the concerned state or Union Territory.
- This will be followed by a physical verification of the animals.
- The CWLW will have to issue an online certificate of possession of exotic live species within six months of the date of the voluntary disclosure.

- After the registration, it is mandatory for the owner to allow the CWLW with free access to the exotic species declared on any day for verification.

How big a problem is illegal trade of exotic animals in India?

- The **Directorate of Revenue Intelligence (DRI)**, which enforces anti-smuggling laws, says India has emerged as a big demand centre for exotic birds and animals with an increase in smuggling of endangered species from different parts of the world.
- Most of this exotic wildlife is imported through Illegal channels and then sold in the domestic market as pets.
- The long international border and air routes are used to source consignments from Bangkok, Malaysia and other top tourist destinations in South East Asia, as well as from Europe from where they are sent to Kolkata, Chennai, Hyderabad, Delhi, Bangalore, and Mumbai, Cochin.

Directorate of Revenue Intelligence (DRI)

- The Directorate of Revenue Intelligence (DRI) is an **Indian intelligence agency**.
- It is **India's apex anti-smuggling intelligence**, investigations and operations agency.
- The Directorate is run by officers from the **Central Board of Indirect Taxes and Customs (CBIC)** who are posted in its various Zonal Units as well as in Indian embassies abroad as part of the Customs Overseas Intelligence Network.
- It is headed by a **Director General of the rank of Special Secretary** to the Government of India.
- The Agency works to secure India's national and economic security by preventing the outright smuggling of contraband such as **firearms, gold, narcotics, Fake Indian Currency notes, antiques, wildlife and environmental products**.
- Moreover, it also works to prevent the **proliferation of black money, trade based money laundering and commercial frauds**.

GLOBAL CLIMATE SUMMIT 2020

GS-III ENVIRONMENT

Context

- The **United Nations (UN), United Kingdom (UK) and France** co-hosted the Climate Ambition Summit 2020, in partnership with **Chile and Italy** on 12 December, exactly **five years** since the adoption of the **Paris Agreement**.

Key highlights of summit

- The Summit was a major step on the road to the next **UN Climate Change Conference of the Parties (COP26)**, which will be hosted by the **UK** next November in **Glasgow**.
- The Summit provided leaders with a global platform to **showcase commitments to tackle climate change**, which were under the **three pillars of the Paris Agreement**:
 - **mitigation,**
 - **adaptation and**
 - **finance commitments.**
- The Summit heard from about 70 world leaders highlighting new announcements and steps they are taking to reach the **goal of net-zero emissions**.
- The Climate Ambition Summit 2020 marked the fifth anniversary of the Paris Agreement, and provided a platform for government and non-governmental leaders to **demonstrate their commitment to the Paris Agreement and the multilateral process**.
- The Summit **aims to rally momentum and call for much greater climate action and ambition**.
- National governments were invited to present
 - More ambitious and high-quality climate plans, as well as COVID recovery plans,
 - New finance commitments and measures to limit global warming to 1.5°C.
 - New and more ambitious nationally determined contributions (NDCs);
 - Long-term net-zero emissions strategies;

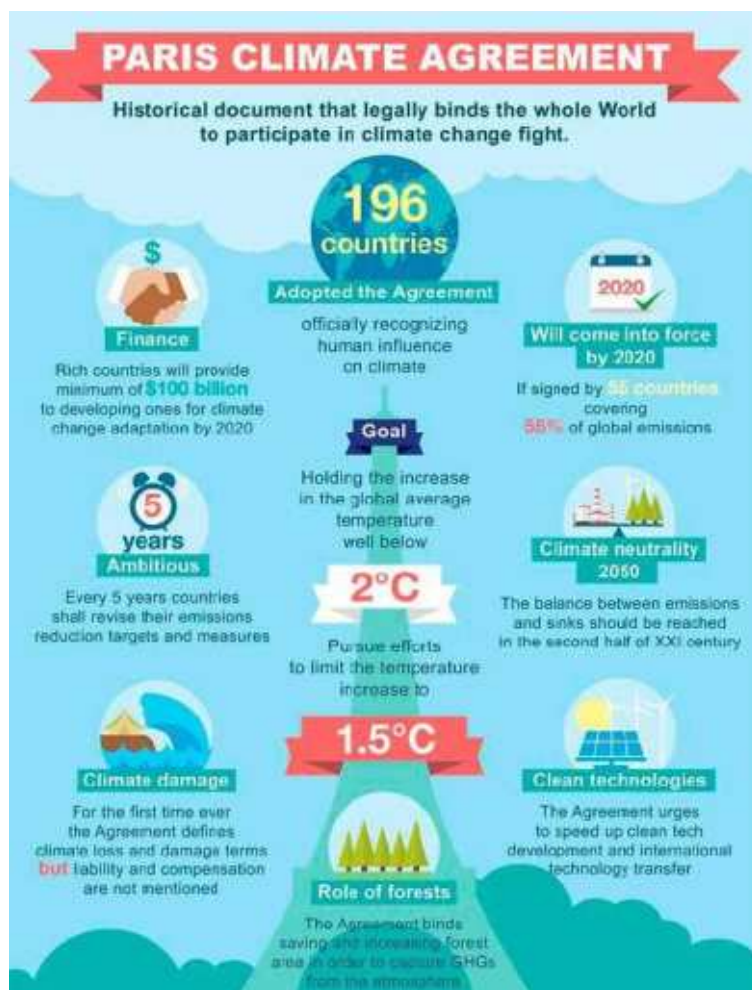
- Climate finance commitments to support the most vulnerable; and
- Ambitious adaptation plans and policies.
- UN Urged world leaders to **declare a "climate emergency"** in their countries until **carbon neutrality** is reached, to spur action to **avoid catastrophic global warming**.
- With a hope to galvanize countries into stricter actions on global warming emissions, UN said that current commitments across the globe did not go "far from enough" to limit temperature rises.

Fossil Fuel Investment 'Unacceptable'

- The economic recovery packages launched in the wake of the coronavirus pandemic represented an opportunity to accelerate the transition to a low-carbon future but so much more needs to be done to ward off catastrophic consequences.
- Members of the G20 are **spending 50% more in their stimulus and rescue packages on sectors linked to fossil fuel production and consumption, than on low-carbon energy**.

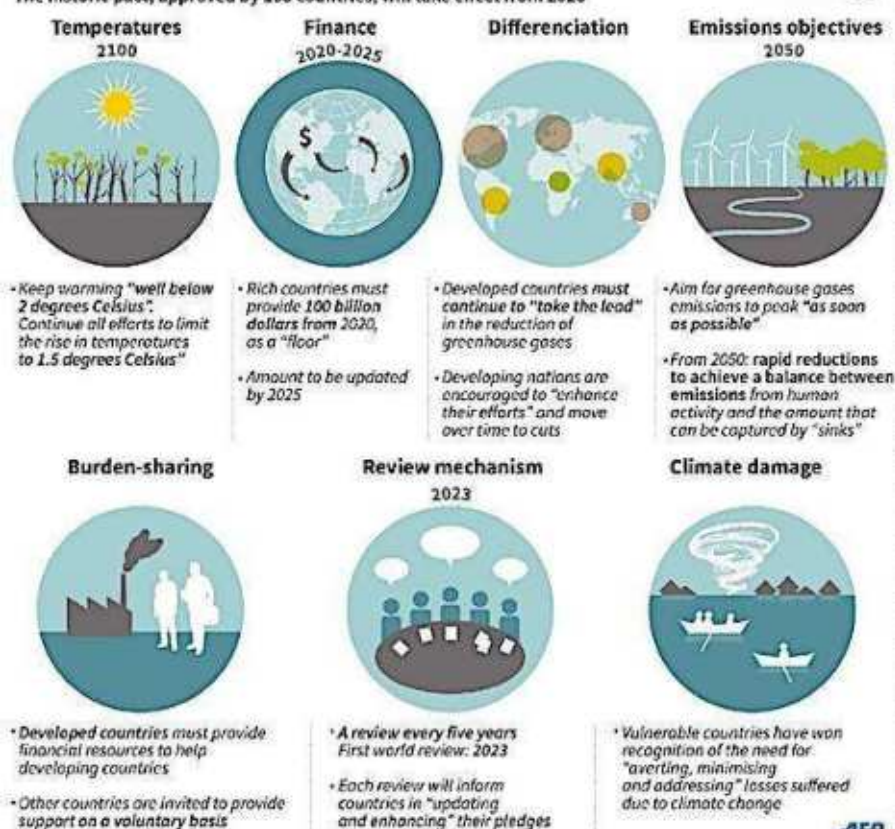
China and India Promises

- **China and India** vowed to advance their commitment to lower carbon pollution at the summit.
- China promised to **boost its installed capacity of wind and solar power to more than 1,200 gigawatts over the next decade**. It will increase its share of non-fossil fuels in primary energy consumption to around 25% during the same period.
- India said that it is ramping up its use of clean energy sources and was **on target to achieve the emissions norms set under the 2015 Paris agreement**.
- **India**, the second-most populous nation on Earth and the world's fourth-largest greenhouse gas emitter, is **eyeing 450 gigawatt of renewable energy capacity by 2030**.



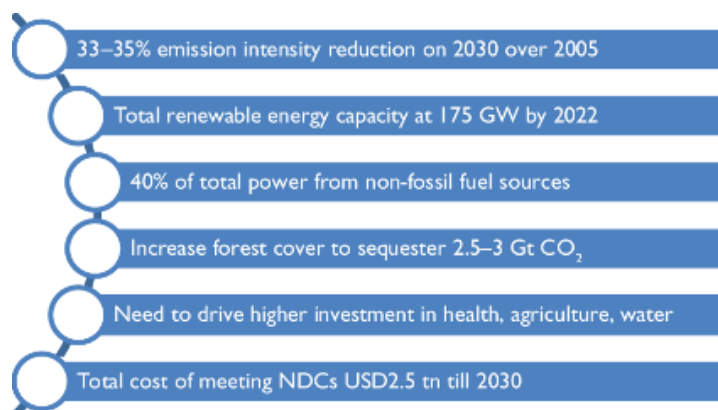
The Paris climate agreement: key points

The historic pact, approved by 195 countries, will take effect from 2020



- India has **reduced its emission intensity by 21 per cent over 2005 levels.**
- Between 2014 and 2020, **India's solar power capacity** has grown from **2.63 gigawatts to 36 gigawatts.** India's **renewable energy capacity** is the **fourth largest** in the world. It will reach 175 gigawatts before 2022.

India's INDC targets



Way forward

- To achieve and surpass the goals of the Paris Agreement, we must **engage with all sincere stakeholders** in pursuit of the shared goals of a healthy, prosperous planet.
- **Use market-based policies** can help us **meet critical environmental goals** while catalyzing new technologies and approaches.

GREAT INDIAN BUSTARD

GS-III ENVIRONMENT

Context

- The Ministry of Environment Forest and Climate Change (MoEFCC) along with the Wildlife Conservation Society (WCS) India has come up with a unique initiative — a **“firefly bird diverter”** for overhead power lines in areas where Great Indian Bustard (GIB) populations are found in the wild.

GIB

- GIB is one of the **most critically threatened species** in India, with less than 150 birds left in the wild.
- GIBs are one of the **heaviest flying birds** in India.
- Experts say only two districts in Rajasthan — Jaisalmer and Barmer — have a breeding GIB population in the wild.
- The bird can also be found in very small numbers in **Gujarat, Madhya Pradesh, Karnataka, Maharashtra and Andhra Pradesh.**

BIRD ON A WIRE	
<ul style="list-style-type: none"> ➤ According to the latest population assessment, the largest population of GIB is in Thar area of Rajasthan 	
<ul style="list-style-type: none"> ➤ Desert National Park which extends from Jaisalmer to Jodhpur is home to 170 GIBs 	
<ul style="list-style-type: none"> ➤ Five known mortalities in 2017-2018 following electrocution 	
<ul style="list-style-type: none"> ➤ Five breeding sites left now 	
<ul style="list-style-type: none"> ➤ National conservation GIB breeding programme involves state governments of Gujarat, 	
<p>Rajasthan, Maharashtra and will be supervised by Wildlife Institute of India (WII)</p>	
<ul style="list-style-type: none"> ➤ WII team to finalize the size of a GIB hatching facility in Jaisalmer 	



- The National Green Tribunal report in 2019, pointed out that power lines, especially high-voltage transmission lines with multiple overhead wires, are the **most important current threat for GIBs** in the Thar region, and are causing unsustainably high mortality in about 15% of their population.
- **Firefly bird diverters** are flaps installed on power lines.
- They work as reflectors for bird species like the GIB. Birds can spot them from a distance of about 50 meters and change their path of flight to avoid collision with power lines.
- Smaller birds can change their direction [swiftly] but for larger bird species, it is difficult because their body weight and other factors.
- A total of 1,813 firefly bird diverters are being installed in this stretch — a model that has been endorsed by experts from the International Union for Conservation of Nature (IUCN) Species Survival Commission's (SSC) Bustard Specialist Group.
- The **diverters are called fireflies** because they look like fireflies from a distance, shining on power lines in the night.
- The selected stretch is opposite the Pokhran Field Firing Range, which offers a safe habitat to a breeding population of GIBs outside the Desert National Park Sanctuary in Jaisalmer.
- Death in most cases is due to impact with the wires and not due to electrocution.
- The Supreme Court of India, in a recent hearing, directed that power lines in GIB landscapes should be placed underground. The innovative firefly diverter installation could serve as an alternative means to species conservation.

WESTERN GHATS CONSERVATION

GS-III ENVIRONMENT

Context

- **Isolating the indigenous people** from their natural habitats in the Western Ghats to protect biodiversity is **unproductive**.
- In 2012, 39 areas covering national parks, wildlife sanctuaries, and reserved forests in the **Western Ghats** were declared a **World Heritage Site by UNESCO**.
- These sites are crucial for their biodiversity value. Ten of them are in Karnataka.
- Since the time the Ministry of Environment and Forests began identifying the potential heritage sites, there has been unrest among the indigenous people.
- When the exercise began, they feared for their existence in lands that they had inhabited for decades.
- The restrictions on movement following the declaration of these territories as ecologically sensitive areas aggrieved them further.
- Against the backdrop of the enactment of the **Forest Rights Act of 2006** in India and the **Declaration on the Rights of Indigenous People in 2007** by the United Nations, the people residing in the Western Ghats did not anticipate that they would have to deal with the uncertainty about their future following the announcement of the World Heritage Site.

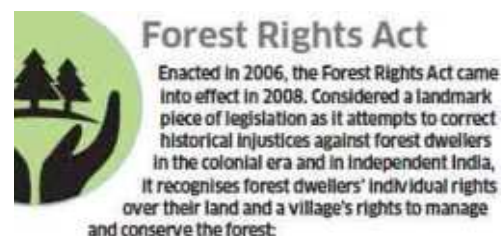
- The indigenous people of the Western Ghats, including the **Particularly Vulnerable Tribal Groups**, constitute 44.2% of the tribal population of 6.95% of Karnataka.
- The Western Ghats are also home to a sizeable population of communities like **Gowlis, Kunbis, Halakki Vakkala, Kare Vakkala, Kunbi, and Kulvadi Marathi**.
- In the context of the Forest Rights Act, they are treated as 'other traditional forest dwellers' since they have been living there for at least three generations prior to December 13, 2005 and depend on the forest or forest land for their livelihood needs.
- They eke out their living by collecting 'minor forest produce' such as cinnamon and kokum from the forest.

A dismal record

- Karnataka has a dismal record in implementing the Forest Rights Act compared to other States.
- According to the Ministry of Tribal Affairs, as of April 30, 2018, the State had recognised **only 5.7% of the total claims made**.
- Notably, 70% of the claims were disposed off.
- There appeared to be clear inconsistency in the government's approach in settling the claims made by the tribal versus the claims made by other traditional forest dwellers.
- The inconsistency reflected in their argument. According to them, tribal applications constituted 17.5% of the claims and nearly all of them were settled, while other claims were rejected as they were not backed by valid evidence.
- This means that claims made by other traditional forest dwellers were treated as inconsequential.

The wrong approach

- Assuming that denying tribal or other traditional forest dwellers their rights in the forest would serve the purpose of conservation is far from the truth.
- The Forest Rights Act is not about the indiscriminate distribution of forest land to anyone applying for it.
- As per the law, only those lands are recognized where people prove their occupation not later than December 13, 2005.
- Moreover, the combined stretch of land claimed by them is comparatively smaller by any account than what has been taken away for building dams, mining, laying railway lines and roads, power plants, etc.
- The government records also reveal that 43 lakh hectares of forestland were encroached both legally and illegally until 1980 when the Forest Conservation Act came into force.
- Sadly, there is no significant conservation even after this landmark law.
- Invariably, an approach adopted to isolate the indigenous people from their natural habitats to protect biodiversity is the root cause of conflict between them and conservationists.
- The **Global Environment Outlook Report 5** mentions that there is decreased biodiversity across the globe even as 'protected areas' have been expanding.
- People living in nature's surroundings are integral to conservation as they relate with it in a more integrated and spiritual way.



Individual Forest Rights: Any person belonging to a scheduled tribe can claim rights to live in and cultivate up to 4 ha if he occupied it and depended on it as of December 13, 2005. A non-tribal, in addition, will have to prove his family's residence in the vicinity of the forest for 75 years prior to December 2005.

Community Forest Rights: The Act recognises the rights of a gram sabha over forest land within the village boundaries or seasonal use of landscape for pastoral communities. This allows the villagers to own and collect, use and dispose of minor forest produce besides timber, including the right to use grazing land and water bodies and the right to protect and regenerate any community resource, among others.

The way forward

- Declaration of the Western Ghats as a World Heritage Site is as important in preserving the rich biodiversity of the region as the recognition of the rights of the people who depend on the forests.

- As confirmed internationally, **preserving biodiversity requires the legal empowerment of the people living in those areas.**
- The **Forest Rights Act is an ideal instrument** to push forward the objective.
- To realize it on the ground, the government must make an effort to build trust between its agencies in the area and the people who depend on these forests by treating them as equal citizens like everyone else in the country.

www.aptiplus.in


APTI PLUS
 Academy for Civil Services Pvt. Ltd.

Join the best IAS Institute in Eastern India
to crack the Nation's most prestigious service

ADMISSIONS OPEN FOR UPSC CSE 2022

Renowned
Faculty
Members from
Delhi

Highest
Success Ratio
in Eastern
India

Home
Learning
Program
with Advanced
LMS

Personal
guidance for the
journey from
Prelims to
Interview

Online &
Offline Mock
Tests

Offline Classes from April 2021*

*(As per Govt. approval)

For detail: 88203 41777, 81004 65577

THE SOLAR WINDS HACK

GS-III SECURITY

Context

- The 'SolarWinds hack', a cyber-attack recently discovered in the United States.
- It has emerged as one of the biggest ever targeted against the US government, its agencies and several other private companies. In fact, it is likely a **global cyber-attack**.
- It was first discovered by US cyber security company Fire Eye.
- US Security Adviser for President Donald Trump, has named **Russia for the attack**.

What is this 'Solar Winds hack'?

- Fire Eye called it a **state-sponsored attack**, although it did not name Russia.
- It said the attack was carried out by a **nation "with top-tier offensive capabilities"**, and "the attacker primarily sought information related to certain government customers."
- It also said the methods used by the attackers were novel.
- Fire Eye named this cyber-attack as **Campaign UNC2452**, was not limited to the company but had targeted various "**public and private organizations** around the world".

Massive cyber attack hits U.S. agencies
Following a global cyber-espionage attack that penetrated multiple U.S. government agencies and private organisations, governments worldwide are scrambling to see if they, too, are victims

Supply chain attack
Pathway into victim's network relies on access to supplier, in this case **SolarWinds**.
Texas-based company provides **Orion** network monitoring services to government agencies and companies

solarwinds

Mar-Jun 2020
Malicious code creates "**Sunburst**" backdoor in updates to SolarWinds' Orion Platform software.
Hackers gain remote access into networks of some 18,000 agencies that have installed updates

Sunburst backdoor
Masquerades as Orion software, appearing as legitimate traffic. Backdoor gives unrestricted access to internal email systems of agencies

Hacked networks
Communicate with hackers' server domain name - **avsvmcloud[.]com** - one of several domains that attackers have set up to control victims' networks

Dec: Cybersecurity company **FireEye** discovers its Orion software has been hacked. Attackers steal FireEye's tools used to probe its customers' defences

Dec: Cybersecurity company **FireEye** discovers its Orion software has been hacked. Attackers steal FireEye's tools used to probe its customers' defences

FireEye
FireEye probes 50,000 lines of SolarWinds source code and discovers backdoor.
Alerts SolarWinds and law enforcement

Dec 17: FireEye teams up with **Microsoft** and domain registrar **GoDaddy** to create "**killswitch**" for backdoor

Killswitch
GoDaddy redirects domain **avsvmcloud[.]com** to IP address **20.140.0.1** that belongs to Microsoft. Malicious traffic coming to this domain is analysed to identify perpetrators

U.S. government agencies affected
Energy, Commerce, Homeland Security, Pentagon, Treasury, U.S. Postal Service, National Institutes of Health

**DEPARTMENT OF ENERGY
UNITED STATES OF AMERICA**

How did US government agencies and companies get attacked?

- This is being called a '**Supply Chain**' attack: Instead of directly attacking the federal government or a private organization's network, the hackers target a **third-party vendor**, which supplies software to them.
- In this case, the target was an IT management software called **Orion**, supplied by the Texas-based company **Solar Winds**.

Widespread implications

- The attack could have widespread implications for the cyber security industry at large, as companies and the government have become increasingly reliant on online and cloud systems.
- A researches technology industry trends, predicted **cyber security spending would reach about \$123.8 billion this year**.

What is Hacking?

- Hacking is an **unauthorized entry into a network or a computer** to steal or manipulate information, data or files.
- The person involved in this process is named as a hacker.
- Computer hacking is done using several types of programs such as Rootkit, Trojan, Key logger etc.
- Hackers also employ techniques like **browser hijacks, spoofing, phishing** etc. to capture user's personal or financial details.

Well-known methods of hacking

Phishing

- This implies replicating the original website so that the unsuspecting user enters the information like account password, credit card details, which the hacker seizes and misuses.
- The banking websites are the frequent target for this.

Virus

- These are released by the hacker into the files of the website once they enter into it.
- The purpose is to corrupt the information or resources on the website.

UI redress

- In this method the hacker creates a fake user interface and when the user clicks with the intent of going to a certain website, they are directed to another site altogether.

Cookie theft

- Hackers access the website using malicious codes and steal cookies which contain confidential information, login passwords etc.

DNS spoofing

- This basically uses the cache data of a website or domain that the user might have forgotten about.
- It then directs the data to another malicious website.

How to guard against hacking?

- **Virtual Private Networks (VPN)** is a protocol by which corporate networks connect to offsite and remote locations through a point to point tunnel like connectivity.
- Normally **security firewalls** are placed at multiple levels of the network and security policies are defined at the highest level leading to a near to 100 % security coverage.
- Download software from authorized websites.
- Do not click on random email attachments.
- Scan all types of hard drives before running
- Anti-hacking software.

QKD TECHNOLOGY

GS-III SECURITY


Context

- The Defence Research and Development Organization (DRDO) successfully demonstrates quantum communication between two labs using **Quantum Key Distribution (QKD) technology**, which is a “robust” way to share encryption keys.

Quantum technology

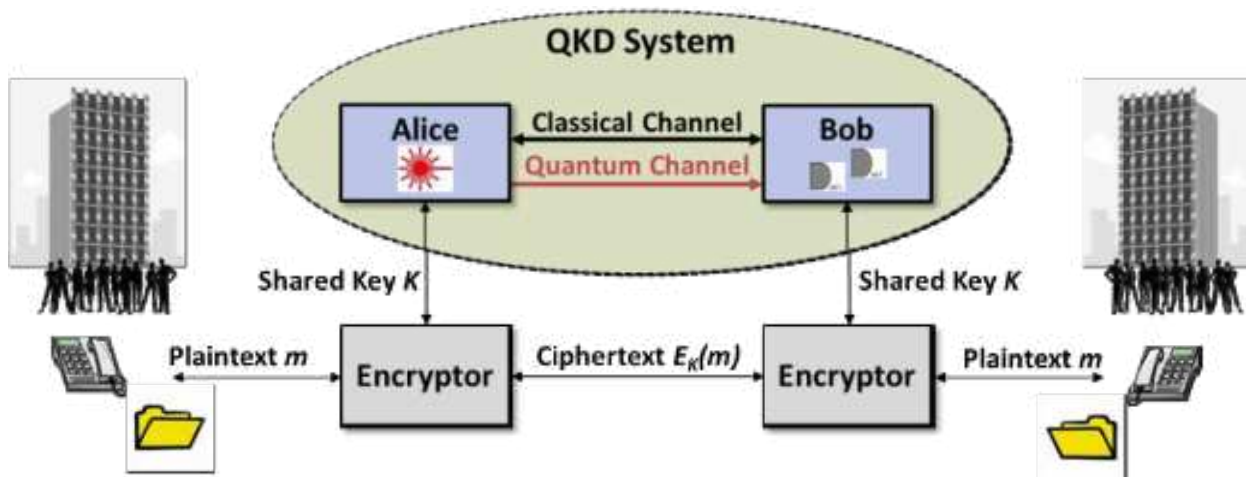
- It is a class of technology that works by using the **principles of quantum mechanics** (the physics of sub-atomic particles), including quantum entanglement and quantum superposition.
- Quantum computing uses **qubits as basic resources**, similar to how bits are used as basic resources in classical computing.

Applications

- more reliable navigation and timing systems (check out our work to create the world's smallest quantum navigation device)
 - more secure communications
 - more accurate healthcare imaging
 - more powerful computing.
- 

Quantum Key Distribution (QKD) technology

- In the QKD technology, encryption keys are sent as **qubits** in a fibre optic cable.
- The QKD is designed in a way that if an illegitimate entity tries to read the transmission, it will disturb the **qubits** - **which are encoded on photons** - and this will generate **transmission errors**, leading to legitimate end users being immediately informed.
- **Secure communications are vital for defence and strategic agencies** world over and distribution of encryption keys from time to time is an important requirement in this context quantum based communication offers a robust solution to sharing the keys securely.
- The Defence Research and Development Laboratory (DRDL) and The Research Centre Imarat (RCI) were the two labs that participated in this demonstration.
- Time-bin encoding is used to encode qubit on a photon.



NETRA & NATGRID SURVEILLANCE SYSTEMS

GS-III SECURITY

Context

- A bench of Chief Justice D N Patel issued notice to the ministries of Home Affairs, Information Technology, Communications and Law and Justice, seeking their stand on the plea by an NGO.
- The Delhi High Court sought response from the Centre on a petition claiming that the **citizens' right to privacy was being "endangered" by surveillance programmes** such as **Centralized Monitoring System (CMS), Network Traffic Analysis (NETRA) and National Intelligence Grid (NATGRID)**.

Centralized Monitoring System (CMS)

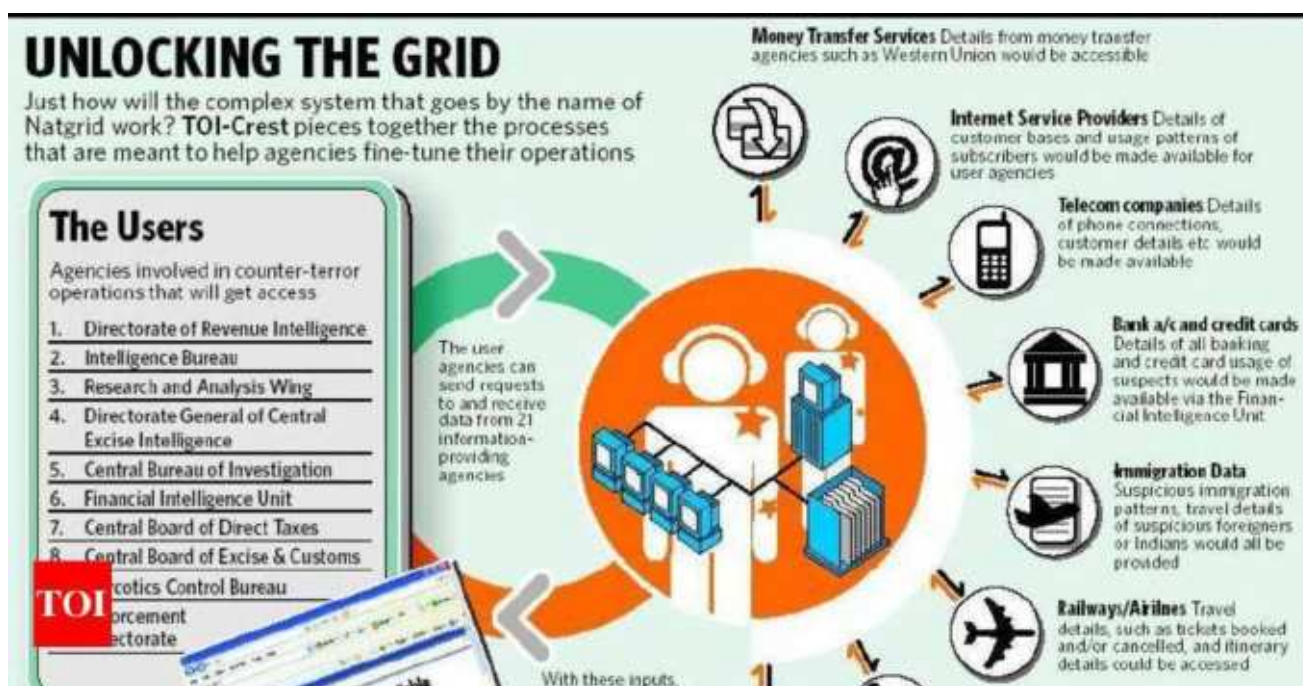
- CMS is a **centralized system to monitor communications** on mobile phones, landlines and Internet traffic in the country.
- It claimed that the functional features of CMS project allows for the state and authorized agencies to bypass the existing procedural safeguards to be followed while issuing Lawful Interception and Monitoring orders (LIMs).

Network Traffic Analysis (NETRA)

- It stated that NETRA is a **massive dragnet surveillance system** designed specifically to **monitor the nation's internet networks** including voice over internet traffic passing through software programs such as Skype or Google Talk, besides write-ups in tweets, status updates, emails, instant messaging transcripts, Internet calls, blogs and forums.
- India's very own **network surveillance tool, NETRA** is developed by the Center for Artificial Intelligence and Robotics (CAIR), a unit of **Defence Research and Development Organization (DRDO)**.
- It is a piece of software that captures data from the Internet traffic, analyses it and alerts the concerned agencies in case it identifies a potential security threat.
- NETRA can monitor **any text-based messages –Facebook, e-mails, blogs included**.
- NETRA identifies and filters keywords in the text message, even when it is **encrypted**.
 - Encryption** is actually a code language with a very complex computer generated code
- It can report the usage of certain words like 'murder', 'attack', 'bomb' and 'terrorist', along with the source IP address, to the concerned authorities.
- Developed to **mainly monitor terrorist activities**, it can monitor **Internet traffic** and **trends over various channels** like Facebook, instant messengers, blogs, emails, Skype, Google talk, etc.
- Currently, NETRA serves 3 security agencies - **Cabinet Secretariat, Intelligence Bureau and the Research and Analysis Wing**.
- NETRA could help the country tackle the growing **menace of Internet terrorism**.

National Intelligence Grid (NATGRID)

- NATGRID project results in a **real-time profiling of individuals** through collection, aggregation, and analysis of metadata of individuals, which could reveal information such as civil, political, religious affiliation, social status, support to a charitable organization, subject's involvement in an intimate relationship and others.



CAATSA SANCTIONS ON TURKEY FOR S-400 PURCHASE

GS-III SECURITY

Context

- The issue of sanctions by the U.S. for purchase of Russian arms is of particular interest to New Delhi, which is also in the process of buying the S-400 from Moscow.
- The U.S. has imposed sanctions on **NATO-ally Turkey** for its purchase of **Russia's S-400 missile** defence system.
- The sanctions comprise of
 - ban on granting specific U.S. export licenses and authorizations for any goods or technology
 - ban on loans or credits by U.S. financial institutions totaling more than \$10 million in any 12-month period
 - Ban on U.S. Export-Import Bank assistance for exports.

Countering America's Adversaries Through Sanctions Act, CAATSA

- It is a **United States federal law** that imposed sanctions on Iran, North Korea, and Russia.

WHAT IS CAATSA?

Countering America's Adversaries Through Sanctions Act. Enacted in August 2017, came into effect in January. Targets Iran, North Korea and Russia

INDIA'S WORRY

One of its provisions targets Russian defence firms and countries doing business with them. India has defence deals worth over \$12 billion in the pipeline with Russia

THE SOLUTION

New clauses inserted by the US in the National Defense Authorization Act (US military budget), which empower the Trump administration to suspend CAATSA sanctions, but it has to certify that India is reducing its dependence on Russia

US VERSUS RUSSIA IN INDIAN ARMS MARKET

RUSSIA		THE US	
India's biggest arms supplier for decades. Sales worth \$65 billion since early-1960s	MiG fighters & Sukhoi-30MKI jets to Kilo-class submarines, Talwar/Tabar-class frigates & aircraft carrier INS Vikramaditya	Overtook Russia in bagging Indian deals over last 3/4 years. Sales worth \$15 billion since 2007	C-17 Globemaster-III strategic airlifters, C-130J Super Hercules aircraft & P-8I maritime patrol planes to M-777 ultra-light howitzers, Apache attack & Chinook heavy-lift helicopters
FUTURE PROJECTS		FUTURE PROJECTS	
<ul style="list-style-type: none"> ➤ Lease of 2nd nuclear-powered submarine (after first one, INS Chakra) for around \$1.5 billion ➤ Five S-400 Triumf air defence systems for around \$5.5 billion ➤ Four Grigorovich-class stealth frigates (2 to be built in India) for around \$4 billion ➤ Joint production of 200 Kamov-226T light utility helicopters (140 in India) for \$1 billion 		<ul style="list-style-type: none"> ➤ US pushing F/A-18 "Super Hornet" or F-16 fighter production line in India to supply 110 jets for IAF for \$20 billion ➤ In contention for 57 multi-role fighters to operate from aircraft carriers ➤ Also for 111 armed naval light utility helicopters (Rs 21,738 crore) ➤ Also 24 multi-role helicopters with anti-sub warfare capabilities (Rs 12,000 crore). Another 123 such choppers later 	
 <p>INS Vikramaditya</p>		 <p>IAF C-17 Aircraft</p>	

S-400 Triumph missile system

- It is an **air defence missile system** developed by Almas Central Design Bureau of **Russia**.
- It integrates a multifunction radar, autonomous detection and targeting systems, anti-aircraft missile systems, launchers, and command and control centre.
- It is capable of firing three types of missiles to create a layered defence.
- The system can engage all types of aerial targets, including aircraft, unmanned aerial vehicles (UAV), and ballistic and cruise missiles, within the range of **400km at an altitude of up to 30km**.



Context

- With the deal for Ka-226T **utility helicopters with Russia** not concluded five years after it was announced, the Army is set to approach the Defence Ministry for a waiver to take the deal forward.

Urgently required

- About 75% of the Army's fleet of Cheetah and Chetak helicopters is over 30 years old.
- Some of them are about 50 years old. There is a need for urgent replacements.
- The Ka-226T deal with Russia has been **stuck over indigenization**. So, the Army is approaching the Ministry of Defence [MoD] for a waiver to conclude the deal.
- In 2015, India and **Russia** had concluded an **Inter-Governmental Agreement (IGA)** for at least **200 Ka-226T twin engine utility helicopters** estimated to cost over \$1 billion with 60 helicopters to be directly imported and remaining 140 manufactured locally.
- They are to **replace the ageing and obsolete Cheetah and Chetak** fleet of the Army and the Air Force.
- A joint venture India Russia Helicopters Ltd. (IRHL) has been set up between Hindustan Aeronautics Ltd. (HAL) and Russian Helicopters (RH) which will assemble the helicopters in India.
- The **Request for Proposal (RFP)** issued by the MoD to IRHL for 200 helicopters stated 70% localization over which the final deal has been held up as the JV quoted localization of 62.4% in its response.



Chetak Helicopter

- Hindustan Aeronautics Limited (HAL), Helicopter Division started manufacturing of helicopters in 1962, by entering an agreement with AIRBUS, France.
- The Chetak Helicopter is a two ton class helicopter.
- The seven seater Chetak helicopter is versatile, multi role, multi purpose, and spacious.
- The helicopter is powered by Artouste - III B turbo shaft engine.
- The helicopter is suitable for commuting, cargo / material transport, casualty evacuation, Search & Rescue (SAR), Aerial Survey & Patrolling, Emergency Medical Services, Off-shore operations and Under slung operations



Cheetah Helicopter

- The Cheetah Helicopter (identical to LAMA SA 315B Helicopter of Eurocopter, **France**) is a high performance helicopter designed for operation over a very wide range of weight, centre of gravity and altitude conditions.
- The five seater Cheetah helicopter is versatile, multi role, multi purpose, highly maneuverable and rugged in construction.
- It holds the world record in high altitude flying among all categories of Helicopters.



THE MORAL AND LEGAL ISSUE OF MARITAL RAPE

GS-IV ETHICS

Context

- India is one of only 36 countries where the intimate assault of marital rape is a perfectly legal crime.

What is Marital Rape?

- Marital rape is the act of forcing your spouse into having sex without proper consent, is an unjust yet not uncommon way to degrade and disempower women.

Domestic Violence in India: Some statistics

- Domestic violence in India is an entrenched problem, and it has only been exacerbated in the recent years.
- About 70 per cent of women in India are victims of domestic violence.
- As per the National Crime Records Bureau's (NCRB) 'Crime in India' 2019 report, in India, a woman is raped every 16 minutes, and every four minutes, she experiences cruelty at the hands of her in-laws.
- An analysis of National Family Health Survey (NFHS) 2015-16 data indicates that an estimated 99.1 per cent of sexual violence cases go unreported and that the average Indian woman is 17 times more likely to face sexual violence from her husband than from others.

Arguments against criminalizing Marital Rape

- Four arguments are normally raised in support of the marital rape exception.
 - First, that allowing wives to complain about rape will destroy the family;
 - Second, that by definition, sex within marriage can never amount to rape;
 - Third, that the criminalisation of marital rape would violate the privacy of marriage by (to put it euphemistically) "allowing the State into the bedroom";
 - And last, that it would become a weapon of abuse in the hands of unscrupulous wives.

Refuting the arguments against criminalization

- The belief that the institution of marriage would wither away if marital rape were made criminal appears to rest upon the bizarre assumption that coerced sex is essential to marriage.
- If it is true, then we must ask whether an institution that depends on coercion for its very existence is worth saving in the first place.
- The second and third arguments were good when the IPC was framed in 1860. They rest upon two assumptions: first, that marriage amounts to a one-time, lifetime consent to sexual intercourse; and second, that the institution of marriage must be placed beyond the realm of constitutional scrutiny.
- Both these assumptions, however, are entirely incompatible with a constitutional democracy founded upon ideas of freedom and autonomy.
- Indeed, the Supreme Court's famous Right to Privacy Judgment clarified these issues beyond dispute.

Arguments in favor of criminalizing Marital Rape

- Although marriage is considered to be a deeply personal matter of two individuals which the State is hesitant to disrupt, the refusal of the State to enter this private space can be problematic because it leads to indoctrination of the widely held view that woman should bear the weight of the responsibility of her family's image.
- On the other hand, it is also absurd that the legal system in India which aims to secure the rights of every individual of society ironically provides no legal redress if that individual is a wife seeking accountability from her husband for raping her.
- The wife is left in a dilemmatic position where she can neither take help from the State nor from her family.

- Thus, it is important for the State to penetrate this private sphere because when the gravity of the crime is as large as rape, it is necessitated that the sacred institution of the couple's marriage be brought into question on the ground that marital affairs can be held sacred anymore when a repugnant crime like rape is committed.

USA	Britain	Bhutan
 USA In US, marital rape became a crime in every state by 1993. Punishment: Most states penalise marital rape like any other rape – with fines (that could exceed \$50,000) and prison terms (varying between several years and life in prison without parole)	 Britain In 1991, rape within marriage became a crime. The 2003 Sexual Offences Act clarified the law, giving consent a legal definition in England and Wales. Punishment: The accused will face five years of prison term	 Bhutan Marital rape is considered an offence and a petty misdemeanour in Bhutan. Punishment: Marital rape is punishable by a minimum prison term of 1 year and a maximum term of less than 3 years

Adithyaling, Alankar

Issues in Indian Legal Regime

- In spite of the recent amendments in the criminal law, various laws meant to protect women from domestic violence and sexual assault has largely remained ineffective.
- But what happens when laws provide a safeguard to the culprits and endanger the victims?
- One of the most horrifying and repressive issues with the Indian legal regime is that marital rape is perfectly legal.
- Today, it has been impeached in more than 100 countries but, unfortunately, India is one of the only 36 countries where marital rape is still not criminalized.

We are happy to announce that students of APTI PLUS family have cleared the **IAS 2019**

 NABAL JAIN RANK 125	 ANKIT MISHRA RANK 294	 JAYANT NAHATA RANK 298	 JUREN MOHAPATRA RANK 379	 OM P. MOHANTY RANK 715	 BISHUJI B. NAYAK RANK 819
 NUPUR GOEL RANK 11	 SARIN SHARMAN RANK 10	 SUDHANU GUPTA RANK 19	 SUNIL K. SINGH RANK 84	 SUNIL K. SINGH RANK 85	 SUNIL K. SINGH RANK 109
 SUNIL K. SINGH RANK 159	 SUNIL K. SINGH RANK 244	 SUNIL K. SINGH RANK 280	 SUNIL K. SINGH RANK 311	 SUNIL K. SINGH RANK 363	 SUNIL K. SINGH RANK 376
 SUNIL K. SINGH RANK 386	 SUNIL K. SINGH RANK 423	 SUNIL K. SINGH RANK 480	 SUNIL K. SINGH RANK 513	 SUNIL K. SINGH RANK 518	 SUNIL K. SINGH RANK 539
 SUNIL K. SINGH RANK 627	 SUNIL K. SINGH RANK 632	 SUNIL K. SINGH RANK 663	 SUNIL K. SINGH RANK 674	 SUNIL K. SINGH RANK 718	 SUNIL K. SINGH RANK 737
 SUNIL K. SINGH RANK 761	 SUNIL K. SINGH RANK 773	<i>Congratulations everyone!!!</i>			

The whole legal system relating to rape is in a mess, replete with paradoxes. The major legal lacunae that come in the way of empowering women against marital rape are:

- The judicial interpretation has expanded the scope of Article 21 of the Constitution of India by leaps and bounds and to live with human dignity.
- Marital rape clearly violates the right to live with dignity of a woman and to that effect, the exception provided under Section 375 of the Indian Penal Code, 1860 is violative of Article 21 of the Constitution.
- Article 14 of the Constitution guarantees the fundamental right that the State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India
- Article 14 therefore protects a person from State discrimination. But the exception under Section 375 of the Indian Penal Code, 1860 discriminates with a wife when it comes to protection from rape. Thus, exception provided under Section 375 of the Indian Penal Code, 1860 is not a reasonable classification, and thus, violates the protection guaranteed under Article 14 of the Constitution.
- Though protection of the dignity of women is a fundamental duty under the Constitution, casting a duty upon every citizen renounce practices derogatory to the dignity of a woman; it seems that domestic violence and marital rape do not come under the definition of dignity.
- The United Nations Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), of which India is a signatory, has viewed that this sort of discrimination against women violates the principles of equality of rights and respect for human dignity. Further, the Commission on Human Rights, at its fifty-first session, in its Resolution No. 1995/85 of 8-3-1995 has recommended that marital rape should be criminalized.
- A husband cannot be prosecuted for raping his wife because consent to matrimony presupposes consent to sexual intercourse. This implies that having sex anytime, anywhere and of any sort is an implied term of the contract of marriage, and the wife could not breach that term of the contract.
- The law prevents a girl below 18 years from marrying, but on the other hand, it legalizes non-consensual sexual-intercourse with a wife who is just 15 years of age.
- The Indian Penal Code, 1860 states that it is rape if the girl is not the wife of the man involved and is below 16, even if she consents. But if she is a wife, not below 15 and does not consent, it is not rape.
- Another paradox is that according to the Indian Penal Code, 1860, it is rape if there is a non-consensual intercourse with a wife who is aged between 12 and 15 years. However, the punishment may either be a fine or an imprisonment for a maximum term of 2 years or both, which is quite less in comparison to the punishment provided for rape outside the marriage.
- Though the advocates of women's rights secured a clause in 1983 under which it is unlawful for a man to have sexual intercourse with his separated wife pending divorce, the courts are reluctant to sentence husbands in spite of the law.

When rape is allowed by law



More than two-thirds of married women in India, aged 15 to 49, have been beaten, or forced to provide sex, regardless of their socio-economic positions. (As per the UN Population Fund)

1 in 5 men has forced his wife or partner to have sex. (As per the International Men and Gender Equality Survey 2011)

Over 104 countries across the world have criminalised marital rape.

India, Saudi Arabia, Pakistan and China have not.

Marital Rape and the Indian Legal Scenario

Marital Rape and the Law of India

The Supreme Court recently ruled that forced sexual intercourse by husband with wife above 15 years of age will not be considered as 'rape' under the IPC, adding to the plight of married women trapped in abusive relationships.



1 What is Marital Rape?

Marital rape is the act of sexual intercourse with one's spouse without the consent of the other spouse. It is a form of domestic violence and sexual abuse.

2 Why isn't Marital Rape a Criminal offence in India?

Social changes are slow to occur and especially slow in large countries like India. Until the 1970s, systems across the world - even in the developed world - had permitted Marital rape and criminalized homosexuality to various levels. Since then activists have fought on those fronts and have achieved great progress.



3 What the Law says?



The Petition challenged the Exception given in s. 375 of IPC, declaring that forced sexual intercourse by a man with his wife above 15 years is not rape.



The decision carries with it plight for several Indian women stuck in abusive marriages and unwilling to consent to sexual intercourse.



Girls below 18 are now discriminated solely on the basis of whether or not they are married.



If married, the threshold age becomes 15 below which intercourse with wife would amount to rape.



Forced sexual intercourse with wife would not be considered criminal even if the wife is below 18, since the age has been lowered to 15.



The distinction based solely on the ground of marriage is clearly and blatantly violative of Fundamental Rights under Art. 14, 15 and 21 of the Constitution.



The position hampers the sexual choice and freedom of decision that every person possesses as a matter of right over his own body.



Though child marriages are illegal, the law as laid in the IPC and its reinforcement by the Court creates the effect that young girls married off before 18 but past 15 are now more likely to be abused by their husbands.

Recommendations

- In 2013, the UN Committee on Elimination of Discrimination Against Women (CEDAW) recommended that the Indian government should criminalize marital rape.
- The JS Verma committee set up in the aftermath of nationwide protests over the December 16, 2012 gang rape case had also recommended the same.

Social issues

- Rape laws in our country continue with the patriarchal outlook of considering women to be the property of men post marriage, with no autonomy or agency over their bodies.
- They deny married women equal protection of the laws guaranteed by the Indian constitution.
- Lawmakers fail to understand that a marriage should not be viewed as a license for a husband to forcibly rape his wife with impunity.
- A married woman has the same right to control her own body as does an unmarried woman.
- The concept of marital rape in India is the epitome of what we call an "implied consent".
- Marriage between a man and a woman here implies that both have consented to sexual intercourse and it cannot be otherwise.

Section 375

- Section 375 defines the offence of rape with the help of six descriptions.

- One of the exceptions to this offence is “Sexual intercourse or sexual acts by a man with his own wife, the wife not being under 15 years of age, is not rape”.

Issues with Section 375

- Essentially, Exception clause of Section 375 creates a classification not only between consent given by a married and unmarried woman, but also between married females below 15 years of age and over 15 years old.
- Such a classification does not pass the test of “intelligible differentia”.
- It is therefore, prima facie in contravention to the Right to Equality enshrined under Article 14.

Judgments by Courts

- In 2017, a PIL was filed by Independent Thought, an NGO, challenging this unintelligible classification and claiming that married women over 15 years of age should also be afforded this protection.
- The Supreme Court concurred with these averments to some extent and extended the age limit in Section 375 from 15 years to 18 years.

Way ahead

- The above judgment was only a small step towards striking down the legalization of marital rape.
- It is high time that the legislature should take cognizance of this legal infirmity and bring marital rape within the purview of rape laws by eliminating Section 375 (Exception) of IPC.
- By removing this law, women will be safer from abusive spouses, can receive the help needed to recover from marital rape and can save themselves from domestic violence and sexual abuse.
- Indian women deserve to be treated equally, and an individual’s human rights do not deserve to be ignored by anyone, including by their spouse.

Suggestions

- Marital rape should be recognized by Parliament as an offence under the Indian Penal Code.
- The punishment for marital rape should be the same as the one prescribed for rape under Section 376 of the Indian Penal Code.
- The fact that the parties are married should not make the sentence lighter.
- It should not be a defense to the charge that the wife did not fight back and resisted forcefully or screamed and shouted.
- The wife should have an option of getting a decree of divorce if the charge of marital rape is proved against her husband.
- Though a case of marital rape may fall under cruelty or rape as a ground of divorce, it is advisable to have the legal position clarified.
- Demand for divorce may be an option for the wife, but if the wife does not want to resort to divorce and wants to continue with the marriage then the marriage should be allowed to continue.
- Corresponding changes in the matrimonial laws should be made.

Final Words

- Rape is rape, irrespective of the identity of the perpetrator, and age of the survivor.
- A woman, who is raped by a stranger, lives with a memory of a horrible attack; a woman who is raped by her husband lives with her rapist.
- Our penal laws, handed down from the British, have by and large remained untouched even after 73 years of independence.
- But English laws have been amended and marital rape was criminalized way back in 1991.
- No Indian government has, however, so far shown an active interest in remedying this problem.
- The law that shields marital rape must be urgently struck down.

SHORT NEWS ARTICLES

GENERAL STUDIES-I

Bhagyalakshmi Temple

Context

- Recently, Union Home Minister Amit Shah visited the Bhagyalakshmi temple while on a trip to Hyderabad.

About

- Bhagyalakshmi temple is a small temple dedicated to Goddess Lakshmi, adjacent to the southeast minar of Charminar.
- Made of bamboo poles and tarpaulins, it has a tin roof, and the southeast minar forms its back wall. There is no definitive version on how and when exactly it came up, but it has been there since at least the 1960s.
- Sources in the Archaeological Survey of India said the temple encroaches on the protective perimeter of Charminar.

Annapurna Idol

Context

- Recently, Prime Minister Narendra Modi announced that an ancient idol of the goddess Annapurna, stolen from India about a century ago, is being brought back from Canada.

About

- Annapurna, is the goddess of food.
- The 18th-century idol, carved in the Benares style, is part of the University of Regina, Canada's collection at the MacKenzie Art Gallery.
- She holds a bowl of kheer in one hand and a spoon in the other. These are items associated with the goddess of food, who is also the deity of the city of Varanasi.



Ramayan Cruise Tour

Context

- 'Ramayan Cruise Tour' on the Saryu river in Ayodhya will be launched soon.

About

- It will be the first-ever luxury Cruise service on the Saryu river (Ghagra/National Waterways-40) in Ayodhya, Uttar Pradesh.
- It aims to give mesmerizing experience to devotees with one-of-its-kind spiritual journeys while cruising through the famous ghats of the holy river Saryu.
- Tourists will be taken on the 'Ramcharitmanas Tour', featuring an exclusively made video film of 45-60 minutes duration, based on Ramcharitmanas by Goswami Tulsidas, covering the period from the birth of Lord Ram to his Rajyabhishek.

River Sarayu

- The Sarayu is a river that originates in Uttarakhand and flows through Uttar Pradesh in India. It is a tributary of the Sharda River.
- The Sarayu rises at Sarmu, which is located in the extreme north of the district Bageshwar of Uttarakhand on the southern slope of a ridge of the Nanda Kot.

Aadi Mahotsav

Context

- Recently, Union Minister for Tribal Affairs, launched the virtual edition of AadiMahotsav- Madhya Pradesh.

About

- The AadiMahotsav – A Celebration of the Spirit of Tribal Culture, Crafts, Cuisine and Commerce – is an initiative that was commenced in 2017.
- The festival was an attempt to familiarise the people with the rich and diverse craft, culture of the tribal communities across the country, in one place.
- The event showcases the tribal traditions of the various tribal communities – by having their crafts and natural produce on display.
- Videos showcasing different aspects of their culture – music, dance etc, are shared.
- In essence, it is a celebration of the tribes and their diverse, varied lifestyle but on a different platform.

Nisarg Gram

Context

- The upcoming new campus of National Institute of Naturopathy (NIN), Pune will be called “Nisarg Gram”.

Purpose

- To invoke recollections of Mahatma Gandhi’s famous Nature Cure campaign of 1946 at the “NisargUpchar” Ashram in UruliKanchan village near Pune.
- The institution will place emphasis on the symbiotic relationship between research and teaching and the need to foster this relationship with respect to Naturopathy.
- The research activities at Nisarg Gram will provide scope for clinical, basic and literary researches.

Significance

- Collaborations would be a key strategy for growth and development of the Nisarg Gram institute.
- Research institutions and other Gandhian institutes will be roped in as partners for training, internship and mentoring. This will save on infrastructure and staffing for Nisarg Gram.
- It is expected that collaborations with disciplines like public health, rural development and other social sciences will take Gandhian studies, especially Gandhian concepts of public health, to a different terrain and foster its growth to global significance.

Naturopathy

- National Institute of Naturopathy (NIN) is registered under the Societies Registration Act., 1860. This institute has a “Governing Body” headed by the Union Minister for Health & Family Welfare as its President.
- Naturopathy is a drugless non-invasive rational and evidence based system of medicine imparting treatments with natural elements based on the Theory of vitality, theory of toxemia, theory of self healing capacity of the body and the principles of healthy living.
- The applied aspects of Naturopathy includes mainly fasting and diet supported by treatments with natural elements which includes Hydrotherapy, Chromotherapy, Mud Therapy, Manipulative therapy, Electrotherapy, Acupuncture, Magnetotherapy, Physiotherapy, Exercise & Yoga Therapy.

Tharu Tribe

Context

- The Uttar Pradesh government has recently embarked upon a scheme to take the unique culture of its ethnic Tharu tribe across the world.

Aim

- The intention is to put Tharu villages on the tourism map, and to create jobs and bring economic independence to the tribal population.

Who are the Tharu people?

- The community belongs to the Terai lowlands, amid the Shivaliks or lower Himalayas.
- Most of them are forest dwellers, and some practice agriculture.
- The word tharu is believed to be derived from sthavir, meaning followers of Theravada Buddhism.
- The Tharus live in both India and Nepal.
- In the Indian Terai, they live mostly in Uttarakhand, Uttar Pradesh, and Bihar. According to the 2011 census, the Scheduled Tribe population in Uttar Pradesh was more than 11 lakh; this number is estimated to have crossed 20 lakh now.
- The biggest chunk of this tribal population is made up of Tharus. Members of the tribe survive on wheat, corn and vegetables grown close to their homes. A majority still lives off the forest.

Tharu language, food, and culture

- They speak various dialects of Tharu, a language of the Indo-Aryan subgroup, and variants of Hindi, Urdu, and Awadhi.
- In central Nepal, they speak a variant of Bhojpur, while in eastern Nepal, they speak a variant of Maithili.
- Tharus worship Lord Shiva as Mahadev, and call their supreme being "Narayan", who they believe is the provider of sunshine, rain, and harvests.
- Tharu women have stronger property rights than is allowed to women in mainstream North Indian Hindu custom.
- Standard items on the Tharu plate are bagiya or dhikri – which is a steamed dish of rice flour that is eaten with chutney or curry – and ghonghi, an edible snail that is cooked in a curry made of coriander, chili, garlic, and onion.

Bakhshali Scroll

Context

- A black dot on a third-century Indian manuscript has been identified by Oxford University as the first recorded use of the mathematical symbol for zero, 500 years earlier than previously thought.

About

- The birch bark scroll is known as the Bakhshali manuscript after the village, which is now in Pakistan, where it was found buried in 1881.
- The Bakhshali scroll was already recognised as the oldest Indian mathematical text. Researchers used carbon dating to trace it back to the third or fourth century.
- The text was in fact found to contain hundreds of zeroes, representing orders of magnitude in the ancient Indian numbers system.
- The earliest recorded example of the use of zero was previously believed to be a ninth-century inscription on a wall in a temple at Gwalior in India.

Khudiram Bose (Birth Anniversary)

Contribution

- Bose gave up studies when he was in class 9 because he was more interested in patriotic activities
- He joined the Swadeshi Movement and decided to devote his life for the noble cause of bringing freedom to India
- In 1905, he actively **participated in protests** against the British when **Bengal was partitioned**.
- He joined the Anushilan Samiti when he was 15.
- When Bose was 16, he planted bombs near police stations and targeted government officials
- Before planting another bomb, Bose adopted the name Haren Sarkar, and closely observe the daily routine, activities and movements of Kingsford
- On April 30, 1908, he threw bombs on the carriage in which Kingsford was travelling. The hit was a success and the carriage blew up and started burning. However, the carriage was not occupied by Kingsford but instead the wife and daughter of barrister Pringle Kennedy
- Khudiram was detained the same day

- While in court, to save his friends, Khudiram took up the full responsibility of the entire operation and the loss of lives solely upon himself
- Khudiram was only 18 years old when he was hanged.

Abdur Rahim Khan-e-Khanan

Context

- Abdur Rahim Khan-e-Khanan's tomb was opened to the public after six years of restoration work.

About

- Khanzada Mirza Khan Abdul Rahim Khan-i-Khanan, popularly known as simply Rahim, was a poet who lived in India during the rule of Mughal emperor Akbar, who was his mentor, also.
- He was one of the nine important ministers (dewan) in his court, also known as the Navaratnas.
- Rahim is known for his Hindi dohe (couplets) and his books on astrology.
- The village of Khan Khana, which is named after him, is located in the Nawanshahr district of the state of Punjab.

Zomi ethnic group

Context

- Manipur's Zomi ethnic group has renewed its demand for a self-administered zone on the lines of the Bodoland Territorial Council (BTC) in Assam.
- The Zomi Council, representing nine Zomi tribes, is banking for the creation of Zoland Territorial Council (ZTC) under the Sixth Schedule of the Constitution.

About

- The word Zo is used to describe an ethnic group, also known as the Mizo, the Kuki, the Zomi, the Chin and a number of other names based on geographic distribution, are a large group of related Tibeto-Burman peoples spread throughout the northeastern states of India, northwestern Myanmar (Burma) and the Chittagong Hill Tracts of Bangladesh.
- In northeastern India, they are present in: Nagaland, Mizoram, Manipur and Assam.

Zari-Zardozi

Context

- Madhya Pradesh is organizing the first of its kind of exhibition called Raag-Bhopali to promote Zari-Zardozi crafts of Bhopal.

About

- Zardozi is a type of heavy and elaborate metal embroidery on a silk, satin, or velvet fabric base.
- Zari originated in a village by the same name in ancient Persia (Iran of today) where artisans used the skill of weaving thin threads of gold and silver onto fine fabrics of silk.
- The art was brought to India by Persian migrants between 1700-1100 BC – the period of Rig Veda.
- However, zari work flourished during the Mughal era under the patronage of Emperor Akbar.
- Designs are often created using gold and silver threads and can incorporate pearls, beads, and precious stones.
- It is used as decoration for a wide range of applications, including clothes, household textiles, and animal trappings.
- Today, zardozi is popular in the Indian cities of Lucknow, Farrukhabad, Chennai and Bhopal.
- In 2013, the Geographical Indication Registry (GIR) accorded Geographical Indication (GI) registration to the Lucknow zardozi.

Zari is categorized into 3 types:

- **Real Zari:** It is made of pure gold & silver. Due to the high cost of pure gold and silver, Real Zari is sought after by the very rich and discerning.
- **Imitation Zari:** It is made of silver electroplated (thinly) copper wire. Imitation Zari was used as a replacement for silver. However with increasing prices of copper too, even Imitation Zari is produced in a rather limited way.

- **Metallic Zari:** It is made of slitted polyester metallized film. Metallic Zari is the work which is in vogue as it weighs quite lightly compared to pure gold and silver or for that matter copper. It is also affordable and more durable compared to Real Zari and Imitation Zari.

Namghar

Context

- Recently, Union Home Minister Amit Shah distributed financial grants to 8,000 Namghars under the Assam Darshan programme.

About

- Namghars literally Prayer House are places for congregational worship associated with the entire Assamese community and the Ekasarana sect of Hinduism, in particular, that is native to Assam.
- Besides forming the primary structure used for worship, they also function as meeting houses for congregations, as well as theaters for dramatic performances (bhaona).
- The Namghar, also called the kirtanghar, is also the central structure in the Sattras (monasteries of the Ekasarana religion) where the other buildings are positioned around it.
- Namghars are widespread in Assam, and very often more than one namghar exists in a single village, signifying many congregational communities.
- Namghars were introduced in Assam by the Vaishnavite saints Damodaradeva, Madhavadeva and Sankaradeva for Assamese people where they can culture and practice naam (devotional songs) and Bhakti of God (devotion)
- He established the first Naamghar at Bordowa in Nagaon district. There is a Namghar in Puri as well, near the Jagannath Temple.

GEOGRAPHY







Mount Ili Lewotolok

Context

- Indonesia's Mount Ili Lewotolok recently erupted releasing a column of smoke and ash 2.5 miles (4km) into the sky.

About

- Mount Ili Lewotolok or Lewotolo is a **strato volcano** in the north-central part of the island of Lembata in Indonesia.

Types of Volcanoes			
Volcano Type	Characteristics	Examples	Simplified Diagram
Flood or Plateau Basalt	Very liquid lava; flows very widespread; emitted from fractures	Columbia River Plateau	
Shield Volcano	Liquid lava emitted from a central vent; large; sometimes has a collapse caldera	Larch Mountain, Mount Sylvania, Highland Butte, Hawaiian volcanoes	
Cinder Cone	Explosive liquid lava; small; emitted from a central vent; if continued long enough, may build up a shield volcano	Mount Tabor, Mount Zion, Chamberlain Hill, Pilot Butte, Lava Butte, Craters of the Moon	
Composite or Stratovolcano	More viscous lavas; much explosive (pyroclastic) debris; large, emitted from a central vent	Mount Baker, Mount Rainier, Mount St. Helens, Mount Hood, Mount Shasta	
Volcanic Dome	Very viscous lava; relatively small; can be explosive; commonly occurs adjacent to craters of composite volcanoes	Novarupta, Mount St. Helens Lava Dome, Mount Lassen, Shastina, Mono Craters	
Caldera	Very large composite volcano collapsed after an explosive period; frequently associated with plug domes	Crater Lake, Newberry, Kilauea, Long Valley, Medicine Lake, Yellowstone	

Burevi

- Cyclonic Storm Burevi was a weak tropical cyclone which recently made landfall in Sri Lanka.
- It was likely to affect Tamil Nadu and Kerala.



Koilwar Bridge

Context

- Recently, Koilwar bridge over Sone river in Bihar was inaugurated.

About

- Koilwar Bridge, (officially Abdul Bari Bridge) is 1.44 Km long rail-cum-road bridge connects Arrah with Patna, the capital of Bihar.
- The bridge is presently the oldest operational railway bridge in India standing since 04 November 1862.
- From 1862 to 1900, Koilwar bridge remained as the longest river bridge in India.

Son River

- Son River is a perennial river that originates near Amarkantak Hill in Madhya Pradesh just east of the headwater of the Narmada River.
- It parallels the Kaimur hills, flowing east-northeast through Uttar Pradesh, Jharkhand and Bihar states to join the Ganges just west of Patna.
- Sone river is the southern and second-largest tributary of the Ganges' after Yamuna River.
- The Kabra khurd is a beautiful place on the banks of the Son river, primarily due to its picnic spots.

Eswatini

Context

- Eswatini Prime Minister Ambrose Dlamini, who was undergoing treatment for coronavirus in neighbouring South Africa, has died.

About

- Eswatini formerly and still commonly known as Swaziland is a landlocked country in Southern Africa.
- It is bordered by Mozambique to its northeast and South Africa to its north, west, and south.
- Eswatini is one of the smallest countries in Africa; despite this, its climate and topography are diverse, ranging from a cool and mountainous highveld to a hot and dry lowveld.



Haldibari-Chilahati Rail Link

Context

- PM Modi and Sheikh Hasina launched the 5th rail link connecting India and Bangladesh. It is called Haldibari-Chilahati rail link.

About

- The rail link, 3.5 km of which is on the Indian side and the rest in Bangladesh, was operational till 1965 and was part of the broad-gauge rail route from Kolkata to Siliguri during partition.
- But the link got disconnected in 1965 after the war with Pakistan.

Other rail links

- At present there are four other operational rail links between both countries.
- They are
 - ✓ Petrapole (India)-Benapole (Bangladesh),
 - ✓ Gede (India)-Darshana (Bangladesh),
 - ✓ Singhabad (India)-Rohanpur (Bangladesh) and
 - ✓ Radhikapur (India)-Birjol (Bangladesh).

Significance

- The 10.5 km long Haldibari-Chilahati Rail Link is expected to further strengthen people to people contact and boost trade between the two neighbours.



Fordow Fuel Enrichment Plant

Context

- Iran has begun construction on a site at its underground nuclear facility at Fordo amid tensions with the US over its atomic programme.

About

- Fordow Fuel Enrichment Plant (FFEP) is an Iranian underground uranium enrichment facility located 20 miles northeast of the Iranian city of Qom, near Fordow village.
- The site is under the control of the Atomic Energy Organization of Iran (AEOI).
- It is the second Iranian uranium enrichment facility, the other one being that of Natanz.

Chillai Kalan'

Context

- Kashmiris welcome 'chillai kalan' with cool pictures

About

- 'Chillai kalan', is a local term for the 40-day period of harshest period from December 21 to January 31 as a cold wave grips the region.
- In the Persian tradition, the night of December 21, the longest of the year, is celebrated as Shab-e-Yalda (night of birth) or Shab-e-Chelleh.
- The 40-day chillai kalan is followed by the 'chillai khurd' and 'chillai bacha', which sees a rise in day temperatures.

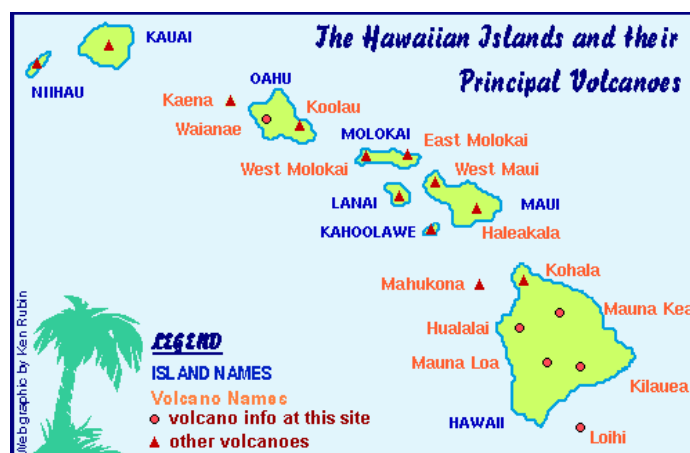
Kilauea volcano

Context

- The Kilauea volcano on Hawaii's Big Island has erupted.

About

- Kilauea is an active shield volcano in the Hawaiian Islands.
- Historically, Kilauea is the most active of the five volcanoes that together form the Big Island of Hawai'i.
- It is the second-youngest product of the Hawaiian hotspot and the current eruptive center of the Hawaiian-Emperor seamount chain.
- Structurally, Kilauea has a large, fairly recently formed caldera at its summit and two active rift zones, one extending 125 km east and the other 35 km west, as an active fault of unknown depth.



India Meteorological Department's centre

- Recently, Union Minister of Earth Sciences, Science and Technology and Health and Family Welfare, inaugurated the India Meteorological Department's centre at Leh in Ladakh.
- The new Centre will provide Ladakh specific weather forecasts more accurately and consistently for the region.

Sea of Galilee

Context

- The Sea of Galilee, has swelled up due to recent rains, according to reports in the Israeli media.

About

- The lake lies in northern Israel, between the occupied Golan Heights and the Galilee region.
- It is fed by underground springs but its major source is the Jordan river.
- The lake is also known as Lake Tiberias or Kinneret.
- The Jordan flows into the lake, Israel's largest freshwater body and then exits it before ending in the Dead Sea, the saltiest and the lowest point on the planet.
- The region the lake is located in, had been suffering from drought till 2018.
- However, the winters of 2018, 2019 and of this year so far have been wet and have led to the lake swelling up.
- Water is not extracted from the Sea of Galilee. But it is considered to be an important barometer of the water situation in Israel.



Iceberg 'A68a'

Context

- The giant iceberg A68, the biggest block of free-floating ice from Antarctica with an area of about 5,800 sq. km, has been drifting in the Atlantic Ocean since 2017.

About

- A68a, iceberg splitted off from Antarctica's Larsen C ice shelf in July 2017.
- Since then it has been drifting towards the remote island of South Georgia, which is a British Overseas Territory (BOT).
- Recently, two new icebergs calved from A68a and were large enough to be named and tracked. They are called A68E and A68F.



POLITY

Lottery, gambling and betting taxable under GST Act: SC

- The Supreme Court held that lottery, gambling and betting are taxable under the Goods and Services Tax (GST) Act.
- The court held that lottery, betting and gambling were "actionable claims" and came within the definition of 'goods' under Section 2(52) of the Central Goods and Services Tax Act, 2017.
- The levy of GST on lotteries did not amount to "hostile discrimination".
- Lottery, betting and gambling are well known concepts and have been in practice in this country since before Independence and were regulated and taxed by different laws.
- When the 2017 Act defines the 'goods' to include actionable claims and included only three categories of actionable claims, i.e., lottery, betting and gambling, for purposes of levy of GST, it cannot be said that there was no rationale for Parliament in including these three actionable claims for tax purposes, and leaving others.

Inner-Line Permit

Context

- Union Home Minister said the Inner-Line Permit (ILP) had been the Centre's biggest gift to Manipur since its statehood.
- Implemented under the British-era Bengal Eastern Frontier Regulation, the ILP is an official document issued to let an Indian citizen enter a protected area for a limited period.

A long-standing demand

- Pressure groups in the northeast view this permit as a shield against the entry of illegal immigrants.
- ILP was a long-standing demand of the people of Manipur.
- Apart from Manipur, ILP is needed in Arunachal Pradesh, Mizoram and Nagaland.
- Several groups in Meghalaya have been demanding the implementation of ILP.

INTERNATIONAL RELATIONS

UN Alliance of Civilizations (UNAOC)

Context

- India's stand **against 'UN's selectivity on religions'** gains force from its secularism
- At the UN General Assembly discussing resolutions of the UN Alliance of Civilizations (UNAOC) on the 'Culture of Peace', India **criticised the world body** for what it called **"selectivity" in seeking to protect Abrahamic religions – Islam, Christianity and Judaism** – over others.
- Previous resolutions of the UNAOC had repeatedly decried the hatred against those religions – "Islamophobia, Christianophobia and anti-Semitism" – but **didn't condemn attacks on other religious groups including Hindus, Sikhs and Buddhists, who have suffered terror strikes** and seen their shrines destroyed in Afghanistan and Pakistan.
- India said, the UNGA statement welcomed the **Kartarpur Gurdwara corridor** agreement between India and Pakistan, but failed to note that Pakistan's government has taken over the management of the Sikh shrine, which it called a **contravention of the agreement and a violation of Sikh beliefs**.
- India's delegate also accused Pakistan of a **"culture of hatred" against "religions in India"** and fostering cross-border terrorism and said a culture of peace cannot exist until that is changed.

UNAOC

- This organisation was set up in 2005 to **prevent polarisation between societies and cultures** and to bridge differences between them, only serves to further the theory of an inevitable "clash of civilisations" instead.
- UNAOC aims to **bridge divides, and promote harmony among the nations, all with a view toward preventing conflict and promoting social cohesion**.
- UNAOC issued a statement of **"grave concern"** over the **Delhi riots** in February this year that it said resulted in casualties of "mostly Muslims".
- India is keen to push back on the UNAOC and other UN arms, like the UN Human Rights Council, that have criticised the Citizenship (Amendment) Act.

KARTARPUR CORRIDOR

■ Kartarpur Sahib Gurdwara, situated in Narowal district of Pakistan's Punjab province, is a historic site where Guru Nanak Dev lived last 18 years of his life till 1539

■ The shrine, one of the holiest for Sikhs, is now be open for round-the-year pilgrimage by Indian devotees through a special corridor

■ Opening of the corridor coincides with the 550th birth anniversary of Guru Nanak

■ The Corridor links Dera Baba Nanak on the Indian side and Kartarpur Sahib, situated 4.5 km from the Indian border.

■ Under an agreement between India and Pakistan signed on October 24, up to 5,000 pilgrims



pilgrimage

■ The pilgrims will have to return to India the same day they undertake the pilgrimage

■ Pakistan has levied \$20 on every pilgrim as service fee although the understanding was that it will be a free pilgrimage

■ India has been urging Pakistan to waive this fee

■ In Punjab, various developmental works worth more than ₹3,200 crore have been initiated across the state by the government led by Amarinder Singh

■ Special projects are being undertaken in 70 villages and towns visited by Guru Nanak Dev

can visit the shrine every day. The number may go up to 10,000 on special occasions

■ India will share the list of pilgrims 10 days before their visit. Pakistan will verify the list and finalise it four days before their visit.

■ The pilgrims will require passport for undertaking the

IAS GRAPHICS

Cautious approach

- Government must be careful about ensuring that in exposing the UN's "selectivity" it doesn't open a flank for a counter-charge against India.
- The **Citizenship (Amendment) Act**, for example, has been criticised for offering fast-track citizenship to **only a select group of religions**, leaving out Muslims.
- India cannot call for a culture of peace that stitches together an alliance of faiths, while **Indian States bring laws that seek to make difficult inter-faith marriages**.

India-Nepal ties

Context

- The two countries that have had a **strained relationship** since the imposition of a five-month-long **blockade in 2015** in Nepal just as the country was recovering from a devastating earthquake.

Story so far

- In the past five years, the only glimmer of hope to work on the relationship was the constitution of an **Eminent Persons Group**.
- The Group was disbanded after submitting its report, the outcome of which is still not known.
- Nepal thought that the Eminent Persons Group would be the foundation for reworking the relationship between the two countries.

Unchanging perspectives

- The Nepal-India relationship has never been free of controversy as the perspectives of both sides are yet to change.
- Nepal government **amended the Nepal map** to add new territory to deflect attention from the poor management of the COVID-19 pandemic by his government.
- Nepal wanted to discuss the map with India but the latter did not provide any time for a discussion.
- India continues to think that by providing largesse to Nepal in the form of aid and development projects, it can win Nepali hearts.
- But despite pouring billions of rupees into Nepal over decades, it has still not been able to do so. Therefore, it needs to reflect on what it is not doing right.

Two issues that need to be addressed

- Two issues are important to understand here.
- First, **Indian aid is seen in Nepal as a favour** bestowed on a constituency it wants to garner support from rather than a contribution to Nepal's planned development.
- Second, **India competes with China in providing aid outside government budgets**. And China picks up projects of visibility and strategic location. Chinese involvement in Nepal has increased since the April 2015 earthquake and **Nepal is surely an area of strategic influence in China's Belt and Road Initiative**.

People-to-people ties

- In the past two decades, two significant changes have happened in this area.
- First, **Indian workers in Nepal constitute a big part of the workforce** and send about \$3 billion to India every year. **In terms of remittances to India, Nepal ranks eighth**. So, the Government of India needs to keep in mind that many households in India are being run with remittances from Nepal.
- Second, the **new Nepal is comprising of young people with global aspirations**. Nearly three-fourths of the population of Nepal is under 35 years of age. **India needs to engage beyond its current constituency and Nepal needs to plan how it engages with the youth in mainland India**.

Conclusion

- There are some fundamentals that we simply cannot forget: geography will not change, the border will remain open as millions of livelihoods on both sides depend on it, and China is going to be a big global player with varied interests in the neighbourhood.
- Therefore, the India-Nepal relationship has to be recalibrated.

China and Pakistan signed military deal

Context

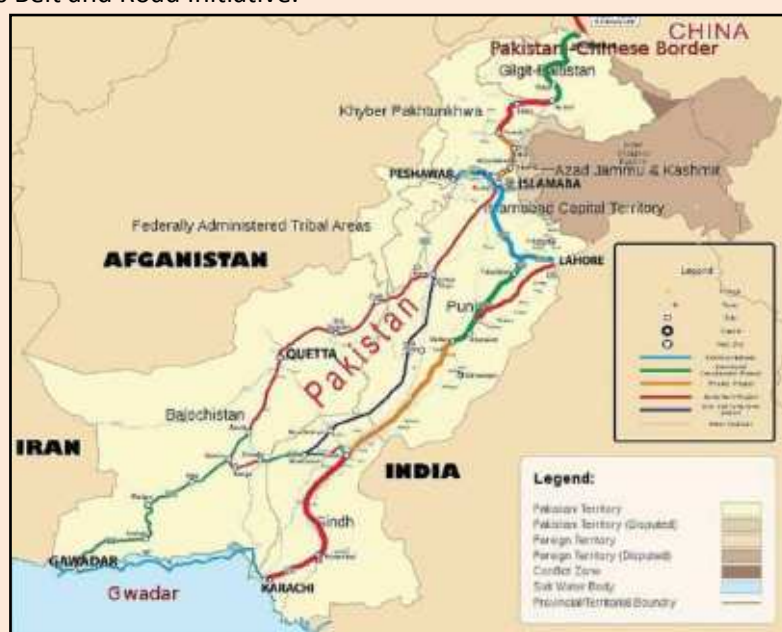
- China and Pakistan signed a new memorandum of understanding to boost their already close military relations.
- Both countries discussed “matters of mutual interest, regional security and enhanced bilateral defence collaboration” along with on-going projects under the **China Pakistan Economic Corridor (CPEC)**, in which the Pakistani military is playing an increasingly prominent role.

‘All-weather friendship’

- Both sides “reaffirmed their commitment to ‘iron brotherhood’ and ‘all-weather’ Friendship.”
- While details of the new MoU signed by the two militaries were not immediately available, it follows another agreement signed last year.

The China–Pakistan Economic Corridor

- The China–Pakistan Economic Corridor (CPEC) is an economic route stretching from western China through Pakistan to the Indian Ocean coast.
- It is part of China's Belt and Road Initiative.



India’s Neighbourhood First Policy

The story so far

- This year, India faced a trifecta of challenges in its neighbourhood from **China: the COVID-19 pandemic, the growing competition for influence in South Asia**, and aggressive actions at the Line of Actual Control (LAC) by China’s People’s Liberation Army (PLA).

How has India helped tackle the regional COVID-19 challenge?

- The COVID-19 pandemic that originated in China has led to one of the biggest health challenges, causing **heavy economic damage in South Asia**.
- India ranks second after the United States** in terms of number of cases, and the **worst-hit economy among G20 nations**.
- But India is also one of the best poised nations to aid recovery efforts in the region, given its status as one of the world’s leading producers of pharmaceutical drugs and vaccines.
- In March, Prime Minister held a special virtual summit of eight SAARC nations and proposed a COVID-19 package, for which **India provided about half of the \$20 million funding for relief**.
- India’s military ran a series of missions to SAARC countries and the Indian Ocean Region (IOR) with supplies of food and medicines.

- India's '**Vande Bharat**' mission flew home nationals from neighbouring countries, along with lakhs of Indians who had been stranded during the lockdown.
- India was not the only country in the region providing help. China, too, stepped up efforts to extend its influence in the South Asian region through COVID-19 relief.
- Given that all SAARC countries except India and Bhutan are part of the Belt and Road Initiative (BRI), and owe different amounts of debts to Chinese banks, **Beijing stepped in to provide partial debt waivers to the Maldives and Sri Lanka**. It also extended a massive \$1.4-billion Line of Credit to Pakistan.

Did the military standoff influence regional ties?

- China doubled down on territorial claims and its transgressions along its borders with South Asia: from Ladakh to Arunachal Pradesh, PLA soldiers amassed along various sectors of the LAC, leading to violent clashes.
- The deaths of 20 Indian soldiers at the Galwan valley was the **first such casualty in 45 years**.
- China also laid claim to **Bhutan's Sakteng natural reserves** and pushed along the boundary lines with Nepal, all of which changed India's strategic calculations along its Himalayan frontiers.
- That **India and Nepal** saw their **worst tensions** in decades over the construction of a road to **Lipulekh**, leading to Nepal amending its constitution and map to claim Indian Territory, added to the already fraught situation.

How has India dealt with a three-pronged challenge?

- The government's response to the challenges has been to assert its Neighbourhood First and SAGAR (Security and Growth for All in the Region) strategies as foreign policy priorities.
- Apart from the COVID-19 relief and neighbourhood visits, Mr. Modi and External Affairs Minister S. Jaishankar have been in frequent touch with their counterparts in the region.
- Mr. Modi and Bangladesh Prime Minister Sheikh Hasina held a virtual summit. India has also upped its game on infrastructure delivery, particularly for regional connectivity in the past year, including completing railway lines to Bangladesh and Nepal, riverine projects, ferry service to the Maldives, identifying other services to Sri Lanka and IOR islands, while also considering debt waiver requests from its neighbours.
- Unlike in the past, India has also become more flexible about the entry of other powers to help counter China's influence in the region – it recently welcomed the U.S.'s new military dialogue with the Maldives.
- America's Millennium Challenge Corporation's (MCC) projects in Afghanistan, Bhutan, Sri Lanka, Nepal and Bangladesh are also finding more space.
- As part of its Indo-Pacific policy, New Delhi is also encouraging its Quad partners – the U.S., Japan and Australia – to collaborate on security and infrastructure initiatives in the neighbourhood, along with promoting forays by other partners like the U.K., France and Germany in the region.
- It is also significant that despite considerable security challenges from China, India has not sought to elicit support from its neighbours, which might have put them in a difficult position.
- Thus, the Modi government has made it clear that despite the provocations, it intends to resolve the nearly ten-month-long military standoff diplomatically and bilaterally.

Bangladesh signs first Preferential Trade Agreement (PTA) since its independence

Context

- Bangladesh signed its first **Preferential Trade Agreement (PTA)** with Bhutan allowing duty free access to a range of goods between the two countries.
- This is the first PTA Bangladesh has signed with any country in the world.
- The agreement was signed on the occasion marking the 50 years of diplomatic ties between the two countries.
- In 1971, Bhutan was the first country in the world, followed by India as the second, to recognise Bangladesh as an independent country.
- Under the PTA 100 Bangladeshi products will get duty free access to Bhutan.
- At the same time, 34 items from Bhutan will get duty free access into Bangladesh. Further items can be added in the list later on the basis of discussion between the two countries.
- The trade volume between the two countries is approximately 50 million dollars with 7.56 million of export and 42.09 million import into Bangladesh.

- Bangladesh is expected to sign 11 more PTAs and Free Trade Agreements (FTAs) with countries like Indonesia and Nepal by June next year.

ECONOMY

Purchasing Managers Index (PMI)

- PMI is an indicator of business activity in the manufacturing and services sectors.
- It is a survey-based measure that asks the respondents about changes in their perception about key business variables as compared with the previous month.
- The PMI is usually released at the start of every month.
- It is, therefore, considered a good leading indicator of economic activity.

Public WiFi Access Network Interface (PM-WANI)

- The public WiFi Access Network Interface, which will be called 'PM-WANI', was first recommended by the Telecom Regulatory Authority of India (TRAI) in 2017.
- This will involve multiple players, including PDOs, Public Data Office Aggregators (PDOA), app providers, and a central registry.
- PDOs - comparable to a PCO or a cybercafe - will establish, maintain, and operate WiFi access points and deliver broadband services to subscribers, while the PDOAs will be aggregators of PDOs and perform functions such as authorisation and accounting.
- The app provider will develop the app to register users and discover PM-WANI compliant WiFi hotspots nearby.
- The details of all three will be maintained by the registry.
- According to TRAI, in most major economies, for 50%-70% of their total usage time, mobile users use WiFi technology to communicate. However, in India, this figure is less than 10%.
- Service providers had in 2018 stated that they aimed to provide 5 lakh hotspots by March 31, 2019 and 10 lakh hotspots by September 30, 2019. However, these targets have not been achieved.
- The move will help unleash a WiFi revolution in the country. For PDOs, there will be no license or fee or registration. This could be a tea shop or kirana shop.
- PM-WANI is going to be a power transformative digital platform to empower ordinary Indians.
- It offers a lot of scope for various sectors, particularly education.

SCIENCE & TECHNOLOGY

Hayabusa2

Context

- Hayabusa2 returned the samples to Earth on 5 December 2020.

About

- Hayabusa2 is an asteroid sample-return mission operated by the Japanese state space agency JAXA.
- It is a successor to the Hayabusa mission, which returned asteroid samples for the first time in June 2010.
- Hayabusa2 was launched on 3 December 2014 to reach near-Earth asteroid 162173 Ryugu.
- It surveyed the asteroid for a year and a half and took samples.
- Its mission has now been extended through at least 2031, when it will rendezvous with the 1998 KY26 asteroid.

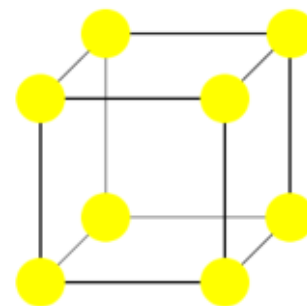
'Damaru' Inspired Lattice

Context

- IIT Kanpur Researchers have developed 'Damaru' Inspired Lattice that finds applications in stealth submarines, high speed trains.

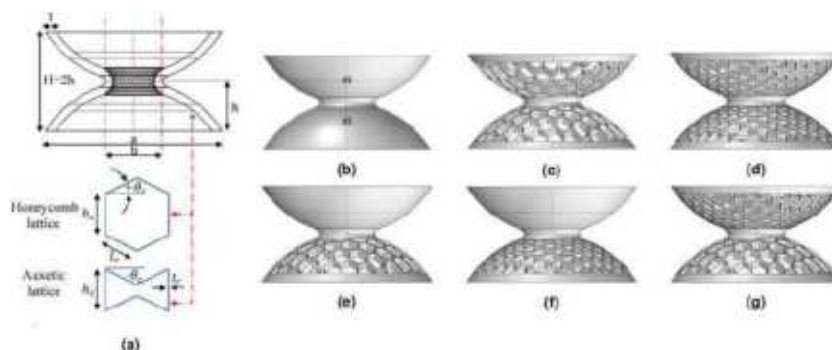
What is a Lattice?

- A lattice is an ordered array of points describing the arrangement of particles that form a crystal.
- The unit cell of a crystal is defined by the lattice points. The unit cell is the smallest part of a crystal that repeated regularly through translation in three dimensions creates the whole crystal.
- For example, the image shown here is the unit cell of a primitive cubic structure.



About Damaru' Inspired Lattice

- IIT Kanpur researchers have demonstrated how with the use of a micro-structured hour-glass shaped metastructure in the lattice unit, one can get a wider variation of propagation and stop bands.



Application

- Lattice based meta-structures have shown tremendous application in electro-magnetic and sonic wave absorption which could in principle create 'invisibility' of an object either in optical or in acoustic domain.
- Existing lattice and crystal based phononic materials have however, practical limitations in terms of customizability and hence, they can be generally used in a narrow band of frequency.

Inspiration

- Inspiration of the lattice they developed has come from a two-headed drum called 'Dambaru' or 'Damaru' which is used in ancient Hinduism and Tibetan Buddhism.
- IIT Kanpur researchers have shown the nature of stiffness of a vibrating medium could be altered drastically by controlling the lattice micro-structure from regular honeycomb to auxetic honeycomb structure.
- This has wide applications in the field of vibration isolation in high speed trains, stealth submarines and helicopter rotors.

Arecibo telescope

Context

- Puerto Rico's massive Arecibo telescope, famous for its stellar contributions to astronomy, recently collapsed.

About Arecibo telescope

- Completed in 1963, it was the world's largest single-aperture telescope for 53 years, surpassed in July 2016 by the Five-hundred-meter Aperture Spherical Telescope (FAST) in China.

Contribution

- In 1992, it was the first observatory to spot planets outside Earth's solar system.
- In the past decades, it also played a large role in the search for extraterrestrial intelligence, including broadcasting the first terrestrial message to outer space.
- It has also observed the spinning stars known as pulsars that led to the 1993 Nobel Prize in Physics.
- The telescope has been used for radar assessments of near-Earth asteroids, to measure their threat to the planet.

HL-2M Tokamak

Context

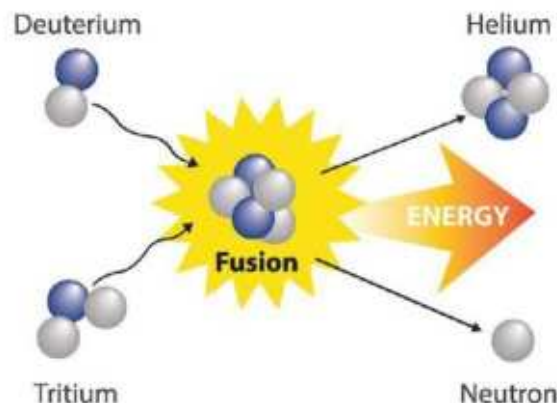
- China has successfully powered up its "artificial sun" nuclear fusion reactor for the first time.

About

- The HL-2M Tokamak reactor is China's largest and most advanced nuclear fusion experimental research device.

Fusion

- Fusion is the process that powers the sun and the stars.
- It is the reaction in which two atoms of hydrogen combine together, or fuse, to form an atom of helium. In the process tremendous amounts of energy is released.



Potential

- The device can potentially unlock a powerful clean energy source.
- It uses a powerful magnetic field to fuse hot plasma and can reach temperatures of over 150 million degrees Celsius. (ten times hotter than the core of the sun).
- Located in southwestern Sichuan province and completed late last year, the reactor is often called an "artificial sun" on account of the enormous heat and power it produces.

Collaboration with ITER

- China's HL-2M Tokamak is planning to collaborate with scientists working on the International Thermonuclear Experimental Reactor.

What is ITER?

- ITER is an international nuclear fusion research and engineering megaproject based in France.
- It will be the world's largest magnetic confinement plasma physics experiment.
- The ITER Members include – China, the European Union, India, Japan, Korea, Russia and the United States.

Significance of HL-2M Tokamak

- The development of nuclear fusion energy is a way to solve China's strategic energy needs.
- It also has great significance for the future sustainable development of China's energy and national economy.

ASKAP

Context

- A powerful new radio telescope- Australian Square Kilometre Array Pathfinder (ASKAP) has mapped vast areas of the universe in in just 300 hours, revealing about three million new galaxies.
- Comparable surveys of the sky have taken as long as 10 years.

About

- ASKAP is located in the Mid West region of Western Australia.
- The ASKAP telescope makes images of radio signals from the sky, allowing astronomers to view the Universe at wavelengths that our eyes cannot see.
- It is a type of radio telescope known as an 'interferometer'.
- This means it uses many antennas acting together as one large telescope.

Areas of study

- ASKAP is intended to study the following topics:
- Galaxy formation and gas evolution in the nearby Universe through extragalactic HI surveys
- Evolution, formation and population of galaxies across cosmic time via high resolution, continuum surveys
- Characterisation of the radio transient sky through detection and monitoring (including VLBI) of transient and variable sources, and
- Evolution of magnetic fields in galaxies over cosmic time through polarisation surveys.

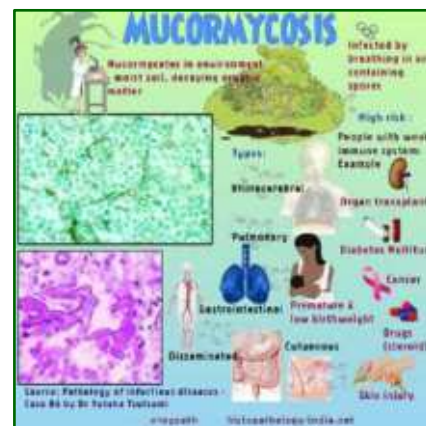
Mucormycosis Fungus

Context

- Doctors at Sir Ganga Ram hospital have witnessed more than 12 cases of COVID-19 triggered Mucormycosis fungus.

Black Fungus

- Black Fungus or Mucormycosis, previously called zygomycosis, is a serious but rare fungal infection caused by a group of molds called mucormycetes which exist in the environment.
- Mucormycosis mainly affects people who have health problems or take medicines that lower the body's ability to fight germs and sickness.
- It most commonly affects the sinuses or the lungs after inhaling fungal spores from the air, or the skin after the fungus enters the skin through a cut, burn, or other type of skin injury.



Plasmodium Ovale

Context

- A not very common type of malaria, *Plasmodium Ovale*, has been identified in a Jawan in Kerala.

About Malaria

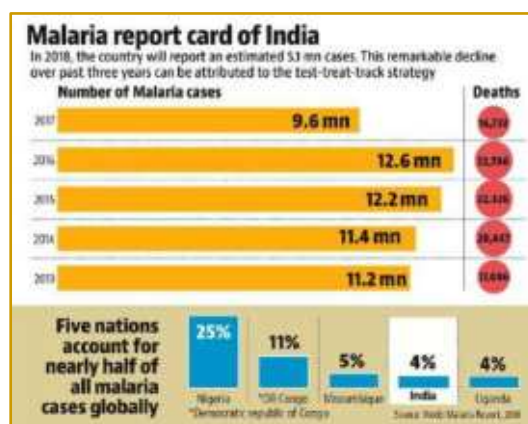
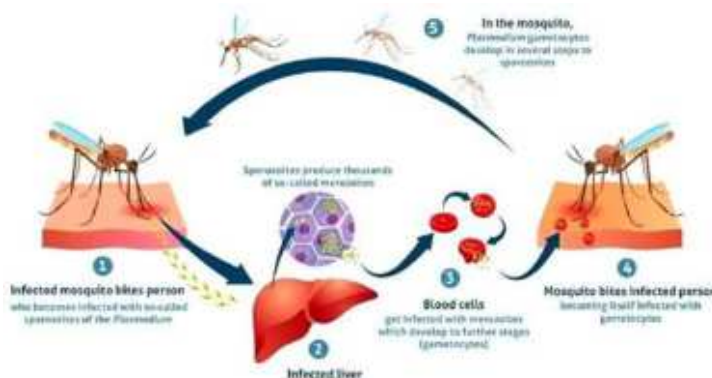
- Malaria is caused by the bite of the female Anopheles mosquito, if the mosquito itself is infected with a malarial parasite.
- There are five kinds of malarial parasites – *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium malariae*, *Plasmodium ovale* and *Plasmodium knowlesi*.

Plasmodium ovale

- It is termed ovale as about 20% of the parasitised cells are oval in shape.
- P ovale malaria is endemic to tropical Western Africa.
- P ovale is relatively unusual outside of Africa and, where found, comprises less than 1% of the isolates. It has also been detected in the Philippines, Indonesia and Papua New Guinea, but is still relatively rare in these areas.

India and Malaria

- India recorded largest reductions in malaria cases in South-East Asia from 20 million in 2000 to about 5.6 million in 2019: World Malaria Report 2020.
- Gaps in access to life-saving tools are undermining global efforts to curb the disease, and the COVID-19 pandemic is expected to set back the fight even further.





- The service is priced competitively, as the company is offering free 20GB cloud storage and 100GB space per month to those who pay just Rs 30.
- The plans offer features such as integration with Gmail, real-time multi-user file collaboration, advanced real-time collaboration, web document previews and automated account backups.
- The service supports smart tags and users will be able to find any file within seconds.
- One can share any document, photo or videos from the platform without downloading them again on their device.
- DigiBoxx is currently available for Android users only.
- The service has connection encryption and all the files stored on its platform are encrypted at a database level.

Significance

- The platform is the first of its kind 'Make in India, Store in India' digital asset management SaaS product that is in line with the country's national security and data localisation priorities.
- This cloud storage and file sharing service will give a boost to Prime Minister Narendra Modi's vision of 'Atmanirbhar Bharat'.

Fully-Automated Driverless Train

Context

- Prime Minister Narendra Modi recently flagged off the country's first ever fully-automated driverless train service on the Magenta Line of the Delhi Metro.

About

- The service will be available on Delhi Metro's 38-km long Magenta Line which connects Janakpuri West in West Delhi to Botanical Garden in Noida.
- The train will be fully automated, eliminating the possibility of human error.
- The driverless metro trains will switch to what is called the Driverless Train Operation (DTO) mode.

Tau Bootes

Context

- An international team of scientists has collected the first possible radio signal from a planet beyond our solar system, emanating from an exoplanet system about 51 light-years away.

About

- Using the Low Frequency Array (LOFAR), a radio telescope in the Netherlands, the researchers uncovered emission bursts from the Tau Bootes star-system hosting a so-called hot Jupiter, a gaseous giant planet that is very close to its own sun.

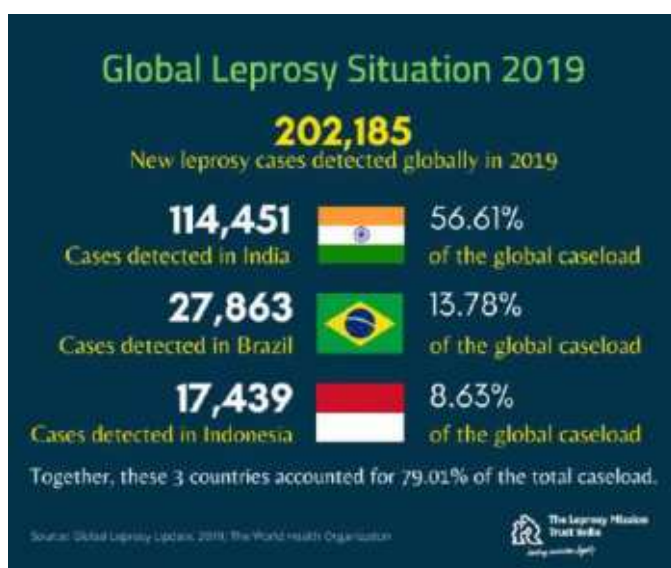
Tau Boötis

- Tau Boötis is an F-type main-sequence star approximately 51 light-years away in the constellation of Boötes.
- It is a binary star system, with the secondary star being a red dwarf.

Leprosy

Context

- Health workers in Himachal Pradesh are screening the state's entire population for symptoms of leprosy, in a door-to-door surveillance campaign.



Leprosy

What is Leprosy?
Hansen's Disease, commonly known as Leprosy, is a chronic mildly communicable disease caused by infection from *Mycobacterium leprae*. This is a rod-shaped acid fast bacillus that primarily affects the skin, mucous membranes, eyes and peripheral nervous system.

How do you acquire this?
Although not highly infectious, leprosy bacilli may be easily transmitted through insulation from an individual with bacteria, from an untreated person with leprosy, through prolonged and close contact with infectious persons, but an increased risk for our children.

How is it diagnosed?
The diagnosis of leprosy is commonly based with the clinical signs and symptoms. However, only in some instances that there is a need to use laboratory and other investigations to confirm a diagnosis of leprosy. If a person exhibits one or more of the following cardinal signs, then he/she should be regarded to have leprosy:
a. Painless hypoaesthetic or redish patches of skin (skin lesions) with loss of sensation or feeling.
b. Damage to the peripheral nerves demonstrated by loss of sensation and weakness of the muscles of the hands, feet and/or face.
c. Skin smears positive for *M. leprae*.

Are we at risk?
15% of infected people do not develop the disease due to our own body's ability to resist infection. Most people who are exposed to *M. leprae* resist infection and develop immunity after the exposure. However, a few percentage of the infected population further develop the disease. The symptoms typically appear there in two years up to twenty years after infection.

Treatment
The treatment regimen is the WHO recommended Multi-Drug Therapy (MDT). It is a combination of two (2) or more of the following drugs: Rifampicin, Clofazimine, Dapsone, Ofloxacin and Isoniazid. This regimen is life-saving and prevents the emergence of drug resistance strains of *M. leprae*.

Prevention
The most effective way of preventing disabilities in leprosy as well as preventing further transmission of the disease lies in early diagnosis and treatment with MDT.

Naegleria fowleri

Context

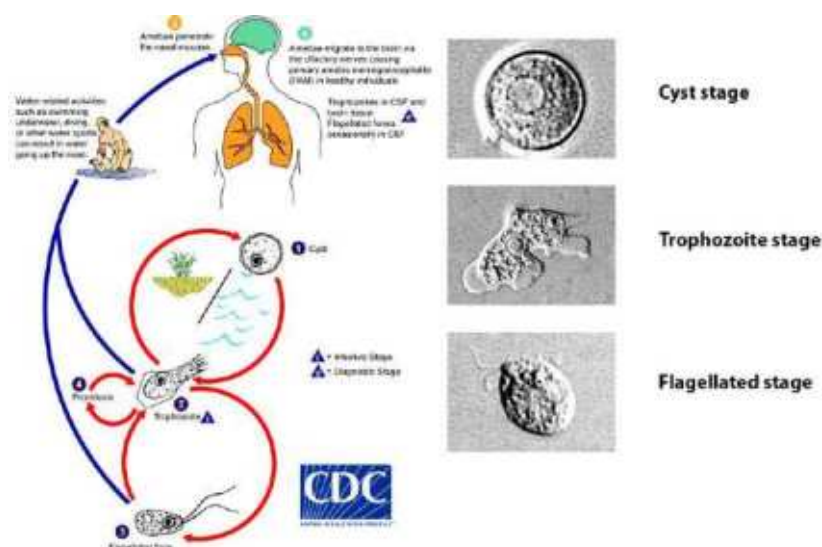
- A deadly brain-consuming amoeba — *Naegleria fowleri*— is crawling its way northward from the southern states of the US.

About

- Naegleria fowleri* is a free-living microscopic amoeba.
- It can cause a rare and devastating infection of the brain called **primary amebic meningoencephalitis (PAM)**.
- The amoeba is commonly found in warm freshwater and soil.
- Naegleria fowleri* usually infects people when contaminated water enters the body through the nose.
- Once the amoeba enters the nose, it travels to the brain, where it causes PAM, which is usually fatal.
- Infection typically occurs when people go swimming or diving in warm freshwater places, like lakes and rivers.
- In very rare instances, Naegleria infections may also occur due to contaminated water from other sources.

Treatment

- The treatment of choice is an intravenous drug called amphotericin B. Amphotericin B may also be instilled directly into the brain.
- Because treatment with amphotericin B alone usually fails, other drugs are often added.
- Miltefosine is a drug that has shown promise, and it is available through the Centers for Disease Control and Prevention.
- Treatment should be initiated as rapidly as possible, and immediate consultation with an infectious-diseases expert is highly recommended.
- More than 99% of cases of PAM are fatal despite treatment.



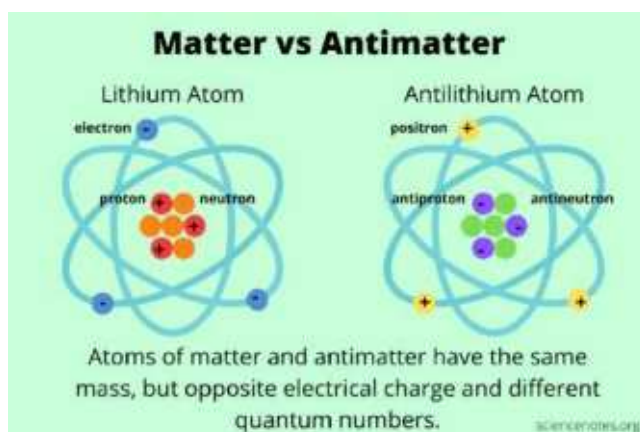
Antimatter

Context

- A new experiment at the world's most powerful particle collider sheds light on an enduring cosmic mystery---- Why Is There More Matter than Antimatter?

About

- Antimatter particles are created in ultra high-speed collisions.
- In the first moments after the Big Bang, only energy existed.
- As the universe cooled and expanded, particles of both matter and antimatter were produced in equal amounts.
- Antimatter is the opposite of normal matter. Why matter came to dominate is a question that scientists have yet to discover.
- More specifically, the sub-atomic particles of antimatter have properties opposite those of normal matter.
- The electrical charge of those particles is reversed.

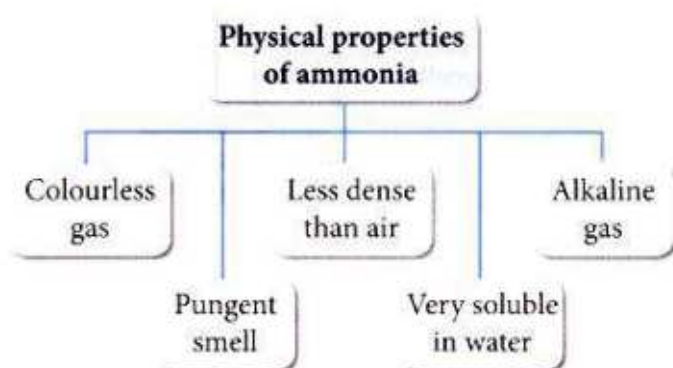


Negative Matter	Antimatter
<i>Picture courtesy: for more</i>	
- Has a negative mass (-1 kg)	- Has a positive mass (+1 kg). Just differs in charge.
- It would gravitationally repel normal matter	- Gravitationally attracts normal matter
- It would find many applications in Wormholes & faster than light travel.	- Already in use in medical field. Can be used in rockets as a power source to achieve high speeds ($E = mc^2$)
- Still hypothetical	- Existence confirmed. Can even be artificially produced.

Ammonia

Context

- Two persons died and several took ill in a major ammonia gas leakage at the Indian Farmers Fertilizer Cooperative Limited (IFFCO) unit at Prayagraj.



Ammonia

Other names: trihydronitrogen, nitrogen trihydride

Chemical structure:

Trigonal pyramidal shape

Chemical formula: NH_3
Molar mass: 17.03 g/mol

Ammonia Properties

Physical properties:

- Colorless gas with a sharp, penetrating odor
- Boiling point of -33.35°C
- Freezing point of -77.7°C
- It is very soluble in water
- It is less dense than air, v.d of 8.5
- It is alkaline in nature

Chemical properties:

- Ammonia is a base but not a strong one
- It combines with different acids to form ammonium salts
- Easily dissolves in water to form aqueous ammonia solution, also known as ammonium hydroxide (NH_4OH)

ENVIRONMENT

Apex Committee for Implementation of Paris Agreement

Context

- The Union Environment Ministry has constituted a high-level inter-ministerial **Apex Committee for Implementation of Paris Agreement (AIPA)** under the **chairmanship of Secretary**, Ministry of Environment Forest and Climate Change.

Aim

- To ensure that India was “on track” towards meeting its obligations under the Paris Agreement including its Nationally Determined Contributions (NDC)

India's INDC

- India submitted its NDC in 2015 for implementation of the Paris Agreement in the post-2020 period.
- The NDC has **eight goals** including **three quantitative goals** namely
 - a reduction in the emissions intensity of **Gross Domestic Product (GDP)** by 33 to 35% by 2030 from 2005 level;
 - achieving about **40% cumulative electric power installed capacity from non-fossil fuel based energy resources** by 2030; and
 - Creating an **additional carbon sink of 2.5 to 3 billion tonnes of carbon dioxide** equivalent through additional forest and **tree cover** by 2030.
- Senior officials from 14 Ministries will serve as Members to AIPA who will oversee the progress in implementation of the NDC and receive periodic information updates to monitor, review and revisit climate goals to fulfill the requirements of the Paris Agreement.



Key function of the AIPA

- AIPA would **operate as a National Authority to regulate carbon markets** in India under **Article 6 of the Paris Agreement**.
- It **formulates guidelines** for consideration of projects or activities under Article 6 of the Paris Agreement.
- It will **issue guidelines on carbon pricing, market mechanism**, and other similar instruments that have a bearing on climate change and NDCs.
- It will take note of the **contributions of the private sector** and multi-/bi-lateral agencies in the field of climate change and provide guidance for aligning their climate actions with national priorities.

2020 one of three hottest years ever recorded: U.N.

“Humanity is waging war on nature. This is suicidal. Nature always strikes back — and it is already doing so with growing force and fury,”

Context

- This year is on course to be one of the three warmest ever recorded, the United Nations warned that the world was on the brink of a **“climate catastrophe”**.
- The past six years, 2015 to 2020, are set to make up all six of the hottest years since modern records began in 1850.
- The 2015 Paris Agreement on climate change calls for capping global warming at well **below two degrees Celsius above the pre-industrial (1850-1900) level**, while countries will pursue efforts to limit the increase to 1.5 degrees Celsius.

Changing frontiers

- The average global temperature in 2020 is set to be about 1.2 degrees Celsius above the pre-industrial level.
- There is at least a one in five chance of it temporarily exceeding 1.5 degrees Celsius by 2024.

Hottest decade

- The World Meteorological Organization said 2020 seemed on course to be the **second-hottest year ever**.
- The years from 2015 to 2020 are therefore individually “likely to be the six warmest on record”.
- Temperature averages across the last five years, and across the last 10-year period, “are also the warmest on record”.

- Oil, gas and coal production must fall six percent a year in order to limit catastrophic global warming, said the UN's annual **Production Gap assessment**, which **measures the difference between the Paris goals and countries' fossil fuel production plans**.
- Greenhouse gases in the atmosphere — the main driver of climate change — hit record highs last year and continued climbing in 2020 despite measures to halt the Covid-19 pandemic.

Plastic pollution

Context

- Plastic pollution from discarded fishing gear in the Ganges River poses a threat to wildlife such as the **critically endangered three-striped roofed turtle** and the **endangered Ganges river dolphin**, according to the Wildlife Institute of India.
- The findings offer hope for solutions based on “**circular economy**” where **waste** is dramatically **reduced** by **reusing materials**.
- A high proportion of the fishing gear was made of **nylon 6**, which is valuable and can be used to make products including carpets and clothing.”
- Collection and recycling of nylon 6 has strong potential as a solution because it would cut plastic pollution and provide an income.



Mouse deer or Indian Spotted Chevrotain

Context

- Indian Spotted Chevrotain or Indian Mouse Deer is an Artiodactyl i.e. a species of even toed ungulate in the family Tragulidae, found in **India, Sri Lanka and possibly Nepal**.
- It is the **smallest deer in India** and is **highly nocturnal**.
- Conservation status:** According to IUCN (International Union for Conservation of Nature and Natural Resources), is **Least Concern**.
- Threats:** **Hunting and trapping by tribal and frequent forest fires** are the biggest threats to these small deer.



Malayan Giant Squirrel

Context

- A first-of-its-kind study by the Zoological Survey of India (ZSI) under the Union Ministry of Environment, Forest and Climate Change, has projected that numbers of the Malayan Giant Squirrel (*Ratufa bicolor*) could **decline by 90 per cent in India by 2050**.
- If urgent steps are not taken, the **species could be extinct** in the country in **subsequent decades**.
- A large tree squirrel that is considered to be a “**forest health indicator species**” is disappearing.
- It may be in the middle of this century no longer be found in the forests of **India’s Northeast to which it is native**.

Malayan Giant Squirrel

- The Malayan Giant Squirrel, one of the **world’s largest squirrel species** that has a dark upper body, pale under parts, and a long, bushy tail, is currently found in parts of **West Bengal, Sikkim, Assam, Arunachal Pradesh, Meghalaya, and Nagaland**.
- Destruction of its habitat could restrict the squirrel to **only southern Sikkim and North Bengal** by 2050, according to the ZSI.
- India is home to **three giant squirrel species**; the other two – **Indian Giant Squirrel and Grizzled Giant Squirrel – are found in peninsular India**.
- Unlike the nocturnal flying squirrels, giant squirrels are diurnal, but arboreal (tree-dwelling) and herbivorous like the flying squirrels.
- The **population of the species also indicates** to us the health of the forest, of the vegetation and plants in the forest on which the species feeds, as well as that of the **other symbiotic species that inhabit the region**.
- The Malayan Giant Squirrel is also distributed through **Southern China, Thailand, Laos, Vietnam, Burma, the Malayan Peninsula, Sumatra, and Java**.
- It is found **mostly in evergreen and semi-evergreen forests**, from plains to hills at elevations of 50 m to 1,500 m above sea level.
- In India, some 20% of the population of the species is found at elevations between 1,500 m and 2,700 m; the rest live in the plains and up to 1,500 m.
- The species is listed as **Near Threatened on IUCN’s 2016 list, and it is protected under India’s Wildlife Protection Act**.
- The Malayan Giant Squirrel and its habitat are under threat from **deforestation, fragmentation of forests, crop cultivation and over-harvesting of food, illegal trade in wildlife, and hunting for consumption**.
- **Slash-and-burn jhum cultivation** in many areas of the Northeast contribute to destruction of its habitat.



30,000 MW (megawatt) hybrid renewable energy park

Context

- Prime Minister laid the foundation stone for a 30,000 MW (megawatt) hybrid renewable energy park close to the Indo-Pak border in **Kutch** district.
- The project is billed as the **largest of its kind in the world**.

What is this hybrid renewable energy park taking shape in Gujarat?

- Government of India will install **175 GW of renewable energy capacity by 2022**, the Gujarat government identified 1,00,000 hectares of wasteland near Khavda, 72 km north of Bhuj, close to the international border with Pakistan in Kutch, for an energy park.

- The renewable energy park will have two zones:
- one, a 49,600-hectare hybrid park zone that will accommodate wind and solar power plants of 24,800 MW capacity; and
- Two, an exclusive wind park zone spread over 23,000 hectares.
- The project site is about 25 km from Khavda, which is the last point that can be accessed by civilians in the area.
- The exclusive wind park zone will come up within 1-6 km of the international border.
- This site has been chosen because this is a **complete wasteland**.
- Putting windmills near the border, will also act as a **boundary**.

Two new Zoos granted recognition by Central government

Context

- At the 37th General Body meeting of Central Zoo Authority chaired by Union Minister for Environment, Forest and Climate Change, two new zoos
- the Rajgir Zoo Safari in Nalanda, Bihar and
- Shaheed Ashfaq Ullah Khan Prani Udyaan in Gorakhpur, Uttar Pradesh were granted recognition.

Rajgir Zoo Safari, Nalanda, Bihar

- Rajgir Zoo Safari, is established exclusively comprising on only safari enclosures which, on contrary to conventional enclosure, offer larger space for captive animals.
- The zoo proposes to house Lion, Bear, Tiger, Leopard and a mixed safari of common herbivore species such as Spotted Deer, Sambar among others.

Shaheed Ashfaq Ullah Khan Prani Udyaan, Gorakhpur, U.P.

- The zoo is situated in the spiritual land of Gorakhpur and has a high visitation.
- The zoo features enclosures for a range of birds, herbivores and carnivores.
- The zoo aims to create awareness through naturalistic enclosures and create long-lasting visitor experience through state-of-the-art visitor facilities like 4D Theatre, battery-operated train and accessibility to Divyangjan.

About the Central Zoo Authority

- Central Zoo Authority was established as a **statutory body** under the Ministry of Environment & Forests by the Government of India in the year 1992.
- The Central Zoo Authority has been constituted under the section 38A of **Wild Life (Protection) Act 1972**.
- The CZA is **chaired by the Environment Minister** and tasked with regulating zoos across the country.
- It is responsible for oversight of zoos. It is an affiliate member of the **World Association of Zoos and Aquariums (WAZA)**

Mallana Cream

Context

- The Narcotics Control Bureau in Mumbai claimed to have seized the contraband 'Malana Cream' from a person linked to actor Sushant Singh Rajput's death.

What is Malana Cream?

- It is the **charas or hash or hashish**, which comes from the Malana Valley in Kullu district of **Himachal Pradesh**.
- Charas, called bhang in Himachal, is the **resin obtained from a species or strain of the cannabis plant**, which grows naturally in the valley and is also cultivated illegally.
- The valley has a single village, Malana, and the hash **resin produced there is generally more 'creamy', or clay-like**, as compared to that produced in other parts of the state.

What makes it unique?

- The cannabis plant has a number of chemical compounds called cannabinoids, among which **tetrahydrocannabinol (THC) is the primary psychoactive constituent** which produces the high sensation.
- Strains of the plant with low levels of THC are used for industrial and non-drug purposes such as making ropes, paper, textiles etc.

- Plants with a high level of another cannabinoid called CBD (cannabidiol) are used for medicinal purposes.
- A high proportion of THC in the plant extract is required for recreational drug use and Malana Cream is believed to be particularly rich in THC, making it more potent.
- Resin extracted from the plant, generally by rubbing using hands, is also concentrated further to obtain the more potent hash oil.
- In addition, charas from Malana has a distinct set of turpenes, aromatic compounds associated with flavor and other characteristics. These characteristics are the result of unique climatic conditions of the valley.

Steppe eagle, Tawny eagle

Context

- A Steppe eagle, Tawny eagle spotted at Kalangal in Coimbatore district
- International Union for Conservation of Nature's Red List calls them **endangered and vulnerable** species respectively.

Steppe eagle

- It breeds across Eurasia, from Turkey to China.
- The migratory season has been observed from August to March and they return from April.
- They feed on small mammals, birds, reptiles and insects.
- Immature birds have been noticed taking carcasses of these.
- They frequent open grasslands, scrubs and mountain forest.
- Its conservation status is 'endangered' in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species.



Tawny eagle

- It is a large, long-lived bird of prey.
- Due to its heavily feathered legs, it is also known as "**booted eagles**".
- Tawny eagles have an extensive but discontinuous breeding range that constitutes much of the **African continent as well as the Indian subcontinent**.
- Numerous factors, particularly loss of nesting habitat due to logging and global warming, as well as persecution (largely via poisoning) and other anthropogenic mortality are driving the once numerous tawny eagle perhaps to the brink of extinction.



Pink bloom

Context

- Pink bloom, which emerged as a recent tourist attraction at Avalappandi Canal of Kozhikode has become a major threat to the fresh water bodies in Kerala.

Red Cabomba

- **Flowering invasive alien species, Red Cabomba** (Cabombafurcata), a submerged perennial aquatic plant that grows in stagnant to slow-flowing freshwater.
- **Native to Central and South America**, Cabomba is a common aquarium plant with beautiful flowers and excellently dissected leaves.

Affecting fish yield

- Cabomba has caused the **decrease in the diversity of native aquatic plants** and has also caused **economic losses** by affecting the yield of freshwater fishes.
- Cabomba prefers **nutrient-rich freshwater bodies**.
- They are capable of **fast spreading** by propagation of stem fragments and form dense stands in water bodies that will outnumber native plants.

- This aquatic plant has a **high natural dispersal potential** owing to its ability to readily fragment and spread both actively and passively.
- The invasion of Cabomba chokes **ecologically and economically important water bodies and drainage canals**.
- It requires a **large quantity of oxygen for its growth**, which results in decline of biodiversity and affects the water quality.



Controlling measures

- The key to controlling the species is to **mechanically remove** the plants from the water body and drying them in terrestrial spaces.
- People should **stop collecting and transporting the plant**.
- District authorities should initiate immediate measures to remove the plant from the current invaded areas to prevent further spread.

Ban on sale and use of firecrackers

Context

- The National Green Tribunal (NGT) directed a complete ban on the sale and use of firecrackers during the COVID-19 pandemic in the National Capital Region (NCR) and all cities and towns where the ambient air quality is in the poor or above categories.
- It directed that **only green crackers** will be permitted for Christmas and New Year – between 11:55 pm and 12:30 am – in areas where the ambient air quality is in the moderate or below categories.
- All district magistrates have been directed to ensure that **firecrackers are not sold and that compensation from violators** are recovered.
- The green panel also specified that with a view to ensure availability of air quality data, at least one air quality monitoring station is required to be set up at every district headquarter.

Rights to business vs. Right to Health

- Right to business is not absolute. There is no right to violate air quality and noise level norms.
- This being crime under the law of the land cannot be a right.
- Nobody has the right to carry on business at the cost of health of others.
- All licenses already given or which may be given are inherently subject to overriding requirement of preventing damage to the environment and the public health."

About NGT:

- **The National Green Tribunal Act, 2010 is an** Act of the Parliament of India which enables creation of a special tribunal to handle the expeditious disposal of the cases pertaining to environmental issues.
- **It draws inspiration from the India's** constitutional provision of (Constitution of India/Part III) Article 21 Protection of life and personal liberty, **which assures the citizens of India the right to a healthy environment.**

Powers

- Power: **The NGT has the power to hear all civil cases relating to environmental issues and questions that are linked to the implementation of laws listed in Schedule I of the NGT Act. These include the following:**
 - The Water (Prevention and Control of Pollution) Act, 1974;
 - The Water (Prevention and Control of Pollution) Cess Act, 1977;
 - The Forest (Conservation) Act, 1980;
 - The Air (Prevention and Control of Pollution) Act, 1981;
 - The Environment (Protection) Act, 1986;
 - The Public Liability Insurance Act, 1991;
 - The Biological Diversity Act, 2002.

- Importantly, the NGT has not been vested with powers to hear any matter relating to the Wildlife (Protection) Act, 1972, the Indian Forest Act, 1927 and various laws enacted by States relating to forests, tree preservation etc. Therefore, specific and substantial issues related to these laws cannot be raised before the NGT.
- Principles of Justice adopted by NGT: The NGT is not bound by the procedure laid down under the Code of Civil Procedure, 1908, but shall be guided by principles of natural justice. Further, NGT is also not bound by the rules of evidence as enshrined in the Indian Evidence Act, 1872.
- The Chairperson of the NGT is a retired Judge of the Supreme Court, Head Quartered in Delhi. Other Judicial members are retired Judges of High Courts. Each bench of the NGT will comprise of at least one Judicial Member and one Expert Member.

Change Performance Index (CCPI) 2021

Context

- India remained in the **top 10 for the second year** in a row in this year's Climate Change Performance Index (CCPI) 2021, occupying rank 10.

Key findings:

- It received high ratings in all CCPI categories, except renewable energy, where it had a medium performance.
- Under the renewable energy category, India performed medium and high for its current shares of renewable energy and development of renewable energy supply in the last year, respectively.
- Country experts attribute these positive developments to India's policy frameworks. They recognized the need, however, for long-term planning.

About CCPI

- The CCPI analyses and compares climate protection across 57 countries (plus EU as a whole) with the highest emissions, which together account for 90 per cent of global emissions.
- The current index analyses emissions before the coronavirus crisis and does not reflect emissions reduction during this unusual situation.
- CCPI, published by **German watch in cooperation with New Climate Institute and Climate Action Network (CAN)**.
 - German watch, is a **non-profit, non-governmental organization** based in Bonn, Germany. It seeks to influence public policy on trade, the environment, and relations between countries in the industrialized north and underdeveloped south.

Novel species of Muraingrass

Context

- A new species of Indian Muraingrasses **known for their ecological and economic importance**, such as **fodder**, have been spotted by scientists in **Goa in the Western Ghats**, one of the four global biodiversity hotspots of India.
- The species has **adapted to survive harsh conditions, low nutrient availability, and blossoms every monsoon**.
- Globally 85 species are known from *Ischaemum*, of which 61 species are exclusively found in India.
- The **Western Ghats have 40 species** with the **highest concentration** of the genus.
- The species was named *Ischaemumjanarthanamii* in honour of Prof. M. K. Janarthanam, Professor of Botany, Goa University, for his contribution to the Indian grass taxonomy and documentation of the floristic diversity of Goa state.
- The first collection of this new species was made in the 2017 monsoon.
- Ischaemumjanarthanamii* grows on **low altitude lateritic plateaus** in the outskirts of **Bhagwan Mahavir National Park, Goa**.



- The vegetation is exposed to **extreme climatic conditions like desiccation in drier months and soils with low nutrient availability.**
- However, withstanding these, the species has adapted to survive harsh conditions and blossom every monsoons.

Bhagwan Mahavir National Park

- Bhagwan Mahaveer Sanctuary and Mollem National Park is a 240 square kilometres protected area located in the Western Ghats of West India, in **Goa State**, along the eastern border with Karnataka.
- **National Highway 4A** divides it into **two parts.**
- It contains several **important temples** dating to the Kadambas of Goa, and home to waterfalls, such as **Dudhsagar Falls and Tambdi Falls.**
- The parkland is also home to a community of nomadic buffalo herders known as the **Dhangar.**

In India, over 75% districts hotspots of extreme weather events

Context

- The CEEW study found that in the last 50 years, the frequency of flood events increased almost eight times.
- Events associated with floods such as landslides, heavy rainfall, hailstorms, thunderstorms, and cloudbursts increased by over 20 times.
- Over 75 per cent districts in India, home to more than 63.8 crore people, are hotspots of extreme climate events such as cyclones, floods, droughts, heat and cold waves, according to a study released by the Council on Energy, Environment and Water (CEEW).
- This is the first time that extreme weather event hotspots in the country have been mapped.
- The frequency, intensity, and unpredictability of these extreme events have risen in recent decades – while India witnessed 250 extreme climate events in 35 years between 1970 and 2005, it recorded 310 such weather events in only 15 years since then, the study has pointed out.
- The annual average for districts affected until 2005 was 19, but after 2005, on average 55 districts were affected by floods each year.
- Six of India's eight most flood-prone districts in the last decade – Barpeta, Darrang, Dhemaji, Goalpara, Golaghat, Sivasagar – are in Assam.
- The current trend of catastrophic climate events results from a mere 0.6 degrees Celsius temperature rise in the last 100 years.
- India is already the fifth most vulnerable country globally in terms of extreme climate events, and it is all set to become the world's flood capital, as the number of rainy days during monsoon have decreased, single-day extreme rainfall events are increasing, leading to flooding.

Microclimatic zones shifting

- Microclimatic zones, or **areas where the weather is different from surrounding areas**, are shifting across various districts of India, the study has found.
- A shift in microclimate zones may lead to severe disruptions across sectors – every 2 degrees C rise in annual mean temperature will reduce agricultural productivity by 15-20%, it has found.
- Some reasons identified behind this shift in microclimatic zones is **change in land-use patterns, disappearing wetlands and natural ecosystems by encroachment, and urban heat islands that traps heat locally.**

About CEEW:

- The Council on Energy, Environment and Water, commonly known as CEEW, is a **Delhi-based not-for-profit policy research institution.**
- Some of CEEW's research areas include resource efficiency and security; water resources; renewable energy; sustainability finance; energy-trade-climate linkages; integrated energy, environment and water plans; and climate geoengineering governance.
- The think-tank advises the Indian government on environment policies.

Indian Gaur

Why in news?

- A male Gaur, also known as Indian Bison, aged between three to four years, was spotted in the residential area of Pune was rescued after three-hour long efforts by forest department officials, which later died of suspected exhaustion.

Indian Bison

- The Indian Bison, mainly found in **South and Southeast Asia**.
- The gaur is the **largest wild bovid alive today**.
- It is listed in **Schedule 1 of the Indian Wildlife (Protection) Act, 1972**.
- It has been listed as '**vulnerable**' since 1986 on the **Red List of the International Union for Conservation of Nature**.
- In India, the Gaur is mainly found in **Western Ghats, the forests of central India and forest patches in the Northeast**.
- In **Maharashtra**, a Gaur is found mainly in **Sahyadri ranges** and also in forest areas adjoining Madhya Pradesh.
- Gaurs are by **nature shy** and avoid confrontation, unless provoked.
- Cases of crop damage by the Gaurs are common and often reported from places adjoining forest areas where Gaurs are present.
- There is a **mechanism to give compensation to farmers** after crop damage by wild animals like elephants, chital, sambar deer or blackbuck, and a similar mechanism exists for crop damage by Gaurs.



Standard Operating Procedure for Human-Gaur conflicts

- The SOP document has very clear instructions on crowd control, precautions to be taken by media personnel and ensuring that social media messages do not lead to panic.
- The SOP also has step-by-step instructions on tranquilizing, loading and transport of the heavy animal, which can weigh between 600 to 1000 kgs.
- One entire section of the SOP document is dedicated to steps to avoid any human casualties in man-animal conflict situations.

Rare Myristica Swamp Tree frog

Context

- Myristica Swamp Tree frog, a rare **arboreal species endemic to the Western Ghats** that bears the scientific name *Mercurana myristicapalustris*, has been recorded for the first time north of the Shencottah gap in **Vazhachal Reserve Forest** in Thrissur.
- Unlike the Myristica Swamp Tree frog found in the foothills of the Agasthyamalai, these frogs were found to be active throughout June and early July.
- It has adapted to a non-Myristica swamp predominant with the plant *Polyalthia fragrans*.
- The frog was first described in 2013 from the lowland swamps of Kulathupuzha Reserve Forest, in the western foothills of Agasthyamalai.
- These frogs are **rare and elusive** for the reason that **they are arboreal and active only for a few weeks** during their breeding season.
- During this season, there is a large aggregation of males that descend from the high canopy of the trees. The males vocalize in groups from the low perches in the swamps.



They exhibit unique breeding behavior.

- The female digs the mud and lays eggs in shallow burrows in mud.
- After breeding and egg-laying, they retreat back to the high canopies of the tree and remain elusive till next breeding season.

Himalayan serow

Context

- A Himalayan serow has been sighted for the first time in the Himalayan cold desert region.
- A Himalayan serow is described as **resembling a cross between a goat, a donkey, a cow, and a pig**.
- It's a **medium-sized mammal** with a large head, thick neck, short limbs, long, mule-like ears, and a coat of dark hair.
- There are several species of serows, and **all of them are found in Asia**.
- The Himalayan serow, or *Capricornis sumatraensis* that, is restricted to the Himalayan region. Taxonomically, it is a subspecies of the mainland serow (*Capricornis sumatraensis*).
- Himalayan serows are **herbivores**, and are typically found at altitudes between 2,000 meters and 4,000 metres (6,500 to 13,000 feet).
- They are known to be found in eastern, central, and western Himalayas, but not in the Trans Himalayan region.



So where has this serow been sighted?

- The animal was spotted by locals and wildlife officials at a riverside rocky wall near hurling village in Spiti, Himachal Pradesh.
- This is the first recorded human sighting of the serow in Himachal Pradesh.

Why is the sighting of the serow unusual?

- Spiti lies in the cold mountain desert region of the western Himalaya, and its valley floor has an average elevation of 4,270 metres above sea level.
- Serows are generally not found at this altitude, and never before has a serow been seen in the Himalayan cold desert.
- Wildlife officials believe this particular animal may have strayed into the Spiti valley from the **Rupi Bhaba Wildlife Sanctuary** in adjoining Kinnaur.

Is the serow a threatened or endangered species?

- According to the International Union for Conservation of Nature (IUCN), Himalayan serows have experienced significant declines in population size, range size and habitat in the last decade, and this is expected to continue due to intensive human impact.
- Previously assessed as 'near threatened', the Himalayan serow is now been **categorized as 'vulnerable' in the IUCN Red List of Threatened Species**.
- It is **listed under Schedule I of the Wildlife Protection Act, 1972**, which provides absolute protection.

Rupi Bhaba Wildlife Sanctuary

- It lies on the left bank of the **Satluj River**.
- It is covered with lush green forests, and the undulating terrain shelters a large number of Indian Wildlife species.
- The sanctuary lies adjacent to the **Great Himalayan and Pin Valley National Parks**.
- **Flora:** Dry temperate coniferous and dry broad leaved coniferous.
- **Fauna:** Musk deer, Himalayan black bear, Himalayan tahr, brown bear, snow leopard, fox, wagtail and western tragopan.
- **Location:** Himachal Pradesh.

Amur falcon

Context

- An Amur falcon was sighted earlier on the campus of the Bombay Natural History Society (BNHS) at Kodiakkarai, abutting the **Point Calimere Sanctuary**, in Nagapattinam district.
- The bird, sighted for the **first time** in the area.
- It is unusual to find the bird in south India. Usually, it takes the path of central India on its lengthy migration from the breeding grounds in Russia and China to South Africa.

Amur Falcon

- The Amur falcon is a **small raptor** of the falcon family.
- It breeds in south-eastern Siberia and Northern China before migrating in large flocks across India and over the Arabian Sea to winter in Southern Africa
- Much is still unknown about the patterns of their estimated 22,000 km journey.
- The wide breeding range and large population size of the Amur falcon have led to the species being assessed as being of **least concern**.
- In 2012, mass trapping and capture of migrating Amur falcons in Nagaland (India) was reported in the media and a successful campaign was begun to prevent their killing.



Impact of Climate change on migratory birds

- **Rising sea level** is certainly affecting migratory and wintering shorebirds, perhaps favoring some and not others.
- Due to the flooding of the bird areas duration of migratory bird reduces.
- As the duration of stay of the migratory birds depends on the **retention of rainwater and the inflow of seawater into the swamp**.

Point Calimere

- Kodiakkarai also called Point Calimere, is a low headland on the Coromandel Coast, in the state of Tamil Nadu, India.
- It is the apex of the **Cauvery River delta**, and marks a nearly right-angle turn in the coastline.
- Kodiakkarai is designated as **Ramsar Convention site** since August 2002.
- The forests of Point Calimere, also known the **Vedaranyam forests**, are one of the last remnants of the dry evergreen forests that were once typical of the East Deccan dry evergreen forests ecoregion.
- Migratory birds gathered in and around Point Calimere in northeast monsoon season.

National Hydrology Project

- National Hydrology Project (NHP) was started in the year 2016 as a **Central Sector Scheme** with **100% grant to Implementing agencies** on pan India basis with a budget outlay of Rs 3680 Crore to be spent over a period of 8 years.
- The project aims at improving the extent, reliability and accessibility of water resources information and to strengthen the capacity of targeted water resource management institutions in India.
- Thus NHP is facilitating acquisition of reliable information efficiently, which would pave the way for an **effective water resource development and management**.
- The Project, has made significant progress in the fields of
 - Water resource monitoring system,
 - water resource information system (WRIS),
 - water resource operation and planning systems and
 - Institutional capacity enhancement.
- Under the NHP, a nationwide repository of water resources data - NWIC has been established.
- NHP is focusing on establishment of **real time data acquisition system (RTDAS)** on pan India basis.

- The Real time data acquisition system, the near real time data acquisition system and the manual data acquisition stations would complement each other and would lay a strong foundation for informed decision making for better water resources management.
- All such data would be available through web enabled India WRIS which is being upscale under the NHP.
- NHP is a project of **National importance** since it establishes a **Nationwide 'Nodal' 'one point' platform for all states to collaborate and share data pertaining to water resources.**

E20 fuel

Context

- Government invites public comments for introducing adoption of **E20 fuel to promote green fuel like ethanol.**
- Adoption of **E20 fuel means blending of 20 per cent of ethanol with gasoline as an automotive fuel.**
- The move assumes significance in the wake of promoting green fuel like ethanol **to reduce huge Rs 8 lakh crore crude import dependencethereby saving foreign exchange and boosting energy security.**
- Government aspires to take the ethanol economy to Rs 2 lakh crores in the next five years from Rs 22,000 crore at present.
- The notification facilitates the development of E20 compliant vehicles. It will also **help in reducing emissions of carbon dioxide, hydrocarbons, etc.**

Ethanol Blended Petrol (EBP) Programme

- Under it, the Oil Marketing Companies (OMCs) **sell petrol blended with ethanol up to 10%.**
- This programme has been **extended to whole of India except Union Territories of Andaman Nicobar and Lakshadweep islands** with effect from 01st April, 2019 to promote the use of alternative and environment friendly fuels.
- This programme has been extended to whole of India **except Union Territories of Andaman Nicobar and Lakshadweep islands** with effect from 01st April, 2019 wherein OMCs sell petrol blended with ethanol up to 10%.
- The Government has **10% blending target for mixing ethanol with petrol by 2022 & 20% blending target by 2030.**

Indian sharks, rays and chimaeras face high risk of extinction

Context

- A recent assessment of sharks, rays and chimaeras by the International Union for Conservation of Nature (IUCN)'s Shark Specialist Group in the Indian Exclusive Economic Zone (EEZ) has revealed that of the **170 species found across the oceans of the country, 19 (about 11%) are facing high risk of extinction.**
- Of the 19 species that have been assessed as critically endangered, there are seven species of sharks, five species of guitar fishes, two sawfishes, four wedge fishes and one species of stingray, the Maculabatis arabica, a recently discovered species.
- In the last assessment, **only 3% sharks, rays and chimaeras were Critically Endangered (CE), which increased to 11% in 2020.**
- Similarly, for the **Endangered (EN)** category, the number of the species **increased** from 5% in 2014 to 18% in 2020.
- Shark and rays numbers in Indian waters have **fallen drastically** in recent years due to **target fishing (when a particular type of fish is targeted) and by-catch** (other fish that get caught alongside).
- **Information on deep-water species is very limited** even in India.
- There is need for more **accurate species-specific data for formulating a shark conservation policy** to rebuild depleted shark populations for the benefit of the ecosystem and also the people that depend on them for livelihoods and food security.

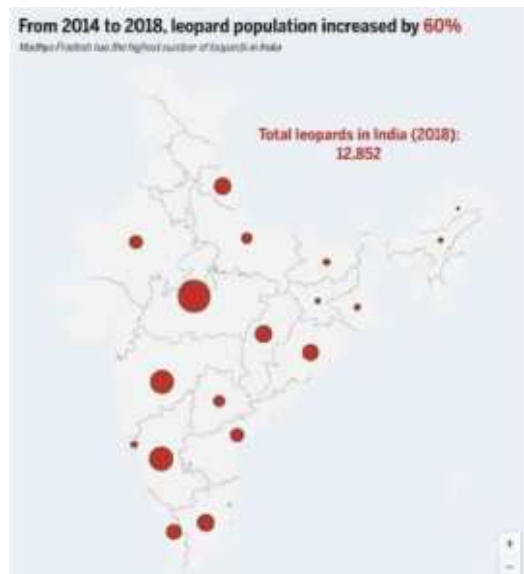
Indian swellshark

- This Red List update, marks for the first time one deep-water Indian swellshark *Cephaloscyllium silasi* as **critically endangered** due to very limited geographic range, and population decline.
- The Indian swellshark is a **small deep-water catshark known from the coast of Kollam, Kerala and Sri Lanka, and also from the Andaman & Nicobar Islands.**
- It occurs on the continental slope at depths of 100-500m.
- The species is caught as incidental catch by intensive deep-water trawl fisheries.

'Status of Leopards in India 2018' report

Context

- From 8000 in 2014, India's leopard population **increased to over 12,000 in 2018.**
- The leopard population has been estimated using **camera trapping method.**
- Increase in the population of tigers, Asiatic lions and now leopards, shows how India is protecting its environment, ecology and biodiversity.
- As per the report, India's leopard population in 2018 was estimated at 12,852, with **maximum big cats** being found in **Madhya Pradesh at 3,421, followed by Karnataka at 1,783 and Maharashtra 1,690.**
- As for region wise distribution, the **highest number of 8,071 leopards were found in central India and eastern ghats**, which include the states of Madhya Pradesh, Maharashtra, Rajasthan, Odisha, Chhattisgarh, Jharkhand, Telangana and Andhra Pradesh.
- In the western ghat region, which comprises Karnataka, Tamil Nadi, Goa and Kerala, there are 3,387 leopards while there are 1,253 leopards in Shivalik and Gangetic Plains, which includes Uttar Pradesh, Uttarakhand and Bihar.
- In the northeast hills, there are just 141 leopards.



EAT

- True carnivores that are excellent ambush predators
- Feed on anything they can overpower, from mid-size ungulates, to domestic livestock, dogs, birds, and rodents

ACTIVITY

- Mostly solitary, nocturnal creatures, also seen at dusk and dawn in forests. Entirely nocturnal close to human presence
- Territorial
- Leopard densities can reach 5 animals per 100 sq km in densely populated human landscapes like western India

BLACK PANTHER

- Dark morphs or black leopards, often called black panthers, are the same species, but with recessive melanistic genes
- Spots are hidden under the dark coat

PANTHERA PARDUS FUSCA

INDIAN LEOPARD

Highly adaptable big cat can live close to humans

POPULATION around 7,810 (2014 census) thought to be around 12,500-14,000 across India	WEIGHT 50-77 kg (males) 25-34 kg (females)	GEOGRAPHIC RANGE Indian subcontinent (all states), Nepal, Pakistan, Bangladesh, Bhutan, Myanmar, China	HABITAT Forest, scrubland, savanna, grassland, rocky areas, mountains, desert
---	---	--	--

Large head, powerful jaws

Coats have black rosettes

Each coat pattern is unique and makes individual's identifiable

Have an easily recognizable growling/roaring call

CUBS

- Females usually give birth to two cubs after a gestation period of 90-105 days
- Only the female cares for the cubs, who remain with the mother for about 1.5-2 years

AGILE CAT

- Excellent at climbing trees
- Can run down a tree head-first
- Can carry large prey up a tree to protect it from other carnivores including tigers and wild dogs

THREATS

- A TRAFFIC study reports that between 2001-2010 at least 2 leopards were killed each week for the illegal wildlife trade in India
- Population has declined by 75-90% in the last two centuries
- Poisoning and retaliatory killing
- Poaching for pelts and body parts
- Became roadkill when roads and highways run through forests
- Conflict with livestock herders
- Hunting

PROTECTION STATUS:
VULNERABLE on the IUCN Red List

Gastrodia agnicellus

Context

- 'World's ugliest orchid' discovered in the forests of **Madagascar**.

Gastrodia agnicellus

- It is a new species of Orchids.
- The 11 mm flowers of this orchid are small and brown.
- The orchid **depends on fungi for nutrition** and has **no leaves or any other photosynthetic tissue**.
- Although assessed as a **threatened species**, the plants have some protection because they are located in a national park.



Blue whales

Context

- New population of blue whales discovered in **western Indian Ocean**.
- Scientists have found evidence of a previously undiscovered population of blue whales living in the western Indian Ocean based on an **analysis of sound recordings** from the region.
- It sheds light on the global distribution of the largest animals to have ever lived on the Earth.
- These **highly endangered mammals** are found around the globe in all oceans, and **sing very low-pitched and recognizable songs**, every blue whale population has its own unique song.
- The scientists analyzed recordings from the **Arabian Sea coast of Oman**, and as far south as Madagascar, and found a blue whale song that had never been described.

'Mini Kaziranga'

Context

- Too many cattle are robbing the one-horned rhinos of **Assam's Pobitora Wildlife Sanctuary**, referred to as '**Mini Kaziranga**' for similar features, of their nutritious food.
- This has been confirmed by the death of two rhinos whose alimentary canals had a high load of worms because of **nutritional stress** caused by dry reeds and other such "junk food" of the wilderness.
- One of the factors behind the crisis of nutritional grass in Pobitora is the **competition from some 10,000 cattle that graze on the fringes of the sanctuary** measuring 38.81 sq km on paper but with only 16 sq km for an estimated 102 rhinos to inhabit.
- **Non-rejuvenation of nutritious grass due to change in flood pattern** has also combined with the expansion of woodland in the sanctuary, leaving the rhinos with less than 8 sq km of grassland to feed on.

Pobitora Wildlife Sanctuary

- Assam's Pobitora Wildlife Sanctuary, referred to as 'Mini Kaziranga' is a wildlife sanctuary on the southern bank of the **Brahmaputra River**.
- It is the dwelling place of the Greater Indian One-Horned Rhinoceroses with its highest population in the whole world.

"Swachhata Abhiyan" app

Context

- A mobile application to **identify and geotag insanitary latrines** and manual scavengers was launched.

Swachhata Abhiyan app

- It will provide the authorities concerned details of any insanitary latrine or manual scavenger they notice.
- This would help in rehabilitating all manual scavengers and replace insanitary latrines with sanitary ones.
- Census 2011 reported that there were over 26 lakh insanitary latrines in the country.
- Existence of insanitary latrines is the main reason for manual scavenging.

Ladakh's Tso Kar

Context

- India has added Tso Kar Wetland Complex in Ladakh as its **42nd Ramsar site**, the second **one** in the Union Territory (UT) of **Ladakh**.

Tso Kar Basin

- The Tso Kar Basin is a high-altitude wetland complex, consisting of two principal water bodies--**Startsapuk Tso**, a freshwater lake of about 438 hectares to the south, and **Tso Kar** itself, a hypersaline lake of 1,800 hectares to the north, situated in the Changthang region of Ladakh, India.
- It is called **Tso Kar, meaning white lake**, because of the white salt efflorescence found on the margins due to the evaporation of highly saline water.
- The Tso Kar Basin is an **A1 category important bird area (IBA)**, as per Bird Life International and a key staging site in the Central Asian Flyway.
- The site is also one of the most important **breeding areas of the black-necked crane** (*Grus nigricollis*) in India.
- This IBA is also the major breeding area for Great Crested Grebe (*Podiceps cristatus*), Bar-headed Geese (*Anser indicus*), Ruddy Shelduck (*Tadorna ferruginea*) and many other species.

Ramsar convention:

- The aim of the Ramsar list is "to develop and maintain an international network of wetlands, which are important for the conservation of global biological diversity and for sustaining human life through the maintenance of their ecosystem components, processes and benefits".

Ecological importance of wetlands:

- The wetlands provide a wide range of important resources and ecosystem services such as food, water, fibre, groundwater recharge, water purification, flood moderation, erosion control and climate regulation.
- They are, a major source of water and our main supply of freshwater comes from an array of wetlands, which help soak rainfall and recharge groundwater.

Japan adopts green growth plan

Context

- Japan adopts green growth plan to go carbon free by 2050. The programme calls for auto industries to go carbon free by the mid-2030s.
- Japan aims to eliminate gasoline-powered vehicles in about 15 years.
- The government has a plan to achieve ambitious pledge to go carbon free by 2050 and generate nearly \$2 trillion growth in green business and investment.
- The "green growth strategy" urges utilities to bolster renewables and hydrogen while calling for auto industries to go carbon free by the mid-2030s.
- The strategy, provides a roadmap to achieving the goals in different sectors, projected 30-50% increase in electricity demand and called for a push to triple renewables in the country's energy mix to about 50-60% from the current level, while also maximising use of nuclear power as a stable, clean source of energy.
- The strategy identified 14 industries, such as offshore wind, hydrogen and fuel ammonia as well as autos and rechargeable batteries and roadmap for each sector.
- The strategy shows an installation target for offshore wind power of up to 45 gigawatts by 2040.
- Under the strategy, the government is also to provide tax incentives and other support to encourage investment into green technology, and projected an annual growth of 90 trillion yen (\$870 billion) by 2030 and 190 trillion yen (\$1.8 trillion) by 2050.
- The government will offer tax incentives and other financial support to companies, such as a 2 trillion yen (\$19 billion) green fund.

New species of sun rose

Context

- Botanists have discovered a new species of wild Sun Rose from the **Eastern Ghats in India**.
- The new species, named *Portulaca laljii*, discovered from Prakasam district of Andhra Pradesh
- It has **unique features** such as a **tuberous root, no hair in its leaf axils, a reddish pink flower, prolate-shaped fruits, and copper brown seeds without lustre**.
- These morphological features distinguish the species from other species of genus Portulaca.
- The flowers, which are **reddish pink in colour, are very minute**, at about 0.5mm.
- The plant was found growing in rocky crevices at an altitude of about 1,800 metres above mean sea level, very close to the ground, at about less than 10 cm.
- The flowers are very attractive and bloom for months from June to February.
- The plant can have a **rich horticultural value**.
- Because of the **succulent nature of tuberous roots that the plant can survive on rocky crevices**.
- The new Portulaca laljii **only grows naturally in rocky crevices**.
- Portulaca laljii has been named to honour the contribution of Lal Ji Singh, an eminent botanist of the Botanical Survey of India associated with the Andaman and Nicobar Centre of the Botanical Survey of India.
- The species has been placed under the **'Data Deficient' category of the IUCN List of Threatened Species** because very little information is available about the population of the species.



Kolar Leaf-Nosed Bat

Context

- Conservation plan on table to save bat species in Kolar caves—"The Kolar Leaf-Nosed Bat".
- Till several years ago, the Kolar Leaf-Nosed Bat was **found in only two caves in the village of Hanumanahalli in Kolar district of Karnataka**.
- For reasons that are still unknown, the bat became locally extinct in one of the two caves.
- The Karnataka Forest Department, along with the Bat Conservation India Trust (BCIT), is on a war footing to save the remaining bats, which are **endemic to the area**, from extinction.
- The government has notified the 30 acres around the caves as **protected area**.

Kolar Leaf-Nosed Bat

- It is **exclusive to Karnataka** and very little is known about this bat.
- Bats are **one of the least studied mammals** in the country, though there are 130 species in India.
- They are **very adaptable creatures** and therefore can often be found near human habitation or even in urban settlements, which makes them vulnerable.
- They also have a bad image in the public eye, as **carriers of diseases**.
- Bats are absolutely vital for the ecology as **they are pollinators**, their main diet being nectar.
- The **plants that bloom at night are entirely dependent on bats** and moths for pollination.
- Bats also help in **insect control** and therefore, help in the **protection of crops**.



- There are five species of bats that live in the caves of Hanumanahalli, of which the Kolar Leaf-Nosed Bat is just one.
- It is currently evaluated as **critically endangered by the IUCN**.
- Its single cave is not on protected land, and the species itself is **not protected by Indian law**.
- Its habitat is under threat **due to illegal granite mining**.

Shoolpaneshwar Wildlife Sanctuary

Context

- Tribal communities have been protesting and urging center to withdraw the Centre's notification classifying 121 villages around the **Shoolpaneshwar Wildlife Sanctuary** in Narmada district as **eco-sensitive zones**.
- Tribals, especially from the **Tadvi and Vasava communities**, have been on the edge ever since Kevadia, a sleepy village in Narmada district, was developed into a tourism circuit around the Statue of Unity.

Why are tribal communities protesting against the notification?

- **Firstly**, land belonging to the forest department, horticulture department, that used for agricultural use and plots reserved for parks – **cannot be transferred for non-agricultural use for commercial, industrial or residential purposes**.
- Any land that needs to be transferred can be done so **only after approval from the state government**.
- **Second**, a process has been initiated to include the state government as the co-owner of the land in the 121 villages.
- **Third**, the notification, has left **tribals in a state of mistrust and fear**.

What is PESA?

- Provisions of the law deem the gram sabhas as "most competent" to deal with matters related to their territories for safeguarding their customs, traditions as well as the natural resources in the tribal areas.
- The PESA Act is totally rooted in the cultural and traditional practices of the tribal community and vests ultimate power to the gram sabha to make administrative decisions.

Dzukou Valley

Context

- The Indian Air Force has engaged a Mi-17V5 helicopter to tame a massive wildfire in Dzukou Valley, a popular trekking destination on the Manipur-Nagaland border.

Dzukou Valley

- Dzukou, about 30 km from Kohima, is a sanctuary for the **endangered Blyth's tragopan** – Nagaland's State Bird – and other species of birds and animals.
- Often caught in a boundary dispute between Manipur and Nagaland, the Dzukou Valley has been **prone to wildfires**.
- The Dzüko Valley is a valley located at the **borders of the states of Nagaland and Manipur in Northeast India**.
- The valley is famous for its wide range of flowers in every season but the most famous one is the **Dzüko Lily** and it is found only in this valley.



SECURITY

Naval version of BrahMos missile

Context

- A naval version of the BrahMos **supersonic cruise missile** was successfully test-fired from an indigenously built stealth destroyer of the Indian Navy in the Arabian Sea.
- BrahMos Aerospace, an India-Russian joint venture**, produces the **supersonic cruise missile** that can be launched from **submarines, ships, aircraft, or from land platforms**.
- The range of the new land attack version of the missile has been **extended to 400km** from the original 290 km.
- India has deployed a sizeable number of the original BrahMos missiles along the Line of Actual Control with China in Ladakh and Arunachal Pradesh.
- The Indian Air Force is also integrating the BrahMos supersonic cruise missile on over 40 Sukhoi fighter jets, which is aimed at bolstering overall combat capability of the force.

BrahMos Cruise Missile

Air-launched variant tested

BrahMos, the world's fastest supersonic cruise missile, successfully flight-tested for the first time from a Sukhoi-30MKI fighter of the Indian Air Force against a sea based target in Bay of Bengal. The missile is now capable of being launched from land, sea and air, completing the tactical cruise missile triad for India.

Technical Specifications	
Maximum range	400+ km
Velocity	Mach 2.8
Weight	2.5 tonnes
Warhead mass	200-300 kg
Altitude	<ul style="list-style-type: none"> ■ Cruise: 15 km ■ Terminal: 10-15 metre

Special Features

- Universal for multiple platforms
- "Fire and Forget" principle of operation
- High supersonic speed all through the flight
- Long flight range with varieties of flight trajectories
- Low radar signature
- Shorter flight times leading to lower target dispersion and quicker engagement
- Pin point accuracy with high lethal power aided by large kinetic energy on impact

Compared to existing state-of-the-art subsonic cruise missiles, BrahMos has

- 3 times more velocity ■ 2.5 to 3 times more flight range
- 3 to 4 times more seeker range ■ 9 times more kinetic energy



Project 17A Ship 'Himgiri'

Context

- 'Himgiri', the first of the three Project 17A ships being built at M/s Garden Reach Shipbuilders and Engineers Limited (GRSE), Kolkata.
- The ship has taken its name and crest of the second Frigate of the Leander Class of ships, which incidentally was launched 50 years ago in 1970.
- Under the Project 17A program, a total of seven ships, four at Mazagon Dock Shipbuilders Limited (MDL) and three ships at GRSE are being built with enhanced stealth features, advanced indigenous weapon and sensor fit along with several other improvements.
- The launch of 'Himgiri' has showcased GRSE's commitment towards the building of three state-of-the-art warships of P17A for Indian Navy.



Project 17A program

- P17A ships are the **first gas turbine propulsion and largest combat platforms** ever built at GRSE.
- Since its inception, Project 17A has upheld India's vision for Atmanirbhar Bharat. Naval shipbuilding provides a great opportunity to energise our economy post COVID-19.
- P17A ships have been **indigenously designed** by Directorate of Naval Design (Surface Ship Design Group) - DND (SSG), and are **being built at indigenous yards** namely MDL and GRSE.
- Project 17A ships are **sourcing 80% of the material/ equipment** required for the project from **indigenous vendors** and with employment generation for over 2000 Indian firms and MSMEs within the country.
- Modular construction of the ship through outsourcing, and integrated construction methodology are being used to enhance GRSE's productivity for delivery of ship targeted in August 2023.

DRDO systems

Context

- Raksha Mantri handed over three indigenously developed Defence Research and Development Organization (DRDO) systems to Army, Navy and Air Force at a function held in DRDO Bhawan.

Indian Maritime Situational Awareness System (IMSAS)

- The IMSAS is state-of-the-art, fully indigenous, high performance intelligent software system that provide Global Maritime Situational Picture, Marine planning tools and Analytical capabilities to Indian Navy.
- The system provides Maritime Operational Picture from Naval HQ to each individual ship in sea to enable Naval Command and control (C2).
- Centre for Artificial Intelligence & Robotics (CAIR), Bengaluru and Indian Navy has jointly conceptualized and developed the product and the BEL, Bengaluru has implemented it.

ASTRA Mk-I Missile

- It is the **indigenously developed first Beyond Visual Range (BVR) Missile**, which can be launched from Sukhoi-30, Light Combat Aircraft (LCA), Mig-29 and Mig-29K.
- Globally, very few countries have expertise and capabilities to design and produce this class of weapon system.
- Successful development of ASTRA weapon system by Defence Research & Development Laboratory (DRDL) Hyderabad & production by Bharat Dynamics Limited (BDL), Hyderabad is a major contribution towards 'Atmanirbhar Bharat'.

Border Surveillance System (BOSS)

- An **all-weather electronic surveillance system** successfully designed and developed by Instruments Research & Development Establishment (IRDE), Dehradun.
- The system has been deployed at Ladakh border area for day and night surveillance.
- The system **facilitates monitoring and surveillance by automatically detecting the intrusions in harsh high-altitude sub-zero temperature areas** with remote operation capability.
- The system is being produced by Bharat Electronics Limited (BEL), Machlipatnam.

Coastal radar network

Context

- India looks at integrating more countries into coastal radar network.
- Efforts are in advanced stages to **set up coastal radar stations in Maldives, Myanmar and Bangladesh**.
- As part of efforts to further expand the coastal radar chain network meant to **enable real time monitoring of the high seas for threats** as also **expand India's assistance for capacity building to Indian Ocean littoral states**.
- **Mauritius, Seychelles and Sri Lanka** have already been integrated into the country's coastal radar chain network.

Nodal agency

- The Indian Navy's Information Management and Analysis Centre (IMAC) located in Gurugram which was set up after the 26/11 Mumbai terror attacks is the nodal agency for maritime data fusion.
- As part of information exchange regarding traffic on the high seas, the Navy has been authorized by the government to conclude white shipping agreements with 36 countries and three multilateral constructs.

- So far agreements have been concluded with 22 countries and one multilateral construct. Of these, 17 agreements and the one multilateral construct have been operationalized.

Info fusion centre

- Navy's Information Fusion Centre for the Indian Ocean Region (IFC-IOR), was meant to promote Maritime Domain Awareness.
- International Liaison Officers (ILO) from France, Japan and the U.S. have already joined the centre.
- IFC-IOR had established itself as the hub of maritime security information in the IOR through white shipping exchange agreements with 21 countries and 20 maritime security centers.
- Under Phase-I of the coastal radar chain network, 46 coastal radar stations have been set up across the country's coastline.
- Under Phase-II of the project, which is currently under way, 38 static radar stations and four mobile radar stations are being set up by the Coast Guard and is in advanced stage of completion.

Medium Range Surface to Air Missile (MRSAM)

Context


- Defence Research and Development Organization (DRDO) achieved a major milestone with the maiden launch of Medium Range Surface to Air Missile (MRSAM).

MRSAM

- Army version of MRSAM is a surface to Air Missile developed jointly by India's DRDO and Israel's Israel Aerospace Industries (IAI) for use of the Indian Army.
- The missile is designed to provide the armed forces with air defence capability against a variety of aerial threats at medium ranges.
- MRSAM Army weapon system comprises of Command post, Multi-Function Radar and Mobile Launcher system.
- MRSAM surface-to-air missile is powered by a dual-pulse solid propulsion system developed by DRDO.

DEFENCE SHIELD

- Medium-range surface-to-air missile (MR-SAM) developed by DRDO & Israeli Aerospace Industries
- To be produced in bulk by defence PSU Bharat Dynamics
- Designed to track & intercept enemy aircraft, drones, missiles & helicopters
- Advanced version of Israeli Barak-I anti-missile defence systems, which have a 9km range & were fitted on 14 Indian warships several years ago



MISSILE CHARACTERISTICS			
Interception Range	Length	Weight	Payload
70km	4.5metre	270kg	60kg

NAVY	IAF
<ul style="list-style-type: none"> ➤ Project sanctioned in Dec 2005 at initial cost of ₹2,606 crore ➤ Tested for first time on Nov 2014 ➤ Already fitted on 3 Kolkata-class destroyers ➤ Will also be fitted on at least 12 under-construction warships (aircraft carrier INS Vikrant, 4 Visakhapatnam-class destroyers & 7 stealth frigates) ➤ Will cost over ₹1,200 crore for each warship 	<ul style="list-style-type: none"> ➤ Project sanctioned in Feb 2009 at cost of ₹10,076 crore ➤ Tested for first time on Thursday ➤ IAF to induct initial 9 MR-SAM squadrons from 2017-18 onwards
ARMY	
<ul style="list-style-type: none"> ➤ Project contract in final stages (estimated cost ₹14,000-crore) ➤ Army initially wants 1 regiment, with four batteries (16 launchers) 	

Akash short-range Surface to Air Missile (SAM) system

Context

- Union Cabinet gives approval for Akash missile export.
- As part of efforts to boost defence exports, the Union Cabinet, chaired by Prime Minister **approved the export of the indigenously developed and manufactured Akash** short-range Surface to Air Missile (SAM) system.
- It also approved the high-level committee formed to expedite clearance of such exports.
- The export version of Akash will be different from system currently deployed with Indian armed forces.

Export of big platforms

- This decision by the Cabinet would help the country to **improve its defence products** and make them **globally competitive**.

- After its induction in the Services, interest was shown in the Akash missile by many friendly countries during international exhibitions/Def Expo/ Aero India.

Akash missile

- Akash has a **range of 25 km** and can simultaneously engage multiple targets in all weather conditions.
- It has a large operational envelope from a low altitude of 30 meters to a maximum of up to 20 km.
- It was inducted in 2014 in the Air Force and in 2015 in the Indian Army.
- Akash is the country's important missile with over **96% indigenization**.
- Akash is a **medium-range** mobile surface-to-air missile defense system developed by the **Defence Research and Development Organization (DRDO)** and produced by **Bharat Dynamics Limited (BDL)** for Missile Systems, **Bharat Electronics (BEL)**, **Tata Power Strategic Engineering Division** and **Larsen & Toubro** for other radars, control centers, launcher systems in India.
- Akash has a **range of 25 km** and can simultaneously engage multiple targets in all weather conditions.
- It has a large operational envelope from a low altitude of 30 metres to a maximum of up to 20 km. It was inducted in 2014 in the Air Force and in 2015 in the Indian Army.
- It is propelled by an **Integrated Ramjet Rocket Engine**. The use of a ramjet propulsion system enables sustained speeds without deceleration throughout its flight.
- The Missile has command guidance in its entire flight.



Sahayak-NG

Context

- Visakhapatnam-based Naval Science and Technological Laboratory (NSTL) successfully conducted the maiden flight trial of Sahayak.

Sahayak-NG

- It is a new-generation **air droppable container** with parachute system, capable of carrying critical stores for ships in distress at sea from Indian Navy's Fixed Wing Aircraft.
- Sahayak-NG has a **Satellite-based Reporting Terminal (SBRT)**, which provides its precise GPS location enabling the ship in distress to pick up critical stores.
- The airworthiness of the system was certified by CEMILAC.
- The system has good export potential and also has great utility for commercial and fishing vessels in emergency and distress.

Indian Coast Guard Interceptor Boat

Context

- Indian Coast Guard Interceptor Boat was commissioned at Hazira.
- This Interceptor boat is **built indigenously** by M/s L&T Jetty, Hazira and is **capable of high speed of 45 knots having capability to operate in shallow waters**.
- Vessel is fitted with latest state-of-the-art navigation and communication equipment designed for high speed interception, close coast patrol, low intensity maritime operations, Search and Rescue and maritime surveillance.



- Interceptor Boat will operate from Gujarat under administrative and operational control of the Commander Coast Guard Region (NW) and is a part of ongoing efforts of Indian Coast Guard to strengthen coastal security of Gujarat maritime borders.

Advanced Hypersonic Wind Tunnel test facility

Context

- Defence minister inaugurated the advanced **Hypersonic Wind Tunnel test facility** in Hyderabad.
- The state-of-the-art facility is pressure vacuum driven enclosed free jet facility with nozzle exit of one-meter diameter.
- This will simulate **Mach 5 to 12**, making India the third country after the US and Russia to have such a facility.
 - Mach represents the **multiplication factor to the speed of sound**.
- The project is an **indigenous development** and an outcome of synergistic partnership with Indian industries.

www.aptiplus.in


APTI PLUS
Academy for Civil Services Pvt. Ltd.

Join the best IAS Institute in Eastern India
to crack the Nation's most prestigious service

ADMISSIONS OPEN FOR UPSC CSE 2022

Renowned
Faculty
Members from
Delhi

Home
Learning
Program
with Advanced
LMS

Personal
guidance for the
journey from
Prelims to
Interview

Online &
Offline Mock
Tests

Highest
Success Ratio
in Eastern
India

Offline Classes from April 2021*

*(As per Govt. approval)

For detail: 88203 41777, 81004 65577

1. Consider the following about Minimum Support Prices (MSP)

1. The Cabinet Committee of Economic Affairs announces MSP for various crops at the beginning of each sowing season based on the recommendations of the Commission for Agricultural Costs and Prices (CACP).
2. At present, CACP recommends MSPs of 50 commodities.

Which of the above statements is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

2. Consider the following about Goods and Services Tax (GST)

1. Petroleum and tobacco products are currently exempted.
2. States and Union Government have equal voting share in GST council.

Which of the above statements is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

3. Consider the following about Purchasing Manager's Index (PMI)

1. It is calculated separately for the manufacturing and services sectors and then a composite index is constructed.
2. PMI above 50 represents an expansion and PMI under 50 represents a contraction when compared to the previous month.

Which of the above statement is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

4. Consider the following about UN Convention on the Rights of Persons with Disabilities (UNCRPD)

1. The Parliament enacted the Rights of Persons with Disabilities Act, 2016 with a view to fulfilling the obligations under the UNCRPD.
2. All parties to the convention are obliged to send reports to this committee stating how they are implementing the convention and the progress made so far.

Which of the above statements is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

Ans: c

5. Consider the following about Brahmos missile.

1. BrahMos missiles are designed, developed and produced by BrahMos Aerospace, a joint venture company set up by the Defence Research and Development Organisation (DRDO) and Mashinostroyeniya of Russia.

2. The versions of the BrahMos that are presently being tested have an extended range of 4000 kilometres, as compared to its initial range of 290 kilometres.

Which of the above statement is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

6. Which of the following statements is/are true about Nagara temple?

1. The Nagara temple is enclosed within a compound wall having an entrance gateway in its centre, which is known as a Gopuram.
2. Panchayatan style refers to the five sculptures of deities being enshrined inside a single temple.
3. Garbha Griha is the name given to the upraised platform of the Hindu temples.

Select the correct answer using the codes given below:

- a) 1 & 2 only b) 2 & 3 only
c) All of the above d) None of the above

7. Consider the following statements about Iqta system

1. Land revenue assigned to individual on certain conditions
2. All Iqta holders should look after the administration

Which of the following statements is/are true?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

8. Consider the following about Nuclear Magnetic Resonance (NMR)

1. Nuclear Magnetic Resonance can ascertain the composition of a product at the molecular level.
2. The NMR test is required by Indian law for honey that is being marketed locally but not for export.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

9. Which of the following are correct about Socio-Economic Caste Census (SECC) on inclusion and exclusion for deprivations.

1. automatic exclusion on the basis of 14 parameters,
2. automatic inclusion on the basis of 5 parameters
3. grading of deprivation on the basis of seven criteria.

Which of the above is correct?

- a) 1 & 2 only b) 2 & 3 only
c) 1 & 3 only d) 1, 2 & 3

10. Consider the following about India's foreign trade.

1. China is the biggest source of Indian import.
2. The USA is the biggest destination for Indian export followed by the United Arab Emirates.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

11. Consider the following about Contempt of court

1. The AG's consent is mandatory when a private citizen wants to initiate a case of contempt of court against a person.
2. Article 129 of the Constitution gives the Supreme Court the power to initiate contempt cases on its own, independent of the motion brought before it by the AG or with the consent of the AG.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

12. Consider the following statement about Non-cooperation movement

1. Attainment of swaraj within a year was its motto.
2. M.A Jinnah supported this movement

Which of the above statement(s) is/are not correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

13. Consider the following about Representation of the People Act (RPA), 1951

1. Act states that if an MP or MLA is convicted for any other crime and is sent to jail for 2 years or more, he/ she will be disqualified for life from contesting elections.
2. If a person is confined in a prison, whether under a sentence of imprisonment or transportation, then he is not eligible for voting, however, in the case of preventive custody, he can vote.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

14. Consider the following about Tropical cyclones.

1. Tropical cyclones are active above the mid-latitudinal region between 35° and 65° latitude in both the hemispheres.
2. Presence of Coriolis force is a must for formation of tropical cyclones.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

15. Consider the following about Indian Economy Goods and Services Tax (GST)

1. GST is based on the principle of destination-based consumption taxation.
2. The list of items that would fall under the multiple tax slabs are worked out by the Union Government only.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

16. Consider the following statements:

1. SC Bose supported the Gandhi-Irwin pact.

2. SC Bose wanted to negotiate the death sentence of Bhagat Singh and his associates.
3. SC Bose supported the withdrawal of the Civil Disobedience Movement.

Which of the above statements is/ are correct?

- a) 1 only b) 2 only
c) 1 & 3 only d) 1, 2 & 3

17. Consider the following statements:

1. Ballia parallel government was led by Chittu Pandey.
2. YB Chavan was one of the leaders of Tamluk Sarkar.

Which of the above statements is/ are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

18. Consider the following statements:

1. Communists wholeheartedly supported the Quit India Movement.

2. The Muslim League opposed the Quit India movement

Which of the above statements is/ are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

19. Consider the following about Monetary Policy Committee (MPC)

1. The MPC is entrusted with the responsibility of deciding the different policy rates including MSF, Repo Rate, Reverse Repo Rate, and Liquidity Adjustment Facility.
2. It has been instituted by the Central Government of India under Section 452B of the RBI Act that was amended in 1934.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

20. Consider the following about Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act

1. Under the act, an aggrieved victim is a woman "of any age whether employed or not", who "alleges to have been subjected to any act of sexual harassment".
2. Every employer must constitute an Internal Complaints Committee (ICC) at each office or branch with 10 or more employees.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

21. Consider the following about Targeted Long-Term Repo Operations (TLTRO)

1. The LTRO is a tool under which the central bank provides one-year to three-year money to banks
2. It is provided at the interest rate more than the prevailing repo rate.

Which of the above is correct?

- a) 1 only b) 2 only

- c) Both 1 & 2 d) Neither 1 nor 2

22. Consider the following statements:

1. According to Wavells Breakdown Plan, British Army would handover India to INC except Muslim provinces of North-West and North-East.
2. According to Balkan Plan, the entire nation was free to form as many nation as possible.

Which of the above statements is/ are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

23. Consider the following statements:

1. Indian Factory Act 1881 prohibited employment of children below 12 years of age.
2. Indian Factory Act 1881 reduced maximum working hours for children to 7 hours a day.

Which of the above statements is/ are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

24. Consider the following statements:

1. With paramountcy, the British Government exercised the right to interfere in the internal affairs of states through their residents or by appointing and dismissing ministers and officials.
2. Till 1876 Princely States were independent and Sovereign States.

Which of the above statements is/ are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

25. Consider the following about Rat hole mining.

1. Rat hole mining involves digging of very small tunnels, usually only 3-4 feet high, which workers (often children) enter and extract coal.
2. The National Green Tribunal (NGT) has banned it on grounds of it being unscientific and unsafe for workers.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

26. Consider the following about the Central Drugs Standard Control Organisation (CDSCO) and Drug Controller General of India(DCGI).

1. CDSCO is responsible for approval of new Drugs and conduct of clinical trials in India.
2. DCGI is responsible for approval of licences of specified categories of drugs such as blood and blood products, IV fluids, vaccines and sera in India.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

27. Consider the following about the Narcotic Drugs and Psychotropic Substances Act.

1. NDPS Act prescribes capital punishment for repeat offenders of drug trafficking.
2. The Narcotics Control Bureau was constituted by the Government of India in 1986 under the Narcotic Drugs and Psychotropic Substances Act, 1985.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

28. Consider the following about Hayabusa2

1. The Hayabusa2 mission was launched in December 2014 when the spacecraft was sent on a six-year-long voyage to study the asteroid Bennu
2. It was launched by Japan.

Which of the above is correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

29. The following statements about the Vedic beliefs:

1. The later Vedic period (c.1000-600 BC) brought the passion for speculation on ultimate causes and the search for the absolute.
2. The doctrine of transmigration, and the search for release from the cycle of rebirth took shape during the Rigvedic period.

Which of the above statement(s) is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

30. Consider the following about food fortification

1. Food fortification is defined as the practice of deliberately increasing the content of essential micronutrients so as to improve the nutritional quality of the food supply and to provide a public health benefit with minimal risk to health.
2. India's National Nutritional strategy, 2017, had listed food fortification as one of the interventions to address anaemia, vitamin A and iodine deficiencies.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

31. Consider the following about National Education Policy

1. It has an aim of universalization of education from preschool to secondary level with 100% Gross Enrolment Ratio (GER) in school education by 2030.
2. Target of assessment reforms with 360 degree Holistic Progress Card, tracking Student Progress for achieving Learning Outcomes.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

32. Consider the following about Ordinance

1. The President can promulgate an ordinance only when both the houses are not in session or only one house is in session.
2. Ordinance ceases to exist if parliament takes no action within six weeks from its reassembly

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

33. Consider the following statements about the chemical quality of detritus:

1. With the same climatic conditions decomposition rate is high when detritus is rich in nitrogen.
2. High quantities of lignin and chitin in detritus increase the rate of decomposition.

Which of the above statements is / are correct :

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

34. Consider the following statements about Mutualism interaction between species :

1. It is beneficial to any one of the party.
2. Lichen is an example of mutualism.

Which of the above statements is / are correct :

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

35. Consider the following about Bharatmala Pariyojna.

1. It enhances focus on improving connectivity in North East and leveraging synergies with Inland Waterways.
2. It calls for seamless connectivity with neighbouring countries.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

36. Consider the following about Artificial intelligence

1. Through AI an entire manufacturing process can be made totally automated, controlled & maintained by computer system.
2. Software that can predict trends in stock market have been created which have been known to beat humans in predictive power.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

37. Consider the following about 5g and 4g telecommunication technologies.

1. 5G utilises much higher radio frequencies of 28 ghz while 4G uses lower reading frequencies of 700 mhz to 2500 mhz.
2. 5G has higher latency as compared to 4G.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

38. Consider the following about National Education Policy for higher education.

1. The National Research Foundation will be created as an apex body for fostering a strong research culture and building research capacity across higher education.
2. Higher Education Commission of India (HECI) will be set up as a single umbrella body for the entire higher education, excluding medical and legal education.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

39. Consider the following about Minimum Support Prices (MSP)

1. The Cabinet Committee of Economic Affairs announces MSP for various crops at the beginning of each sowing season based on the recommendations of the Commission for Agricultural Costs and Prices (CACP).
2. MSPs ensure that farmers get a minimum price for their produce in adverse markets.
3. MSPs have also been used as a tool by the Government to incentivise farmers to grow crops that are in short supply.

Which of the above is/are correct?

- a) 1 & 2 only b) 2 & 3 only
c) 1 & 3 only d) 1, 2 & 3

40. "Consider the following statements

1. Chalcolithic people cultivated barley, wheat, lentil and rice.
2. Infant mortality rate in Chalcolithic culture was very high.

Which of the following statements is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

41. "Consider the following statements

1. Harappan Culture is older than the Chalcolithic culture.
2. Harappan Culture arose in the Northeastern part of the Indian Subcontinent.

Which of the following statements is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

42. Consider the following about Anthrax

1. It is a disease caused by Bacillus anthracis, a bacteria.
2. Anthrax does not spread directly from one infected animal or person to another; it is spread by spores.

Which of the following statements is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

43. Consider the following about government security (G-Sec) in India

1. The central government issues both treasury bills and govt bonds or dated securities.
2. State governments issue only treasury bills, which are called the state development loans.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

44. Consider the following about Karnataka Prevention of Slaughter and Preservation of Cattle Bill (2020)

1. It has termed cow slaughter as a cognizable offence.
2. Violators can attract three to seven years of imprisonment.
3. A penalty between Rs 50,000 and Rs 5 lakh can be levied for the first offence while second and subsequent offences can attract penalties ranging between Rs 1 lakh and Rs 10 lakh.

Which of the above is/are correct?

- a) 1 & 2 only b) 2 & 3 only
c) 1 & 3 only d) 1, 2 & 3 only

45. Consider the following statements about Meghalaya Plateau.

1. It has been detached from the Indian Peninsula by the Maida Gap.
2. The Nokrek Peak is the highest elevation in the Meghalaya Plateau.
3. The Mikir Hills form the southern part of Meghalaya Plateau.

Which of the above is/are correct?"

- a) 1 only b) 2 only
c) 1 & 3 only d) 2 & 3 only

46. Consider the following statements about Secretary General :

1. He is a permanent officer and is appointed by the presiding officer of the House.
2. The secretariat of each House is headed by a secretary general.

Which of the above statements is / are correct :

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

47. Consider the following about Index of industrial production

1. IIP is a composite indicator that measures the growth rate of industry groups classified under broad sectors, namely, Mining, Manufacturing, and Electricity.
2. IIP is the only measure on the physical volume of production.

Which of the above is/are correct?

- a) 1 only b) 2 only

- c) Both 1 & 2 d) Neither 1 nor 2

48. Consider the following about Delimitation Commission in India.

1. The Constitution mandates that its orders are final and cannot be questioned before any court as it would hold up an election indefinitely.
2. The commission is made up of a retired Supreme Court judge, the Chief Election Commissioner and the respective State Election Commissioners.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

49. Consider the following about Parliamentary committees in India

1. Referring Bills to parliamentary committees is mandatory.
2. The Standing Committees are permanent and work on a continuous basis.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

50. Consider the following about EL Nino

1. El Nino is a climatic cycle characterised by high air pressure in the Eastern Pacific and low air pressure in the Western.
2. El Nino reduces upwelling of cold water, decreasing the uplift of nutrients from the bottom of the ocean. This affects marine life and sea birds.

Which of the above is/are correct?

- a) 1 only b) 2 only
c) Both 1 & 2 d) Neither 1 nor 2

ANSWERS

1. a	11. c	21. a	31. c	41. a
2. a	12. b	22. c	32. c	42. c
3. c	13. c	23. d	33. a	43. a
4. c	14. b	24. a	34. b	44. d
5. a	15. a	25. c	35. c	45. a
6. d	16. b	26. c	36. c	46. c
7. a	17. a	27. c	37. a	47. c
8. a	18. c	28. b	38. c	48. c
9. d	19. c	29. a	39. d	49. b
10. c	20. c	30. c	40. b	50. b