



IAS PARLIAMENT

Information is a Blessing

A Shankar IAS Academy Initiative

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JUNE 2021

G.S PAPER II

1. POLITY

1.1 Kedar Nath Singh Sedition Ruling

What is the issue?

- The Supreme Court (SC) quashed the sedition case filed against journalist Vinod Dua in Himachal Pradesh.
- In this context, it is essential to understand the provisions of Sedition law and the Supreme Court guidelines in Kedar Nath Singh ruling.

What is the recent case about?

- Journalist Vinod Dua allegedly made remarks against Prime Minister Modi.
- He also criticized the government's handling of the migrant crisis during the 2020 lockdown.
- BJP leader Ajay Shyam filed a case of sedition against Dua.
- Section 124A of the IPC penalizes sedition.
- It is punishable with either imprisonment ranging from 3 years to a lifetime, a fine, or both.
- The Himachal Pradesh government argued in the Supreme Court against Dua.
- It was said that Dua had attempted to spread misinformation and cause panic among the general public.

What has the court ruled?

- The Supreme Court shielded Dua from arrest earlier, and now the case itself is quashed.
- The SC held that his remarks constituted genuine criticism of the government.
- So, it could not be labeled seditious.
- In doing so, the court also reiterated the principles in the landmark case on sedition - Kedar Nath Singh v Union of India (1962).
- [Both the state and the Centre argued against quashing the FIR.]

What was Dua's petition?

- Dua had sought the court to pronounce certain directions to prevent misuse of the sedition law.
- **Suggestions** - It applies to persons belonging to the media with at least 10 years' standing.
- FIRs against them should not be registered unless cleared by a committee.
- The committee is to be constituted by every State Government.
- It should comprise of the CJ of the High Court or a Judge designated by him, the leader of the Opposition and the Home Minister of the State.
- **Court's response** - The Court did not agree to this.
- It said that formulating such a committee would amount to encroachment of the legislature's domain.
- [But such screening committees have been appointed by courts for doctors and in domestic violence cases.]
- The court however clarified that every Journalist would be entitled to protection in terms of Kedar Nath Singh ruling.

What are the Kedar Nath Singh guidelines?

- In the 1962 Kedar Nath Singh case, the SC upheld the constitutional validity of the sedition law.



- It also attempted to restrict its scope for misuse.
- So, unless accompanied by an incitement or call for violence, criticism of the government cannot be labeled 'sedition'.
- Seven principles in the Kedar Nath Singh ruling specify situations in which the charge of sedition cannot be applied.

What are the key principles in Kedar Nath Singh ruling?

- The expression 'the Government established by law,' in the Sedition law, has to be distinguished from the persons engaged in carrying on the administration for the time being.
- ['Government established by law' is the visible symbol of the State.]
- Any acts within the meaning of Section 124-A which have the effect of subverting the Government established by law, or creating disaffection against it, would be within the penal statute.
- Comments on Government actions, however strongly worded, would not be penal, without exciting those feelings which generate the inclination to cause public disorder by acts of violence.
- Sedition is limited only to such activities that come within the ambit of the observations of the Federal Court.
- This covers "activities involving incitement to violence or intention or tendency to create public disorder or cause disturbance of public peace."

1.2 Inequality within Intermediate Castes

What is the issue?

- The Supreme Court recently [struck down the Maharashtra law](#) granting reservation to the Maratha community in admissions and government jobs.
- It is essential, in this context, to also acknowledge the growing socio-economic differentiation within the dominant castes.

What did court say?

- The court held that the classification of Marathas as a socially and educationally backward class was unreasonable.
- The Marathas belonged to a politically dominant caste with significant economic resources.
- The majority opinion in the Indra Sawhney case was correct.
- The limit of 50% for caste-based reservation did not need consideration by a larger bench.
- The court said the fixed quantitative limit on caste-based reservation was intrinsic to the fundamental principle of equality.
- It rejected the state's argument that the breach of the limit was necessitated as the population of backward classes was over 80%.
- The Court also stressed the need to safeguard the interests of the unreserved sections.

What, however, is the socio-economic differentiation present?

- There is a growing socio-economic differentiation within the dominant castes, which the state and the court have to acknowledge.
- **Income** - In 2011-12, the average per capita income of the Marathas was second only to the Brahmins.
- Among this, the highest quintile (20% of the caste group) got 48% of the total income of the Marathas.
- The mean incomes of the highest Dalit quintile and that of the second-highest were above those of the three lowest quintiles of the Marathas.
- So, the lowest quintile and the 40% poorest of the Marathas were lagging behind the Scheduled Castes elite.
- **Education** - The above condition is partly due to changes on the education front.
- The percentage of Brahmins who were graduates and above was about 26% in 2011-12.

- It was only 8.1% among the Marathas.
- During 2004-05 to 2011-12, Dalits and OBCs have gained at a faster rate in education.
- The percentage of graduates among Dalits in 2004-05 was 1.9%.
- It has more than doubled to 5.1% in 2011-12.
- The corresponding figure for the OBCs was 3.5% and has doubled to 7.6%.
- For the Marathas it was 4.6% in 2004-05 and has come up to 8% in 2011-12.
- Correlatively, the percentage of salaried people among the Dalits was about 28% in Maharashtra in 2011-12, as against 30% among the Marathas.

Why does the verdict need reconsideration?

- The court ignored the cautionary note struck in Indra Sawhney case.
- It had expressed doubts about judicial supremacy in the broad area of social policy, which could lead to undesirable exclusion of beneficiaries.
- In the same line, the Court now fails to admit the complexity that the role of class has introduced in post-liberalisation India.
- The dated approach to social realities and a purely arithmetic limit finds no expression in the Constitution.
- Clearly, a section of the Maratha community had faced backwardness and exclusion akin to SC/STs.
- There is a strong need for positive discrimination of the lower classes of the dominant castes.
- The Court may recognise the growing social differentiation of dominant castes if a proper caste census was organised and made public.
- The Union government must look into this.

1.3 Time for Simultaneous Polls

What is the issue?

- Elections in four states and one UT in March-April 2021 are suspected to have contributed to the second wave of Covid infections.
- This has again called for a well-reasoned debate on the concept of “one nation, one election.”

Why simultaneous elections?

- Simultaneous Elections refers to structuring the Indian election cycle so that elections to Lok Sabha and State Assemblies are synchronized.
- The idea has been around since at least 1983, when the Election Commission first mooted it.
- The concept of simultaneous elections needs to be debated mainly around five issues:
 1. Financial costs of conducting elections
 2. cost of repeated administrative freezes
 3. visible and invisible costs of repeatedly deploying security forces
 4. campaign and finance costs of political parties
 5. the question of regional/smaller parties having a level playing field

What about the cost factor?

- Directly budgeted costs of conducting elections are around Rs 300 crore for a state the size of Bihar.
- But there are other financial costs, and incalculable economic costs.
- Before each election, a “revision” of electoral rolls is mandatory.
- Each election means teachers missing from schools and colleges.

- The economic costs of lost teaching weeks, delayed public works, badly delivered or undelivered welfare schemes to the poor have never been calculated.
- The Model Code of Conduct (MCC) has economic costs too.
- Works may have been announced long before an election is announced.
- But tenders cannot be finalised, nor work awarded, once the MCC comes into effect.
- Add to this the invisible cost of a missing leadership.
- The time for Ministers' (politicians too) ministerial duties reduces sharply.
- There are also huge and visible costs of deploying security forces and transporting them, repeatedly.
- A NITI Aayog paper says that the country has at least one election each year; actually, each state has an election every year, too.
- So, these financial and economic costs are incurred repeatedly.

Will simultaneous elections impact regional parties?

- There are fears that the Centre might gain greater power and regional parties might be at a disadvantage.
- Fixed five-year terms for state legislatures in fact take away the central government's power to dissolve state assemblies.
- But regional parties may be at a disadvantage because in simultaneously held elections, voters are likely to predominantly vote one way.
- This might give the dominant party at the Centre an advantage.
- Nevertheless, in any case, votes cast the same way may help regional parties tot up a nice enough number in Parliament to be a part of the central government.

What is the concern with instability?

- There is an argument that if a government loses its majority in the House, it necessarily means fresh elections.
- Firstly, with the current anti-defection law, it is virtually impossible for a ruling party/coalition to lose numbers.
- Secondly, even if a Prime Minister or Chief Minister loses a vote of confidence, those who voted against him/her have a majority.
- And their leader should become the Prime Minister or the Chief Minister.
- So, the dissolution of Parliament or Assembly is not a necessary consequence.

1.4 Treatment of Pre-Trial Political Prisoners

What is the issue?

- June 6 marks the third anniversary of the incarceration of five rights activists in the Bhima Koregaon conspiracy case.
- Here is a look at the case and the larger issue behind.

What is the Bhima Koregaon case?

- January 1, 2018 was the 200th anniversary of a battle fought at Bhima Koregaon, a small village in Pune.
- [It was where 500 Dalit Mahar soldiers of the British army defeated an army of the Peshwas.]
- Dalits converged in thousands from across the state for its commemoration.
- But violence broke out and one person died.
- Initially, the police investigated Hindutva leaders Milind Ekbote and Sambhaji Bhide for instigating the violence, and arrested Ekbote briefly.
- But some months later, the police claimed that the violence was a conspiracy by left activists and intellectuals.

- Five rights activists were arrested in this conspiracy case and eleven more were subsequently jailed for the same.
- These 16 women and men - the BK-16 accused - are intellectuals, lawyers, a poet, professors, cultural and rights activists.
- It includes an 84-year-old Jesuit priest, Father Stan Swamy.
- All these persons have sterling records of service with India's most oppressed people.

Why is the case contentious?

- The charge against BK-16 was that they had conspired to instigate Dalits into violent insurrection, and to assassinate the Prime Minister.
- 3 years later, the trial against them has still not commenced.
- The state has succeeded in misusing the law with the complicity of all institutions of criminal justice.
- It worked to confine behind bars the BK-16 accused, without any opportunity for either bail or to prove their innocence.
- [After a tortuous court battle, just one of them, poet Varavara Rao, was granted bail because of his critically deteriorating health.]
- The evidence marshalled against the accused rests on some alleged emails.
- But independent agencies contest that these are malign insertions through malware.
- The case reveals the ease with which it is possible for the executive to undermine reputations of activists.
- It has imprisoned indefinitely without bail or trial, people who dissent and organise struggles against state policies.
- Many among the BK-16 are suffering from various kinds of illnesses.
- They are now housed in the overcrowded Taloja and Byculia jails, ideal sites for super-spreading the Covid virus.
- Above all, it is the agenda of the state to ensure that political prisoners are kept well.

1.5 Delhi HC Ruling on UAPA - Terrorist Act

Why in news?

- The Delhi High Court granted bail to three student activists, who were arrested under the stringent Unlawful Activities (Prevention) Act (UAPA).
- The Court also ruled that "terrorist activity" cannot be broadly defined to include ordinary penal offences.

What is the case about?

- The three accused were JNU students Natasha Narwal and Devangana Kalita, and Jamia Millia Islamia student Asif Iqbal Tanha.
- They were arrested in May 2020 in connection with the riots in north east Delhi.
- Communal clashes had broken out in north east Delhi on 24 February 2020 after violence between citizenship law supporters and protesters.

What did the Court observe?

- Section 15 of the UAPA defines the phrase 'terrorist act' in a very wide and detailed manner.
- The Court thus stressed on how terrorism was different even from conventional, heinous crime.
- It reasoned that "the more stringent a penal provision, the more strictly it must be construed".
- This is a "sacrosanct principle of interpretation of penal provisions."
- This ensures that a person who was not covered by the legislative ambit does not get roped into a penal provision.
- The Supreme Court itself, in the 1994 case of Kartar Singh v State of Punjab, flagged similar concerns.



- It addressed the misuse of another anti-terror law, the Terrorists and Disruptive Activities (Prevention) Act, 1987.

What constitutes a terror activity then?

- The UAPA is meant to deal with matters of profound impact on the 'Defence of India' and address threats to the very existence of our Nation.
- So, the extent and reach of terrorist activity must travel beyond the effect of an ordinary crime.
- It must not arise merely by causing disturbance of law and order or even public order.
- It must be such that it travels beyond the capacity of the ordinary law enforcement agencies to deal with it under the ordinary penal law.
- The Court clarified this, citing a 1992 SC ruling in the case of Hitendra Vishnu Thakur v State of Maharashtra.

What is the significance of the ruling?

- This is perhaps the first instance of a court calling out alleged misuse of the UAPA.
- UAPA relaxes timelines for the state to file chargesheets and has stringent conditions for bail.
- So, it gives the state more powers compared to the Indian Penal Code.
- But the Act is being used against individuals even in cases that do not necessarily fall in the category of "terrorism."
- A total of 1126 cases were registered under UAPA in 2019, a sharp rise from 897 in 2015.
- It was frequently used against tribals in Chhattisgarh, those using social media through proxy servers in Jammu and Kashmir, and journalists in Manipur among others.
- The Court ruling has now, in effect, raised the bar for the State to book an individual for terrorism under the UAPA.

Quick Fact

UAPA

- The 'terrorist act' (including conspiracy and act preparatory to the commission of a terrorist act) was brought within the purview of UAPA by an amendment made in 2004.
- This came on the heels of Parliament repealing Prevention of Terrorism Act (POTA).
- POTA's precursor, the Terrorist & Disruptive Activities (Prevention) Act (TADA) was repealed in 1995.
- Section 15 of the UAPA defines "terrorist act" and it is punishable with imprisonment for a term of at least 5 years to life.
- In case the terrorist act results in death, the punishment is death or imprisonment for life.

1.6 Right to be Forgotten - Delhi HC Order

What is the issue?

- The Delhi High Court recently ordered the removal of one of its own judgments from easy access.
- It comes as an important development for the 'right to be forgotten.'

What is the case about?

- The petitioner was acquitted of certain crimes by the court.
- The judgment was freely accessible on the Internet, which the petitioner was unhappy of.
- The petitioner thus sought removal of the judgment from a leading database platform and search engines.
- The court, as a temporary relief, asked search engines to remove this order from search results.
- It also ordered the database platform to block the judgment from being accessed by search engines.

What is the rationale?

- The High Court recognised that the petitioner may have a right to be forgotten.

- The right to be forgotten is, generally, the right to have information about a person removed from public access.
- The idea is that individuals should be able to determine the development of their life in an autonomous way.
- Persons cannot be perpetually stigmatised for past conduct.

What is the SC ruling in this regard?

- In 2017, the Supreme Court recognised the right to be forgotten as being under the ambit of the right to privacy (specifically, informational privacy) under the Constitution.
- It observed that if someone desired to remove personal data from the virtual space, it ought to be respected.
- However, the right to be forgotten was subject to reasonable restrictions based on countervailing rights such as free speech.

How is it in practice?

- Despite the Supreme Court's judgment, the right remains underdeveloped in India.
- For now, individuals may request data hosts to take down some content.
- It may be taken down based on the policies of the respective hosts.

What are the concerns?

- There is a general consensus that people should be allowed to modify or delete information uploaded by themselves.
- However, whether this extends to information uploaded by third parties is uncertain.
- If the person was never convicted, should they continue to bear the infamy is a big question.
- The U.S. Supreme Court, in a similar case, has disallowed suppression of criticism and accountability, especially against powerful figures.
- There may be significant merit to the right to be forgotten.
- But, whether it extends to the removal of judgments of courts of record is questionable.
- Judgments are published for good reasons. Trials held under public scrutiny act as a check against judicial arbitrariness.

What could have been done?

- This is perhaps the first instance of a court ordering the removal of access to its complete final judgment from certain spaces.
- Instead, the Delhi HC could have ordered that the name and personal details of the petitioner be redacted.
- And the public access to the judgment itself could have been maintained.
- The Streisand effect should also be taken into account.
- [It is a social phenomenon that occurs when an attempt to hide, remove, or censor information has the unintended consequence of further publicizing that information, often via the Internet.]
- The issue has been listed for a final hearing and the outcome is keenly awaited.

2. GOVERNMENT ACTS & POLICIES

2.1 Centre's J&K Outreach - India's Kashmir Policy

Why in news?

The Union Home Secretary has extended invitation to the leadership of the J&K-based political parties to discuss on the Kashmir issue.

What is the significance?

- On August 5, 2019, the State of J&K was stripped of its special constitutional status and dismembered into two Union Territories.
- The Prime Minister has now decided to meet 14 party leaders from the Union Territory.
- It includes those who were incarcerated for opposing the Centre's move.
- [The leaders of mainstream parties, including former CMs, were jailed after 2019.]
- This will be the first political engagement since the August 5 move.
- The decision signals a revival of the political process in Jammu and Kashmir.
- It demonstrates a desirable flexibility in the Centre's approach towards resolving the Kashmir issue.

Why now?

- The political environment has changed since the 2019 move.
- The Joe Biden administration is eager to end the U.S. entanglement in Afghanistan.
- It is also keen of resisting China's attempts to dominate the world.
- India is in a stand-off with China on the border.
- The Biden administration is publicly disapproving of India's Kashmir policy.
- Pakistan is also trying to reclaim its strategic advantage.
- Besides, the mishandling of the COVID-19 pandemic has dented India's global image.
- This has triggered new political challenges domestically.
- All these make rigidity less rewarding in India's Kashmir policy and call for a flexible approach.

What is the way forward?

- The Centre must now engage the political parties in good faith and with an open mind.
- Corruption investigations in Kashmir, legitimate as they may be, must not be used to debase politics itself.
- Efforts to tackle corruption and pilferage should not amount to furthering instability in J&K.
- There is no clear agenda for the meeting and a sense of betrayal prevails among Kashmiris.
- So, any hope of a quick resolution to the frozen political questions is not realistic.
- Nevertheless, it could be a beginning towards a durable and democratic resolution of the Kashmir question.

2.2 Ending Encryption

What is the issue?

- The Information Technology ([Intermediary Guidelines and Digital Media Ethics Code](#)) Rules 2021 recently came into force.
- WhatsApp has moved the Delhi High Court against the rules, especially the traceability clause; here is a look at the various aspects of it.

What is the traceability rule?

- It applies to significant social media intermediary providing services primarily in the nature of messaging.
- A "significant social media intermediary" is one with more than 50 lakh registered users.
- These "shall enable the identification of the first originator of the information on its computer resource as may be required by a judicial order."

Why has WhatsApp challenged this?

- For compliance and traceability, WhatsApp will have to break its end-to-end encryption service.
- The encryption service allows messages to be read only by the sender and the receiver.

- Its argument is that the encryption feature allows for privacy protections.
- So, breaking it would mean a violation of privacy.

What are the concerns?

- The question to be asked is whether the traceability guidelines (by breaking encryption) are vital to law enforcement in cases of harmful content.
- The problem with enforcing traceability is that, there are no safeguards like any independent or judicial oversight.
- So, government agencies could seek any user's identity on vague grounds.
- This could compromise the anonymity of whistle-blowers and journalistic sources acting in public interest.
- It fundamentally undermines users' right to privacy.

What is the government's stance?

- The traceability measure will be used by law enforcement as the "last resort."
- It will come by only in specific situations.
- These may include prevention, detection, investigation, prosecution or punishment of an offence related to the sovereignty and integrity of India.
- Child sexual abuse material, punishable with imprisonment could also be a case.
- The assertion suggests that this requirement is in line with the Puttaswamy judgment.
- The judgement clarified that any restriction to the right of privacy must be necessary, proportionate and include safeguards against abuse.

Is there no other alternative?

- The Government, as the law stands now, can already seek access to encrypted data.
- It is provided under Section 69(3) of the IT Act, and Rules 17 and 13 of the 2009 Surveillance Rules.
- These require intermediaries to assist with decryption when they have the technical ability to do so.
- It is carried out when law enforcement has no other alternative.
- Besides, the government can still seek unencrypted data, metadata and digital trails from intermediaries.

What is the way forward?

- The Government needs to revisit its position on traceability commitments of intermediaries.
- It could instead revise the IT Act, 2000 in line with existing global best practices.
- Besides, the government should finalise the long-pending Data Protection Bill.

3. SOCIAL JUSTICE

3.1 Recognising Sex Work as Work

What is the issue?

- Much like many other sections of the society, the pandemic has hit hard the adults who earn by providing sexual services.
- It is time to consider the demand of recognising sex work and granting basic labour rights to sex workers.

Why do sex workers face double burden?

- Amidst the pandemic, sex workers have lost their livelihood options.
- In India, sex work is not recognised as "legitimate work."
- Sex workers thus do not become eligible to benefit from the government's relief programmes.



- They have been asking for decriminalisation of sex work and a guaranteed set of labour rights.
- COVID-19's impact has provided yet another reason to consider this long-pending demand.

What are the current legal provisions?

- With subsequent amendments, the Suppression of Immoral Traffic in Women and Children Act, 1956, is now changed as the Immoral Traffic (Prevention) Act.
- This is the legislation currently governing sex work in India.
- It penalises acts such as -
 - i. keeping a brothel
 - ii. soliciting in a public place
 - iii. living off the earnings of sex work
 - iv. living with or habitually being in the company of a sex worker

What are the concerns?

- **Legal** - The Act represents the archaic and regressive view that sex work is morally wrong.
- It perceives that people involved in it, especially women, never consent to it voluntarily.
- As a consequence, it is believed that these women need to be “rescued” and “rehabilitated.”
- This is a valid argument for minor girls, but not for many consenting adult sex workers.
- **Social** - The Act's precept has led to the classification of “respectable women” and “non-respectable women.”
- It thus perpetuates the prejudice of viewing sex workers as morally devious.
- The Act, besides criminalising, has further stigmatised sex work.
- It thus leaves sex workers more prone to violence, discrimination and harassment.
- **Rights** - The Act denies individuals their right over their bodies and imposes the will of the state.
- It gives no agency to the sex workers to fight against the traffickers.
- It has, in fact, made them more susceptible to be harassed by the state officials.
- There is a distinction between women who are trafficked for commercial sexual exploitation and adult, consenting women who are in sex work of their own volition.
- The Justice Verma Commission had also acknowledged this distinction.
- Evidence also shows that many women choose to remain in sex work despite opportunities to leave after ‘rehabilitation’ by the government or NGOs.
- But the Act fails to recognise this choice.

What is the way forward?

- The Supreme Court, in *BudhadevKarmaskar v. State of West Bengal* (2011), opined that sex workers have a right to dignity.
- Parliament must also take a re-look at the existing legislation and do away with the ‘victim-rescue-rehabilitation’ narrative.
- The country must rethink sex work from a labour perspective and guarantee basic labour rights to sex workers.

3.2 Outlawing the Conversion Therapy

Why in news?

The Madras High Court, recently, explicitly called for an Indian ban on conversion therapy.

What is a conversion therapy?

- It is a pseudo-medical practice.

- It falsely professes to be able to change the sexual orientation of members of the LGBTQIA+ community.
- It is done to make a person act more stereotypically masculine or feminine.

Why is it unwelcome?

- There is a misguided and unscientific notion that sexuality can be altered through external intervention.
- It takes from the false belief that non-heterosexual orientations are unnatural or immoral.
- A number of Indians have become victims of conversion therapy, being subjected to physical and emotional abuse.
- A shocking 98% who undergo the therapy experience depression, anxiety, permanent physical harm and loss of faith.
- The United Kingdom recently pledged to outlaw the conversion therapy.
- Laws against the practice have already been passed in several countries, including Germany, Canada, Malta, Australia, and the U.S.

Where does India stand?

- Laws and attitudes toward homosexuality have evolved in recent years.
- The Indian Psychiatric Society has already declared that non-heterosexuality is not a mental illness.
- It cannot be changed by external attempts.
- Also, Section 377 no longer applies to consensual homosexual relations.
- But these positive steps are far from enough.
- The Mental Healthcare Act bans medical treatment without consent.
- But victims may consent to conversion therapy when administered by medical professionals.
- Because they have internalised a misplaced belief that they are abnormal.
- So, in effect, there is no law at present banning conversion therapy in India.
- Anjana Harish, a young woman, committed suicide in Goa recently after detailing the physical and mental anguish she was subjected to as part of an attempt at conversion therapy.
- It is just one case in the long history of the persecution of LGBTQIA+ people in India.

What is the Madras HC ruling?

- The court has called for a ban on the conversion therapy.
- It has also demanded legal action against those who practise it.
- It is a significant step in the fight against homophobia.

4. HEALTH

4.1 India's Revised Vaccination Policy

Why in news?

Indian Prime Minister recently announced the shift to centralised procurement of Covid-19 vaccines.

How was it earlier?

- From January 16 to April 30, 2021, the Centre had procured and allocated vaccine doses to the states.
- This was available for free vaccination of three priority groups.
- These were healthcare workers, frontline workers, and persons above the age of 45.
- From May 2021, States were allowed to procure 25% of the vaccines manufactured and the Centre, 50%.
- [States had to procure 25% of the doses from the open market to vaccinate the 18-44 year age group.]

What is the new policy?

- **Procurement** - From June 21, 2021, the Centre will be directly procuring 75% of the doses manufactured.
- It will distribute this among the states.
- Vaccines will continue to be free for all those who choose to get their shot at government centres.
- **Private centres**- Private hospitals will have exclusive access to the remaining 25%.
- However, private centres can charge only Rs 150 as service charge over and above the vaccine price.
- The maximum vaccine price is Rs 780 for Covishield, Rs 1,410 for Covaxin and Rs 1,145 for Sputnik V.
- **Distribution** - The vaccines will be allocated to the states based on three positive metrics.
- These are population, disease burden and the progress of vaccination.
- One negative metric will be the wastage of vaccines.
- A state reporting good vaccination coverage will get a higher number of doses.
- On the other hand, a state recording a higher wastage will receive a lower number.

Why is the course correction now?

- The Supreme Court had termed the earlier vaccine policy “irrational and arbitrary”.
- Several states had faced difficulties in procuring and managing the funding of vaccines.
- The Centre saw itself desperately short of supply right in the middle of India’s deadly second wave.
- The hospital emergencies worsened the Centre’s panic.
- So, it has taken up the responsibility of directly buying vaccines to States.
- The course correction in vaccine policy should help improve India’s response to the pandemic.

5. GOVERNANCE

5.1 Restrictions on Government Servants

Why in news?

- With a notification dated May 31, 2021, the Centre has amended its pension rules.
- It has put new restrictions on officials of intelligence and security organisations after retirement.

What are the changes made?

- The government has amended the CCS (Central Civil Services) Pension Rules-1972.
- Amended Rule-8(3)(a) talks about officials retired from any intelligence or security-related organisation included in the Second Schedule of the RTI Act.
- With the new provision, they are barred from writing anything about their organisation without permission.
- [The Second Schedule of the RTI Act covers 26 organisations.
- These include the Intelligence Bureau, R&AW, Directorate of Revenue Intelligence, CBI, NCB, BSF, CRPF, ITBP and CISF.]

What are the existing provisions after retirement?

- **Pension** - The pension of government servants is already subject to their good conduct after retirement.
- The appointing authority may, by order in writing, withhold or withdraw a pension or a part thereof.
- This applies if the pensioner is convicted of a serious crime or is found guilty of grave misconduct.
- The expression ‘grave misconduct’ includes the communication or disclosure of any sensitive information obtained while holding office.

- **Employment** - Rule 26, Death-cum-Benefits Rules, restricts a pensioner from any commercial employment for one year after retirement.
- This cooling-off period was 2 years until 2007, when an amendment reduced it to one year.
- Exceptions are allowed with previous sanction of the central government.
- Non-compliance may have implications on receiving pensions.

What are the restrictions while in service?

- The CCS (Central Civil Services) Conduct Rules deal with this.
- Rule 7 restricts government servants from resorting to or abetting any form of strike or coercion.
- Rule 8 restricts them, except with government sanction, from owning or participating in the editing or management of any newspaper.
- It applies to other periodical publication or electronic media as well.
- They can publish book or participate in public media.
- But, they shall at all such times clarify that the views expressed are their own and not that of the Government.
- Rule 9 restricts them from making statements or opinion that adversely criticize any current or recent policy or action of the Central Government or a State Government.
- Rule 9 of the CCS Pension Rules deals with any government official committing any misconduct and retiring.
- In that case, he or she may face departmental proceedings only until 4 years of the date of committing that misconduct.

What about involvement in political activity?

- **While in service**- The Conduct Rules bars government servants from being associated with any political party or organisation.
- They can also not take part or assist any political activity.
- Every government employee shall at all times maintain political neutrality.
- **After retirement** - There is no rule to stop them from joining politics after retirement.
- In 2013, the Election Commission wrote to the DoPT and Law Ministry in this regard.
- It suggested a cooling-off period for bureaucrats joining politics after retirement.
- But this was rejected, saying "it may not stand the test of valid classification under Article 14 of the Constitution."

Why is the amendment now?

- Some high-profile retired officers had written books on their tenure as officials.
- Some of these had revealed some confidential information.
- The move was thus prompted by concerns arising out of these.
- The Committee of Secretaries recommended, and the amendment was in process for around 4 years.
- It was approved recently and notified on May 31, 2021.

5.2 SDG India Index 2020-21

Why in news?

SDG (Sustainable Development Goals) India Index 2020-21 was recently released by the NITI Aayog.

What is the SDG India Index?

- The SDG India Index was first launched in December 2018 in collaboration with the United Nations in India.
- It tracks the progress of all states and UTs on 16 Goals and 115 indicators.



- These are aligned with the National Indicator Framework (NIF) of the Ministry of Statistics and Programme Implementation.
- It considers parameters including health, education, gender, economic growth, institutions, climate change and environment.
- The SDG India Index scores range between 0–100.
- States and UTs are classified into four categories based on their score as aspirant: 0–49, performer: 50–64, front-runner: 65–99, achiever: 100.

What are the highlights of the recent report?

- The country's overall SDG score improved by 6 points — from 60 in 2019 to 66 in 2020-21.
- Kerala has retained the top rank with a score of 75.
- Himachal Pradesh and Tamil Nadu both took the second spot with a score of 74.
- Bihar, Jharkhand and Assam were the worst performing states.
- Chandigarh maintained its top spot among the UTs with a score of 79, followed by Delhi (68).
- Mizoram, Haryana, and Uttarakhand are the top gainers in terms of improvement in their rankings from 2019.
- In 2019, 10 states/UTs belonged to the front-runners category.
- In 2020-21, 12 more states/UTs graduated to this category.
- These are Uttarakhand, Gujarat, Maharashtra, Mizoram, Punjab, Haryana, Tripura, Delhi, Lakshadweep, A&N Islands, J&K, and Ladakh.
- 15 states/UTs are in the performer category.
- Currently, there are no states in the aspirant and achiever category.

What do specific indicators show?

- Measures related to the availability of affordable, clean energy showed improvements across several States and UTs.
- The campaign to improve the access of households to electricity and clean cooking fuel has been shown to be an important factor.
- But there has been a major decline in the areas of industry, innovation and infrastructure besides decent work and economic growth.
- These were made worse by the lockdowns imposed to tackle the COVID-19 pandemic.

What is a key concern?

- There were stark differences between the southern and western States on the one hand and the north-central and eastern States on the other.
- This points to the persisting socio-economic and governance disparities.
- These, if left unaddressed, will exacerbate federal challenges and outcomes.
- It is already visible in public health challenges during the second wave of COVID-19 across some of the worse-off States.
- The Index has also made some methodological changes.

What is the impact created by the methodological changes?

- The SDG on inequality shows an improvement over 2019, but the indicators used to measure the score have changed.
- The 2020-21 Index drops several economic indicators.
- It gives greater weightage to social equality indicators such as -
 - i. representation of women and people from marginalised communities in legislatures and local governance institutions

ii. crimes against SC/ST communities

- The index has dropped the well-recognised Gini coefficient measure.
- It has also dropped the growth rate for household expenditure per capita among 40% of rural and urban populations.
- Instead, only the percentage of population in the lowest two wealth quintiles is used.
- The SDG score on inequality thus seems to have missed out on capturing the impact of the pandemic on wealth inequality.
- A UN assessment of the impact of COVID-19 had notably said that the South Asian region may see rising inequality.
- While the better score for India will bring some cheer, governments must work on addressing issues such as increased inequality and economic despair.

5.3 Performance Grading Index - School Education

Why in news?

The Education Ministry recently released the latest edition of the Performance Grading Index (PGI).

What is the Index for?

- The Education Ministry released the first PGI in 2019 for the reference year 2017-18, to measure the performance of states in school education.
- The objective is to help the states prioritise areas for intervention in school education.
- States are only graded and not ranked.
- This is to avoid discouraging the practice of one improving only at the cost of others and casting a stigma of underperformance on some.

How does it work?

- The PGI assesses states' performance in school education based on data drawn from several sources including -
 - i. the Unified District Information System for Education Plus
 - ii. National Achievement Survey
 - iii. Mid-Day Meal
- States are scored on a total of 1,000 points across 70 parameters.
- The parameters are grouped under five broad categories:
 1. access (eg. enrolment ratio, transition rate and retention rate)
 2. governance and management
 3. infrastructure
 4. equity (difference in performance between scheduled caste students and general category students)
 5. learning outcomes (average score in mathematics, science, languages and social science)
- The PGI grading system has 10 levels.
- Level 1 indicates top-notch performance and a score between 951 and 1,000 points.
- Level II, also known as Grade 1++, indicates a score between 901 and 950.
- Level III, or Grade 1+, indicates a score between 851 and 900.
- The lowest level is Grade VII, and it means a score between 0 and 550 points.

What are the highlights of the recent Index?

- In PGI 2019-20 too, no state/UT could achieve the highest grade/Level I, same as in 2017-18 and 2018-19 editions.

- Chandigarh, Punjab, Tamil Nadu, Andaman and Nicobar and Kerala have scored more than 90%.
- They have obtained Grade 1++ (or Level II), which makes them the best performing states.
- This is the first time that any state has reached Level II.
- Only the UT of Ladakh has been placed in the lowest grade, that is Grade VII.
- But this is because it was the first time it was assessed after it was carved out of J&K in 2019.
- **Progress** - A total of 33 States and UTs have improved their total PGI score in 2019-20 as compared to 2018-19.
- However, there are still 31 states/UTs placed in Level III (Grade 1) or lower.
- The biggest improvement in PGI this year has been shown by Andaman and Nicobar Islands, Punjab, and Arunachal Pradesh.
- All three have improved their score by 20%.

6. INDIA & ITS NEIGHBORHOOD

6.1 A year after Galwan - India-China Relations

What is the issue?

- On June 15, 2020, the Line of Actual Control (LAC) witnessed its first deaths after 1975, in a violent clash with China in Galwan in Ladakh.
- After an year, here is an assessment of the military and geopolitical situation.

What is the current situation?

- Militarily, the current situation in Ladakh is not bad.
- There is a continued deployment of 50,000-60,000 soldiers.
- With this, the Indian Army has been able to hold the line to prevent any further ingress by the China's People's Liberation Army (PLA).
- The Chinese presence on the Indian side of the LAC in Gogra, Hot Springs and Demchok gives the PLA some tactical advantage.
- But the area which majorly jolts Indian military plans is the Chinese control of Depsang Plains.

What are the shortcomings in India's approach?

- Militarily, Chinese incursions in Ladakh have shown that the idea of deterrence has failed.
- Many retired military officers feel that the Indian Army had only weakened its negotiating position during the talks with the PLA.
- In any case, there has been no progress in talks after the disengagement at Pangong lake and Kailash range in February 2021.
- There is no record of the Cabinet Committee on Security being convened to discuss the Ladakh border situation.
- No official briefing or press conference about the situation in Ladakh has taken place in the last 13 months since the Ladakh crisis.
- The official excuse was operational security, but the actual reason was to avoid political embarrassment for the government in power.
- This is because PLA soldiers remain in control of what was hitherto in Indian control.

What is the recent policy in this regard?

- Defence Minister recently approved a revised policy on how India compiles, archives and disseminates its war documents and related history.

- As per the new policy, once an operation/war is completed, the first cut of history is to be prepared.
- It will be disseminated for internal circulation within 5 years.
- Whether this first draft of history is to be placed in the public domain or not, will be determined on a case by case basis.
- It will depend on the sensitivity of the operation/war.
- [Predictably, the Henderson Brooks-Bhagat report relating to the 1962 war with China, which is still under wraps, will not be part of the new policy.
- Apparently, another committee will take a view on previous wars.]

How does the future look?

- A return to the status quo ante of April 2020 in Ladakh remains a far from reality.
- The Chinese side refuses to engage meaningfully.
- India argues that there could be no normalcy without restoration of status quo ante at the borders.
- With the widening power gap between New Delhi and Beijing, the challenge is as much economic as it is geopolitical.
- A new reset in bilateral ties is difficult because China is now in a different league, competing with the U.S.
- India will never be comfortable taking sides in a new Cold War between the U.S. and China.
- Beijing seems as keen as New Delhi to avoid a military conflict, though accidents such as Galwan can never be ruled out.
- India thus has to live with this tense and uneasy calm with China for some time, a challenge brought to the fore by the Ladakh crisis.
- The Ladakh crisis has also led India to relook external partnerships, particularly with the United States.
- The military importance of the Quad remains arguable.
- The choices made in New Delhi will have a significant impact on the future of global geopolitics.

7. INTERNATIONAL ISSUES

7.1 Terror in the Sahel

What is the issue?

The recent massacre of at least 160 people in a border village in Burkina Faso is a grim reminder of the threat the *Sahel region* faces from Islamist terrorism.

What happened?

- The attack took place in Solhan village, in the Sahel's Yagha province.
- Nobody has claimed responsibility.
- But Burkinabe authorities have named the Islamic State in the Greater Sahara (ISGS).
- The ISGS has carried out hundreds of terror strikes in recent years.
- The Burkina Faso attack (June 2021) occurred after 137 people were killed by jihadists in Niger, in March 2021.

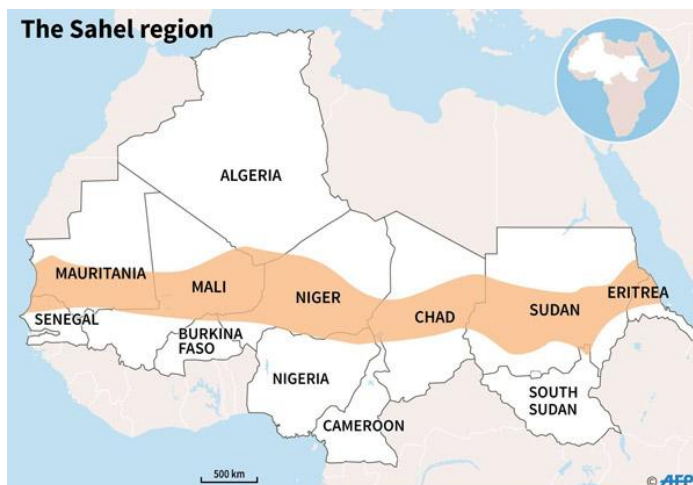
What is the long-drawn security concern?

- Burkina Faso saw its first major Islamist terrorist attack in 2015.
- The security situation there has deteriorated steadily, especially along the borders with Niger and Mali.
- This has been the case with much of the Sahel region, a 5,900-km-long semi-arid territory.
- It has seen terrorist groups expanding their networks and stepping up attacks on civilians and soldiers.

- In Nigeria, Islamists control swathes of territories.
- They have carried out abductions and attacks, including gunning down 27 people in a village.
- Mali has been fighting terror groups since 2013.

Which are the groups involved?

- **Terror groups** - Four main terror outfits operate in the region:
 1. the ISGS
 2. the Islamic State West Africa Province (ISWAP)
 3. the Jama'at Nasr al-Islam walMuslimin, the local al-Qaeda branch in Mali
 4. Boko Haram
- Of these, the ISGS and Jama'at Nasr are reportedly in alliance.
- Their aim is to expand the influence in the Burkina-Mali-Niger border region.
- They shoot down anyone in the region who does not declare their loyalty to the jihadists.
- Boko Haram and the ISWAP are fighting each other but control territories in northeastern Nigeria.
- **States** - France has deployed troops in the region for counter-insurgency operations.
- It is being helped by the U.S., which has a drone base in Niger.



What is driving the tensions now?

- The regime change policies of the U.S. and France are partly to be blamed for the problems the Sahel countries are facing today.
- A NATO invasion removed Muammar Gaddafi from power in Libya in 2011.
- Since then, the region lost a stable bulwark against militias and jihadists.
- Libya, having fallen into anarchy and civil war, became a jihadist breeding ground.
- When trouble spread to Mali, France made a military intervention in 2013.
- But it did not defeat the insurgency, which spread beyond Mali's borders.
- Now, jihadists find safe havens in the lawless deserts of the Sahel.
- The IS-militant infrastructure was destroyed in Iraq and Syria.
- Soon, their foot soldiers fled to Africa, regrouping themselves in the region.

What should be done?

- The recent attacks should serve as a warning to all stakeholders.
- Major global powers, which worked together with regional players to defeat the IS in West Asia, should not stay away from the growing threat from Africa.

Sahel

- *Sahel is a semiarid region of western and north-central Africa stretching from Atlantic Ocean eastward, from Senegal to Sudan.*
- *In between, it covers southern Mauritania, the great bend of the Niger River in Mali, Burkina Faso (formerly Upper Volta), southern Niger, northeastern Nigeria, south-central Chad.*
- *It forms a transitional zone between the arid Sahara (desert) to the north and the belt of humid savannas to the*

- They should, along with the UN, help the Sahel countries build capacity and institutions, offer stable governance and adopt sustainable counter-insurgency strategies.

7.2 Carbis Bay Declaration - G7 Summit

Why in news?

The G-7 summit recently took place in the U.K., and the leaders jointly signed the Carbis Bay Declaration.

What are the highlights?

- **Vaccine** - The G7 pledged over the next 12 months to secure a further one billion COVID-19 vaccine doses.
- This will be either through donating surplus supplies or providing further finance to Covax.
- [Covax is the UN-backed scheme charged with distributing vaccines to low- and middle-income countries.]
- The G7 also committed to invest \$12 trillion in the combined pandemic recovery plan.
- It also pledged to reinforce global surveillance for potentially dangerous diseases.
- **Economy** - The joint statement set out plans to reduce roadblocks to production in Africa.
- On the controversial issue of enforced temporary waivers of patents, it said the leaders will support manufacturing in low income countries.
- They would engage constructively on the issue of intellectual property waivers in discussions at the WTO.
- The G7 also agreed to increase the special drawing rights (SDRs) in IMF of low-income countries by \$100bn.

What was the U.S.'s role?

- United States's new President Biden vowed that "America is back" to take the lead on global challenges.
- The G-7 commitments on vaccines and pandemic recovery depends on U.S. commitments for a large part.
- There was an invitation by the G7 to "fellow democracies" India, Australia, South Korea and South Africa.
- There was also special communiqué on "Open Societies" for the G-7 outreach.
- These are an extension of Biden's stated commitment to convening a Democracy Summit soon.

What is G7's stance on China?

- Consensus amongst the seven-member countries on countering China was an important message from the meet.
- The final G-7 communiqué holds no less than four direct references to China, each negative.
- It includes criticising Beijing for its -
 - i. rights record in Xinjiang and democratic freedoms in Hong Kong
 - ii. "non-market policies and practices"
 - iii. concerns over its actions in the China Seas
- The G7 also underscored "the importance of peace and stability across the Taiwan Strait".
- Besides, there was a demand for a transparent investigation into the origins of the COVID-19 virus.
- The G7 also vowed to cooperate with China on issues such as the climate.

What are the concerns?

- The bonhomie among the G-7 leaders was obvious.
- But the differences and contradictions in the grouping remain a challenge.
- Even two decades ago, questions were raised about whether the grouping (earlier, the G-8), could claim to be the world's "richest" countries.
- This is especially true when emerging economies, China and India, are not included.



- On economic issues, the EU is a more representative unit than the individual European G-7 member countries.
- Finally, G-7 is much an exclusive club of the “haves” or “the best vs the rest.”
- This seems anachronistic in a world that is much more interlinked now than in 1975, when the grouping first came about.
- Given all this, G7 needs to be more open and less exclusive in an increasingly interlinked world.

Where does India stand?

- India is a special guest to the G-7/G-8 since 2003.
- It has maintained its independent course, especially on political issues.
- At the recent meet, India voiced concerns about some clauses in the joint communiqué on Open Societies.
- The communiqué condemned “rising authoritarianism”, net shutdowns, manipulation of information, and rights violations.
- These are areas the Indian government has often been criticised for in the recent years.
- However, India signed off on the joint statement by G-7 and guest countries on “open societies.”
- The statement reaffirms and encourages the values of “freedom of expression, both online and offline”.
- In the present, India will be expected to walk the talk on its commitments at the G-7 outreach, especially in the areas of information clampdowns.
- [Notably, India had the largest number of Internet shutdowns in 2020.]

7.3 Biden-Putin Summit in Geneva

What is the issue?

The Geneva summit between U.S. President Joe Biden and his Russian counterpart Vladimir Putin has set a pragmatic tone for engagement between the two competing great powers.

Why is the meet so significant?

- Relations between the US and Russia have hit the lowest point in recent years since the end of the Cold War.
- The U.S. had accused Russia of interfering in its elections and launching cyberattacks.
- Russia was also criticised on stifling of internal dissent.
- On the other hand, Russia had slammed America’s “interventionist” foreign policy.
- Given these differences, the summit gains significance.

What are the key outcomes?

- Despite the differences, the leaders held talks on all critical issues, bringing diplomacy to the centre-stage.
- Mr. Biden sought a more predictable, rational engagement, while Mr. Putin said relations were “primarily pragmatic”.
- They have decided to return their Ambassadors to the Embassies.
- The leaders also announced “a strategic stability dialogue” to discuss terms of arms control measures.
- While there was no major breakthrough, they could at least demonstrate a willingness to strengthen engagement and reduce tensions.

What are the long-pending irritants?

- There are many structural issues in the U.S.-Russia ties.
- Russia ended its post-Soviet strategic retreat and adopted a more assertive foreign policy under Mr. Putin.
- It did this partly in response to NATO expansion into eastern Europe.
- The West saw this as a threat to its primacy.

- The 2008 Georgia war practically ended the good terms between “democratic Russia” and the West.
- The annexation of Crimea in 2014 again renewed the tensions.
- Russia was thrown out of the G8, and western sanctions followed.
- But such steps did not deter Mr. Putin.
- Ties hit rock bottom after allegations on Russian cyberattacks and role in US elections.
- Russia, which had amassed troops on the Ukraine border earlier in 2021, sees NATO’s expansion into its border region as a threat.

7.4 U.S.' Decision to Block Iran-linked Websites

Why in news?

The US government has blocked dozens of US website domains connected to Iran.

What is the rationale?

- The move is linked to what the US says are disinformation efforts.
- It has accused the sites, including Iran’s state-owned Press TV, of spreading disinformation.
- In the past, the U.S. had cracked down on Chinese and Iranian media over similar allegations.
- The move comes days after Iran elected Ebrahim Raisi, a hardline cleric, as President.
- Mr. Raisi has been sanctioned by the U.S. for his alleged role in the execution of political prisoners and other rights violations.
- His elections as the President has already escalated tensions between the two countries.
- The U.S. wants Iran to return to the terms of the original Iran-U.S. nuclear deal.
- It also wants to discuss Iran’s ballistic missile programme and its regional activities.
- Mr. Raisi, known for his hardline domestic and foreign policy views, has rejected such demands outright.

Is the move justified?

- Iran’s sharp response to the move on the websites, has been that the U.S. was trying to “muzzle free speech”.
- The U.S.’s move hardly serves its declared purpose of fighting disinformation.
- E.g. America seized the website of the semi-official Iranian news agency, Fars, in 2018.
- But it switched to an Iranian domain and was back online.
- It aids the Iranian narrative that America remains hostile.
- The U.S. decision could also create hitches in the diplomatic process under way.
- Notably, both countries are trying to revive the nuclear deal.
- So, the move by the U.S. now seems an unnecessary provocation.

What should be done?

- The way to fight disinformation campaigns is to promote information and strengthen independent journalism.
- Mr. Raisi would take over the presidency in early August 2021 (nearly a month to go).
- So, Mr. Biden’s best chance to revive the nuclear deal is to do it before then.
- Both sides should focus on the diplomatic path.
- This should aim at achieving a pragmatic agreement first, that addresses the most critical issues such as Iran’s expanding nuclear programme and America’s sprawling sanctions regime.

8. BILATERAL RELATIONS

8.1 India - Expanding Ties with the West

What is the issue?

The summit of Group of Seven (G7) industrial countries is an opportunity for India to expand ties with the West.

Is the West on decline?

- Since the global financial crisis of 2008, the West is perceived to be in a terminal decline.
- Various factors have only added to this view:
 - the rapid rise of China
 - deepening divisions within the West during the Trump years
 - the chaotic response in North America and Europe to the Covid-19 pandemic
- But the US president Joe Biden wants to reverse the global perception of a declining West.
- Biden also calls for the normalisation of relations with Russia, suggesting a fresh look at the ties.

What does it mean for India?

- Biden is determined to strengthen US alliances and draw India into a new global architecture.
- The other factors generating convergence between the interests of India and the West includes -
 - i. the challenges from an increasingly aggressive China
 - ii. the urgency of mitigating climate change
 - iii. the construction of a post-pandemic international order
- Biden also made an elevation of the Quad (US, Australia, India and Japan) to the summit level recently.
- It is much about defining a new agenda for a particular geography, the Indo-Pacific, of which India is a part.

What about India's role in G7?

- This is not the first time that India is participating in the G-7.
- It is also not new to have G-7 leaders invite different countries to join them.
- But the difference this time is the conception behind UK PM Boris Johnson's invitation.
- UK, as the host, has invited leaders of India, Australia, South Africa and South Korea to the summit.
- This suggests the intention to build a coalition of leading democracies, based more broadly than the geographic West.
- India is at the very heart of this Western calculus of having a global democratic coalition.
- [India has been having strong bilateral strategic cooperation with the US, France, UK and the Quad.
- There is also the trilateral partnerships with France and Australia as well as Japan and Australia.
- India has also stepped up its engagement with the European Union.]

How significant is the West to India?

- China is trying to internationalise the Kashmir issue after the 2019 constitutional changes.
- And India has relied on Western support to fend off this effort of China.
- [The West is also supportive to India's aim to contain Pakistan's support for cross-border terrorism.]
- There is also a growing trade imbalance with China, leading to India walking away from the RCEP.
- In all, India is reluctant to integrate with the China-led Asian economic order.
- Importantly, it is also turning to the West - the US, UK, EU and others - for trade agreements.
- In essence, China is the greatest obstacle to India's global aspirations and the West is an emerging partner.

How about ties with Russia?

- Moscow has moved closer to Beijing in recent years.
- But India has been reluctant to abandon its longstanding ties with Russia.
- However, a deteriorating US-Russia relationship in recent years was a challenge to India.
- But, the renewed dialogue between Washington and Moscow has increased India's hopes now, to strengthen ties with Russia.

What are the challenges though?

- Between India and the West, there are many areas of continuing divergence.
- These range from the economic role of the state to the democratic regulation of social media and the technology giants.
- So, translating the broad convergences between India and the West into tangible cooperation require sustained negotiations.
- A productive partnership with the West helps India's national interests and adds strength to India's international relations.

8.2 Italian Marines Case

Why in news?

The Supreme Court ordered the closure of proceedings in India against two Italian marines, accused of killing two fishermen off the Kerala coast in February 2012.

What is the case on?

- On February 15, 2012, two Indian fishermen were returning from a fishing expedition near Lakshadweep islands onboard fishing vessel St Antony.
- They were gunned down by two Italian marines on board oil tanker Enrica Lexie.
- The incident occurred around 20 nautical miles off the coast of Kerala.
- Shortly after the incident, the Indian Coast Guard intercepted Enrica Lexie.
- They detained the two Italian marines, Salvatore Girone and Massimiliano Latorre.
- The challenges in dealing with the case had to do with -
 - i. the legal tangles over jurisdiction
 - ii. the lawfulness of their arrest and the location of their trial
 - iii. the provisions of law under which they should be tried
 - iv. legal accountability through a criminal trial

What was the Permanent Court of Arbitration ruling?

- [Permanent Court of Arbitration - a tribunal under the UN Convention on the Law of the Sea]
- The Permanent Court of Arbitration had clarified that India and Italy had concurrent jurisdiction to try the case.
- However, it said that the Italian marines enjoyed immunity from Indian jurisdiction.
- This is because they were acting on behalf of a state.
- The UN tribunal had also ruled that the Indian fishing boat, St. Antony, and the victims were entitled to compensation.
- This is on the ground that Enrica Lexie had violated the boat's right of navigation under the Law of the Sea.

What next?

- The Supreme Court has issued the order of closure after Italy deposited compensation of Rs. 10 crore.



- The two marines are now likely to face trial in Italy.
- But as far as India is concerned, the monetary compensation may have to be treated as the only available form of closure for the moment.
- The legal heirs of the two victims are likely to get Rs. 4 crore each, and the owner of the fishing vessel, Rs. 2 crore.

Why is the delay?

- India did not initially agree to Italy's offer of compensation and a trial in its own jurisdiction, which was what the UN tribunal's ruling also said.
- Back then, many in India believed it was an act of wanton killing.
- And those in Italy believed the fears of piracy were genuine.
- Meanwhile, India's efforts to assert criminal jurisdiction succeeded in national courts.
- In 2013, the SC ruled that prosecuting the marines was solely in the Union government's jurisdiction.
- The NIA invoked the Suppression of Unlawful Acts against Safety of Maritime Navigation and Fixed Platforms on Continental Shelf Act, 2002.
- This stringent anti-piracy law gave way to Italy's concerns.
- European nations objected to the trial taking place under this law that provided for the death penalty.
- The provisions of the Act were dropped, but this led to significant delay in prosecuting the matter.
- A lesson from the Italian marines case is that in such incidents, legal steps must go hand-in-hand with diplomatic efforts to find early resolution.

G.S PAPER III

9. ECONOMY

9.1 Understanding India's GDP Fall

What is the issue?

- In the latest estimates of economic growth (for the financial year that ended in March 2021), India's Gross Domestic Product (GDP) contracted by 7.3% in 2020-21.
- It is imperative, in this context, to understand the reasons for this contraction in GDP.

How could this be approached?

- There are two ways to view this contraction in GDP:
 1. To look at this as an outlier - India, like most other countries, is facing a once-in-a-century pandemic
 2. To look at what has been happening to the Indian economy over the last decade, and more precisely over the last 7 years
- Notably, between the early 1990s until the pandemic hit the country, India grew at an average of around 7% every year.
- So, the latest GDP data suggests that India's economy had been steadily worsening during the current regime even before the Covid-19 pandemic.
- The "fundamentals of the economy" (a bunch of economy-wide variables showing an economy's health) suggest this, as discussed below.

How has the GDP been?

- The GDP growth rate has been a point of growing weakness for the last 5 of these 7 years.

- After the decline in the wake of the Global Financial Crisis, the Indian economy started its recovery in March 2013.
- This recovery turned into a deceleration of growth since the third quarter (October to December) of 2016-17.
- While RBI does not state it, the demonetisation move and the hastily implemented GST impacted the economy (already struggling with bad loans in the banking system).
- Consequently, the GDP growth rate steadily fell from over 8% in FY17 to about 4% in FY20, just before Covid-19 hit the country.
- In January 2020, the GDP growth fell to a 42-year low (in terms of nominal GDP).

What is the GDP per capita level?

- GDP per capita is the total GDP divided by the total population.
- It is used to better understand how well-placed an average person is in an economy.
- From 2016-17, India's GDP per capita started decreasing.
- As a result, India has been losing out to other countries.
- Even Bangladesh has overtaken India in per-capita-GDP terms.

How has unemployment rate traversed?

- Between 2012 and 2018, the total number of employed people fell by 9 million.
- This is the first such instance of total employment declining in independent India's history.
- India started routinely witnessing unemployment rates close to 6%-7% in the years leading up to Covid-19.
- This is against the norm of an unemployment rate of 2%-3%.
- More worrying is the fact that unemployment rate is falling even when the labour force participation rate has been falling.
- With weak growth prospects, unemployment is likely to be the biggest challenge in the coming years.

How about inflation rate?

- In the first 3 years, the current government greatly benefited from very low crude oil prices.
- Oil prices (India basket) stayed close to the \$110-a-barrel mark throughout 2011 to 2014.
- It then fell rapidly to just \$85 in 2015, coming to below (or around) \$50 in 2017 and 2018.
- The sudden, sharp fall in oil prices allowed the government to completely deal with the high retail inflation in the country.
- But since the last quarter of 2019, India has been facing persistently high retail inflation.
- Even the demand destruction due to lockdowns induced by Covid-19 in 2020 could not extinguish the inflationary surge.
- Going forward, inflation is a big worry for India.

What about fiscal deficit?

- Fiscal deficit too is a concern.
- In the Union Budget 2021, the government conceded that it had been underreporting the fiscal deficit by almost 2% of India's GDP.
- Even before Covid-19, it was an open secret that the fiscal deficit was far more than what the government publicly stated.

How strong is the Rupee as against the Dollar?

- A US dollar was worth Rs 59 in 2014. Seven years later, it is closer to Rs 73.
- The relative weakness of the rupee reflects the reduced purchasing power of the Indian currency.

9.2 RBI's Clarification on Cryptocurrencies

Why in news?

- Some leading banks cautioned people against dealing in cryptocurrencies.
- Following this, the RBI intervened and made a clarification.

What did the RBI say and what was the trigger?

- State Bank of India and HDFC Bank cautioned their customers against dealing in virtual currencies such as Bitcoin.
- They cited the April 2018 order of the RBI on virtual currencies (VCs).
- Banks also warned customers that failure to adhere to the advisory may lead to cancellation or suspension of their cards.
- The 2018 order banned entities regulated by RBI from dealing in VCs or providing services for facilitating others to deal with or settling VCs.
- The RBI had no option but to allow it after the Supreme Court lifted the ban in 2020.
- So, the RBI now intervened and said the 2018 order was no longer valid from the date of the Supreme Court judgement (click [here](#) to know more).
- Therefore, it cannot be cited or quoted from.

What clarification does it offer?

- The RBI clarification is expected to give some relief to customers who have invested in cryptocurrencies.
- Many Indians have invested in cryptocurrencies like Bitcoin and Ethereum.
- Their money, estimated to be around Rs 10,000 crore, will not be blocked now.
- Banks, as well as other entities addressed above, may continue to carry out customer due diligence processes with existing mechanisms.
- E.g. KYC, Anti-Money Laundering (AML), Combating of Financing of Terrorism (CFT), PMLA, FEMA, etc.
- Meanwhile, the RBI is in the process of developing its own virtual currency.

9.3 Rural India - Economy's 'Saviour' in 2020-21

What is the issue?

- 2020-21 saw the Indian economy register its worst-ever contraction since Independence and also the first since 1979-80.
- But rural economy was resilient, supported by various factors. Here is a look at them and the future prospects.

What is different this time?

- There have been four instances of negative GDP growth earlier: 1979-80, 1972-73, 1965-66 and 1957-58.
- All four were drought years.
- These years saw agricultural de-growth surpassing that of overall GDP.
- But in 2020-21, there has been record economic contraction, yet no drought.
- And the farm sector (agriculture, forestry & fishing) actually grew by 3.6%.

What are the key reasons for this?

- **Monsoon** - All-India rainfall during the southwest monsoon season (June-September) for 2019 and 2020 were above-normal.
- The country received 971.8 mm and 961.4 mm monsoon rainfall respectively, above the long period average of 880.6 mm.
- Rainfall in the post-monsoon, winter and pre-monsoon seasons of 2019 and 2020 were also good.
- So, 2019-20 and 2020-21 produced back-to-back bumper harvests.

- **Lockdown** - Agriculture was exempted from the nationwide pandemic-induced lockdown.
- There was also the inherent resilience and adaptability of rural economic actors.
- So, the farm sector was relatively insulated from lockdown-imposed supply-side restrictions.
- [The problems agriculture encountered due to the lockdown had more to do with the demand side.
- This was not from rising prices but from forced consumption reduction.]

How were the demand side problems addressed?

- The demand-side problem was partly addressed through enhanced state crop procurement under MSP scheme.
- There was also the first instalment direct transfers to farmer accounts under the PM-Kisan scheme.
- Both these added to the liquidity infusion into the agricultural economy.
- Demand situation improved with the gradual lifting of lockdown restrictions.
- [The MSP procurement intervention was not possible in non-mainstream produce. E.g. vegetables, fruits, poultry, fish, flowers, spices, etc.
- It also did not help in regions (E.g. maize in Bihar) where the institutional mechanisms for procurement were non-existent.
- E.g. Food Corporation of India, NAFED, Cotton Corporation of India or even cooperative dairies]

What else favoured rural economy?

- There was recovery in global agri-commodity prices; better price realizations worked in farmers' favour.
- 2020-21 was also notable for the record 389.35 crore person-days of employment generated under MGNREGA.
- This was yet another source of liquidity infusion.
- Rural consumption, in turn, provided some cushion to the economy.

Will the rural economy perform the same way in 2021-22?

- **Covid-19 cases** - Rural areas were mostly unaffected by the pandemic's first wave.
- However, in the second wave of COVID-19, there are more cases in rural districts as well.
- So, the impact on agriculture per se would depend on the spread, intensity and duration of the infection.
- **Monsoon** - The India Meteorological Department has forecast a 74% probability of rainfall being "normal", "above-normal" or "excess".
- The good news this time is that there is no El Niño.
- There are also increased chances of a La Niña.
- [It is El Niño's counterpart and is associated with above-normal rains and lower temperatures in India for the autumn and winter months.]
- That augurs well for the next rabi crop too.
- The other element influencing rainfall - Indian Ocean Dipole (IOD) - is currently "neutral."
- But there is a possibility of negative conditions developing during the monsoon months.
- Also, unseasonal summer showers may upset the normal heating pattern.
- These factors might undermine a little the optimism with monsoon rains.
- **Prices** - Global prices of wheat, maize, soyabean, palm oil, sugar, skimmed milk powder or cotton have scaled multi-year highs in the recent period.
- This has helped India's agri-commodity exports in 2020-21 to recover to near their peak 2013-14 levels.
- But export demand alone may not sustain prices.

- Especially, job and income losses, accelerated post the pandemic, have severely dented domestic purchasing power.
- Also, even the benefits reaped by farmers from improved prices in many crops have been significantly eroded by rising input costs.
- Diesel prices alone have gone up by over a third in the last one year.
- Non-urea fertilizers prices have also gone up.

9.4 Rising Oil Prices

Why in news?

Crude oil prices have hit a two-year high with Brent crude rising above the \$71 per barrel mark on 2nd June 2021.

Why are crude oil prices rising?

- In 2020, crude oil prices had reached a low of under \$19 per barrel.
- So, key oil-producing countries made supply cuts to balance the prices.
- The Organisation of Petroleum Exporting Countries (OPEC) extended this supply cuts through the first 5 months of 2021.
- Saudi Arabia notably made an additional voluntary production cut of 1 million barrels per day between February and April 2021.
- There were also hopes of improving demand due to economic recoveries across geographies.
- With these, crude oil prices have been rising steadily since the beginning of 2021.
- In 2021 start, Brent Crude was trading at about \$52 per barrel.

How will oil prices be in the coming days?

- Increased production and supply could lower the prices in the market.
- Saudi Arabia has started to reverse the voluntary supply cuts.
- Also, OPEC+ has announced that they would adhere to plans entailing a gradual increase in crude oil production.
- However, the gradual withdrawal of supply cuts is unlikely to have any significant impact on prices.
- This is because demand for petroleum products increases, spurred by increasing economic activity.
- Another expectation is the oil production in Iran, with hopeful removal of international sanctions.
- However, any increase in crude oil production from Iran would happen only gradually.
- And it may not destabilise crude oil prices.

How does high crude oil price impact India?

- Rising crude oil prices have contributed to petrol and diesel prices rising to record high levels across the country.
- But oil marketing companies note that even current record-high prices are lower than what refiners should be charging in line with international prices.
- [The prices of petrol and diesel are benchmarked to a 15-day rolling average of the international prices of the petroleum products.]
- Also, prices are set to rise further unless there is a cut on levies on autofuels or a fall in crude oil prices.
- **Tax** - The central government had in 2020 hiked central excise duties on petrol by Rs 13 per litre and those on diesel by Rs 16 per litre.
- This was done to shore up revenues as economic activity fell due to the pandemic.
- Notably, state and central taxes account for about 58% of the pump price of petrol and 52% of that of diesel in Delhi presently (June 2021.)

9.5 U.S. Retaliatory Tariff on Digital Service Taxes

Why in news?

The United States announced and then immediately suspended retaliatory tariff imposition on digital service taxes (DST) on six countries including India.

What is the proposed tariff?

- The retaliatory tariff on digital service taxes (DST) was proposed for a period up to 180 days.
- It was proposed to be imposed on Austria, India, Italy, Spain, Turkey, and the U.K.
- The US announced 25% tariffs on over \$2 billion worth of imports from these six countries.
- It then immediately suspended the duties to allow time for international tax negotiations.
- [In India's case, around 26 categories of goods are in the preliminary list of products that would be subject to the additional tariffs.]

What are the digital services taxes in India?

- The government had moved an amendment in the Finance Bill 2020-21.
- It imposed a 2% [digital service tax](#).
- It applies to trade and services by non-resident e-commerce operators with a turnover of over Rs 2 crore.
- This includes e-commerce operators involved in supply of services, including online sale of goods and provision of services.
- [The move effectively expanded the scope of [equalisation levy](#).
- Till the previous year, the equalisation levy only applied to digital advertising services.]
- Estimates indicate that the DST payable by US-based company groups to India will be up to approximately \$55 million per year.
- So, the U.S. proposal, if applied, would collect duties on Indian goods in the range of the same amount of DST that India collects from US companies.

What is the U.S.'s concern?

- The digital services taxes in these countries primarily impact Silicon Valley tech giants.
- The tariff proposed on goods from them was approved following a "Section 301" investigation.
- The investigation looked into the digital services taxes imposed by the above countries.
- It found that the taxes discriminated against US digital companies.
- They were against tech companies like Apple, Amazon, Google and Facebook.
- The taxes were also inconsistent with principles of international taxation.
- [The investigation was initiated by the Trump administration in June 2020.
- The deadline for approving tariff action based on the investigation is around now.]

What is the rationale for the suspension now?

- The Biden administration seems to agree with the findings of the Trump era investigations on digital services tax (as being discriminatory).
- It is thus likely that Biden is using the tariff proposal as a tool to speed up the international negotiations.
- Negotiations on international taxation are going on at the OECD and in the G20 process.
- In this context, it is to be noted that at this point in the fragile, post-COVID-19 recovery, the world can hardly afford another tariff war.
- Notably, the digital services sector has enjoyed low-tax or tax-free operations across the world for decades.



9.6 G7 Global Corporate Tax Deal

Why in news?

The Group of Seven (G7) countries have backed the proposal to impose a common global corporate tax.

What are the decisions taken?

- The tax proposal endorsed by the G7 countries (US, UK, Germany, France, Canada, Italy and Japan) has two parts.
- The agreement made will be discussed in detail at the upcoming meeting of G20 financial ministers and central bank governors.
- **First part** - Countries around the world should tax their home companies' overseas profits at a rate of at least 15%.
- This 15% of global minimum corporate tax would deter the practice of using accounting schemes to shift profits to a few very low-tax countries.
- [Often, these tax havens are the Caribbean Islands such as Bahamas or British Virgin Islands.
- Or at times, it is countries like Ireland where the corporate tax rate is as low as 12.5%.]
- **Second part** - This allows countries to tax a share of the profits earned by companies "that have no physical presence but have substantial sales."
- For instance, this could be through selling digital advertising.

What is the rationale?

- The G-7 statement echoes an earlier US proposal.
- The US had urged the world's 20 advanced nations to move in the direction of adopting a minimum global corporate income tax.
- It urged countries to tax part of the earnings of the largest and most profitable companies if they are doing business within their borders.
- It also supported awarding countries the right to tax 20% or more of profit exceeding a 10% profit margin.
- The decision to ratify the 15% floor rate by G7 follows from the same route, to deal with low-tax jurisdictions around the globe.
- It addresses the low effective rates of tax shelled out by some of the world's biggest corporations.
- These include digital giants such as Apple, Alphabet and Facebook, as well as major corporations such as Nike and Starbucks.

Who will benefit?

- The proposal works well for the US government at this time.
- The same holds true for most other countries in western Europe.
- This is true even as some low-tax European jurisdictions and some in the Caribbean rely largely on tax rate arbitrage to attract MNCs.
- The second part of the G7 proposal is expected to impact companies that rely on the digital medium to drive their profits.
- However, after the imposition of a common global corporate tax, countries are advised to revoke their respective [digital services taxes](#).
- So, this would benefit the large tech companies, especially the Silicon Valley companies.
- [The US considers those unilateral digital services taxes to be unfair trade measures that single out the American tech companies such as Google, Amazon and Facebook.]

What are the challenges though?

- A global minimum rate would take away a tool that countries use to push policies that suit them.



- For instance, in the backdrop of the pandemic, developing countries with less ability to offer mega stimulus packages may experience a longer economic hangover than developed nations.
- A lower tax rate is a tool they can use to alternatively push economic activity.
- So, there are challenges in getting all countries to agree for the proposal as it impinges on the right of the sovereign to decide a nation's tax policy.

What does it mean for other countries?

- **China** is not likely to have a serious objection with the proposal.
- But an area of concern for it would be the impact of such a tax stipulation on Hong Kong.
- Hong Kong is notably the seventh-largest tax haven in the world and the largest in Asia.
- Also, China's strained relationship with the US could be a deterrent in negotiations on a global tax deal.
- **India** - In a bid to revive investment activity, the FinMin, in 2019, announced a sharp cut in corporate taxes for domestic companies to 22%.
- And for new domestic manufacturing companies, it was brought to 15%.
- Given this, India is likely to look into the pros and cons of the new proposal as and when it comes, and the government will take a view thereafter.

9.7 Micro Loans in India

What is the issue?

Non-banking financial groups have gained attention for providing easy and hassle-free micro loans online, with the aid of technology.

What is micro-financing?

- Microfinance refers to the provision of basic financial services for low-income but economically active people.
- The idea is to offer loans that are easy to procure and require minimum documentation.
- Micro loans or micro financing is seen as an important tool in uplifting the weaker sections of the society.

How did micro-financing evolve?

- The concept of micro-finance came into existence way back in the 1970s.
- In the 1970s, Muhammad Yunus, professor of economics, began to hand out small loans in his home country Bangladesh.
- He founded the Grameen Bank in 1983 which today is active in over 70,000 villages in Bangladesh.
- Taking inspiration from the micro-financing reforms in Bangladesh, NABARD was developed in India.
- [NABARD - National Bank for Agriculture and Rural Development]
- Additionally, micro-financing was also developed for rural and women development through SEWA (Self-Employed Women's Association) in Gujarat, back in 1974.
- Several other associations then grew to provide micro-loans.
- What began as a micro-credit system, slowly altered into a 'financial system' mechanism.
- It soon enabled everyone from rural to urban population to gain access to the micro-loans system in India.
- It was not just limited to banking entities and NGOs but further expanded to non-banking financial entities.

What is the current scenario?

- Given the pandemic situation, there are uncertainties to economic growth in India.
- So, banks shy away from providing loans to the economically backward sections, owing to higher risks.
- But non-banking financial groups continue to provide easy and hassle-free micro loans through an automated process.

How does it work?

- It is done with the help of the application of Machine Learning in the loan procurement and disbursal process.
- The companies can easily access and analyse the borrower's vast digital footprint.
- This helps them to evaluate the loan repayment capacity of an individual.
- The technological term for this form of data is 'alternative data.'
- It is faster to process, unlike the traditional credit score.
- High internet penetration and smartphone availability have also made people aware about the easy process of micro loan procurement.
- In terms of customer support, 'bots' have been specifically designed to answer all the queries of the borrowers with a single click.
- With this rapid development and digitisation, there has been a prominent growth in micro loans acquired by the common people.
- Micro loan helps the unorganised sectors/businesses grow with easy access to credit.
- Besides helping in individuals' growth, micro-finance contribute to the escalation in the growth metrics of the economy as a whole.

9.8 Draft Report - Working Group on WPI Revision

What is the issue?

- The draft technical report of the working group on revision of current series of WPI 2011-12 to new series 2017-18 is out, seeking comments.
- Revisions of the base year for Wholesale Price Index (WPI) are welcome, but creation of a producer price index should also be expedited.

What are the highlights of the draft report?

- Changing the base year for the WPI from 2011-12 to 2017-18 is required.
- This is key to reflect the structural changes in the economy, including demonetisation and GST.
- The working group has made a comprehensive evaluation of the changing consumption patterns of wholesale products and has expanded the basket.
- The number of items in the manufactured products index has increased from 564 in the current index to 1,026.
- The number of primary articles index has increased from 117 to 131 and fuel and power index from 16 to 19.
- The weight of primary articles in the new series is higher.
- This is mainly due to higher food prices in the period considered.
- Share of fuel prices has moved lower to 11.24% from 13.15%.
- This is due to the lower crude oil prices in that period.
- Manufactured products continue to have the largest share at 63.93% in the new index.
- Using the average consumption of 3 years from 2015-16 to 2017-18 is a good way to smoothen the short-term volatility in prices.
- [But average of 5 years instead of 3 years could have been considered.]
- **Business Services Price Index (BSPI)** - The report recommends having a BSPI.
- Merging BSPI with the WPI will help capture the inflation in services more accurately.
- The report suggests six price indices as separate indices and a combined BSPI.
- The separate indices are BSPI-Banking, BSPI-Insurance, BSPI-Securities, BSPI-Telecom, BSPI-Air Transport and BSPI-Railways.

- This index can be used by National Accounts Division, MOSPI, as a deflator in national accounts.

How suitable is WPI?

- The WPI was the primary inflation gauge prior to 2014.
- But since then, the consumer price index (CPI) has become the key data point used to formulate monetary policy.
- So, the focus on WPI has reduced over the years.
- The WPI is now mainly used as a deflator for nominal macroeconomic aggregates such as GDP and IIP.
- It is also used to determine escalation clause in infrastructure projects, revision of toll rates, tariff setting in ports, electricity and so on.
- The WPI has a mix of primary commodities and manufactured products as its constituents.
- This renders it unsuitable as a measure of producer price inflation.

CPI and WPI

- Both CPI (Consumer Price Index) and WPI measure the inflationary trends i.e. movement of price signals within the broader economy.
- WPI tracks year-on-year wholesale inflation at the producer or factory gate level / purchase of bulk inputs by traders.
- CPI, on the other hand, tracks changes in price levels at the shop end.
- It is thus reflective of the inflation experienced at the level of consumers.
- The two indices differ in the manner in which weightages are assigned.
- This applies to food, fuel and manufactured items as well as their sub-segments.
- E.g. weightage of food in CPI is far higher (46%) than in WPI (24%).
- Also, WPI does not capture changes in the prices of services but CPI does.

What is the need now?

- There is a need for disseminating a Producer Price index (PPI), work on which is in progress.
- The PPI selects constituents based on supply use and avoids double counting.
- It will thus be a better measure of the inflationary pressure on businesses.
- The sub-group to facilitate smooth transition from WPI to PPI needs to expedite the process.
- A clutter of items that also find a presence in the CPI should be avoided.

9.9 Draft Rules for E-Commerce Companies

Why in news?

The government has proposed changes to the e-commerce rules under the Consumer Protection Act.

What are the key provisions?

- **Sales** - The draft rules seek to ban “specific flash sales” by e-commerce entities.
- Conventional e-commerce flash sales are not banned.
- However, specific flash sales or back-to-back sales “which limit customer choice, increase prices and prevents a level playing field are not allowed”.
- **Liability** - In several cases, when problems arise with goods purchased, e-commerce platforms direct the consumers to the respective sellers.
- The rules have introduced the concept of “fall-back liability.”
- With fall-back liability, consumers will be able to reach out to the platform itself to solve the grievance.
- E-commerce firms will be held liable if their seller fails to deliver goods or services due to negligent conduct, which causes loss to the customer.
- **Preferential treatment** - The rules propose to restrict e-commerce companies from “manipulating search results or search indexes.”
- This will address the long-standing demand from sellers and traders to prevent preferential treatment to certain platforms.
- **Privacy** - Without express and affirmative consent, e-commerce companies cannot make available to any person information pertaining to the consumer.

- No entity shall record consent automatically, including in the form of pre-ticked checkboxes.
- **Domestic goods** - The companies will have to provide domestic alternatives to imported goods.
- This adds to the government's push for made-in-India products.
- **Other rules** - Any online retailer will first have to register itself with the Department of Promotion for Industry and Internal Trade (DPIIT).
- No logistics service provider of a marketplace e-commerce entity shall provide differentiated treatment between sellers of the same category.
- Parties and associated enterprises related to e-commerce companies will not be allowed to be enlisted as sellers on the respective platform.
- This follows from the DPIIT's foreign direct investment policy for e-commerce marketplaces.
- Any entity having 10% or more common ultimate beneficial ownership will be considered an "associated enterprise" of an e-commerce platform.
- The draft amendment also proposes to ask e-commerce firms to mandatorily become a part of the National Consumer Helpline.

What is similar to the IT intermediary rules?

- The [IT intermediary rules](#) were announced recently for social media companies.
- Similar to this, the Consumer Affairs Ministry has proposed to mandate e-commerce companies to make few appointments.
- These are a grievance officer, a chief compliance officer and a nodal contact person for 24×7 coordination with law enforcement agencies.
- E-commerce companies are also asked to share information with a government agency lawfully authorised for investigative or protective or cyber security activities.
- This is for the purposes of verification of identity or for any legal procedures or in relation with cyber security incidents.
- The information so sought will have to be produced by the e-commerce company within 72 hours of the receipt of an order from the said authority.

9.10 Protection of Intellectual Property Online

Why in news?

Union Minister Ravi Shankar Prasad was locked out of his Twitter account for an hour, allegedly over a notice received for violation of the Digital Millennium Copyright Act (DMCA).

What is the DMCA?

- The Digital Millennium Copyright Act, or DMCA, is a 1998 law passed in the US.
- It is among the world's first laws recognising intellectual property on the internet.
- It was signed into law by the then US President Bill Clinton.
- It oversees the implementation of the two treaties signed and agreed upon by member nations of the World Intellectual Property Organisation (WIPO) in 1996.
- These are the WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty.

Why did the treaties come into place?

- There was rapid commercialisation of internet in late 1990s.
- This started with static advertisement panels being displayed on the internet.
- With this, it became important for website owners to get the user to spend more time on their webpage.
- For this, fresh content was generated by creators and shared over the Internet.



- The problem started when the content would be copied by unscrupulous websites or users, who did not generate content on their own.
- Further, with expansion, websites from countries other than the one where the content originated also started to copy the unique content generated by the websites.
- To avoid this and bring to task the unauthorised copiers, the members of WIPO agreed to extend the copyright and intellectual property protection to digital content.
- As of date, 193 nations across the world, including India, are members of WIPO which was established in 1967.

What do the treaties mandate?

- Both the treaties require member nations and signatories to provide in their respective jurisdictions the below.
- - Protection to intellectual property that may have been created by citizens of different nations who are also co-signatories to the treaty.
- The said protection must not be any less than the one being given to a domestic copyright holder.
- They also obligate that signatories ensure ways to prevent circumvention of the technical measures used to protect copyrighted work.
- They also provide the necessary international legal protection to digital content.

What happens with violation, and how does DMCA work?

- Content creators of any form who believe that their original content has been copied by user or a website without authorisation can file an application.
- It can be filed citing that their intellectual property had been stolen or violated.
- They can approach the website on which the content has been hosted, or third party service providers like DMCA.com.
- These third party service providers utilise a team of experts to help take down the stolen content for a small fee.
- In the case of social media intermediaries like Facebook, Instagram or Twitter, content creators can directly approach the platform.
- They should have a proof of them being original creators.
- These companies operate in nations which are signatories to the WIPO treaty.
- So, they are obligated to remove the said content if they receive a valid and legal DMCA takedown notice.
- Platforms, however, also give the other users against whom allegations of content cheating have been made, a chance to reply to the notice.
- The platform shall then decide which party is telling the truth, and shall accordingly, either restore the content or keep it hidden.

10. SCIENCE & TECHNOLOGY

10.1 Genome sequencing in Pandemic Response

What is the issue?

- Emerging variants, with evidence of higher transmissibility and immune escape, demand re-strategised responses to COVID-19 pandemic in India.
- Genomic sequencing becomes significant in this context.

How does genome sequencing help?

- [Genome sequencing refers to figuring out the order of DNA nucleotides, or bases, in a genome - the order of As, Cs, Gs, and Ts that make up an organism's DNA.]



- An effective COVID-19 pandemic response includes keeping track of emerging variants.
- There are a total of 10 variants till now including variants of interest and concern.
- Conducting further studies about their transmissibility, immune escape and potential to cause severe disease is essential now.
- Therefore, genomic sequencing becomes one of the first steps in this important process.
- Besides increasing vaccination coverage, the U.S. and UK have scaled up genomic sequencing which went a long way in containing the virus.

Delta Variant

- The Delta variant was previously known as the “Indian variant”, as it was first found in India.
- It is one of three sub-lineages of the Indian variant, and is also known as B.1.617.2.
- Studies have shown that the Delta variant became the most circulating variant in Delhi.
- The Delta variant is likely to be associated with high viral load.
- It also resulted in a higher proportion of breakthrough infection (people already vaccinated getting infected).
- The Public Health England (PHE) also reported that the Delta variant has become the most common circulating strain in the U.K., replacing Alpha variant (B.1.1.7, first reported from Kent, England in September 2020).
- The PHE also reported that the effectiveness of a single dose of vaccine (amongst symptomatic patients) was lower against the Delta strain.

What is the case with India?

- India seems to be faltering on both expanding vaccination coverage and genomic sequencing.
- Procedural steps such as setting up the Indian SARS-CoV2 Genomic Consortia, or INSACOG have been taken.
- But the sequencing has remained at a very low level of a few thousand cases only.

What are the measures to be taken?

- **Genomic sequencing**- India needs to scale up genomic sequencing, across all States.
- There should be sufficient and representative samples collected for genomic sequencing.
- This will help track district-level trends in circulating variants.
- A national-level analysis of collated genomic sequencing data should be done on a regular basis.
- And the findings should be shared publicly.
- **Research** - The government must invest and support more scientific and operational research on vaccine effectiveness.
- The data should include various stratifiers such as age, gender and comorbid conditions, etc.
- **Vaccine policy** - There are early indications of immune escape and reduced vaccine effectiveness against the *Delta variant* (especially after one shot).
- So, the policy on population coverage with two shots of vaccine, gap between the doses, priority groups, etc should be reviewed scientifically.

11. ENVIRONMENT

11.1 Forest Rights & Forest Conservation

What is the issue?

- Recently, at the UN High-Level Dialogue on Desertification, Land Degradation and Drought, Indian PM reiterated India's target of land degradation neutrality by 2030, citing the Banni grassland in Gujarat.
- In this context, here is a look at the various aspects of land restoration in India.

Why is the Banni grassland notable?

- One of Asia's largest tropical grasslands, Banni is home to great biological diversity.
- It is the lifeline of its pastoralist communities.
- However, climate change and the invasion by *Prosopis juliflora* have severely impacted its unique ecology.

- It was found that unless action was taken, Banni grassland was headed for severe fodder scarcity.
- The region's highly degraded lands were being restored.
- The livelihoods of pastoralists were supported using a "novel approach."
- The Banni's pastoralist communities (Maldharis) uproot Prosopis in the pre-monsoon period.
- When it rains, the native grass species regenerate from their rootstock.
- This is precisely what the pastoralist communities have been doing for the past few years.
- Their endeavour needs to be supported.

What is the significance?

- Local communities applying their deep knowledge of the local ecology to become "decision-makers" in restoring their commons is indeed novel in India.
- However, the mandate for them to do so is not new. The Forest Rights Act (FRA), 2006 provides for this.
- Adivasis and other traditional forest-dwelling communities, including pastoralists, are legally empowered.
- They can decide on the management and restoration of their community forest resources (CFR).
- They can stop any activity that adversely impacts biodiversity or the local ecology.

What is the larger picture?

- Similar to the Banni grasslands, India's forests are grappling with degradation, an important contributor to GHG emissions.
- More than 40% of the forest cover is open, often degraded.
- India has committed to restore 26 million hectares of degraded forests and lands by 2030 under the Bonn pledge.
- It has also targeted creating an additional carbon sink of 2.5 to 3 billion tonnes by 2030 through additional forest and tree cover.
- This is committed as part of its Nationally Determined Contribution under the Paris Agreement.

What are the forest restoration efforts so far?

- Initiatives to restore degraded landscapes include:
 - i. social forestry in the 1970s
 - ii. tree growers' cooperative societies in the 1980s
 - iii. Joint Forest Management in the 1990s
 - iv. National Afforestation Programme and Green India Mission in the last two decades
- Studies have found these to have limited restoration benefits.
- These initiatives have drawn criticism for paying little attention to the land and forest tenure of local communities.
- They fail to incorporate traditional ecological knowledge.
- The CFR rights under FRA tackle these issues.
- It assigns rights to protect, manage and restore around 40 million hectare of forests to village-level democratic institutions.
- The recognition of these rights, however, has happened at an extremely slow pace.
- Less than 5 % of the total potential area has been brought under CFR.
- In Banni too, title deeds formally recognising the CFR rights of the pastoralists are yet to be issued.
- Institutional support for CFR remains minimal.

12. INTERNAL SECURITY

12.1 Building Cyber Resilience

What is the issue?

- Many high-profile cyberattacks in the recent period has exposed vulnerabilities in the critical infrastructure of even advanced nations.
- This has reinforced the need for improved defences against actual, and potential, cyberattacks by all countries across continents.

What were the recent cyber attacks on the U.S.?

- Towards the end of 2020, a major cyberattack, headlined ‘SolarWinds,’ had rocked the U.S., believed to have been sponsored from Russia.
- Following this, thousands of U.S. organisations were hacked in early 2021, by a Chinese group Hafnium.
- In quick succession, thereafter, the U.S. has witnessed three more major attacks.
- One was the ransomware attack by Russia/East Europe-based cybercriminals, styled DarkSide, on Colonial Pipeline.
- Another Russia-backed group, Nobellium, next launched a phishing attack on 3,000 e-mail accounts targeting USAID and several other organisations.
- Very recently, JBS SA, the U.S. subsidiary of a Brazilian meat processing company, faced ransomware attack.

What is the changing trend in this regard?

- Cyber attacks are often referred to as the fifth domain/dimension of warfare.
- Most nations are focusing on erecting cyber defences to protect military and strategic targets.
- The obsession of military cyber planners has been to erect defences against software vulnerabilities referred to as ‘Zero-day.’
- [This has the capability to cripple a system and could lie undetected for a long time.
- A popular Zero-day software of this kind to date is Stuxnet, which almost crippled Iran’s uranium enrichment programme few years back.]
- But, the above mentioned attacks were all primarily on civilian targets.
- Today, a whole new market currently exists for Zero day software outside the military domain.
- Governments and nations much prepare themselves for these new challenges, which are sure to stretch their capability and resources.
- One related problem is that the distinction between military and civilian targets is increasingly getting erased.
- The consequences of this could be indefinite.
- [E.g. the 2012 cyberattack on Aramco, employing the Shamoon virus, which wiped out the memories of 30,000 computers of the company
- This has ever since been one reason for the very frosty relations between different countries in West Asia and the Gulf region.]
- In the civilian domain, ransomware and phishing, including spear phishing, are the two key modes of cyber warfare today.

What is the impact?

- Ransomware attacks have skyrocketed, with demands and payments going into multi-millions of dollars.
- India figures prominently in this list, being one of the most affected.
- Of late, the recovery cost from the impact of a ransomware attack in India, for example, has tripled.



- Mid-sized companies, in particular, face a catastrophic situation, if attacked, and may even have to cease operations.
- Banking and financial services were most prone to ransomware attacks till date.
- Oil, electricity grids, and lately, health care, have begun to figure prominently.
- **Healthcare sector**-As the COVID-19 pandemic is raging, cyberattacks on health-care systems gains significance.
- Compromised 'health information' of individuals is proving to be a vital commodity for use by cybercriminals.
- The available data aggravates the risk not only to individuals but also to entire communities.

How significant is data protection?

- The data life cycle can broadly be classified into:
 1. data at rest (when it is being created and stored)
 2. data in motion (when it is being transmitted across insecure and uncontrolled networks)
 3. data in use (when it is being consumed)
- Constant exposure lends itself to ever increasing data thefts and abuse.
- Reportedly, more than 3 quintillion bytes of data is created everyday (some put it at over 2.5 quintillion).
- And cybercriminals are becoming more sophisticated, engaging in stealing sensitive data in targeted computers before launching a ransomware attack.
- So, cybersecurity essentially hinges on data protection.

What are the safety mechanisms available?

- Cybersecurity professionals are now engaged in building a 'Zero Trust Based Environment.'
- This is nothing but zero trust on end point devices, zero trust on identity, and zero trust on the network to protect all sensitive data.
- There are few niche companies today, which have developed/developing newer technologies to create a Zero Trust Based environment, employing:
 - i. software defined solutions for agile perimeter security
 - ii. secure gateways, cloud access security
 - iii. privileged access management
 - iv. threat intelligence platforms
 - v. static and dynamic data masking, etc.
- There is thus a need to create awareness on the availability of such firms, to ward-off cyberattacks and safeguard data.

12.2 Jammu Drone Attack

Why in news?

Drones were used for the first time to drop explosive devices, triggering blasts inside the Air Force Station's technical area in Jammu.

Why is this significant?

- Indian authorities reportedly suspect that it was carried out by the Lashkar-e-Taiba, which is patronised by Pakistan.
- There were no casualties at the base.
- But there were at least two more subsequent attempts to use drones to attack military targets.
- The use of drones brought to the fore a troubling new mode of terrorism for the country.



- The use of Unmanned Aerial Vehicles (UAV), autonomous weapons systems and robotic soldiers by states in warfare and policing are increasing.
- This has raised moral and practical questions that remain unresolved.
- Non-state actors have quickly adopted these new modes.

What were the similar earlier incidents?

- In 2018, Syrian rebels used homemade drones to attack Russian military bases in Syria.
- The same year, Venezuelan President Nicolas Maduro had a narrow escape after a drone flying towards him exploded a short distance away.
- In 2019, Houthi rebels claimed responsibility for bombing Saudi oil installations using drones.

What advantages do these new modes offer?

- New modes of sabotage and violence enabled by technology reduce costs, while increasing their efficacy.
- They also reduce the risk of identification for terrorists.
- Simultaneously, security agencies would find conventional tools redundant in combating terrorism.
- Terrorism may not even require organisations, as individuals with sufficient motivation and skills can carry out such attacks.
- The key international framework at present for controlling the proliferation of technology that can be weaponised include the Wassenaar Arrangement and Missile Technology Control Regime.
- These are also largely useless in the emerging scenario.

How have states dealt with terror so far?

- States including India have sought to deal with terrorism with a combination of various approaches.
- These include stringent laws, invasive surveillance, harsher policing and offensives against other countries that support terrorist groups.
- This approach has only had limited success in ensuring peace anywhere while the human and material costs have been high.
-

PRELIM BITS

13. HISTORY, ART & CULTURE

National Maritime Heritage Complex

- This world-class facility is to be developed by the Ministry of Culture (MoC) and Ministry of Ports, Shipping and Waterways (MoPSW) in the vicinity of the ASI site of Lothal, Gujarat.
- It is to be developed as a first of its kind in the country dedicated to the legacy of Maritime Heritage of India from ancient to modern times, to showcase India's rich and diverse maritime glory.
- It would be developed as an international tourist destination that would be showcased for edutainment purpose.
- **Features** - The unique feature of NMHC is the recreation of ancient Lothal city - one of the cities of the Indus valley civilization (2400 BC).
- NMHC would have structures such as National Maritime Heritage Museum, Light House Museum, Heritage Theme Park, Museum Themed Hotels & Maritime themed eco-resorts, Maritime Institute etc.
- Various theme parks would be developed through public-private partnership.
- **NCF** - MoC will facilitate in the fundraising for NMHC through the National Culture Fund (NCF).



- The services of National Culture Fund (NCF) shall be utilized to receive funds by way of grant, donation, CSR and foreign contribution.
- MoC will also provide needed collaboration to NMHC for all maritime heritage subjects under its project 'Mausam'.

China's Dragon Man

- Researchers from China have found an ancient human skull of new human species dubbed the "Dragaon Man" or Homo longi in the Songhua River in China's Harbin city that could belong to an altogether.
- The name "Dragon Man" has been derived from the Long Jiang or Dragon River in China's Heilongjiang province where Harbin is located.
- The cranium, which was found almost complete, could be over 146,000 years old.
- Because of the distinctive shape of the skull some team members have suggested that it be declared a part of a new species of the genus Homo.
- Significantly, the size of the skull, which has a considerable brain capacity, is comparable to that of modern humans and Neanderthals.
- While sizes can vary between populations and males and females, the average capacity of a human brain is about 1,300 cubic centimetres, and it can weigh anywhere between 1,300-1,400 grams.
- **Significance of the discovery** - If the "Dragon Man" is a new species, it might bridge the gaps between our ancient ancestors called Homo erectus and us. It brings new knowledge about the evolution of sapiens.
- Interbreeding with ancient humans allowed Homo sapiens to acquire genes that improved their chances of survival, and that some of these genes are present in modern humans even today.

Nesher Ramla Homo

- Researchers working in Israel had identified a previously unknown kind of ancient human called "Nesher Ramla Homo".
- Nesher Ramla Homo co-existed with Homo sapiens nearly 140,000-120,000 years ago when several species of humans co-existed in Asia, Europe and Africa.
- These include Homo sapiens, the Neanderthals, and the Denisovans.
- This archaic Homo population had mastered the use of technology that until recently was linked only to Homo sapiens or Neanderthals.
- Members of this species could hunt small and large game, they used wood for fuel, cooked and roasted meat, and maintained fires.
- These findings are important because they provide evidence that there were cultural interactions between different human lineages.

Other Human Species

- As per the Smithsonian National Museum of Natural History, there are over 21 human species. These are,
- **Sahelanthropus tchadensis** is believed to be the oldest member of the human family tree. They lived about 7-6 million years ago in Africa.
- The other species that lived in Eastern Africa are Orrorin tugenensis, Ardipithecus kadabba, Ardipithecus ramidus, Australopithecus anamensis, Australopithecus afarensis (Lucy's species), etc.
- **Homo habilis** lived about 2.4-1.4 million years ago in Eastern and Southern Africa. This species still retained some of the ape-like features.
- **Homo erectus** lived about 1.89 million-110,000 years ago, in Northern, Eastern, and Southern Africa and Western and East Asia. 'Turkana Boy' is the most complete fossil belonging to this species.
- **Homo floresiensis** lived around 100,000-50,000 years ago, in Asia.
- **Hobbit** - One of the most recently discovered early human species has been nicknamed the "Hobbit". Specimens have so far only been found on an Indonesian island.



- **Homo heidelbergensis** lived about 700,000-200,000 years ago in Europe, some parts of Asia and Africa. This was the first early human species to live in colder climes.
- **Homo neanderthalensis** lived about 400,000-40,000 years ago, and co-existed with Homo sapiens for a few thousand years.
- They lived in Europe and in southwestern and central Asia.
- **Homo sapiens** - The species to which all existing humans belong evolved in Africa nearly 300,000 years ago as a result of some dramatic climate change events.
- **Neanderthals** (Homo neanderthalensis) - They are believed to be the closest extinct human relatives and lived about 400,000-40,000 years ago in Europe and southwestern to central Asia.

14. GEOGRAPHY

Mount Nyiragongo Volcano

- After a week Mount Nyiragongo volcano in the Democratic Republic of Congo (DRC) erupted, earthquakes are still being reported around it.
- **Location** - Mount Nyiragongo is an active stratovolcano in the Virunga volcanic chain inside the [Virunga National Park](#), which has been listed in the UNESCO's List of World Heritage in Danger.
- Nyiragongo owes its existence to the activity of the African Great Rift (Albertine Rift). The rift is constantly extending and opening.
- **Particularly dangerous** - As the Mount Nyiragongo is located on a highly active segment of the African rift, the magma ascends quickly from about 100 km beneath the Earth's surface.
- Another reason for concern is the extreme fluidity of the lava that allows little time for people to escape.
- Other dangers associated with rifting, and volcano activity in the region,
 1. Dangerous earthquakes;
 2. Explosions when the hot lava reaches Lake Kivu waters causing its sudden boiling;
 3. Release of carbon-rich gases, particularly methane, during rifting and eruption, leading to explosions;
 4. Potential for carbon-rich gas accumulation at the bottom of lake Kivu, which may cause surface water to sink, releasing lethal gases threatening Goma.
- Following the last eruption in 2002, the National Institute of Geophysics and Volcanology in Italy started a programme of hazard evaluation and risk mitigation from lava flow invasion in Goma, DRC.
- Nyiragongo and nearby Nyamuragira are together responsible for 40% of Africa's historical volcanic eruptions.

River Devika National Project

- The River Devika Project in Jammu & Kashmir is being compared with the pioneer "NamamiGange" project of the Central Government.
- The Devika river originates from the hilly Suddha Mahadev temple in Udhampur district of Jammu and Kashmir.
- It flows down towards western Punjab (now in Pakistan) where it merges with the Ravi river.
- The Devika river holds great religious significance as it is revered by Hindus as the sister of river Ganga.
- In 2019, the Devika Bridge in Udhampur was inaugurated. This Bridge takes care of traffic congestion and also ensures smooth passage of Army convoys and vehicles.



Raimona National Park

- Recently, the Assam government created the Raimona National Park in western Assam.
- Raimona National Park will be administered by the Kachugaon Forest Division of Bodoland Territorial Council.
- Raimona is bounded on the west by the Sonkosh river, on the east by the Saralbhangra river and on the south by the Pekua river.
- It adjoins the Buxa Tiger Reserve in West Bengal to its west, Phipsoo Wildlife Sanctuary in Bhutan to its north and the first addition to Manas National Park to the east.
- Raimona, which has 11 different forest types and subtypes, is home to the golden langur, elephant, tiger, clouded leopard and Indian gaur.
- Conservation of this area shall provide water security to the people downstream in Kokrajhar and Dhubri district.

Dihing Patkai National Park

- Recently, the Assam government notified Dihing Patkai as the seventh National Park of the state.
- [The six other National Parks in Assam are Kaziranga, Manas, Nameri, Orang, Dibru-Saikhowa and Raimona.
- Assam now has the third most National Parks after the 12 in Madhya Pradesh and nine in the Andaman and Nicobar Islands.]
- Dihing Patkai national park will be administered by Soraipung Range of Digboi Forest Division and Jeypore Range of Dibrugarh Forest Division.
- Dehing is the name of the river that flows through this forest and Patkai is the hill at the foot of which the sanctuary lies.
- The Dihing Patkai straddling eastern Assam's Dibrugarh and Tinsukia districts is a major elephant habitat.
- It encompasses the erstwhile Dehing Patkai Wildlife Sanctuary, Jeypore Reserve Forest and the western block of Upper Dihing Reserve Forest.
- The forest village area diverted under Forest Conservation Act has been excluded.
- Stretches of Dirak and Buri Dihing rivers have been included in the park.

Dehing Patkai Wildlife Sanctuary

- Dehing Patkai Wildlife Sanctuary is known as the Jeypore Rainforest.
- It is the only sanctuary in India which is home to seven different species of wild cats - tiger, leopard, clouded leopard, leopard cat, golden cat, jungle cat and marbled cat.
- It is home to Chinese pangolin, flying fox, barking deer, serow, Malayan giant squirrels, Assamese macaque and White Winged Wood Duck.

Glacial Lake Atlas

- The Department of Water Resources, River Development and Ganga Rejuvenation (DoWR, RD & GR) under the Ministry of Jal Shakti have released the updated Glacial Lake Atlas of Ganga Basin.
- For the present study, glacial lakes with water spread area greater than 0.25 ha were mapped using Resourcesat-2 (RS-2) Linear Imaging Self Scanning Sensor-IV (LISS-IV) satellite data.
- Based on its process of lake formation, location, and type of damming material, glacial lakes are identified in 9 types, grouped into 4 categories.

NHP-Bhuvan Portal

- The Secretary, Department of Space & Chairman of ISRO launched the National Hydrology Project or NHP-Bhuvan portal of NRSC.
- This portal is a repository of information on the initiatives undertaken by NRSC under NHP with a facility to download the reports and knowledge products being developed by NRSC.
- This initiative under NHP is a step towards facilitating acquiring reliable information and putting the same in public domain which would pave the way for an effective water resource development and management.



- The present glacial lake atlas is based on the inventoried glacial lakes in part of Ganga River basin from its origin to foothills of Himalayas. The study portion of the basin covers part of India and transboundary region.
- This Atlas is available on Bhuvan portal of National Remote Sensing Centre (NRSC), India WRIS Portal and National Hydrology Project (NHP) website.
- **Role of NRSC** - NRSC under the NHP is carrying out hydrological studies using satellite data and geospatial techniques.
- It is responsible for forming a detailed glacial lake inventory, prioritization for GLOF risk, and simulation of GLOF for selected lakes has been taken up for all the catchments of Indian Himalayan Rivers.
- Under this activity, an updated inventory of glacial lakes using high resolution satellite data was prepared for the Indus River basin in 2020.
- **Uses** - The Glacial Lake Atlas can be used for managing the glacial lakes, and to mitigate the possible impacts of Glacial Lake Outburst Floods (GLOF) and climate change.
- It provides database for regular or periodic monitoring changes in spatial extent (expansion/shrinkage), and formation of new lakes.
- Central and State Disaster Management Authorities can make use of the atlas for disaster mitigation planning and related program.

National Hydrology Project

- National Hydrology Project is a Central Sector Scheme with 100% grant to implementing agencies on pan India basis that was started in 2016.
- It is implemented by the Department of Water Resources, River Development & Ganga Rejuvenation (DWR, RD & GR). It is supported by the World Bank.
- **Objective** - To improve the extent, quality and accessibility of water resources information and to strengthen the capacity of targeted water resources management institutions in India.
- **Project Components** - Water Resource Monitoring System (WRMS), Water Resources Information System (WRIS), Water Resources Operation and Planning System (WROPS) and Water Resources Institutions Capacity Enhancement (WRICE).
- **Groups of direct beneficiaries**
 - Central and state implementing agencies (IAs) responsible for surface and/or groundwater planning and management, including river basin organizations; and
 - Users of the WRIS across various sectors and around the World.
- **Key Results Indicators**
 - Improving the extent, quality, and accessibility of water resources data: Number of new or upgraded Water Resources monitoring stations providing validated data online.
 - Improving the accessibility of water resources information.
 - Strengthening the capacity: Number of Water Resources institutions achieving benchmark performance levels.

15. POLITY

Class Action Suit

- It is a legal action that allows one or many plaintiffs to file and appear for a group of people with similar interests. Such a group forms a “class”.
- This suit derives from representative litigation, to ensure justice to the ordinary individual against a powerful adversary.
- While class action suits have a history dating back to the 18th century, these were formally incorporated into law in the United States in 1938 under the Federal Rules of Civil Procedure.



- Over the years, class action has become successful at curbing negligence, that it is now a part of US corporate and consumer laws, environmental litigation, etc.

Indian Equivalent to US Class Action Suits

- India has legal provisions for filing class action suits, but under four laws. They are,
- Order 1 Rule 8 of the Civil Procedure Code refers to representative suits, which is the closest to a classic class action suit in a civil context in India. It does not cover criminal proceedings.
- Section 245 of the Companies Act allows members or depositors of a company to initiate proceedings against the directors of the company in specific instances.
- There are threshold limits, requiring a minimum number of people or holders of issued share capital before such a suit can proceed.
- This type of suit is filed in the National Company Law Tribunal.
- Section 53(N) of Competition Act allows a group of aggrieved persons to appear at the National Company Law Appellate Tribunal (NCLAT) in issues of anti-competitive practices.
- The Supreme Court in certain complaints under the Consumer Protection Act has considered them as class action suits. (Rameshwar Prasad Shrivastava and Ors v Dwarkadhis Project Pvt Ltd and Ors)
- **Class action suit and Public Interest Litigation** - For filing a Public Interest Litigation (Article 32 or Article 226 of the Constitution), the plaintiff need not have a personal interest or claim in the matter.
- A crucial difference is that unlike a class action suit, a PIL cannot be filed against a private party (but only for a matter of public interest.)

Ranked Choice Voting

- Ranked choice voting system made its debut in New York City's mayoral primary.
- The system is based on a simple premise - Democracy works better if people aren't forced to make an all-or-nothing choice with their vote.
- Rather than pick just one candidate, voters get to rank several in order of preference.
- Even if a voter's top choice doesn't have enough support to win, their rankings of other candidates still play a role in determining the victor.
- **Working** - If one candidate is the first choice of a majority of voters (more than 50%) that person wins the race outright, just like in a traditional election.
- If nobody hits that threshold, ranked choice analysis kicks in.
- Vote tabulation is done in rounds. In each round, the candidate in last place is eliminated. Votes cast ranking that candidate first are then redistributed to those voters' second choices.
- That process repeats until there are only two candidates left. The one with the most votes wins.
- **Benefit** - Nobody "wastes" their vote in this system by picking an unpopular candidate as their first choice. If that person is eliminated, you still get a say in who wins the race based on your other rankings.
- Another benefit is that it's tough for someone to get elected without broad support, unlike the traditional election.

Model Tenancy Act

- The Union Cabinet, chaired by Prime Minister, approved the Model Tenancy Act (MTA) to be sent to the States and Union Territories to enact legislation or amend laws on rental properties.
- The MTA would prescribe the norms for lease agreements, deposits, dispute handling and other aspects of rental properties.
- The Act will be applicable prospectively and won't affect the existing tenancies.
- It would set up separate rent authorities, courts and tribunals in each district to settle disputes.



- It also makes it mandatory for there to be a written agreement between the property owner and the tenant. It would be submitted to the concerned district 'Rent Authority'.
- It puts a maximum limit for security deposits paid by tenants at 2 months' rent for residential properties and 6 months' rent for non-residential spaces (Commercial property).
- Tenant will not be evicted during the continuance of tenancy agreement unless otherwise agreed to in writing by both the parties.
- **Significance** - The Act will create adequate rental housing stock for all the income groups thereby addressing the issue of homelessness.
- It will enable institutionalisation of rental housing by gradually shifting it towards the formal market.

Model Panchayat Citizens Charter

- A Model Panchayat Citizens Charter or framework for delivery of the services across the 29 sectors, aligning actions with localised Sustainable Development Goals (SDGs).
- It is prepared by Ministry of Panchayati Raj in collaboration with National Institute of Rural Development & Panchayati Raj (NIRDPR).
- [NIRDPR is an autonomous organisation under the Ministry of Rural Development.]
- The aim of establishing a Citizen charter is to provide services to the people in a time bound manner without any prejudice, redressing their grievances and improving their lives.
- The Gram Panchayat Citizen Charter would ensure,
 1. Transparent and effective delivery of public services for sustainable development and enhanced citizen service experiences;
 2. Deepening inclusive and accountable Local Self Governments by incorporating diverse views; designing and delivering services.
- It will make the citizens aware of their rights, and make the Panchayats and their elected representatives directly accountable to the people.
- The Panchayats will utilise this framework to draw up a Citizens Charter and adopt it through a Gram Sabha resolution by 15th August, 2021.

Inland Vessels Bill, 2021

- The Union Cabinet gave the nod to the Inland Vessels Bill, 2021, which will replace the Inland Vessels Act, 1917.
- Total 4,000 km inland waterways have been operationalised. The Bill will regulate safety, security and registration of inland vessels.
- **Unified law** - A key feature of the Bill is a unified law for the entire country, instead of separate rules framed by the States.
- The certificate of registration granted under the proposed law will be deemed to be valid in all States and Union Territories. There will be no need to seek separate permissions from the States.
- **Central database** - The Bill provides for a central database for recording the details of vessel, vessel registration, crew on a portal.
- It requires all mechanically propelled vessels to be mandatorily registered. All non-mechanically propelled vessels will also have to be enrolled at district, taluk or panchayat or village level.
- **Definitions** - The Bill enlarges the definition of 'inland waters', by including tidal water limit and national waterways declared by the Central Government.
- **Pollution Control** - This Bill directs the Central Government to designate a list of chemicals, substances, etc. as pollutants. This deals with pollution control measures of Inland Vessels.



Delimitation in Jammu and Kashmir

- The Union government has invited political leaders from Jammu and Kashmir for a meeting with the Prime Minister in Delhi. This may be related to the delimitation process that needs to be held in J&K.
- **Delimitation** is the act of redrawing boundaries of an Assembly or Lok Sabha seat to represent changes in population over time.
- This exercise is carried out by a Delimitation Commission, whose orders have the force of law and cannot be questioned before any court.
- The objective is to redraw boundaries (based on the data of the last Census) in a way so that the population of all seats be the same throughout the State.
- Aside from changing the limits of a constituency, the process may result in change in the number of seats in a state.
- **Frequency** - Delimitation exercises in J&K in the past have been slightly different from those in the rest of the country because of the region's special status - which was scrapped by the Centre in 2019.
- Until then, delimitation of Lok Sabha seats in J&K was governed by the Constitution of India, but the delimitation of the state's Assembly seats was governed by
 1. Jammu and Kashmir Constitution and
 2. Jammu and Kashmir Representation of the People Act, 1957.
- Assembly seats in J&K were delimited in 1963, 1973 and 1995.
- **Now** - In March 2020, the government set up the Delimitation Commission, headed by retired Supreme Court judge Ranjana Prakash Desai, which was tasked with winding up delimitation in J&K in a year.
- Apart from Desai, Election Commissioner and J&K State Election Commissioner are the ex-officio members of the delimitation panel. That apart, there are five associate members.
- After the abrogation of J&K's special status in 2019, delimitation of Lok Sabha and Assembly seats in the newly-created Union Territory would be as per the provisions of the Indian Constitution.
- As per the Jammu and Kashmir Reorganisation Bill, the number of Assembly seats in J&K would increase from 107 to 114, which is expected to benefit the Jammu region.

Recusal of Judges

- Recently, two Supreme Court judges have recused themselves from hearing cases relating to West Bengal.
- **Reasons for recusal** - When there is a conflict of interest, a judge can withdraw from hearing a case to prevent creating a perception that s/he carried a bias while deciding the case.
- The practice stems from the cardinal principle of due process of law that nobody can be a judge in his/her own case.
- Another instance for recusal is when an appeal is filed in the Supreme Court against a judgement of a High Court that may have been delivered by the SC judge when she was in the HC.
- **Process for recusal** - The decision to recuse generally comes from the judge herself as it rests on the conscience and discretion of the judge to disclose any potential conflict of interest.
- In some circumstances, lawyers or parties in the case bring it up before the judge. If a judge recuses, the case is listed before the Chief Justice for allotment to a fresh Bench.
- **Rules** - There are no formal rules governing recusals, although several Supreme Court judgments have dealt with the issue.
- In *Ranjit Thakur v Union of India* (1987), the Supreme Court held that the tests of the likelihood of bias are the reasonableness of the apprehension in the mind of the party.
- The 1999 charter 'Restatement of Values in Judicial Life' is a code of ethics adopted by the Supreme Court.
- It states, "A Judge shall not hear and decide a matter in a company in which he holds shares, unless he has disclosed his interest and no objection to his hearing and deciding the matter is raised."
- **Decision** - Once a request is made for recusal, the decision to recuse or not rests with the judge.



- The judges can recuse even if they do not see a conflict but only because such an apprehension was cast. They can refuse to withdraw from a case.
- **Record** - Since there are no formal rules governing the process, it is often left to individual judges to record reasons for recusal.
- Some judges disclose the reasons in open court; in some cases, the reasons are apparent.

Central Deputation of IAS officers

- The outgoing West Bengal Chief Secretary Bandyopadhyay has been the subject of a tussle between the Centre and the West Bengal government as the state government appointed him as Chief Advisor to the CM.
- He was due to begin an extension of three months after retiring as Chief Secretary, but the Centre instead asked him to join the Government of India. But he did not join.
- **Extension** - Rule 16(1) of Death-cum-Retirement Benefit (DCRB) Rules provides the conditions for the extension of service.
- A member of the Service dealing with budget work or working as a full-time member of a Committee which is to be wound up within a short period may be given extension of service for a period not exceeding 3 months in public interest, with prior approval of Central Government.
- For an officer posted as Chief Secretary of a state, this extension can be for six months.
- **Central deputation** - In normal practice, the Centre asks every year for an “offer list” of officers of the All India Services willing to go on central deputation, after which it selects officers from that list.
- Rule 6(1) of the IAS Cadre Rules - An officer may, with the concurrence of the State Governments concerned and the Central Government, be deputed for service under the Central Govt or another State Govt.
- It says “In case of any disagreement, the matter shall be decided by the Central Government and the State Government(s) concerned shall give effect to the decision of the Central Government.”
- **Punishment** - The Centre cannot take action against civil service officials who are posted under the state government, unless the latter agrees.
- All India Services (Discipline and Appeal) Rules, 1969 - The authority to institute proceedings and to impose penalty will be the state government if the officer is serving in connection with the affairs of a state.
- For any action to be taken against an officer of the All India Services, the state and the Centre both need to agree.

Twitter - Not a Social Media Intermediary

- The government withdraws the protection given to Twitter, which is given to it for being a social media intermediary under Section 79 of the Information Technology (IT) Act.
- The Ministry of Electronics and Information Technology (MeitY) says that Twitter has not adhered to norms while appointing executives as Resident Grievance Officer, Nodal Officer and Chief Compliance Officer.
- **Protection** - Section 79 of IT Act says that any intermediary shall not be held legally or otherwise liable for any third party information, data, or communication link made available or hosted on its platform.
- This protection shall be applicable if the said intermediary,
 1. Doesn't initiate the transmission of the message in question,
 2. Doesn't select the receiver of the transmitted message, and
 3. Doesn't modify any information contained in the transmission.
- So, if a platform acts as the messenger carrying a message from point A to B, without interfering with its content in any manner, it will be safe from any legal prosecution due to the message being transmitted.
- **Impact** - As the protection accorded to Twitter under Section 79 of the IT Act is gone, it opens up the platform to the possibility of any and all penal action that is likely to be taken against it as a publisher of content.



- This means that if someone puts out any content on Twitter that leads to some form of violence, or violates any Indian law with respect to content, the person along with Twitter will be legally liable for the content.

Loopholes of Indian Laws Used

- **Citizenship laws** - India does not allow dual citizenship. According to Section 9 of the Indian Citizenship Act, 1955, any Indian citizen who voluntarily acquires foreign citizenship ceases to be an Indian citizen.
- The only exception when this law does not apply is when the two concerned countries are at war with each other.
- So, for all practical purposes, Choksi remains an Antiguan citizen even though Antigua has begun a legal process to revoke his citizenship.
- **Passport laws** - As per the Passports Act 1967, it is mandatory for all Indian passport holders to surrender their passports to the nearest Indian Mission/Post soon after acquiring foreign nationality.
- Misuse of Indian passports constitutes an offence under Section 12(1A) of the Passports Act 1967.
- It is a violation of Passport Rules if the Indian Passport has been kept with and used by the person for more than 3 years after acquiring the foreign nationality.

Tulu Language

- A Twitter campaign demanding official language status to Tulu in Karnataka and Kerala received an overwhelming response.
- Tulu speakers have been requesting the governments to give Tulu the official language status and include it in the eighth schedule to the Constitution (Presently, there are 22 official languages).
- Tulu is a Dravidian language spoken mainly in regions of Karnataka (Dakshina Kannada and Udupi districts) and Kerala (Kasaragod district). This region is informally known as Tulu Nadu.
- Robert Caldwell (1814-1891), in his book, A Comparative Grammar of the Dravidian or South-Indian Family of Languages, called Tulu as one of the most highly developed languages of the Dravidian family.
- Tulu is not an official language in the country. But the Karnataka government introduced Tulu as a language in schools a few years ago.
- To know more about the Tulu issue, [click here](#).

16. GOVERNMENT INITIATIVES

AgriStack

- The Union government has decided to give agriculture a shot of technology by creating a centralised farmer database under 'AgriStack'.
- Department of Agriculture, Cooperation and Farmers Welfare entered into a MoU with Microsoft Corporation to start a pilot project in 100 villages of six states - UP, MP, Gujarat, Haryana, Rajasthan and AP.
- The MoU requires Microsoft to create a 'Unified Farmer Service Interface' through its cloud services. This platform will help digitise agricultural services delivery by the public and private sectors.
- The MoUs stress on profiling land and crop estimation using remote sensing and geo-spatial technologies.
- 'AgriStack' is a collection of digital databases and technology-based interventions in agriculture. It is proposed by the Central Government focusing on India's farmers and the agricultural sector.
- Under the programme, each farmer will have a unique digital identification (farmers' ID) that contains personal details, information about the land they farm, as well as production and financial details.
- Each ID will be linked to the individual's digital national ID Aadhaar.
- The MoUs talk about database creation from particularly three schemes: PM-KISAN (Pradhan Mantri Kisan Samman Nidhi), Soil Health Card and PM Fasal Bima Yojna (crop insurance scheme).

- This data will be compared with land records data. If there's a mismatch, it will be shared with the local authorities for validation and field survey.
- The field data received from local authorities will be updated with the compiled data to create clean, standardised, verified data for AgriStack.

Horticulture Cluster Development Programme

- Horticulture Cluster Development Programme (CDP) was launched by the Ministry of Agriculture and Farmers' Welfare (MoA&FW) to ensure holistic growth of horticulture.
- It is central sector programme that aims at growing and developing identified horticulture clusters to make them globally competitive.
- It is implemented by the National Horticulture Board (NHB) of the Ministry of Agriculture and Farmers' Welfare (MoA&FW).
- **Benefits** - It will address all major issues related to the Indian horticulture sector including pre-production, production, post-harvest management, logistics, marketing and branding.
- It will leverage geographical specialisation and promote integrated and market-led development of horticulture clusters.
- It will help in 'Doubling farmers' income. It will benefit about 10 lakh farmers and related stakeholders of the value chain.
- It will improve exports of the targeted crops by 20% and create cluster-specific brands to enhance the competitiveness of cluster crops.
- The programme is expected to converge with other initiatives of the Government such as the [Agriculture Infrastructure Fund](#).
- CDP has a huge potential to transform the entire horticulture ecosystem improving its global competitiveness by building last-mile connectivity.

Pradhan Mantri Annadata Aay SanraksHan Abhiyan

- In 2018, Pradhan Mantri Annadata Aay SanraksHan Abhiyan (PM-AASHA) announced by the government to aid in providing remunerative return to farmers for their produce.

Price Support Scheme

- Under the PSS, pulses, oilseeds and copra will be physically procured by the Central nodal agencies with proactive role of state governments.
- Besides, the scheme will be implemented with the help of,
 1. Food corporation of India (FCI) and
 2. National Agricultural Cooperative Marketing Federation of India (NAFED).

Sub-schemes of PM-AASHA

1. Price Support Scheme (PSS),
2. Price Deficiency Payment Scheme (PDPS) and
3. Private Procurement & Stockist Scheme (PPSS) on a pilot basis.

- The government will procure 25% of the marketable surplus of farmers for eligible crops.
- The procurement expenditure and losses due to procurement will be borne by Central Government as per norms.
- The Centre will provide bank guarantee for the agencies to procure from farmers.

Price Deficiency Payment Scheme

- The scheme has been formulated on the lines of Madhya Pradesh government's Bhawantar Bhugtan Yojana (BBY).
- Under the PDPS, the state will provide the difference between the prices prevailing in mandis and the MSP.
- All oil-seeds are covered. There will be no physical procurement of crops.

- Farmers who sell their crops in recognised mandis within the notified period can benefit from it. PDPS will create a win-win situation for both farmers and the government.

Private Procurement & Stockist Scheme on a pilot basis

- Under the PPPS, selected private agencies will procure oilseeds in coordination with the government.
- The private agency shall procure the commodity at MSP in the notified markets during the notified period from the registered farmers in consonance with the PPSS Guidelines.
- This procurement will be done when the prices in the market fall below the notified MSP and whenever authorized by the state/UT government.
- The private player will then be compensated through a service charge up to a maximum of 15% of the MSP.

Biotech-KISAN Programme

- The Department of Biotechnology (DBT) has issued a Special Call for North East Region (NER) as a part of its Mission Programme Biotech-Krishi Innovation Science Application Network (Biotech-KISAN).
- Biotech-KISAN programme is a scientist-farmer partnership scheme launched in 2017.
- This pan-India program was developed by and with farmers under the Department of Biotechnology, Ministry of Science and Technology.
- It was launched for agriculture innovation with an objective to connect science laboratories with the farmers to find out innovative solutions and technologies to be applied at farm level.
- It follows a hub-and-spoke model and stimulates entrepreneurship and innovation in farmers and empowers women farmers.
- Under this scheme, Biotech-KISAN Hubs have been established covering all 15 agroclimatic zones and 110 Aspirational Districts in the country.
- [Biotech-KISAN hubs would fulfil the technology required to generate agriculture and bio-resource related jobs and better livelihood ensuring biotechnological benefits to small and marginal farmers.]

SAGE Initiative

- With the objective of focussing on the needs of India's fast-rising elderly population, the Ministry of Social Justice and Empowerment (MoSJ&E) will launch the Senior care Ageing Growth Engine (SAGE) project.
- The SAGE project will select, support and create a "one-stop access" of elderly care products and services by credible start-ups.
- Start-ups can apply for being a part of SAGE through the SAGE portal.
- They will be selected on the basis of innovative products and services across sectors such as health, housing, apart from technological access linked to finances, food management, and legal guidance.
- The MoSJ&E will act as a facilitator, enabling the elderly to access the products through these identified start-ups.
- India's elderly population is on the rise, and the share of elders, as a percentage of the total population in the country, is expected to increase from 7.5% in 2001 to almost 12.5% by 2026, and surpass 19.5% by 2050.
- So, there is an urgent need to create a more robust elder care ecosystem in India, especially in the post-COVID phase.
- The SAGE project is shaped on the recommendations of the empowered expert committee (EEC) report on start-ups for elderly.

Indian Certification of Medical Devices Plus Scheme

- ICMED 13485 PLUS scheme was launched by the Quality Council of India (QCI) and Association of Indian Manufacturers of Medical Devices (AiMeD).
- It has added further features to the ICMED the Scheme that had been launched for Certification of Medical Devices in 2016.

- ICMED Plus will verify the quality, safety and efficacy of medical devices.
- It integrates the Quality Management System components and product related quality validation processes through witness testing of products with reference to the defined product standards and specifications.
- Association of Healthcare Providers (AHPI) will encourage implementation of ICMED Plus among its members and stake holders.
- **Significance** - ICMED PLUS is the first scheme around the world in which quality management systems along with product certification standards are integrated with regulatory requirements.
- This scheme will be an end to end quality assurance scheme for the medical devices sector in India.
- It provides the much-needed institutional mechanism for assuring the product quality and safety.
- It will assist the procurement agencies to tackle the challenges relating to the menace of counterfeit products and fake certification.

BIS Scheme on SDO Recognition

- Research Design & Standards Organization (RDSO) of Indian Railways has become the first Institution to be declared as a Standard Developing Organization (SDO) under the BIS SDO Recognition Scheme.
- [RDSO, Lucknow, which is the sole R&D Wing of Ministry of Railways, is one of India's leading Standard formulating Body undertaking standardization work for railway sector.]
- To attain "One Nation One Standard" vision of Govt., Bureau of Indian Standards (BIS), which is a National Standards body under Department of Consumer Affairs, has launched a BIS SDO Recognition Scheme.
- Through this scheme, BIS integrates the existing capabilities and dedicated domain specific expertise available with various organizations in the country engaged in standards development in their sectors.
- It aims to enable convergence of all standard development activities in the country resulting in "One National Standard for One Subject".
- In order to become an SDO, RDSO reviewed its Standard Formulation procedures to realign them with the Best Practices of Standardization,
 1. Encoded in the WTO-TBT "Code of Good Practice" and
 2. Mandated by the BIS as essential criteria for recognition as SDO.
- The scope of RDSO's recognition as SDO, as approved by BIS is "SDO for products, processes and services for railway transportation sector in India".
- The recognition is valid for 3 years and will require renewal after completion of the validity period.
- **Significance** - The initiative set to usher in faster transition from development of technology & innovation stage to actual use on ground.
- In the long run, the initiative will create a Brand India identity for quality of product manufactured in the country.

Unique Disability Identification Card

- The Union Ministry of Health has written to the States/UTs to include the Unique Disability Identification (UDID) Card as a Photo ID while registering on Co-WIN 2.0.
- The UDID project was initiated by the Department of Empowerment of Persons with Disabilities. It aims at,
 1. Building a holistic end-to-end integrated system for Issuance of Universal ID & Disability Certificates for Person with Disabilities with their identification and disability details, and
 2. Creating a National Database for PwDs.
- Once the project covers all persons with disabilities, UDID Card will be made mandatory for availing various government benefits.
- As per the Persons with Disabilities act 1995 only given disabilities type can apply for UDID Card.



- List of disabilities includes blindness, cerebral palsy, low vision, locomotor disability, leprosy-cured, mental retardation, mental illness, and hearing impairment.
- **Significance** - The project will not only encourage transparency, efficiency and ease of delivering the government benefits to the person with disabilities, but also ensure uniformity.
- It will also help in stream-lining the tracking of physical and financial progress of beneficiary at all levels of hierarchy of implementation - from village level, block level, District level, State level and National level.

SATAT Scheme

- An agreement was signed between Oil and Gas majors including IndianOil, HPCL, BPCL, GAIL and IGL for promoting the Sustainable Alternative Towards Affordable Transportation (SATAT) scheme.
- It provides for establishing a strong network for marketing the entire produced quantity of CBG Plants through various channels.
- The agreement also has provision for associate implementers to join the SATAT movement. As per the agreement,
 1. IndianOil shall act as coordinator under the SATAT scheme and liaison with the Government and other agencies on behalf of Industry members.
 2. GAIL shall serve as the coordinator for the implementation of the CBG-CGD synchronization scheme.
- **SATAT scheme** aims to set up Compressed Bio-Gas production plants and make CBG available in the market for use as a green fuel.
- Launched in 2018, SATAT envisages targeting production of 15 MMT of CBG from 5000 plants by 2023. These plants may provide a,
 1. Boost to the availability of more affordable transport fuels,
 2. Better the use of agricultural residue, cattle dung and municipal solid waste,
 3. Provide an investment of 1.75 lakh crore, and
 4. Provide an additional revenue source to farmers, and direct and indirect job opportunities.
- To know more about the Alternative Towards Affordable Transportation (SATAT) scheme, [click here](#).

Saral Jeevan Bima

- It is a standard term life insurance plan that was launched in 2020 by Insurance Regulatory and Development Authority of India (IRDAI).
- It offers basic protection to people who are self-employed or belong to a lower income category - earning about 5 lakhs a year.
- It can be purchased by people in the age group of 18 to 65 years and will have a policy term of 5 to 40 years.
- It is a term cover that pays the entire cover amount to the dependents in case of the death of the policyholder within the policy term. There are no exclusions, other than suicides.
- The plan is available for a minimum cover amount of Rs 50,000, up to a maximum of Rs 25 Lakh.

Merger of CWC-CRWC

- The Union Cabinet has approved to merger of the 'Central Railside Warehouse Company Limited' (CRWC), with its holding enterprise 'Central Warehousing Corporation' (CWC).
- It will be a step towards implementing the direction of "Minimum Government Maximum Governance" given by Prime Minister.
- Due to shortage of capital and some of the restrictive clauses in its MoU with Ministry of Railways, CRWC's pace of growth was not as expected.
- As CWC is the sole shareholder of CRWC and all the assets and liabilities and rights and obligations will be transferred to CWC, there will be no financial loss to either instead it will bring synergy.

- The merger will unify similar functions of both the companies (i.e., warehousing, handling, transportation) through a single administration.
- A separate Division with the name 'Railside Warehouse Complexes (RWCs) Division' will be created by CWC for handling operations and marketing of RWCs.

Central Warehousing Corporation

- CWC is a Schedule 'A'-Mini-Ratna Category-1 Central Public Sector Enterprises (CPSE) set up in 1957 to provide logistics support to the agricultural sector.
- It is a statutory body that was established under the Warehousing Corporations Act, 1962 under the Ministry of Consumer Affairs, Food and Public Distribution.
- It provides reliable, cost-effective, integrated warehousing and logistics solution in a socially responsible and environment friendly manner.
- It was set up to provide for incorporation and regulation of Warehousing Corporations for the purpose of warehousing of agriculture produce and certain other commodities notified by the Central Government.
- As a premier Warehousing Agency, CWC operates Container Freight Stations/ Inland Clearance Depots, Air Cargo Complexes, Inland Check Posts and Temperature Controlled Warehouses.
- Warehousing activities of CWC includes food grain warehouses, industrial warehousing, custom bonded warehouses, container freight stations, inland clearance depots and air cargo complexes.
- Apart from storage and handling, CWC also provides services in the area of clearing & forwarding, handling & transportation, disinfection, fumigation etc.

Central Railside Warehouse Company Limited

- CWC formed a separate subsidiary company named 'Central Railside Warehouse Company Ltd.' (CRWC) in 2007.
- Central Railside Warehouse Company Limited is a Mini-Ratna Category-II CPSE incorporated under the Companies Act, 1956 in 2007.
- It was set up to plan, develop, promote, acquire and operate RWCs / Terminals / Multimodal Logistics Hubs on land leased from Railways or acquired otherwise.
- It developed specialization, expertise and goodwill in development and operation of RWCs. It operates 20 Railside Warehouses across the country.

Second Positive Indigenisation List

- The Defence Ministry notified the 'Second negative import list' - renamed as the 'Positive Indigenisation List' - of 108 items that can now be only purchased from indigenous sources.
- [The 'First Negative Indigenisation List' (101 items) was notified in August 2020.]
- The second list takes the total number on the list to 209. It will be implemented with effect from December 2021 to December 2025.
- It lays special focus on weapons and systems which are currently under development/trials and are likely to translate into firm orders in the future.
- Like the first list, import substitution of ammunition which is a recurring requirement has been given special focus.
- The second list comprises complex systems, sensors, weapons and ammunitions like helicopters, Air Borne Early Warning and Control (AEW&C) systems, MRSAM weapon systems, etc.
- **Significance** - The list recognises the potential of local defence industry and also promotes defence exports.
- It will also invigorate impetus to domestic R&D by attracting fresh investment into technology and manufacturing capabilities.
- It also provides an excellent opportunity for 'start-ups' as also Micro, Small and Medium Enterprises (MSMEs).



Categories of Security

- The Central Reserve Police Force (CRPF) and Central Industrial Security Force (CISF) are the two forces tasked with providing security to VIPs.
- While ministers get Central security cover due to their position in the government, a call on such security to private individuals is taken by the Home Ministry based on inputs from intelligence agencies.
- **Types of security cover** - There are six kinds of central security covers: X, Y, Y plus, Z, Z plus and SPG.
- The Special Protection Group (SPG) with an annual budget of about Rs 600 crore protects only the Prime Minister.
- But, the other categories - X, Y, Y plus, Z, Z plus - are provided to anyone based on the Centre's assessment.
- **X category** - Two personal security officers round the clock, which means around six PSOs assuming an 8-hour shift.
- **Y category** - Two PSOs and an armed guard at residence round the clock and additional security at night.
- That means about 11 personnel (5 for static duty and 6 for personal security) will work over shifts for the person.
- **Z category** - 22 personnel including 2 to 8 armed guards at residence, 2 PSOs round the clock and an armed escort of 1 to 3 for all road journeys.
- **Z+ category** - In addition to Z category security arrangements, protectees under this category get a bulletproof car, escort in three shifts and additional security when required.

Proposed Integrated Theatre Commands

- Integrated Theatre Commands is a unified command under which all the resources of the Army, the Navy and the Air Force are pooled, depending on the threat perception.
- These commands could be geographical (like looking at a border with a country) or thematic (like a command for all maritime threats).
- A model with 4 to 5 tri-Services integrated theatre commands is under discussion, with each command headed by a **three-star officer**.
- The **Theatre Commander** will report to the Chiefs of Staff Committee (COSC), which includes the three Service chiefs. The COSC is headed by the Chief of Defence Staff (CDS) as its permanent chairman.
- The Service chiefs currently have all the operational control over their forces; operational powers will now move to the COSC.
- The proposed commands are,
 - **Maritime Theatre Command** - To take care of all the maritime security needs of India on both the eastern and western seabords, and will include air strike assets and amphibian forces of the Army.
 - **Air Defence Command** - To be mandated with air defence across the country and beyond. The fighter jets will have reconnaissance and surveillance assets as well.
 - **Two or three land-based commands** - There will be one command each for India's borders with China and Pakistan.
- But there is a proposal to have another command looking at India's borders with Pakistan and China in Jammu and Kashmir, and Ladakh.
- Apart from these theatre commands, there will be two functional tri-Services commands as well.
 - **Logistics Command**, which will have the logistics of all the Services under one person.
 - **Training and Doctrine Command** to make all Services work under a common doctrine and have some basic common training.

Two Existing Tri-Service Commands

- **Andaman and Nicobar Command (ANC)** - It is the first Tri-Service theatre command of the Indian Armed Forces created in 2001.
- It is headed by rotation by officers from three Services.
- **Strategic Force Command** - It is responsible for the delivery and operational control of India's nuclear assets.



- The proposal is to have a theatre commander who will have operational control of the assets under his command, thus enhancing jointness among the forces, and also reducing duplication of resources.

Existing Commands

- As of now, the three forces have 17 commands between them. Each command is headed by a 4-star rank military officer.
- Seven Army commands - Northern, Eastern, Southern, Western, Central, South-western and Army Training Command (ARTRAC).
- Seven Air Force commands - Western, Eastern, Southern, Southwestern, Central, Training, and Maintenance commands.
- Three Navy commands - Western, Eastern and Southern, of which Southern is largely about training.
- Even if these commands operate in same region, they aren't co-located, and their areas of operational responsibility aren't necessarily the same.

PENCiL Portal

- The instances of Child Labour can be reported by citizens on PENCIL Portal or by calling on Childline-1098.
- The Platform for Effective Enforcement for No Child Labour (PENCiL) portal was launched by the Ministry of Labour and Employment to rehabilitate child labour in the country.
- This portal is an online platform that aims at engaging the Central and State Governments, District, civil society and the public in eradicating child labour to achieve the target of child labour free society.
- It aims to mainstream into legal schools of all children who have been withdrawn from child labour and rehabilitated through the National Child Labour Project (NCLP) Scheme.
- It aims to build a strong authentication mechanism for implementing and monitoring both the enforcement of the legislative provisions and effective implementation of the NCLP Scheme.
- **Components of PENCiL Portal** - Child Tracking System, Complaint Corner, State Government, National Child Labour Project, Convergence.
- **Implementation Process** - All complaints filed will be received by the District Nodal Officers (DNOs) who are nominated by the Districts.
- After receiving the complaints, the rescue measures will be taken within the 48 hours in coordination with the police department only if the complaint filed is found to be genuine.

Delhi's Master Plan 2041

- The Delhi Development Authority gave its preliminary approval to the draft Master Plan for Delhi (MPD) 2041. The current Master Plan for Delhi 2021 expires this year.
- [A city's master plan is a vision document by the planners and the land-owning agency of the city that gives direction to the future development.
- It includes analysis, recommendations, and proposals keeping in mind the population, economy, housing, transportation, and land use.]
- The draft MPD 2041 seeks to foster a sustainable, liveable and vibrant Delhi by 2041. It presents a plan for the city for the next 20 years.
- **Housing Sector** - The plan aims to incentivise rented accommodation by inviting private players and government agencies to invest more.
- It addresses parking problems and suggests a 'user pays' principle, which means users of all personal motor vehicles, except for non-motorised ones, have to pay for authorised parking facilities, spaces and streets.
- It aims to minimise vehicular pollution through key strategies, like a switch to greener fuels for public transport and adoption of mixed-use of transit-oriented development (TOD).
- **Water** - It aims improving the quality of water, which is taken from the Yamuna River as well as various lakes, natural drains and baolis.



- It lays a clear boundary of the buffer zone near the Yamuna River and explores how to develop it.
- As per the plan, a green buffer of 300-metre width shall be maintained wherever feasible along the entire edge of the river.
- **Health** - MPD 2041 plans to reduce vulnerability to airborne epidemics through decentralised workspaces, creation of open areas, etc.,
- It aims to better habitat design and green-rated developments to reduce dependence on mechanical ventilation systems.
- It aims to develop common community spaces to provide refuge spots, common kitchens and quarantine space in an emergency.
- It plans to improve the night-time economy by focusing on cultural festivals, bus, metro, sports facilities, and retail stores included in Delhi Development Authority's (DDA) Night Life Circuit plan.

Maharashtra's Beed Model of Crop Insurance

- Maharashtra Chief Minister asked Prime Minister for a state-wide implementation of the 'Beed model' of the crop insurance scheme Pradhan Mantri Fasal Bhima Yojna (PMFBY).
- **Beed model** - Located in the drought-prone Marathwada region, the district of Beed presents a challenge for any insurance company.
- Farmers here have repeatedly lost crops either to failure of rains or to heavy rains. Given the high payouts, insurance companies have sustained losses.
- The state government had a difficult time getting bids for tenders to implement the scheme in Beed in the 2020 kharif season.
- In a normal season where farmers report minimal losses, the state gets back money that can form a corpus to fund the scheme for coming year.
- However, the state government would have to bear the financial liability in case of losses due to extreme weather events.
- **Significance** - The reason why Maharashtra is pushing for this scheme is that in most years, the claims-to-premium ratio is low with the premium being paid to the company.
- In the Beed model, the profit of the company is expected to reduce and the state government would access another source of funds.
- Reimbursed amount can lead to lower provisioning by the state for the coming year, or help in financing the paying the bridge amount in case of a year of crop loss.
- For farmers, however, this model does not have any direct benefit.

Pradhan Mantri Fasal Bhima Yojana

- Launched in 2016, the flagship PMFBY insures farm losses against inclement weather events.
- Farmers pay low rate of the premium 1.5-2% with the rest borne by the state and central governments.
- It is a central scheme implemented by state agriculture departments as per central guidelines.
- Prior to 2020, the scheme was optional for farmers who did not have loans pending, but mandatory for loanee farmers. Since 2020, it has been optional for all farmers.

17. BILATERAL RELATIONS

UN Secretary-General

- The United Nations Security Council (UNSC) approved ninth UN Secretary-General António Guterres for a second term for five more years starting January 1, 2022.
- While there are no term limits applicable to this post, no Secretary-General has so far served more than two terms.
- **Selection process** - The Secretary-General is appointed by the UN General Assembly (UNGA) on the recommendation of the UNSC.

- The five permanent members of the 15-nation-strong UNSC are the most powerful players in the process of selection of Secretary-General, as any one of them can eliminate a candidature by a veto.
- [Five permanent members of the UNSC - China, France, Russia, the United Kingdom, and the United States.]
- The 10 elected non-permanent members of the UNSC, of which India is currently a part, do not have veto powers.
- But their backing is still crucial as a candidate requires at least nine out of 15 votes to be recommended for the top job.

Functions and Powers of the UN Secretary-General

- The UN Charter refers to the UN Secretary-General as the “chief administrative officer” of the United Nations.
- The UN Secretary-General shall act in that capacity and perform such other functions as are entrusted to them by the UNSC, UNGA, Economic and Social Council (ECOSOC) and other UN organs.
- S/he is “equal parts diplomat and advocate, civil servant and CEO,” and a symbol of UN ideals and a spokesperson for the interests of the world’s peoples, in particular the poor and vulnerable among them.
- The Secretary-General’s day-to-day work includes
 1. Attendance at sessions of United Nations bodies;
 2. Consultations with world leaders, government officials, and others;
 3. Worldwide travel intended to keep the Secretary-General in touch with the peoples of the UN member states.

Group of 7

- The Group of 7 (G7) is an informal group of seven countries - the United States, Canada, France, Germany, Italy, Japan and the United Kingdom.
- **Origin** - The G7 draws its roots from a meeting between the current G7 members, excluding Canada that took place in 1975.
- Russia participated in the G8 from 1998 to 2014 until its invasion of Ukraine’s Crimea caused the group to eject it.
- **G7 summit** - The heads of these countries hold an annual G7 summit with European Union and other invitees.
 - India has been invited to the 2021 G7 summit as a special guest. It will be particularly interested in the talks related to global vaccine delivery as both a major manufacturer and consumer.
- The presidency of G7 meetings is held by each of the seven countries in turn, each year. The country holding the presidency is responsible for organising and hosting the meeting.
- The UK holds the G7 presidency for 2021 in Cornwall.
- **Nature** - Together the member countries represent 40% of global GDP and 10% of the world’s population.
- Unlike other bodies such as NATO, the G7 has no legal existence, permanent secretariat or official members.
- It has no binding impact on policy, and all decisions and commitments made at G7 meetings need to be ratified independently by governing bodies of member states.

Chemical Weapons Convention

- The Chemical Weapons Convention (international chemical weapons watchdog) told the U.N. Security Council that Syria had likely or definitely used chemical weapons in 17 cases.
- The Chemical Weapons Convention is officially known as the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction.
- It is an arms control treaty administered by the Organisation for the Prohibition of Chemical Weapons (OPCW), an intergovernmental organization based in The Hague, The Netherlands.

- This multilateral treaty entered into force in 1997. It has 192 state parties and 165 signatories. **India** signed the treaty in 1993.
- The Chemical Weapons Convention prohibits,
 1. Large-scale use, development, production, acquisition, stockpiling, or retention of chemical weapons and their precursors
 2. Transferring of chemical weapons and their precursors
 3. Assisting other States to indulge in activities that are prohibited by the CWC
 4. Using riot-control devices as 'warfare methods'.
- The convention allows the above for very limited purposes (research, medical, pharmaceutical or protective).
- Main obligation of member states under the convention is to effect this prohibition, as well as the destruction of all current chemical weapons.
- All destruction activities must take place under OPCW verification.

Organisation for the Prohibition of Chemical Weapons

- Headquartered in The Hague, Netherlands, it is an independent, autonomous international organisation that implements the Chemical Weapons Convention (CWC).
- It has a working relationship with the United Nations (UN).
- By the Relationship Agreement (2001) between the OPCW and the UN, the OPCW reports on its inspections and other activities to the UN through the office of the Secretary General.
- Functions of the Organisation include,
 1. Performs inspections to verify that signatory states are complying with the convention. This includes a commitment to grant inspectors full access to chemical weapons sites.
 2. Performs testing of sites and victims of suspected chemical weapons attacks.
 3. Provides for assistance to and protection of States attacked or threatened with chemical weapons, cooperation in the peaceful use of chemicals.
- It was awarded Nobel Peace Prize in 2013.

Operation Pangea XIV

- International Criminal Police Organization-led (Interpol-led) Operation Pangea XIV targeted the sale of fake medicines and products online.
- More than 1.10 lakh web links have been taken down in an operation involving the police, customs and health regulatory authorities of 92 countries against the sale of fake medicines and medical products.
- This is the largest since the first "Operation Pangea" conducted in 2008.
- Indian agencies also participated in the operation. The Central Bureau of Investigation (CBI) that is the nodal body for the Interpol in the country.

New Atlantic Charter

- US President has signed a "New Atlantic Charter" with the British Prime Minister.
- The charter promises to work closely with all democratic partners in resolving contemporary global problems.
- Eighty years ago, the Atlantic Charter provided the basis for the construction of a new global order after the Second World War.
- The current declaration is a reprise of the Atlantic Charter and is based on the conviction that the West needs to reboot itself to cope with the rise of authoritarian powers like China, the devastating Covid-19 pandemic, and the expansive threat of climate change.

Tigray Crisis

- The United Nations emergency relief coordinator said that Tigray region in the Ethiopia's north was witnessing a widespread full scale famine.
- This famine is a result of the military conflict between Ethiopia's federal government and the ruling party in the Tigray since September, 2020.
- The term 'famine' was used after the release of an Integrated Food Security Phase Classification (IPC) analysis update, which uses a standardised scale originally developed by the UN.
- As per the IPC scale, famine conditions in Tigray are in phase 5, which starts with a catastrophe warning and ends in famine in a region.



Integrated Food Security Phase Classification Scale

- The Integrated Food Security Phase Classification scale (IPC scale), is a tool for improving food security analysis and decision-making.
- This standardised scale integrates food security, nutrition and livelihood information into a statement about the nature and severity of a crisis and implications for strategic response.
- The IPC was originally developed for use in Somalia by the UN Food and Agriculture Organization's Food Security Analysis Unit (FSAU).
- Several national governments and international agencies, including CARE International, FAO, UN World Food Programme (WFP), etc have been working together to adapt it to other food security contexts.

IPC Phase Number	Phase	Description
1.	Generally Food Secure	More than 80% of households can meet basic food needs without atypical coping strategies
2.	Borderline Food Insecure	For at least 20% of households, food consumption is reduced but minimally adequate without having to engage in irreversible coping strategies. These households cannot fully meet livelihoods protection needs.
3.	Acute Food and Livelihood Crisis	At least 20% of households have significant food consumption gaps OR are marginally able to meet minimum food needs only with irreversible coping strategies such as liquidating livelihood assets. Levels of acute malnutrition are high and above normal.



4.	Humanitarian Emergency	At least 20% of households face extreme food consumption gaps, resulting in very high levels of acute malnutrition and excess mortality; OR households face an extreme loss of livelihood assets that will likely lead to food consumption gaps.
5.	Famine/Humanitarian Catastrophe	At least 20% of households face a complete lack of food and/or other basic needs and starvation, death, and destitution are evident; and acute malnutrition prevalence exceeds 30%; and mortality rates exceed 2/10000/day

Tax Inspectors Without Borders

- Bhutan's Tax Inspectors Without Borders (TIWB) programme was launched in partnership with India.
- TIWB is a capacity-building programme, which is joint initiative of the United Nations Development Programme (UNDP) and the Organisation for Economic Cooperation and Development (OECD).
- TIWB was launched in July 2015 to strengthen developing countries' auditing capacity and multinationals' compliance worldwide.
- It deploys qualified experts in developing countries across Africa, Asia, Eastern Europe, Latin America and the Caribbean,
 1. To build tax capacity in areas of audit, criminal tax investigations
 2. For effective use of automatically exchanged information.
- **Bhutan's TIWB** - India was chosen as the Partner Jurisdiction and has provided the Tax Expert for the TIWB programme in Bhutan.
- This programme is expected to be of about 24 months' duration.
- Through this program, India aims to aid Bhutan in strengthening its tax administration by transferring technical know-how and skills to its tax auditors, and through sharing of best audit practices.
- The focus of the programme will be in the area of **International Taxation and Transfer Pricing**.

The EAGLE Act

- The Equal Access to Green cards for Legal Employment (EAGLE) Act of 2021 was introduced in the US House of Representatives. It will remove the per-country cap on permanent residency visas, or green cards.
- It seeks to phase out the 7% per-country limit on employment-based immigrant visas and raises the per-country limit on family-sponsored visas from 7% to 15%.
- It provides for a nine-year period for the elimination of this limit.
- The 7% limit was introduced in the mid-20th century, which has led countries with relatively small populations to be allocated the same number of visas as a relatively large-population country.
- However, since the highest number of applicants is from India and China, the EAGLE Act also seeks to reserve visas for 'Lower Admission States' for nine fiscal years (FY).
- While 30% of employment-based visas will be reserved in FY1, this would be reduced to five% in FY 7, 8 and 9.
- The bill also ensures that "no country may receive more than 25% of reserved visas and no country may receive more than 85% of unreserved visas," in the nine fiscal years.
- **Significance** - The EAGLE Act may speed up the petitions for those applying for employment-based green cards.
- The Act will benefit the US economy by allowing American employers to focus on hiring immigrants based on their merit, not their birthplace.
- Think-tank Cato Institute had reported in March 2020 that 75% of the backlog for employment-based visas was made up of Indians.



- So, this act will be advantageous for Indian job-seekers who currently rely on temporary visas or await green cards to work in the US.

Birthing People

- In its 2022 fiscal year budget released, the US government has replaced the word ‘mothers’ with ‘birthing people’ in a section that deals with bringing down maternal mortality rates.
- The policy document lists a range of measures to help end the highest maternal mortality rate and race-based disparities in outcomes among birthing people in the US.
- **Reason for replacement** - The term ‘birthing people’ is from the realm of trans-rights activism.
- It is a step towards making vocabularies less rigid in terms of gender, so that people beyond binary gender identities can be represented.
- Another argument for the use of ‘birthing people’ is that a surrogate can give birth, who is not the ‘mother’ of the child.
- Other such terms are Chest-feeding instead of breast-feeding, and ‘menstruating people’ or ‘menstruators’ instead of ‘menstruating women’.

China's Red Tourism

- As the Chinese Communist Party celebrates its 100th anniversary this year, the popularity of ‘red tourism’ is at an all-time high in the country and is bringing in huge revenues for China.
- Launched in 2004, Red Tourism involves visiting places that are of historical and cultural importance to the Communist Party’s history, while also providing an impetus to tourism and local businesses.
- It reminds people of the sacrifices made by the leaders of the Communist party to forge a modern China.
- Some of the famous sites covered by ‘red tourism’ are,
 1. Shaoshan - Birthplace of Mao;
 2. Yan’an - Mao Zedong’s revolutionary base area where the Red Army arrived after the Long March;
 3. Jinggangshan where leading members of the Communist Party of China established their first rural base for the revolution in 1927;
 4. Nanchang (Capital city of Jiangxi Province) which witnessed a significant Uprising in 1927 led by Zhou Enlai and He Long;
 5. Nanhu Lake in China’s Zhejiang, where the First National Congress of the Chinese Communist Party was held on a boat in 1921.

18. ECONOMY

Insider Trading

- The Securities and Exchange Board of India (SEBI) found two Infosys employees guilty of insider trading. It has banned all the parties involved in these trades from buying and selling any shares.
- **Insider trading** refers to trading of shares by an ‘insider’ based on Unpublished Price Sensitive Information (UPSI).
- It involves buying or selling shares of a listed company using information that can materially impact the stock price, but has not been made public yet.
- SEBI regulations define an ‘insider’ as someone who is a connected person or has access to UPSI.
- A connected person can be anyone who during the 6 months preceding the insider trade has been associated with the company in some way.
- UPSI includes but is not restricted to information relating to a company’s quarterly results, merger and acquisition deals, major capacity expansion or shutdown plans etc.,

- When insiders use the UPSI they possess to conduct trades, they can be taken to task by the regulator.
- While trading on UPSI is illegal, all insider trading is not barred. If such trades are disclosed to the stock exchanges as per SEBI rules, it isn't illegal.
- But a company must notify the exchanges within a few days about the trading details of the promoter/member of the promoter group or a director if securities worth ₹10 lakh plus are traded.

Global Minimum Corporate Tax Rate

- The Group of Seven (G7) Finance Ministers reached a landmark accord setting a global minimum corporate tax rate at 15% (least), an agreement that could form the basis of a worldwide deal.
- [G7 countries - UK, Canada, France, Germany, Italy, Japan and US. All of them are part of G20]
- Corporation tax is a direct tax imposed on the net income or profit that enterprises make from their businesses.
- The Global Minimum Corporate Tax Rate will ensure taxes were paid in the countries where businesses operate. It may apply to overseas profits.
- Governments could still set whatever local corporate tax rate they want, but if companies pay lower rates in a particular country, their home governments could "top-up" their taxes to the minimum rate.
- This will eliminate the advantage of the companies' shifting profits and tax revenues to low-tax countries regardless of where their sales are made.

Minimum Support Prices for Kharif Crops

- The Cabinet Committee on Economic Affairs has approved the increase in the Minimum Support Prices (MSP) for all mandated Kharif crops for marketing season 2021-22.
- The Kharif crops for which MSPs were approved include paddy, jowar, bajra, ragi, maize, tur, moong, urad, groundnut, sunflower seed, soyabean (yellow), sesamum, nigerseed and cotton.
- Government has increased the MSP of Kharif crops for marketing season 2021-22, to ensure remunerative prices to the growers for their produce.
- It used differential remuneration to encourage crop diversification.

Minimum Support Prices

- Minimum Support Prices (MSP) is a minimum price that government agencies pay whenever they procure the particular crop.
- It is given for any crop that the government considers as remunerative for farmers and hence deserving of support.
- The Commission for Agricultural Costs & Prices (CACP) recommends,
 1. MSPs for 22 mandated crops and
 2. Fair and remunerative price (FRP) for sugarcane.
- CACP is an attached office of the Ministry of Agriculture and Farmers Welfare. It is an advisory body that came into existence in 1965 whose recommendations are not binding on the Government.
- **Crops** - The mandated crops include 14 crops of the kharif season, 6 rabi crops and 2 other commercial crops.
- In addition, the MSPs of toria and de-husked coconut are fixed on the basis of the MSPs of rapeseed/mustard and copra, respectively.
- The Union Budget for 2018-19 had announced that MSP would be kept at levels of 1.5 the cost of production.

Hallmarking of Gold

- The government announced the phased implementation of mandatory hallmarking of gold jewellery with effect from June 16, 2021.



- In the first phase, gold hallmarking will be available in only in 256 districts and jewellers having annual turnover above Rs 40 lakh will come under its purview.
- **Hallmarking** - The Bureau of Indian Standard (BIS) defines hallmarking as the accurate determination and official recording of the proportionate content of precious metal in precious metal articles.
- So, it is a “guarantee of purity or fineness” of precious metal articles. The BIS operates gold and silver hallmarking scheme in India.
- **Metals covered** - A government notification issued in 2018 notified two categories under the purview of hallmarking,
 1. Gold jewellery and gold artefacts; and
 2. Silver jewellery and silver artefacts.
- **Exemption** - Department of Consumer Affairs says that the following will be exempted from mandatory Hallmarking,
 1. Export and re-import of jewellery as per Trade Policy of Government of India,
 2. Jewellery for international exhibitions,
 3. Jewellery for government-approved B2B domestic exhibitions.
- The Ministry of Consumer Affairs, Food and Public Distribution said that watches, fountain pens and special types of jewellery such as Kundan, Polki and Jadau will be exempted from hallmarking.
- The jewellers can continue to buy back old gold jewellery without a hallmark from consumers.
- **Purity standards** - As per BIS standards, there are three categories of hallmarking based on purity of gold - 22 carat, 18 carat and 14 carat.
- However, the ministry announced that the gold of Additional carats 20, 23 and 24 will also be allowed for Hallmarking.
- **Penalty** - For non-compliance with the hallmarking norm, there will be no penalty imposed on jewellers till August 2021.

Fugitive Economic Offenders Act 2018

- At the UN General Assembly (UNGA) Special Session on Challenges and Measures to fight Corruption, India raises the serious issue of Fugitive Economic Offenders and Assets which flee across national jurisdictions.
- India's Fugitive Economic Offenders Act 2018 law empowers authorities for non-conviction-based attachment and confiscation of proceeds of crime and properties and assets of a 'fugitive economic offender'.
- **Fugitive Economic Offenders** are those against whom a warrant for arrest for a Scheduled Offence has been issued by any Indian court and who has left India to avoid criminal prosecution or judicial processes.
- **Scheduled Offence** refers to a list of economic offences contained in the Schedule to this Act.
- Some of the offences listed in the act are counterfeiting government stamps or currency, cheque dishonour, money laundering, transactions defrauding creditors, etc.,
- **Declaration** - After hearing the application, a special court (designated under the PMLA, 2002) may declare an individual as a fugitive economic offender.
- It may confiscate properties which are proceeds of crime, Benami properties and any other property, in India or abroad.
- Upon confiscation, all rights and titles of the property will vest in the central government, free from encumbrances (such as any charges on the property).
- The central government may appoint an administrator to manage and dispose of these properties.
- To know more about the Fugitive Economic Offenders Act 2018, [click here](#).



Keeling Curve

- The amount of carbon in Earth's atmosphere in May 2021 reached its highest level in modern history, a global indicator showed.
- The Keeling Curve, named after its creator Dr. Charles David Keeling, is a global benchmark for carbon levels in the atmosphere.
- It is a graph that represents the concentration of carbon dioxide (CO₂) in Earth's atmosphere since 1958 at the Mauna Loa Observatory in Hawaii.
- It is the longest uninterrupted instrumental record of atmospheric CO₂ in the world, and it is commonly regarded as one of the best and most recognizable products of a long-term scientific study.
- It is considered by many scientists to be a trustworthy measure of CO₂ in the middle layers of the troposphere.
- At Mauna Loa Observatory, Keeling discovered global atmospheric CO₂ levels were rising nearly every year. By analyzing the CO₂ in his samples, he was able to attribute this rise to the use of fossil fuels.

Keeling's Discoveries

- Keeling found that the air samples taken at night contained a higher concentration of CO₂ compared to samples taken during the day.
- He drew on his understanding of photosynthesis and plant respiration to explain this observation:
 1. During the day, plants take in CO₂ to photosynthesize, and
 2. At night, the plants release CO₂.
- By studying his measurements over the course of a few years, Keeling also noticed a larger seasonal pattern.
 1. CO₂ levels are highest in the spring, when decomposing plant matter releases CO₂ into the air, and
 2. CO₂ levels are lowest in autumn when plants stop taking in CO₂ for photosynthesis.

GDP as a Measure of Economic Growth

- Ever since India revised the way it calculates its Gross Domestic Product (GDP) in 2015, there's been a debate raging not just about how India calculates its GDP but also about GDP as a measure itself.
- The International Monetary Fund states that the GDP measures the monetary value of final goods and services i.e., those that are bought by the final user - produced in a country in a given period of time.
- **Debate** - For a while now, GDP's dominance has been questioned.
- GDP fails to capture the welfare loss. GDP often doesn't adequately account for all the welfare gains as well.
- As far as the broader question of people's wellbeing is concerned, GDP is inadequate. But GDP is not designed for this purpose.
- There are suggestions to find alternative measures to GDP as it is a simple measure, and berating it by judging it based on social or moral norms would be completely missing the point of using GDP.
- **Alternatives to GDP** - GDP per capita, median income, inequality (Gini coefficient), net domestic product (NDP), well-being (using Maryland's Genuine Progress Indicator), etc.,

Electoral Bearer Bond Scheme

- The State Bank of India (SBI) has been authorised to issue and encash Electoral Bonds through its 29 Authorized Branches across the country w.e.f. July 01, 2021 to July 10, 2021.
- The Government of India notified the Electoral Bond Scheme in 2018.
- **Donor** - Under the Scheme, Electoral Bonds may be purchased by a person, who is a citizen of India or incorporated or established in India.
- A person being an individual can buy Electoral Bonds through cheque/digital payment, either singly or jointly with other individuals by approaching the banks.
- The donor donates these bonds to the political party.

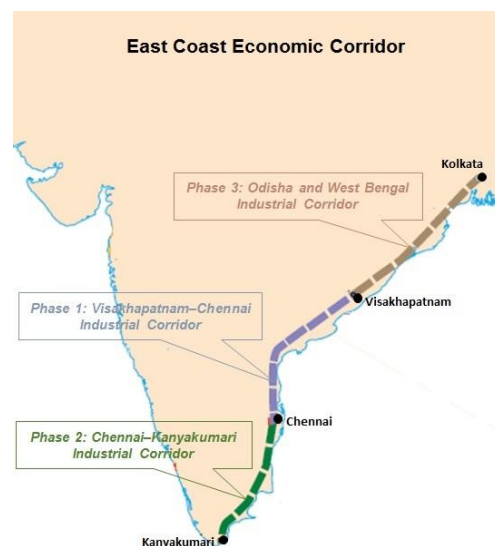
- **Receiver** - Electoral Bonds shall be received only by the Political Parties registered under Section 29A of the Representation of People Act, 1951.
- Also, these Political Parties should have secured not less than 1% of the votes polled in the last General Election to the House of the People or the Legislative Assembly of the State.
- **Encash** - The Electoral Bonds shall be encashed by an eligible Political Party only through a Bank account with the Authorized Bank. E.g.: SBI.
- The political party has to encash into the account which is registered with the Election Commission of India.
- **Validity** - Electoral Bond shall be valid for 15 calendar days from the date of issue and no payment shall be made to any payee Political Party if the Electoral Bond is deposited after expiry of the validity period.
- The Electoral Bond deposited by an eligible Political Party in its account shall be credited on the same day.

Chennai-Kanyakumari Industrial Corridor

- The Asian Development Bank (ADB) and the Government of India signed a \$484 million loan to improve the Tamil Nadu Industrial Connectivity Project.
- This will improve transport connectivity and facilitate industrial development in the Chennai-Kanyakumari Industrial Corridor (CKIC) in the state of Tamil Nadu.
- CKIC is part of India's East Coast Economic Corridor (ECEC), which stretches from West Bengal to Tamil Nadu and connects India to the production networks of South, Southeast, and East Asia.
- The Connectivity project is part of the priority infrastructure projects identified for corridor development under the ADB-supported CKIC comprehensive development plan.
- In addition, the project will help improve the planning capacity of Tamil Nadu's Highways and Minor Ports Department.
- The overall objective is to spur industrial transformation through provisioning of essential transport, energy and urban infrastructure for holistic development of industrial growth centres.
- The project will upgrade about 590 km of state highways in the CKIC influence areas that cover 23 of the 32 districts between Chennai and Kanyakumari in Tamil Nadu.

East Coast Economic Corridor

- The East Coast Economic Corridor (ECEC) - India's first coastal corridor - is an example of an integrated economic development initiative.
- The key idea behind the corridor is port-based industrial development along the eastern coastal belt of India, in alignment with the goals of the Sagarmala initiative.
- It will integrate India's industrial clusters with value chains extending to Southeast Asia and East Asia.
- ECEC stretches from West Bengal to Tamil Nadu and connects India to the production networks of South, Southeast, and East Asia.
- ADB is the lead partner of the Government of India in developing ECEC.
- It covers West Bengal, Odisha, Andhra Pradesh and Tamil Nadu. Vizag to Chennai segment of this Corridor has been taken as phase-1.
- Vizag-Chennai Industrial Corridor (VCIC) is the first coastal economic corridor in the country.
- It is aligned with the Golden Quadrilateral (India's longest road project that connects Delhi, Mumbai, Kolkata and Chennai).
- It also plays a critical role in the "Act East Policy" of India.





19. ENVIRONMENT

Genetically Modified Crops

- Genetically Modified (GM) crops involve the editing of genes of a crop in such a way that it incorporates beneficial traits from another crop or organism.
- This changes the way the plant grows, or makes it resistant to a particular disease. More than 10% of the world's crop land grows GM crops. Food produced using the edited crop is called GM food.
- **Procedure** - The new gene or the transgene that is produced from the donor organism is transferred into the recipient cells using the tools of genetic engineering.
- The cells are then grown in tissue culture where they develop into plants.
- The seeds produced by these plants will inherit the new DNA structure.
- **Advantages** - GM crops are perceived to offer benefits to both producers (mostly, farmers) and consumers.
- Genetic engineering can improve crop protection (Crops with better resistance to pest and diseases can be created). The use of herbicides and pesticides can be reduced or even eliminated.
- Crops can be engineered to withstand extreme weather, improve nutritional content and extend the shelf life of foods.

Aerosol Nucleation

- Scientists from the University of Hyderabad have found frequent formation of sub-3 nanometres aerosol particles in the atmosphere.
- They measured particle size distribution of neutral sub-3nm (1 to 3 nm) particles using AIRMODUS nano Condensation Nucleus Counter (nCNC) at an urban location in India.
- **Terminologies** - The formation of small molecular clusters of sub-3nm size is technically called aerosol nucleation.
- The subsequent growth of these newly formed clusters to the large sizes is called atmospheric new particle formation (NPF).
- NPF occurs everywhere in the terrestrial troposphere, and therefore it is a large source of aerosol numbers to the atmosphere.
- This has critical importance as a major fraction of these newly formed particles can reach to sizes of cloud condensation nuclei where they have climatic impacts.
- **Findings of the Study** - The speed with which this pool of sub-3nm particles form clusters grow depends on various factors.
- Only half of these events newly formed molecular clusters grow past 10 nm sizes. Thus particle size distributions display a conventional banana-shaped aerosol growth, which is indicative of regional NPF event.
- The team found a strong positive correlation between sub-3nm particle concentrations and sulphuric acid concentrations.
- NPF often starts with sulphuric acid in the atmosphere. Other vapours such as ammonia, amines and organics also play a crucial role in the growth of newly formed particles.

Green Hydrogen

- **NTPC Ltd.**, India's largest energy integrated company under Ministry of Power anchored a 2-day online event BRICS Green Hydrogen Summit.
- **Green hydrogen** is produced using renewable energy and electrolysis.
- Electrolysis method uses an electrical current to separate the hydrogen from the oxygen in water. By Products are water and water vapour.



- If this electricity is obtained from renewable sources we will, therefore, produce energy without emitting carbon dioxide into the atmosphere.
- NTPC is pioneering [Green Hydrogen Initiatives](#) in India.
- India's [National Hydrogen Energy Mission](#) focuses on generation of hydrogen from green power resources.

Grey Hydrogen

- Grey hydrogen is produced from hydrocarbons (methane, fossil fuels, natural gas) and releases greenhouse gases into the atmosphere.
- It constitutes India's bulk Production.

Blue Hydrogen

- Blue hydrogen captures the above greenhouse gas emissions and stores them underground to prevent them causing climate change.
- By products are CO, CO₂. They are Captured and Stored, so better than grey hydrogen.

Brood X

- The US President's first trip abroad was delayed when a swarm of cicadas bombarded the plane Air Force One. These swarms are part of Brood X group, based on their life cycles and periodic appearances.
- [Cicadas live underground for extended periods of time, typically 13 or 17 years, and feed on roots of trees both underground and above it.
- The term 'brood' refers to a population of cicadas that is isolated from other populations because of differences in their year of emergence or locality.]
- Brood X is the largest brood of 17-year cicadas and is found in Pennsylvania, northern Virginia, Indiana and eastern Tennessee.
- Brood X cicadas come out of their underground homes every 17 years. They started emerging in May and will be around until the end of June.
- The time when they decide to emerge is dependent on weather, specifically when ground temperatures reach about 17-18°C.
- **Significance of Brood X** - Because of their sheer numbers and the noise they make, cicadas in Brood X often make headlines.
- When the brood last emerged in 2004 in Washington DC, the cicadas made an impact on the cultural scene.

Cicadas

- Among periodical cicadas, there are seven species. There are also some annual cicadas, which come out every year.
- **Underground** - When underground, cicada nymphs go through five stages of development. Once they become adults, which take about 17 years for some periodical cicadas, the males emerge from underground.
- When they come out, they shed their exoskeleton (outer skin) to take their winged form.
- **Emerging Outside** - Their emergence is to ensure continuation of their species (procreation).
 1. Male cicadas emerge first and start singing to attract females. They produce the loudest sounds in the insect world.
 2. Female cicadas respond with a clicking sound with their wings.
- This process lasts for about a month, after which the cicadas die. After mating, the eggs are laid in small twigs and branches.
- Once they hatch after about six weeks, the nymphs fall to the ground, and burrow their way into the ground. After becoming adults, these nymphs will emerge again 17 years later (or 13 years in some broods).
- **Danger** - Cicadas also do not bite or sting, but when the males sing, their collective chorus can reach up to 100 decibels, a noise level that can possibly cause severe damage if you are exposed to it for several hours.



- The female may damage the small twigs when she lays her eggs in them.

Antarctic Treaty

- The 1959 Antarctic Treaty celebrates its 60th anniversary. This Treaty is the only example of a single treaty that governs a whole continent.
- The Antarctic Treaty was signed between 12 countries in Washington on 1st December 1959 for making the Antarctic Continent a demilitarized zone to be preserved for scientific research only.
- Headquartered in Buenos Aires, Argentina, it entered into force in 1961 and has since been acceded by many other nations.
- **Members** - Twelve original signatories are Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the Union of Soviet Socialist Republics, the UK and the US.
- Currently, the treaty has 54 parties. India became a member in 1983.
- **Definition** - Antarctica is defined as all of the land and ice shelves south of 60°S latitude.
- Some important provisions of the Treaty are,
 - Antarctica shall be used for peaceful purposes only
 - Freedom of scientific investigation in Antarctica and cooperation toward that end... shall continue
 - Scientific observations and results from Antarctica shall be exchanged and made freely available
 - Prohibition of military activities, nuclear tests and the disposal of radioactive waste.
 - Neutralising territorial sovereignty, this means a limit was placed on making any new claim or enlargement of an existing claim.
- It put a freeze on any disputes between claimants over their territories on the continent.

Antarctic Treaty System

- It is the whole complex of arrangements made for the purpose of regulating relations among states in the Antarctic by resolving the disputes that are arisen over the years.
- Other than the Antarctic Treaty, the other major International Agreements of the Treaty System are,
 - Convention for the Conservation of Antarctic Seals (1972)
 - Convention on Conservation of Antarctic Marine Living Resources (1980)
 - Protocol on Environmental Protection to the Antarctic Treaty (1991)
- Its purpose is to ensure in the interests of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes.
- These agreements are legally binding and purpose-built for the unique geographical, environmental and political characteristics of the Antarctic and form a robust international governance framework for the region.

UN High-Level Dialogue on Desertification, Land degradation and Drought

- The United Nations High-Level Dialogue on Desertification, Land Degradation and Drought (DLDD) was convened with the support of the United Nations Convention to Combat Desertification (UNCCD).
- It assessed the progress made in fighting land degradation, and map the way forward on global efforts to revive and restore healthy land.

Terminologies

- **Land degradation** can be considered in terms of the loss of actual or potential productivity or utility as a result of natural or anthropic factors; it is the decline in land quality or reduction in its productivity.
- The UN says that desertification is a process, which is a consequence of severe land degradation in typically dry areas resulting from various factors, including climatic variations and human activities.
- **Desertification** creates arid, semi-arid and dry sub-humid areas.
- The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) estimates that over 70% of all natural, ice-free land has been transformed by human activity, devastating global biodiversity.



- It encourages all the member states to adopt and implement UNCCD's Land Degradation Neutrality (LDN) targets and National Drought Plans.
- [LDN is a state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems.]
- **Challenges** - Globally, one fifth of land area (more than 2 billion hectares) is degraded, including more than half of agricultural land.
- Each year, more than 12 million hectares of land are lost to DLDD. Annually, 24 billion tons of fertile soil is lost due to dryland degradation.
- Land degradation currently undermines well-being of 3.2 billion people, more than 40% of the entire world population. Unless we change how we manage soil, 90% could become degraded by 2050.

Steps Taken by India

- India is on track to achieve its national commitment on Land Degradation Neutrality (LDN) (SDG target 15.3).
- It is working to restore 26 million hectares of degraded land by 2030.
- India is assisting fellow developing countries to develop land restoration strategies.
- Over the last 10 years, around 3 million hectares of forest cover has been added.
- A Centre of Excellence is being set up at Indian Council of Forestry Research and Education (ICFRE) to promote a scientific approach towards land degradation issues.
- Based in Dehradun, ICFRE is an autonomous body of the Ministry of Environment, Forest and Climate Change.

International Nitrogen Initiative

- The United Nations (UN) Sustainable Development Goals (SDGs) are the main focus of the eighth triennial conference of the International Nitrogen Initiative (INI).
- The International Nitrogen Initiative (INI) was set up in 2003 under the sponsorship of Scientific Committee on Problems of the Environment (SCOPE) and the International Geosphere-Biosphere Program (IGBP).
- The key aims of the INI are to:
 1. Optimize nitrogen's beneficial role in sustainable food production,
 2. Minimize nitrogen's negative effects on human health and the environment resulting from food and energy production.
- The program is currently a sustained partner of Future Earth.
- INI is coordinated by a **Steering Committee**, led by a chair and six regional centre directors representing, Africa, Europe, Latin America, North America, South Asia and East Asia.
- Steering Committee members serve a ~four year term.
- To know more about International Nitrogen Initiative, [click here](#).

Sea Snot Outbreak

- Turkey's President has said considerable steps will be taken to solve the problem of accumulation of 'sea snot' and protect the country's seas.
- Turkey's Sea of Marmara, that connects the Black Sea to the Aegean Sea, has witnessed the largest outbreak of 'sea snot'. The sludge has also been spotted in the adjoining Black and Aegean seas.
- A 'sea snot' outbreak was first recorded in the country in 2007. It was also spotted in the Aegean Sea near Greece. But the current outbreak in the Sea of Marmara is by far the biggest in the country's history.
- **Sea snot** is a slimy layer of grey or green sludge that floats up on the surface of the seas, which can cause damage to the marine ecosystem.



- It is marine mucilage formed when algae are overloaded with nutrients due to water pollution combined with the effects of climate change.
- **Causes** - The nutrient overload occurs when algae feast on warm weather caused by global warming.
- Overproduction of phytoplankton caused by climate change and the uncontrolled dumping of waste into the seas has led to the present crisis.
- **Impact on Marine Ecosystem** - The growth of the mucilage is posing a severe threat to the marine ecosystem of the country.
- Over a period of time, it could end up poisoning all aquatic life, including fishes, crabs, oysters, mussels, corals, sponges and sea stars.
- If unchecked, this mucilage spread can collapse to the bottom and cover the sea floor, causing major damage to the marine ecosystem.
- Besides aquatic life, the 'sea snout' outbreak has also affected the livelihoods of fishermen.
- The 'sea snout' can also cause an outbreak of water-borne diseases such as cholera in cities like Istanbul.

Ramgarh Vishdhari Tiger Reserve

- National Tiger Conservation Authority (NTCA)'s technical committee has given a nod for the Ramgarh Vishdhari wildlife sanctuary to become Rajasthan's fourth tiger reserve.
- The area that has been identified as the reserve area comprises of two forest blocks of Bhilwara, territorial forest block of Bundi and Indargarh, which falls under buffer zone of Ranthambore Tiger Reserve (RTR).
- Prior to the formation of the state of Rajasthan, these forests were a part of the erstwhile Bundi princely states and were hunting reserves.
- In 1982, a part of the forest was declared as Ramgarh Vishdhari Wildlife Sanctuary under the Rajasthan Wild Animals and Birds Protection Act, 1951. The core area of the Ramgarh Vishdhari has eight villages.
- The sanctuary has leopards, sambhars, chitals, wildboars, smaller cats, caracals, chinkaras and nilgai.
- Other Tiger Reserves in Rajasthan,
 - Ranthambore Tiger Reserve (RTR) in Sawai Madhopur,
 - Sariska Tiger Reserve (STR) in Alwar, and
 - Mukundra Hills Tiger Reserve (MHTR) in Kota.

Deep Ocean Mission

- The Cabinet Committee on Economic Affairs has approved the proposal of Ministry of Earth Sciences (MoES) on "Deep Ocean Mission".
- Deep Ocean Mission aims to explore the Deep Ocean for resources and develop deep sea technologies for sustainable use of ocean resources.
- It will be a mission mode project to support the Blue Economy Initiatives of the Government of India. Ministry of Earth Sciences (MoES) will be the nodal Ministry implementing this multi-institutional mission.
- The Deep Ocean Mission consists of the following six major components:
 1. Development of Technologies for Deep Sea Mining, and Manned Submersible,
 2. Development of Ocean Climate Change Advisory Services,
 3. Technological innovations for exploration and conservation of deep-sea biodiversity,
 4. Deep Ocean Survey and Exploration to explore and identify potential sites of multi-metal Hydrothermal Sulphides mineralization along the Indian Ocean mid-oceanic ridges,
 5. Energy and freshwater from the Ocean - Studies and engineering design for offshore Ocean Thermal Energy Conversion (OTEC) powered desalination plant are envisaged in this proof of concept proposal.
 6. Advanced Marine Station for Ocean Biology.



- The Government of India's Vision of New India by 2030 enunciated in 2019 highlighted the Blue Economy as one of the ten core dimensions of growth.
- To know more about the Deep Ocean Mission, [click here](#).

First-ever GM Rubber

- Kerala-based Rubber Research Institute of India (RRII), under the Rubber Board, had developed the world's first genetically modified (GM) rubber plant tailored for the climatic conditions in the Northeast.
- This is the first time any GM crop has been developed exclusively for this region after years of research in RRII's biotechnology laboratory.
- The GM rubber has additional copies of the gene MnSOD, or manganese-containing superoxide dismutase, inserted in the plant.
- MnSOD may tide over the severe cold conditions during winter - a major factor affecting the growth of young rubber plants in the region.
- Natural rubber is a native of warm humid Amazon forests and is not naturally suited for the colder conditions in the Northeast.
- Growth of young rubber plants remains suspended during the winter months, which are also characterised by progressive drying of the soil.
- This is the reason for the long immaturity period of this crop in the region. With the MnSOD gene in the GM crop, the plants will be protected from adverse effects of severe environmental stresses.
- To know more about Genetically Modified crops, [click here](#).

Rubber Board

- The Rubber Board is a statutory body under the administration of the Ministry of Commerce and Industry.
- It was constituted as per the Rubber Act, 1947 and Rubber Rules 1955 for the overall development of the rubber industry in the country.
- **Head Office** – Kottayam, Kerala.
- It is responsible for the development of the rubber industry in the country by assisting and encouraging research, development, extension and training activities related to rubber.

World's Fifth Ocean

- The National Geographic magazine has recognised the 'Southern Ocean' as the world's fifth ocean hoping others will soon follow suit.
- [The other four Oceans are Pacific, Atlantic, Indian and Arctic Oceans.]
- Usually, the magazine has followed the International Hydrographic Organization (IHO) on marine names.
- The change in name is in alignment with the National Geographic Society's initiative to conserve the world's oceans.
- The Southern Ocean is the **only ocean to touch three other oceans** and to **completely embrace a continent** rather than being embraced by them.
- Its northern limit is a latitude of 60 degrees south. It is also defined by its **Antarctic Circumpolar Current** that was formed 34 million years ago. The current flows from west to east around Antarctica.
- By officially changing the name of the waterbody, the National Geographic hoped to draw attention to the following issues,
 - Rapid warming of the Southern Ocean due to global warming,
 - Industrial fishing on species like krill and Patagonian toothfish

International Hydrographic Organization

- The International Hydrographic Organization is an intergovernmental organization that works to ensure all the world's seas, oceans and navigable waters are surveyed and charted.
- Established in 1921, it coordinates the activities of national hydrographic offices and promotes uniformity in nautical charts and documents.
- It issues survey best practices, provides guidelines to maximize the use of hydrographic survey data and develops hydrographic capabilities in Member States.
- India is also a member of IHO.



Recognition

- The IHO too had recognised 'Southern Ocean' as a distinct body of water surrounding Antarctica in 1937 but had repealed the same in 1953.
- However, the US Board on Geographic Names and the National Oceanic and Atmospheric Administration recognize the term 'Southern Ocean'.

IMD's Doppler Radars

- The India Meteorological Department (IMD) will install seven new doppler radars in Maharashtra.
- Doppler radars of varying frequencies are used by the IMD to detect and track the movement of weather systems, cloud bands and gauge rainfall over an area of 500 km, with effective range of up to 250 km.
- With the radar observations, updated every 10 minutes, forecasters can follow the development of weather systems as well as their varying intensities, and accordingly predict weather events and their impact.
- There are different types of Doppler Radars, which vary with frequencies in which they operate - S-band, C-band and X-band.
 - X-band radar - It is used to detect thunderstorms and lightning as it is more sensitive and can detect smaller particles.
 - C-band radars - The signal is more easily attenuated, so this type of radar is best used for short range weather observation. It guides at the time of cyclone tracking.
 - S band radars - Because of the wavelength and frequency, S band radars are not easily attenuated. So, they are useful for near and far range weather observation.
- The Doppler radars are operational at eight locations in India's east coast (which is frequently affected by the cyclones formed in the Bay of Bengal), four locations in the west coast as well as in other locations.

Doppler Effect

- Doppler Effect (or Doppler shift) is the difference between the observed frequency and the emitted frequency of a wave for an observer moving relative to the source of the waves.
- It was proposed by Austrian physicist Christian Doppler in 1842.
- It says, "When the source and the signal are in relative motion to each other there is a change in the frequency observed by the observer."
- If they are moving closer, frequency increases and vice versa.

RADAR

- Radio Detection and Ranging (Radar) is a detection system that uses radio waves to determine the distance (range), angle, or velocity of objects. A radar system consists of,
 - A transmitter producing electromagnetic waves in the radio or microwaves domain(pulsed or continuous),
 - A transmitting antenna and a receiving antenna and
 - A receiver and processor to determine properties of the object(s).
- Radio waves from the transmitter reflect off the object and return to the receiver, giving information about the object's location and speed.
- RADAR can be used to detect aircraft, ships, spacecraft, guided missiles, motor vehicles, weather formations, and terrain.

Doppler RADAR

- It is specialized radar that uses the Doppler Effect to produce velocity data about objects at a distance.
- It does this by bouncing a microwave signal off a desired target and analyzing how the object's motion has altered the frequency of the returned signal.
- This variation gives direct and highly accurate measurements of the radial component of a target's velocity relative to the radar.

LiDAR Survey

- Environment Minister released the Detailed Project Reports (DPRs) of LiDAR based survey of forest areas in ten states.
- [Ten states - Assam, Bihar, Chhatisgarh, Goa, Jharkhand, Madhya Pradesh, Maharashtra, Manipur, Nagaland, and Tripura.]
- The project, which was awarded to WAPCOS in 2020 for implementation in 26 states, is a first of its kind experiment using LiDAR technology.
- WAPCOS has prepared these DPR's using LiDAR technology in which the 3-D (three dimensional) DEM (Digital Elevation Model), imagery and layers of the project areas are used.
- This LiDAR Survey will,
 - Help augment water and fodder in jungles areas thereby reducing human-animal conflict,
 - Help in groundwater recharge,
 - Recommend different types of Soil & Water conservation structures such as Anicut, Gabion, etc.,
- State forest departments must use CAMPA funds towards implementation of these projects in accordance with the 'Ridge to Valley' approach of watershed management.
- WAPCOS with the participation of State Forest Departments identified one major ridge inside a forest block in these states with average area of 10,000 ha selected in each State for preparation of DPRs.
- States/UTs identified one major ridge inside a forest block with the criteria that
 - Area selected should have average rainfall of the state, and
 - Area requires assisted natural generation which means the density of forests should be less than 0.4 or below, but should have reasonable potential to regenerate with the ANR interventions.

LiDAR

- Light Detection and Ranging (LiDAR) is a remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth.
- A LiDAR instrument has a laser, scanner and a specialized GPS receiver.
- It determines the ranges by targeting an object with a laser and measuring the time for the reflected light to return to the receiver.
- Airplanes and helicopters are the most commonly used platforms for acquiring LiDAR data over broad areas.
- Types** - Two types of lidar are topographic and bathymetric.
 - Topographic lidar uses a near-infrared laser to map the land,
 - Bathymetric lidar uses water-penetrating green light to also measure seafloor and riverbed elevations.
- Uses** - It is used for agriculture, hydrology and water management systems and geology-related applications.
- It is also used in archaeology.

Heritage Trees

- The Maharashtra government will make amendments to the Maharashtra (Urban Areas) Protection and Preservation of Trees Act of 1975, to introduce provisions for the protection of 'heritage trees'.
- Heritage trees** - Under the proposed amendment, a tree with an estimated age of 50 years or more shall be defined as a heritage tree. It may belong to specific species, which will be notified from time to time.
- The environment department, in consultation with the forest department, will issue guidelines to determine the age of the tree.
- Protection** - According to the current Compensatory Plantation in the state, one sapling has to be planted for each tree that is cut.

Determining a Tree's Age

- The most common method of determining the age of the tree is Dendrochronology – or tree-ring dating also called growth rings.
- Each year, roughly a tree adds to its girth, the new growth is called a tree ring. By counting the rings of a tree, the age can be determined.
- To analyse the rings, core samples are extracted using a borer that's screwed into the tree and pulled out, bringing with it a straw-size sample of wood. The hole in the tree is then sealed to prevent disease.



- Under the proposed amendment, anyone cutting a heritage tree must plant compensatory trees in the same numbers as the cut tree's age.
- **Maintenance** - The organization planting these trees will have to ensure the survival of the plantation for 7 years and geo-tag the trees.
- Such plantations can be carried out either in the same plot or a common amenity plot.
- The amendment also has the fine for illegal felling of trees from a maximum of Rs 5,000 to Rs 1 lakh per tree.

Maharashtra Tree Authority

- Maharashtra will form the Tree Authority in local civic bodies and councils which will take all decisions regarding the protection of trees.
- Tree Authority (TA) is tasked with increasing the tree cover in urban areas and protecting the existing ones.
- The knowledge of the experts, who are part of the local TA, will form the basis of decisions taken up by the authority.
- A proposal to cut more than 200 trees of age 5 years or more, will be referred to the state tree authority.
- The local TA will have to ensure that the project is not sub-divided into smaller parts to keep the number of trees below the defined threshold.
- Ensure preparation of a tree plan and should aspire over the years to have 33% green belt in their area.
- The local Tree Authority will have to ensure tree census to be carried out every five years along with counting of heritage trees.

Ambergris

- Ambergris (French for grey amber) is generally referred to as whale vomit. This preternaturally hardened whale dung is produced only by 1% of sperm whales.
- **Formation** - A sperm whale eats several thousand squid beaks a day.
- Occasionally, a beak makes it way to the whale's stomach and into its looping convoluted intestines where it becomes ambergris through a complex process, and may ultimately be excreted by the whale.
- Ambergris is a solid waxy substance that floats around the surface of the water body and at times settles on the coast.
- **Floating Gold** - This excretion is so valuable it is referred to as floating gold. 1 kg of ambergris is worth Rs 1 crore in the international market.
- The reason for its high cost is its use in the perfume markets (like Dubai), especially to create fragrances like musk.
- Ancient Egyptians used it as incense. It is used in traditional medicines.
- Since the sperm whale is a protected species, hunting is not allowed. But, due to Ambergris' high value, the fish has been a target to the smugglers.

Sperm Whale

- The Sperm Whale (*Physeter macrocephalus*), or cachalot, is the largest of the toothed cetacean. They are often spotted in groups (called pods).
- Spermaceti oil extracted from it is used in oil lamps, lubricants and candles.
- **Protection** - The species is protected by a whaling moratorium.
- IUCN Status - 'Vulnerable'.

Link between Cloud Bursts & Forest Fires

- A recent study has found a connection between the formation of the tiny particles, the size of a cloud droplet on which water vapor condenses leading to the formation of clouds and forest fires.



- The quantity of such particles called the Cloud Condensation Nuclei (CCN) was found to have peaks associated with forest fire events.
- Cloud condensation nuclei (CCN), which can activate and grow into fog or cloud droplets in the presence of supersaturation (SS) was measured by a droplet measurement technology's (DMT) CCN Counter.
- This observation was carried out under a Climate Change Programme Division, Department of Science & Technology funded project, where the variation of CCN was reported on diurnal, seasonal, and monthly scale.
- This study showed that the highest concentration of CCN in the high altitude was found to be associated with excessive fire forest activities of the Indian subcontinent.
- There were other peaks also associated with a variety of events, such as long-range transportation and local residential emission.

US Heat Wave

- The Northwestern US and Pacific Canada are in the grips of a heat wave that the National Weather Service called "historic and dangerous". A weather anomaly called a "heat dome" is partially to blame.
- According to the US National Weather Service, in most parts of the country, temperatures must be above the historical average in an area for two or more days before the label "heat wave" is applied to a hot spell.
- **Causes of heat wave** - Heat waves begin when high pressure in the atmosphere moves in and pushes warm air toward the ground.
- That air warms up further as it is compressed, and we begin to feel a lot hotter. The high-pressure system pressing down on the ground expands vertically, forcing other weather systems to change course.
- It even minimizes wind and cloud cover, making the air more stifling. This is why a heat wave parks itself over an area for several days.

Omega Block

- A dangerous 'Omega block' is trapping scorching hot air over the US and Canada.
- **Heat Dome** - Even though the average summer temperatures are steadily increasing every year due to global warming, a weather anomaly called 'Heat dome' is partly to blame for the Pacific Northwest heat.
- As the ground warms, it loses moisture, which makes it easier to heat even more. As that trapped heat continues to warm, the system acts like a lid on a pot - earning the name "heat dome."
- Conflating high- pressure and low-pressure systems have trapped the region in a heat dome locked in place by undulations in the jet stream. [Jet Stream is a river of strong wind in the upper atmosphere.]
- In this case, the jet stream has trapped a ridge of high pressure (heat dome) over the Pacific Northwest, creating a block in the atmosphere that prevents the weather system from moving on.
- Instead, the hot air in the high-pressure system pushes down over the region, creating a suffocating blanket of heat.
- As the wind patterns swirl around the heat block in the shape of the Greek letter Omega, the systems like these got the name "Omega blocks".

SPECIES IN NEWS

Indimimus Jayanti

- Indimimus Jayanti has become the twelfth subgenus, or species, of spider cricket identified under the genus Arachnomimus Saussure, 1897.
- Found in the Kurra caves of Chhattisgarh, the new subgenus was named Jayanti after Professor Jayant Biswas, a leading cave explorer in India.
- **Difference** - Indimimus subgenus is different from the Arachnomimus and Euarachnomimus subgenera because of the male genitalia structure.
- Insects have a lock-and-key model genitalia structure which is unique to each subgenus.



- **Sounds** - Crickets are noticeable for their loud calls, especially at night.
- Male crickets produce this sound by rubbing their wings against each other. Females listen to these calls using ears located on their legs and approach the males for mating and reproduction.
- **Significance** - Interestingly, males of the Jayanti subgenus cannot produce sound and their females don't have ears.
- They may be communicating by beating their abdomen or any other body part on the cave walls (Vibrational communication).
- Further studies on their skills of vibrational communication may help in designing hearing aids for human which can capture quietest signals and amplify to an audible hearing range.

Bharitalasuchus tapani

- In the mid 20th century, researchers from the Indian Statistical Institute, Kolkata, carried out extensive studies on rocks of the Yerrapalli Formation in what is now Telangana.
- By studying some of these specimens now, a team has found a 240 million year old carnivorous reptile called *Bharitalasuchus tapani*.
- In the Telugu language, Bhari means huge, Tala means head, and Suchus is the name of the Egyptian crocodile-headed deity.
- *Bharitalasuchus tapani* were robust animals with big heads and large teeth, and these probably preyed on other smaller reptiles.
- They might have been the largest predators in their ecosystems as they were the size of an adult male lion.
- The reptile belonged to Erythrosuchidae, a family of extinct reptiles.

Yerrapalli Formation

- It is a Triassic rock formation consisting primarily of mudstones that outcrop in the Pranhita-Godavari Basin in south-eastern India.
- It preserves fossils of freshwater and terrestrial vertebrates as well as trace fossils of invertebrates.
- Apart from this *Bharitalasuchus tapani*, the fossil assemblage of the Yerrapalli Formation includes many other extinct creatures such as ceratodontid lungfish, rhynchosaur and allokotosaurian.
- Yerrapalli Formation (fossiliferous locality) is gradually being destroyed by deforestation, mining, agricultural expansion, urbanisation, etc.,

Blue-finned Mahseer

- On the International Union for Conservation of Nature's (IUCN) red list, the Blue-finned Mahseer (*Tor Khudree*) has been moved from the 'endangered' status to the 'least concern' status.
- However, the golden mahseer is still in danger of going extinct.
- The IUCN group is involved in conservation of the blue-finned and golden Mahseer for 50 years in Lonavala, Maharashtra.
- **Characteristics** - They inhabit both rivers and lakes. Most of species ascend into rapid streams with rocky bottoms for breeding.
- They are omnivorous. They eat algae, crustaceans, frogs, insects and other fish. They also eat fruits that fall from trees overhead.
- **Habitat** - This species is found in River Mota Mola east of Pune and other rivers of the Deccan Plateau.
- The species is migratory; moving upstream during rains. It prefers clean, fast flowing and well oxygenated waters.
- **Threats** - Over harvesting, habitat manipulation and competition from other fish species.



Freshwater Black Softshell Turtle

- Hayagriva Madhava Temple Committee (Assam) signed a MoU with two NGOs, Assam State Zoo cum Botanical Garden and the Kamrup district administration for conserving the rare freshwater black softshell turtle.
- Also, a Vision Document 2030 was launched to raise at least 1000 black softshell turtle (*Nilssononia nigricans*) by 2030.
- These turtles are found along the Brahmaputra River's drainage in Assam, and in ponds of temples in north-eastern India and Bangladesh.
- **Conservation** - The International Union for Conservation of Nature had in 2021 listed the turtle as 'critically endangered'.
- But it does not enjoy legal protection under the Indian Wildlife (Protection) Act, 1972.
- **Threats** - It has traditionally been hunted for its meat and cartilage, traded in regional and international markets.
- Since the turtles are conserved in these ponds only based on religious grounds, many biological requirements for building a sustainable wild population have since long been overlooked.

Pygmy Hogs

- Under the Pygmy Hog Conservation Programme (PHCP), eight of 12 captive-bred Pygmy hogs (*Porcula salvania*), were released in Manas National Park (Assam).
- Pygmy hogs are the world's rarest and smallest wild pigs.
- **Habitat** - It thrives in tall and wet grasslands. It is one of the very few mammals that build its own home, or nest, complete with a 'roof'.
- Its presence reflects the health of its primary habitat, the tall, wet grasslands of the region. So, it is an indicator species of the management status of grassland habitats.
- **Presence** - Once found along a narrow strip of wet grassland plains on the Himalayan foothills - from Uttar Pradesh to Assam, through Nepal's terai areas and Bengal's duars.
- Now, they are found mainly in Assam and southern Bhutan.
- **Threats** - Loss and degradation of grasslands (Habitat loss), illegal hunting, dry-season burning, livestock grazing, afforestation of grasslands, flood control schemes.
- **Conservation** - Pygmy Hogs are protected as "Endangered" in IUCN Red List. It is kept in the "Appendix I" of CITES and the "Schedule I" under the Wildlife (Protection) Act, 1972.

20. SCIENCE & TECHNOLOGY

SPACE

Baby Squids and Water Bears Sent to ISS

- NASA will send 128 glow-in-the-dark baby squids and 5,000 tardigrades (or water bears) to the [International Space Station](#) for research purposes.
- These water animals will be sent in a semi-frozen state to the ISS aboard SpaceX's 22nd cargo resupply mission to the ISS. In the ISS, they will be revived and grown in a special bio culture system.
- They are part of experiments that could help scientists design improved protective measures for astronauts going on long-duration space travel.
- **Study on water bears** - One of the studies involves looking at how the water bears would behave in a spaceflight environment.
- [Water bears are chosen because they can adapt to extreme conditions on Earth, including high pressure, temperature and radiation.]



- By learning how the water bears can survive in low gravity conditions, better techniques could be designed to keep astronauts healthy on long-duration space missions.
- **Study on squids** - Understanding of Microgravity on Animal-Microbe Interactions (UMAMI) study will look at how microgravity conditions affect the relationship between the bobtail squid and beneficial microbes.
- Studying this relationship is important as microbes play a crucial role in the normal development of animal tissues and in maintaining human health.
- In space, the findings will help space agencies develop better measures to protect astronauts from adverse host-microbe alterations on long-duration missions.

Quark-Gluon Plasma

- Smashing together lead particles at 99.9999991% the speed of the light, the first matter that appeared after the Big Bang has been recreated.
- This primordial type of matter is known as quark-gluon plasma, or QGP. This matter lasted only for a fraction of a second.
- For recreating QGP, scientists created the soup of energy (similarly to how it was immediately after the Big Bang) at the Large Hadron Collider (LHC), the world's largest atom smasher.
- By smashing heavy atomic nuclei together, a tiny fireball was created that effectively melts particles into their primordial forms for a fraction of a second.
- The scientists found the QGP was a perfect liquid - finding it to have less resistance to flow than any other known substance - and it also changed shape over time in a manner unlike other forms of matter.
- The scientists also determined how QGP evolved in the first moments in the early universe to form hadrons (such as protons, neutrons, etc).
- **Significance** - This study eventually could suggest how the early universe evolved in the first microsecond after the Big Bang.

After the Big Bang

- After the Big Bang, the universe was thought to be a soup of energy before it rapidly expanded during a period known as inflation, which allowed the universe to cool enough for matter to form.
- The first entities thought to emerge were quarks, a fundamental particle, and gluons, which carry the strong force that glues quarks together.
- As the universe cooled further, these particles formed subatomic particles called hadrons, some of which we know as protons and neutrons.

Divine Vessel

- China's spacecraft Shenzhou-12 ("Divine Vessel") will blast off from the Gobi Desert on a Long March rocket soon, ferrying three men to China's Tiangong space station for a three-month stay.
- It will be the third of 11 missions needed to complete the space station by 2022. Among them, four missions will have people on board, potentially propelling up to 12 Chinese astronauts into space.
- **Tianhe** - In April 2021, China launched the core module of the space station - "Tianhe" or "Harmony of the Heavens" - on the Long March 5B.
- Tianhe will act as the management and control hub of the space station. It is a cylinder, which is China's largest spacecraft.

Tiangong Space Station

- Tiangong ('Heavenly Palace') is China's permanent space station that will operate in low-Earth orbit at an altitude from 340 km to 450 km.
- This space station is built because China is excluded from the only space station currently in orbit is the [International Space Station](https://www.nasa.gov/mission/stations/iss/) (ISS).
- The station has a designed life span of 10 years.



- Five missions have already been launched in 2021. In order to complete the construction of the space station in 2022, China plans to launch 6 missions which will include the launch of,
 1. Mengtian and Wentian lab modules,
 2. Two manned spaceships (Shenzhou)
 3. Two cargo spacecraft (Tianzhou)
- Another three astronauts will later begin their six-month stay in orbit.

New Shephard

- The winner of the online auction conducted for the first seat on Blue Origin's New Shephard will be a part of New Shephard's first human flight on July 20 - 52nd anniversary of Neil Armstrong's moon landing.
- **Purpose** - Named after astronaut Alan Shephard (the first American to go to space), New Shephard is meant to take tourists to space to experience microgravity that takes them 100 km above the Earth.
- This rocket system offers flights to space over 100 km above the Earth and accommodation for payloads.
- The idea is to provide easier and more cost-effective access to space meant for purposes such as academic research, corporate technology development and entrepreneurial ventures among others.
- **Working** - New Shephard is a rocket system that has been designed to take astronauts and research payloads past the Karman line (the internationally recognized boundary of space).
- It consists of two parts - Cabin or capsule and Rocket or booster.
- The fully autonomous cabin can accommodate experiments from small Mini Payloads up to 100 kg and, it is designed for six people.
- The cabin sits atop a 60 feet tall rocket and separates from it before crossing the Karman line, after which both vehicles fall back to the Earth.
- **Reusable** - The system is a fully reusable, vertical takeoff and vertical landing space vehicle that accelerates for 2.5 minutes before the engine cuts off.
- After separating from the booster, the capsule free falls in space and the booster performs an autonomously controlled vertical landing back to Earth. The capsule lands back with the help of parachutes.

NASA's Missions to Venus

- NASA has selected two missions to Venus - DAVINCI+ and VERITAS. These missions are part of the NASA's ninth Discovery Program.
- [Discovery Program began in 1992 to give scientists the chance to launch some missions that use fewer resources and have shorter developmental times.]
- NASA is expected to allot \$500 million to each of these missions that will launch between 2028 and 2030.
- **DAVINCI+** (Deep Atmosphere Venus Investigation of Noble gases, Chemistry, and Imaging) is the first US-led mission to Venus' atmosphere since 1978.
- This mission will try to understand Venus' composition to see how the planet formed and evolved.
- It also consists of a descent sphere that will pass through Venus' thick atmosphere and take measurements of noble gases and other elements.
- This mission will try to return the first high resolution photographs of an unique geological feature of the Venus called "tesserae", which may be comparable to Earth's continents.
- Their presence may suggest that Venus has tectonic plates like Earth.
- **VERITAS** (Venus Emissivity, Radio Science, InSAR, Topography, and Spectroscopy) will map the planet's surface to determine its geologic history and understand why it developed so differently from Earth.
- It'll orbit Venus with a radar that will help to create a three dimensional reconstruction of its topography which might tell if processes such as plate tectonics and volcanism are still active there.



- It will also map the emissions from Venus's surface that may help in determining the type of rocks that exist on Venus.
- It will also determine if active volcanoes are releasing water vapour into the atmosphere.

EnVision

- EnVision is a European Space Agency (ESA) led mission. Its orbiter will visit Venus in the 2030s.
- Once launched on an Ariane 6 rocket, the spacecraft will reach Venus in 15 months and will take 16 more months to achieve orbit circularisation.
- The spacecraft will study the planet's atmosphere and surface, monitor trace gases in the atmosphere and analyse its surface composition.
- Radar provided by NASA will help to image and map the surface.
- At the core of the ESA's mission is the question of how Earth and Venus evolved so differently from each other considering that they are roughly of the same size and composition.
- EnVision will follow another ESA-led mission 'Venus Express' (2005-2014) that focussed on atmospheric research and pointed to volcanic hotspots on the planet's surface.

Other Missions to Venus

- The first spacecraft that visited the planet was the Soviet Union's Venera series.
- It was followed by NASA's Magellan Mission (1990-1994).
- Japan's Akatsuki spacecraft has been studying Venus' atmosphere since 2015.

DEFENCE

Enhanced Pinaka Rocket

- The Defence Research and Development Organisation (DRDO) test fired extended range version of indigenously developed Pinaka rocket at Integrated Test Range (ITR), Chandipur, Odisha.
- These 122 mm Caliber Artillery rockets were launched from a Multi-Barrel Rocket Launcher (MBRL).
- The **enhanced range version** of Pinaka Rocket System can destroy targets at distances up to 45 kms.
- This Rocket System has been developed jointly by Pune based Armament Research and Development Establishment (ARDE) and High Energy Materials Research Laboratory (HEMRL).
- The development of the Enhanced Pinaka system was taken up to achieve **longer range performance**.
- To know about the Pinaka Rocket, [click here](#).

Agni P

- Defence Research and Development Organisation (DRDO) successfully flight tested a New Generation Nuclear Capable Ballistic Missile Agni P from Dr APJ Abdul Kalam island off the coast of Odisha, Balasore.
- Agni P is the first of the new generation advanced variant of Agni class of missiles. It has a range capability between 1,000-2,000 kms
- It weighs 50% less than Agni 3 and has new guidance and a new generation of propulsion.
- Since it is a canisterised missile, it can be launched from rail and road and stored for a longer period and transported all across the country as per operational requirements.
- Due to its long range, this missile can be used to target enemy armadas in the Indo-Pacific.

Preventing a Drone Attack

- The need for an anti-drone system shielding critical installations came under sharp focus after a drone attack on an IAF base in Jammu.
- Drones have been increasingly used in the Middle East, particularly in Iraq and Syria, by the US to carry out targeted assassinations.



- At present, the only option is to shoot down the drones, but it is not easy as that would require sniper fire and the drone to be within range. Also, sighting drones, especially during night, is not easy.
- **Countering the drone threat** - Several private defence contractors are offering off-the-shelf anti-drone tech to counter hostile Unmanned Aerial Vehicles (UAVs), popularly known as drones.
- Companies, based out of Israel, US, have developed anti-drone systems using technologies such as radars, optic and thermal sensors etc.
- These systems stand apart when it comes down to the range and the manner in which the threat is assessed and neutralised.
- Some systems simply monitor and alert the presence of a drone, while others are equipped with ballistics and even lasers.
- **Indigenous solution** - The Defence Research and Development Organisation (DRDO) has developed an 'Anti Drone System'.
- The anti-drone system can detect and jam drones up to 3km and uses a laser weapon to fire at targets that are 1 to 2.5km away.

HEALTH

Gain-of-function Research

- The Wuhan Institute of Virology was said to have conducted gain-of-function research on coronaviruses. This gain-of-function research is linked to the theory of "Lab-leak origin" for the SARS-CoV-2.
- In virology, gain-of-function research involves **deliberately altering** an organism in the lab, altering a gene, or **introducing** a mutation in a pathogen to study its transmissibility, virulence and immunogenicity.
- It involves manipulations that make certain pathogenic microbes more deadly or more transmissible.
- This is done by genetically engineering the virus and by allowing them to grow in different growth mediums, a technique called **serial passage**.
- This allows researchers to study potential therapies, vaccine possibilities and ways to control the disease better in future.
- Some forms of these researches carry inherent biosafety and biosecurity risks and so referred to as 'dual-use research of concern' (DURC).

Loss-of-Function Research

- It involves inactivating mutations, resulting in a significant loss of original function, or no function to the pathogen.
- When mutations occur, they alter the structure of the virus that is being studied, resulting in altered functions. Some of these mutations might weaken the virus or enhance its function.

CD8 T-Cells

- A study was conducted on hospitalised patients with both solid tumours and hematologic cancers admitted to hospitals to better understand the immune determinants of Covid-19 deaths.
- **Finding** - Blood cancer patients with Covid-19 who had higher CD8 T cells were more than 3 times likelier to survive than patients with fewer CD8 T cells.
- [CD8 T cells are a type of white blood cells that can kill cancer cells and other invaders.]
- Patients with blood cancers, in particular patients treated with anti-CD20 antibodies, had decreased B cells and antibodies compared to patients with solid cancers and patients without cancer.
- To know more about T-cells, [click here](#).

H10N3 Bird Flu

- A man in China's Jiangsu province has been confirmed as the first human case of infection with a rare strain of bird flu known as H10N3.



- The WHO said while the source of the patient's exposure to the virus was not known. Since no other cases were found among the local population, there was no indication of human-to-human transmission yet.
- H10N3 strain of avian influenza is a low pathogenic or relatively less severe strain of the virus in poultry and the risk of it spreading on a large scale was very low.
- **Spread** - Infected birds spread the virus through their saliva, mucus and poop. Humans get infected when the virus gets in the eyes, nose or mouth, or is inhaled from infected droplets or dust.
- As long as avian influenza viruses circulate in poultry, sporadic infection of avian influenza will occur in humans.

Reassortment

- Flu viruses can mutate rapidly and mix with other strains circulating on farms or among migratory birds, known as "reassortment".
- Reassortment means they could make genetic changes that pose a transmission threat to humans.

Other Avian Influenza Viruses that can Infect Humans

- Currently, there are few avian influenza strains known to infect humans: H5, H7, and H9 - usually in the form of H5N1 and H7N9 viruses.
- While they are rare in the general population, these infections happen most commonly among those who work with poultry.
- The first human cases of the H5N1 virus infection were identified in Hong Kong in 1997.
- The first human cases of the H7N9 strain were reported in 2013. The last human epidemic of bird flu in China occurred in late 2016 to 2017 with the H7N9 virus.

Big Cats at Coronavirus Risk

- Lions at Chennai's Vandalur Zoo and Ranchi's Bhagwan Birsa Biological Park have died of suspected coronavirus infection.
- **Vulnerability** - The defining feature of a coronavirus is the spike protein on its surface. The spike protein initiates infection by binding with a host protein, called ACE2 receptor.
- Different species express ACE2 to different extents, and this plays a key role in determining how much a species is susceptible to coronavirus infection.
- In various studies, domestic cats and their big cousins have been estimated to express ACE2 more significantly than many other species. Also, there are similarities in the ACE2 of cats and humans.
- One study found that the most vulnerable species to coronavirus infection, next to humans, are ferrets, followed by cats and civets.
- Another study found that the primates such as chimpanzee rhesus macaque are at very high risk.
- At high risk are species such as blue-eyed black lemur. Cats were found to have a medium risk, while dogs had a low risk.
- There are no studies on the genome of big felines, but it is assumed that since cats can be infected, there is a big chance that lions and tigers will as well, since they will be very close in sequence.

Monoclonal Antibodies

- A study has shown that the experimental monoclonal antibody cocktail, REGEN-COV2, has been found to be a life-saving treatment for some of the most severely affected Covid-19 patients.
- To fight a viral infection, our bodies create proteins known as antibodies.
- Monoclonal antibodies are artificial antibodies that mimic the activity of our immune systems.
- They are produced through a process that involves extracting specific antibodies from human blood and then cloning them.

- These monoclonal antibodies are designed to target a virus or its specific part. E.g., REGEN-COV2 is a cocktail of two monoclonal antibodies developed to target the SARS-CoV-2 spike protein.
- The monoclonal antibodies bind to specific parts of the spike protein, blocking its ability to infect healthy cells.
- Besides Covid-19, monoclonal antibodies have been used in the treatment of cancers as well as Ebola and HIV.
- **Importance** - Monoclonal antibodies have the ability to help reduce the risk of hospitalisation of Covid-19.
- Some monoclonal antibodies have shown the ability to retain activity against multiple variants of the virus.
- **Limitations** - Monoclonal antibodies are not approved for use in those hospitalised with severe Covid-19 and those requiring oxygen.
- Some emerging variants like the Delta Plus “variant of interest” have also displayed the ability to nullify the use of monoclonal antibodies.

Mixing Covid-19 Vaccines

- India plans to embark soon on an exercise to investigate if it can immunise people using a “mix and match” of different Covid-19 vaccines.
- This would mean following up one dose of a particular vaccine with a second dose of a different vaccine.
- In scientific terms, this is called “heterologous” immunisation.
- Mixing and Matching Covid-19 vaccines of different technologies could better our immune response and may provide wider protection against certain mutations or variants of the SARS-CoV-2 virus.
- This may solve the problem with shortages in supply of a vaccine. It allows the completion of immunization while ensuring safety from side effects from one vaccine.

Corbevax

- India has placed an advance order to block 300 million doses of Covid-19 vaccine, Corbevax, from Hyderabad-based company Biological E.
- **Working of Corbevax** - Corbevax is a “recombinant protein sub-unit” vaccine, which means it is made up of a specific part of SARS-CoV-2 — the spike protein on the virus’s surface.
- The spike protein allows the virus to enter the cells in the body so that it can replicate and cause disease.
- However, when this protein alone is given to the body, it is not expected to be harmful as the rest of the virus is absent.
- The body is expected to develop an immune response against the injected spike protein.
- So, when the real virus attempts to infect the body, it will have an immune response ready that will make it unlikely for the person to fall severely ill.
- **Making of Corbevax** - Corbevax’s beginnings can be traced to the Baylor College of Medicine’s (BCM’s) National School of Tropical Medicine.
- They put the gene sequence for the spike protein into yeast, so that it could manufacture and release copies of the protein.
- After this, the protein was purified to remove any remnants of the yeast. Then, the vaccine was formulated using an adjuvant to better stimulate the immune response.
- Later, BCM transferred its production cell bank for this vaccine to Biological E, so that Biological E could take the candidate through trials.
- **Difference** - Other Covid-19 vaccines approved so far are either,
 1. mRNA vaccines (Pfizer and Moderna),
 2. Viral vector vaccines (AstraZeneca-Oxford/Covishield, Johnson & Johnson and Sputnik V) or
 3. Inactivated vaccines (Covaxin, Sinovac-CoronaVac and Sinopharm’s SARS-CoV-2 Vaccine–Vero Cell).



- Corbevax, like the mRNA and viral vector Covid-19 vaccines, targets only the spike protein, but in a different way.
- Viral vector and mRNA and vaccines use a code to induce our cells to make the spike proteins against which the body has to build immunity.
- In this case (Corbevax), we're actually giving the protein.
- Inactivated vaccines, which include killed particles of the whole SARS-CoV-2 virus, attempt to target the entire structure of the virus. Like most other Covid-19 vaccines, Corbevax is administered in two doses.

First CAR-T Cell Therapy

- The Chimeric Antigen Receptor T-cell (CAR-T) therapy emerged as a breakthrough in cancer treatment.
- So, the IIT Bombay and Tata Memorial Hospital, Mumbai collaborated to conduct the early phase pilot clinical trial of the "first in India" CAR-T therapy.
- The CAR-T cells were designed and manufactured at Bioscience and Bioengineering (BSBE) department of IIT Bombay. This work is partly supported by BIRAC-PACE scheme.
- The TMC-IIT Bombay team are further supported to extend this project for conducting Phase I/II trial of their CAR-T product by DBT/BIRAC, through [National Biopharma Mission](#).
- The development of CAR-T cell technology for diseases including acute lymphocytic leukemia, multiple myeloma, glioblastoma, hepatocellular carcinoma and type-2 diabetes is supported through DBT.
- **Challenges** - Though this technology has a good therapeutic potential for cancer patients, at present this technology is not available in India.
- The challenge is to develop the CAR-T therapy in cost-effective manner and make it available for the patients (currently, it costs 3-4 crore INR).
- The manufacturing complexity is a major reason for the therapy cost.
- National Biopharma Mission is also supporting the development of,
 1. Lentiviral vector manufacturing facility for packaging plasmids used to transfer the modified T cell inside the body,
 2. cGMP facility for T-cell transduction and expansion for CAR T-cell manufacturing to 2 other organizations.

Aducanumab

- Aducanumab (Aduhelm), from the company Biogen, is the new drug approved by the US Food and Drug Administration (FDA) for treating Alzheimer's disease.
- **Working** - Aduhelm is not a cure, but it slows down cognitive decline.
- Alzheimer's disease causes the accumulation of the debris caused by the breakdown of neurons in the brain, leading to plaque formation.
- So, Aducanumab is a monoclonal antibody that is designed to reduce the presence of amyloid beta, a protein that forms plaques in the brain.
- Aducanumab aims at altering the course of the disease by slowing the deterioration of brain function by reducing plaque formation.
- **Efficacy** - Aduhelm was tested in patients at the earliest stages of Alzheimer's before the disease had a major impact in their ability to care for themselves.
- So the FDA has asked Biogen to test the drug in people who had progressed to moderate dementia - a state in which the patients lose the ability to care for and feed themselves.

Alzheimer's Disease

- Dementia is an umbrella term for a range of conditions that involve a loss of cognitive functioning.
- Alzheimer's dementia is the most common type and involves plaques and tangles forming in the brain.



- **Symptoms** - Forgetfulness and memory problems are early symptoms.
- But as the illness progresses, patients tend to become confused, may lose their way around familiar places, and have difficulties with planning and completing simple tasks.
- The disease is basically an accelerated ageing of certain neurons in the brain that are concerned with storage and processing of memory.
- **Estimates** - According to World Health Organization (WHO) estimates for 2017, dementia affects approximately 50 million people worldwide.
- This is projected to grow to 82 million by 2030.
- In India, it is estimated that 5.3 million people (1 in 27) above the age of 60 have dementia in 2020, as per the Dementia in India 2020 report (published by the Alzheimer's and Related Disorders Society of India).
- This is projected to rise to 7.6 million by 2030.

Antibodies against Nipah in Bats

- A cross-sectional survey by Indian Council of Medical Research-National Institute of Virology has found the presence of antibodies in bats from Mahabaleshwar cave (Maharashtra) against the Nipah virus.
- Pteropus medius, which are large fruit-eating bats, are the incriminated reservoir for Nipah virus (NiV) in India as both NiV RNA and antibodies were detected in these bats collected during previous NiV outbreaks.
- The two bat species (from Mahabaleshwar cave) that were studied are,
 1. Rousettus leschenaultii - Medium-sized fruit eating bats and
 2. Pipistrellus pipistrellus - Tiny insectivorous bats.
- These bats had both the NiV RNA and anti-NiV IgG antibodies.
- Exposure of R leschenaultii bats to NiV warrants further investigation as roosting and breeding habitats of Rousettus and Pteropus vary greatly.
- A new introduction might have occurred from P medius to Rousettus bats through NiV-contaminated fruits, as both share the same fruit trees.
- NiV detection in P pipistrellus bats and their role in virus spill-over to humans appear remote.
- Recurring outbreaks, high fatality rate, human-to-human transmission and lack of effective vaccine/antiviral pose a major concern in India as the bat roosts are very common in areas where many humans reside.

Nipah Virus

- NiV is on the top-10 priority list pathogens identified by the World Health Organization.
- A study in 2018 has identified many South East Asian countries including Indian states as potential hotspots for the NiV disease.
- Till date, India has experienced four episodes of NiV outbreaks with CFR ranging from 65% to 100%. The evidence of NiV infection are reported in,
 1. Siliguri district, West Bengal (2001),
 2. Nadia district in West Bengal (2007),
 3. Kozhikode district of Kerala (2018), followed by another outbreak in the same state in 2019.
- To know more about Nipah Virus, [click here](#).

Delta Variant of Coronavirus

- The supercontagious Delta variant of the coronavirus is responsible for about 1 in 5 COVID-19 cases in the US.
- So while Delta may account for an increasing percentage of cases, it is not yet clear whether it will drive the total number of cases higher.



- Delta is one of the “Variants of Concern,” as designated by the Centers for Disease Control and Prevention and the World Health Organization.
- First identified in India, Delta has been reported in 80 countries. It is now the most common variant in India and Britain.
- Delta variant, formerly known as B.1.617.2, is believed to be the most transmissible variant yet, spreading more easily than both the original strain of the virus and the Alpha variant first identified in Britain.
- People infected by the Delta variant were roughly twice more likely to be hospitalized than those infected with Alpha.
- **Impact on Vaccine** - The variant may partially evade the antibodies made by the body after a coronavirus infection or vaccination.
- It may render certain monoclonal antibody treatments less effective.
- **Impact of Vaccine** - The Delta variant is unlikely to pose much risk to people who have been fully vaccinated.
- However, the protection offered by a single dose appears low, and if a person is not at all vaccinated, they are at high risk.

Delta Plus Variant of Coronavirus

- India found 40 cases of Delta variant carrying a mutation that appears to make it more transmissible and advised states to increase testing.
- This Variant is called Delta Plus, which is a sub-lineage of the Delta variant first detected in India.
- It has acquired the spike protein mutation called K417N which is also found in the Beta variant (B.1.351 lineage) first identified in South Africa. This Beta variant was reported to have immune evasion property.
- The K417N mutation, coupled with other existing features of the Delta variant, could make it more transmissible. It is known to reduce the effectiveness of a cocktail of therapeutic monoclonal antibodies.
- There are worries Delta Plus would inflict another wave of infections on India after it emerged from the world's worst surge in cases recently.
- Regions where the Delta Plus variant has been found may need to enhance their public health response by focusing on surveillance, enhanced testing, quick contact-tracing and priority vaccination.

Peter Pan Syndrome

- During a hearing in a special court in Mumbai, the accused had told the court he suffered from “Peter Pan Syndrome”.
- The term ‘Peter Pan Syndrome’ first appeared in 1983, in Dr Dan Kiley’s book. He described it as a “social-psychological phenomenon”.
- While the World Health Organization doesn’t recognise Peter Pan Syndrome as a health disorder, many experts believe it is a mental health condition that can affect one’s quality of life.
- Peter Pan Syndrome is not currently considered a psychopathology.
- **Symptoms** - It is said that people who develop behaviours of living life carefree, finding responsibilities challenging in adulthood and basically, “never growing up” suffer from Peter Pan Syndrome.
- It could affect one’s daily routine, relationships, work ethic, and result in attitudinal changes.
- The affected people have body of an adult but the mind of a child.
- The syndrome can affect anyone, irrespective of gender, race or culture. However, it appears to be more common among men.

Wendy Syndrome

- Wendy Syndrome takes after Wendy Darling, who appears beside Peter Pan but is seen as playing an antithetical character.
- She is often called a “mother”, taking on the role of an adult or someone more mature.
- People suffering from Wendy Syndrome as often seen making decisions, tidying up messes, and offering one-sided emotional support”.



Naming of Coronavirus Variants using Greek Letters

- The World Health Organization's (WHO's) Virus Evolution Working Group announced that the coronavirus variants of concern and variants of interest will now be named using letters of the Greek alphabet.
- [This naming system is similar to a system similar to hurricane naming.]
- The names of the variants of the coronavirus are,
 1. Alpha - B.1.1.7 variant of coronavirus first found in the U.K.,
 2. Beta - B.1.351 variant first identified in South Africa,
 3. Gamma - P.1 variant found in Brazil,
 4. Delta - B.1.617.2 discovered in India.
- The order of the letters indicates the order in which each variant was flagged by the WHO as a potential threat but bears no scientific meaning.
- This new label does not replace the variant's scientific name, B.1.1.7, but can now serve as an easy-to-pronounce alternative to that jumble of letters and numbers.

OTHERS

China's Artificial Sun 'EAST'

- China's "artificial sun" Experimental Advanced Superconducting Tokamak (EAST) has set a new record after it ran at 216 million degrees Fahrenheit (120 million degrees Celsius) for 101 seconds.
- For another 20 seconds, it achieved a peak temperature of 288 million degrees Fahrenheit (160 million degrees Celsius), which is over ten times hotter than the sun's core (15 million degrees Celsius).
- **EAST** - The China's EAST reactor is an advanced nuclear fusion experimental research device located at the Institute of Plasma Physics of the Chinese Academy of Sciences (ASIPP) in Hefei, China.
- EAST is one of three major domestic tokamaks that are presently being operated across the country. Other two are HL-2A reactor and J-TEXT.
- The EAST project, operational since 2006, is part of the International Thermonuclear Experimental Reactor (ITER) facility.
- **Working** - The EAST Tokamak device is designed to mimic the energy generation process of the sun. It replicates the process of nuclear fusion process carried out by the sun and stars.
- Also, in 2020, South Korea's [KSTAR reactor](#) set a record by maintaining a plasma temperature of 100 million degrees C for 20 seconds.

International Thermonuclear Experimental Reactor

- ITER is the world's largest experimental fusion reactor facility in France.
- It includes the contributions of several countries, including India, South Korea, Japan, Russia and the United States.
- To know more about International Thermonuclear Experimental Reactor (ITER), [click here](#).

AmbiTAG

- Indian Institute of Technology, Ropar has developed a first-of-its-kind IoT device called AmbiTag (Available at the production cost of Rs. 400).
- AmbiTag records real-time ambient temperature during the transportation of perishable products (like vegetables, meat and dairy products), vaccines (like COVID vaccine), body organs and blood.
- It generates an alert when the temperature goes beyond a pre-set limit.
- That recorded temperature further helps to know whether that particular item transported from anywhere in the world is still usable or perished because of temperature variation.

- Shaped as USB device, AmbiTag continuously records the temperature of its immediate surroundings from -40 to +80 degrees in any time zone for a full 90 days on a single charge.
- The device has been developed under IIT Ropar Technology Innovation Hub - AWaDH (Agriculture and Water Technology Development Hub) and its Startup ScratchNest. AWaDH is a Govt of India project.

Nano Urea Liquid

- The Indian Farmers Fertiliser Cooperative Limited (IFFCO) launched the World's 1st Nano Urea Liquid for the farmers across the World.
- It has been indigenously developed at Nano Biotechnology Research Centre, Gujrat in line with Atmanirbhar Bharat and Atmanirbhar Krishi.
- IFFCO Nano Urea Liquid is a nutrient to provide nitrogen to plants as an alternative to the conventional urea.
- It is developed to replace conventional urea and it can curtail the requirement of the same by at least 50%.
- It contains 40,000 ppm of nitrogen in a 500 ml bottle which is equivalent to the impact of nitrogen nutrient provided by one bag of conventional urea.
- The conventional urea is effective 30-40% in delivering nitrogen to plants, while the effectiveness of the Nano Urea Liquid is over 80%.
- Currently, India is dependent on imports to meet its urea requirements.
- During 2019-20, the production of urea was only 244.55 lakh metric tonnes as against the consumption volume of 336 LMT leaving a gap of over 91 LMT.

Indian Farmers Fertiliser Cooperative Limited

- It is one of India's biggest cooperative societies, which is wholly owned by Indian Cooperatives.
- Founded in 1967 with just 57 cooperatives, today it is an amalgamation of over 36,000 Indian Cooperatives with diversified business interests.
- Its aim is to enable Indian farmers to prosper through timely supply of reliable, quality agricultural inputs and services in a sustainable manner and to undertake other activities to improve their welfare.

Supersonic Flying

- United Airlines ordered 15 supersonic "Overture" planes with the ability to travel at Mach 1.7, faster than the speed of sound, from the Denver-based startup Boom.
- These supersonic aircrafts will become the world's fastest commercial airliner, reducing travel time by about half of today's planes.
- Boom's claims to produce an eco-friendly aircraft with "net-zero carbon emissions", set to fly with 100% sustainable aviation fuel (SAF).
- **Supersonic aircraft** - They are planes that can fly faster than the speed of sound. The technology for supersonic flights is actually over 70 years old, but only recently has been used for commercial flying.
- Before 1976, when the first commercial supersonic flight took off, the planes were used entirely for military purposes.
- Concorde, the British-French turbojet-powered commercial airliner, was the first aircraft to carry passengers at supersonic speed.
- Usually, supersonic planes can travel at the speed of around 900 kmph, twice the speed of normal aircraft.
- **Boom's Overture supersonic plane** - This would travel at the speed of Mach 1.7 (1,805 kmph) with a range of 4,250 nautical miles. It could carry 65 to 88 passengers and reach an altitude of 60,000 ft.
- The company has expressed confidence in getting an "experimental" jet ready by 2022, start rolling out aircraft by 2025 and eventually open them for passengers by 2029.
- This Overture will be "zero overland noise" and will not be noisy as supersonic planes in the past were.



- It will cruise at supersonic speeds only over water, ensuring that no sonic boom or excessive noise reaches the surfaces where people live.
- Coastal buffer zones will be created into route planning of the airline, enabling the Overture planes to travel over Mach 1 only after it reaches a “safe” distance from the shore.
- Overture planes would rely completely on sustainable aviation fuel, made from biodegradable material.
- **Challenges** - The costs of making “sustainable” supersonic planes are extremely high. The very nature of its flying - using excessive amounts of fuel and energy - is likely to have high environmental costs.
- These planes produce excessive noise pollution in the environment called the “Sonic Boom”. This feels like an explosion to the human ear.
- Thus, these supersonic planes can reach their actual speed until they are far enough from people and completely over the ocean.
- It would not be economically feasible for everyone.

Aircraft Turbulence

- Eight passengers on board a Boeing 737-800 flight from Mumbai to Kolkata suffered injuries after the flight encountered severe turbulence.
- The civil aviation regulator, Directorate General of Civil Aviation (DGCA), has classified the event as an “**incident**”, which means that it will investigate the causes behind its occurrence.
- **Turbulence** - Turbulence means disruption of airflow over the wings of an airplane, which causes it to enter an irregular vertical motion.
- There are at least 7 kinds of turbulence which an aircraft can face.
 1. Turbulence can be weather-related, in which the plane flies through a thunderstorm or a heavy cloud, or
 2. Clear air turbulence, which is mainly caused by wind or jet streams.
 3. Wake turbulence, which forms behind an aircraft when it flies through air, creating wingtip vortices.
- **Severity of turbulence** - It depends on the nature and intensity of the turbulence. Aircraft face some form of turbulence on a regular basis, and pilots are trained to deal with these disturbances.
- In several cases, intense turbulence has been the main cause of an accident. But there are other contributory factors too.
- The other factors include lack of proper training, poor dissemination of weather- or wind-related information.
- **Advice** - According to the US Federal Aviation Administration (FAA), passengers can easily prevent injuries from unexpected turbulence by keeping their seat belt buckled at all times.
- The FAA advises passengers to listen to instructions given by the flight attendants. This same advice is often given by pilots and flight attendants on Indian domestic flights.
- The FAA also recommends certain points that the carriers should follow.

Human DNA-inspired Storage System

- MIT researchers are working on a storage system that can hold ample data, without taking much space. It is inspired by the human DNA.
- **Need** - A coffee mug full of DNA could store all of the world’s data.
- There are about 10 trillion gigabytes (GB) of digital data on Earth right now. Every day, another 2.5 million GB of data are added.
- This data consumes a lot of space as they are stored in enormous facilities known as exabyte data centers which can be the size of several football fields and cost around \$1 billion to build and maintain.
- **Pros** - As the human DNA doesn’t consume any energy, the data written on the DNA can be stored forever.
- Extreme stability, ease of synthesis and sequencing are other factors that favour DNA-based storage.



- **Challenges** in using DNA to store data include the cost of DNA synthesis and pulling out the vital file from the massive data repository.
- **Retrieval Technique** - The MIT team has developed a new retrieval technique to pull out the required data. It involves encapsulating each DNA file into a small silica particle.
- Each capsule is labeled with single-stranded DNA “barcodes” that correspond to the contents of the file.
- This enables them to pull out the desired file while leaving the rest of the DNA intact to be put back into storage.

21. INDEX & REPORT

Global Liveability Index 2021

- The Global Liveability Index for 2021 of 140 cities around the world was released by the Economist Intelligence Unit.
- Handling of the Covid-19 crisis seems to be one of the most important factors that dominated the formulation of the Index for 2021.
- The index takes into account more than 30 qualitative and quantitative factors spanning five categories - stability (25%), healthcare (20%), culture and environment (25%), education (10%), infrastructure (20%).
- **Findings** - New Zealand’s Auckland is named the world’s most liveable city for 2021, due to its successful approach in containing the pandemic.
- Austria’s Vienna (Topped in 2018 and 2019) has completely dropped out of the top 10 after being heavily affected by Covid, and ranks 12.

World Employment and Social Outlook 2021

- The UN’s International Labour Organization (ILO) published its flagship report ‘World Employment and Social Outlook (WESO) 2021.’
- The theme of the report was, ‘The role of digital labour platforms in transforming the world of work.’
- This ILO report explores how the contemporary platform economy is transforming the way work is organized, analyzing the impact of digital labour platforms on enterprises, workers and society as a whole.
- The report by the ILO focuses to,
 - a) Bring out a clear picture of global employment and social trends
 - b) Measure the underperformance of the labour market using the unemployment rate
 - c) Assess the full potential of the working-age population
 - d) Evaluate the participation of the labour market in the economic growth of the countries

Findings

- **Pandemic’s impact** - The ILO report said that the pandemic has pushed over 100 million more workers into poverty, after working hours plummeted and access to good quality jobs evaporated.
- The pandemic has exacerbated existing inequalities in the labour market, with lower-skilled workers, women, young people or migrants among the most affected.
- **Loss of Working Hours** - Many people have held onto their jobs but have seen their working hours cut dramatically.
- In 2020, 8.8% of global working hours were lost compared to the fourth quarter of 2019 -- the equivalent of 255 million full-time jobs.
- While the situation has improved, global working hours have far from bounced back, and the world will still be short the equivalent of 100 million full-time jobs by the end of this year.



- **Unemployment rate** of 6.3% this year (2020-21), falling to 5.7% next year (2021-22) but still up on the pre-pandemic rate of 5.4% in 2019.
- Women have suffered disproportionate job losses while seeing their unpaid working time increase.
- The burden of intensified childcare and homeschooling activities has disproportionately fallen on them. So, women's employment dropped by 5% compared with 3.9% for men.
- **Effect on Workers** - There will be pandemic's longer-term "scarring" effects on workers and enterprises. The projected employment growth will be insufficient to close the gaps opened up by the crisis.

World Energy Investment Report 2021

- The [International Energy Agency](#) (IEA) has released the World Energy Investment Report, 2021.
- According to this report, global energy investment is expected to rebound this year and increase 10% year-on-year to around \$1.9 trillion.
- Most of this investment will flow towards power and end-use sectors, shifting out of traditional fossil fuel production.
- The global energy demand is projected to rise 4.6% year-on-year in 2021, offsetting its contraction in 2020.
- Energy efficiency sector will see a 10% rise in investment, though the low fossil fuel price may act as a deterrent.
- **Renewable power** will have the largest share - around 70% of the total \$530 billion will be spent on new power generation capacity.
- Substantial gain of renewable as the future energy outlook has been dependent on technological development, well-established supply chain and demand from consumers for carbon-neutral electricity.
- **Fossil fuel** - Upstream investment in oil is expected to grow 10%.
- This expansion in fossil fuels was planned with novel technologies like carbon capture and storage (CCS) and bioenergy CCS, which are yet to be attained commercial success.
- The increment of coal-fired power in 2020, mostly driven by China, is indicating that 'coal is down but not yet out'.
- **Pandemic recovery strategies** in many countries lack the required stimulant towards emission biennial technologies and pathways.
- The rhetoric around 'Net Zero' is gaining momentum but its transition to actual action is not visible.
- **Increased Emissions** - Global carbon dioxide emission is set to grow by 1.5 billion tonnes in 2020, after a contraction in 2020 mainly due to economic slowdown induced by the COVID-19 pandemic.
- The emerging market is almost 70% responsible for demand growth and India plays an important part in this block.
- The responsibility-share of developed nations should not be undermined: Their in-country growth of emission is moderate but their exported emission is of concern.
- Market stimulus amid the pandemic may have lost the opportunity to maximise the clean developmental pathway.

World Competitiveness Index

- The World Competitiveness Index was topped by Switzerland, while India maintained 43rd rank.
- This list is compiled annually by the Institute for Management Development (IMD) World Competitiveness Center.
- The Index ranks 64 economies and assesses the extent to which a country promotes the prosperity of its people by measuring economic well-being through hard data and survey responses from executives.
- It measures the prosperity and competitiveness of nations by examining four factors -- economic performance, government efficiency, business efficiency, and infrastructure.

- This year, the rankings examine the impact of COVID-19 on economies around the world.
- **India** - India has maintained its position for the past three years but this year, it had significant improvements in government efficiency.
- India's improvements in the government efficiency factor are due to,
 1. Relatively stable public finances (despite difficulties brought by the pandemic, in 2020 the government deficit stayed at 7%) and
 2. Positive feedbacks registered among Indian business executives with respect to the support and subsidies given by the government to the private companies.
- IMD, however, added that the short term performance of India's economy will depend on its ability to address the pandemic.

World Investment Report 2021

- The World Investment Report 2021 was released by the UN Conference on Trade and Development (UNCTAD).
- **India** - The report says that India is the fifth largest recipient of Foreign Direct Investment (FDI) in the world.
- In India, the FDI increased 27% to USD 64 billion (2020) from USD 51 billion (2019), due to the acquisitions in the Information and Communication Technology (ICT) industry.
- The second wave of the COVID-19 in India weighs heavily on the country's overall economic activities but its strong fundamentals provide optimism for the medium term.
- The report said that the investments from India may stabilise in 2021, supported by the country's resumption of free trade agreement (FTA) talks with the European Union (EU) and its strong investment in Africa.
- **Global** - The global FDI flows have been severely hit by the pandemic and they plunged by 35% in 2020 to USD 1 trillion.
- COVID-19 led lockdowns around the world slowed down existing investment projects and prospects of a recession led multinational enterprises (MNEs) to reassess new projects.
- The pandemic boosted demand for digital infrastructure and services globally, which led to higher values of greenfield FDI project announcements targeting the ICT industry, rising by more than 22%.
- **Asian region** - While some large economies in developing Asia like China and India recorded FDI growth in 2020, the rest recorded a contraction.
- FDI outflows from South Asia fell 12% to USD 12 billion, driven by a drop in investment from India.
- A wider resurgence of the virus in Asia could significantly lower global FDI in 2021, given that region's significant contribution to the total.
- Signs of trade and industrial production recovering in the second half of 2020 provide a strong foundation for FDI growth in 2021.

World Drug Report 2021

- According to the World Drug Report 2021 of the United Nations Office on Drugs and Crime's, the lockdown restrictions during COVID-19 may have accelerated drug trafficking using the Internet.
- **Findings** - Between 2010 and 2019, the number of people using drugs increased by 22%, as there was an increase in the global population.
- Opioids account for the largest burden of disease attributed to drug use.
- In last 24 years, cannabis potency had increased by four times in some parts of the globe. Percentage of adolescents who perceived drug as harmful has reduced by 40%.
- A rise in the non-medical use of pharmaceutical drugs was observed during the coronavirus pandemic.
- **Darknet markets** - In Asia, China and India are the most frequently mentioned countries linked to shipment of drugs sold on the 19 major darknet markets analysed over 2011-2020.



- Access to drugs has become simpler than ever with online sales, and major drug markets on the dark web are worth \$315 million annually.
- The use of private planes for drug trafficking and contactless transactions, such as through the mail, are also on the rise.
- Although this is a “tiny fraction” of overall drug sales, the trend of using dark web on the rise, with a fourfold increase in annual sales from the beginning of the 2010s to more recent years.
- While cannabis dominates darknet sales, marketing on the so-called clear web often involves new psychoactive substances.

NITI Aayog's SDG India Index

- Sustainable Development Goals (SDGs) India Index 2020-21 was released by the government think tank NITI Aayog.
- **The Index** - SDG India Index is developed in collaboration with the United Nations in India.
- First launched in December 2018, the index has become the primary tool for monitoring progress on the SDGs in India.
- It tracks the progress of all states and UTs on 115 indicators aligned with the National Indicator Framework (NIF) of the Ministry of Statistics and Programme Implementation.
- From covering 13 Goals with 62 indicators in its first edition in 2018, the third edition of the index covers 16 Goals on 115 quantitative indicators.
- **Score** - The SDG India Index scores range between 0–100, higher the score of a State/UT, the greater the distance to target achieved.
- States and UTs are classified in four categories based on their SDG India Index score,
 - a) Aspirant: 0–49;
 - b) Performer: 50–64;
 - c) Front-runner: 65–99,
 - d) Achiever: 100.
- **Findings** - In the SDG India Index 2020-21, there are no states in the aspirant and achiever category; 15 states/UTs are in the performer category and 22 states/UTs in the front runner category.
- The country's overall SDG score is 66, which is improved by 6 points from 2019 score. This is due to improvement in performance in providing facilities including clean water and sanitation, etc.
- Kerala has retained the top rank and Chandigarh maintained its top spot among the UTs, while Bihar, Jharkhand and Assam were the worst performing states in this year's index.
- Mizoram, Haryana, and Uttarakhand are the top gainers in terms of improvement in their rankings from 2019.

Performance Grading Index on School Education

- Third Performance Grading Index (PGI) 2019-20 for States and Union Territories of India was released. It was first published in 2019 with reference year 2017-18.
- The PGI is a tool to provide insights on the status of school education in States and UTs including key levers that drive their performance and critical areas for improvement.
- Department of School Education and Literacy (DoSEL) has designed the PGI to catalyse transformational change in the field of school education.
- The PGI is structured in two categories - Outcomes, and Governance & Management.
- It comprises 70 indicators in aggregate with a total weightage of 1000.
- It assesses the States and UTs in five domains - Learning Outcome and Quality; Access; Infrastructure and Facilities; Equity; and Governance Process.

- **Findings** - Punjab, Chandigarh, Tamil Nadu, Andaman & Nicobar Islands and Kerala occupy the highest grade (Grade A++) for 2019-20.
- Andaman & Nicobar Islands, Arunachal Pradesh, Manipur, Puducherry, Punjab and TN have improved overall PGI score by 10%, i.e., 100 or more points.
- **Significance** - The PGI exercise would propel States and UTs towards undertaking multi-pronged interventions that will bring about the much-desired optimal education outcomes.
- It helps the States/UTs to pinpoint the gaps and accordingly prioritise areas for intervention to ensure that the school education system is robust at every level.

AISHE Report 2019-20

- The release of the Report of All India Survey on Higher Education (AISHE) 2019-20 was announced by the Union Education Minister.
- It is the 10th in the AISHE series released annually by the Department of Higher Education.
- AISHE provides key performance indicators on the current status of Higher education in the country.
- **Findings** - In the last five years from 2015-16 to 2019-20, there has been a growth of 11.4% in the student enrolment. The rise in female enrolment in higher education during the period is 18.2%.
- Total Enrolment in Higher Education stands at 3.85 crore in 2019-20 as compared to 3.74 crore in 2018-19, registering a growth of 3.04%. Uttar Pradesh has highest student enrolment in India followed by Tamil Nadu.
- Gross Enrolment Ratio (GER) - the percentage of students belonging to the eligible age group enrolled in Higher Education - in 2019-20 is 27.1% against 26.3% in 2018-19 and 24.3% in 2014-2015.
- Gender Parity Index (GPI) in Higher Education is 1.01 in 2019-20 against 1.00 in 2018-19 indicating an improvement in the relative access to higher education for females of eligible age group compared to males.
- Student enrolment in programmes at under-graduate and post-graduate level is at 3.38 crore.
- Nearly 85% of these students (2.85 crore) were enrolled in the six major disciplines - Science, Medical Science, Engineering & Technology, Humanities, Commerce and IT & Computer.
- Number of students pursuing PhD in 2019-20 is 2.03 lakh against 1.17 lakh in 2014-15.
- Pupil Teacher Ratio in Higher Education in 2019-20 is 26.
- Total Number of Teachers stands at 15,03,156 comprising of 57.5% male and 42.5% female.

Pesticides - India's Leading Cause of Poisoning

- A research titled "Toxicoepidemiology of poisoning exhibited in Indian population from 2010 to 2020: A systematic review and meta-analysis" was done on the prevalence of various types of poisoning in India.
- It has found that pesticides are the leading cause of poisoning in India, with two in every three cases of poisoning happening because of pesticide consumption either intentionally or unintentionally.
- Overall prevalence of pesticide poisoning was at 63% due to widespread use of pesticides for agricultural and household activities.
- The second most common cause of poisoning was miscellaneous agents, followed by drugs, venoms and corrosives.
- The prevalence of poisoning was the highest in north India at 79%, followed by south India (65.9%), central India (59.2%), west India (53.1%), north east India (46.9%) and east India (38.5%).
- **Reasons for pesticide poisoning** - Co-existence of poverty and agricultural farming and thus, the easy availability of pesticides.
- The WHO and its member countries initiated a programme of safe access of pesticides, which has resulted in a decrease in the prevalence of fatal poisoning by 10% across the world.
- However, pesticides remain the leading cause of poisoning in south Asian countries including India and in South East Asia and China.



PRELIMS PRACTICE QUESTIONS

1) Consider the following statements with respect to *AmbiTAG*

1. It is a first-of-its-kind IoT device which helps to know whether a particular soil in a region is suitable for a particular vegetable or fruits.
2. The device has been developed under Agriculture and Water Technology Development Hub (AWaDH), a Govt of India project.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

2) The “*Three Child Policy*”, sometimes seen in the news, was approved recently by which of the following countries?

- a. China
- b. Japan
- c. Madagascar
- d. New Zealand

3) Match the following

Variants of Concern – Country of Origin

- | | |
|----------|---------------------|
| 1. Alpha | – a. India |
| 2. Beta | – b. Brazil |
| 3. Gamma | – c. South Africa |
| 4. Delta | – d. United Kingdom |

Select the correct answer using the codes given below:

- a. 1-d; 2-b; 3-c; 4-a
- b. 1-b; 2-a; 3-d; 4-c
- c. 1-d; 2-c; 3-b; 4-a
- d. 1-c; 2-d; 3-b; 4-a

4) Which of the following statement(s) is/ are *incorrect* with respect to *Hallmarking of Gold*

1. Gold hallmarking is a purity certification of the precious metal and at present it is voluntary in nature in India.
2. Hallmarked gold jewellery will be available in ten different grades instead of only three grades (14-carat, 18-carat and 22-carat).

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2



5) Consider the following statements with respect to *International Nitrogen Initiative (INI)*

1. It was set up in 2003 under the UNESCO's International Geosphere-Biosphere Program (IGBP).
2. INI conferences will be held every three years on different continents.
3. INI 2021 is being hosted by India's Ministry of Environment, Forests and Climate Change.

Which of the statement(s) given above is/are correct?

- a. 2 only
- b. 1 and 3 only
- c. 2 and 3 only
- d. 1, 2 and 3

6) Consider the following statements with respect to *SDG India Index 2020-21*

1. The Index, developed in collaboration with the United Nations in India was launched by NITI Aayog.
2. The index measures the progress at the national and sub-national level in the country's journey towards meeting the Global Sustainable Development Goals and targets.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

7) Consider the following statements with respect to *Seniorcare Ageing Growth Engine (SAGE) Initiative*

1. It aims to select, support and create a one-stop access of elderly care products and services by credible start-ups.
2. Ministry of Social Justice & Empowerment will act as a facilitator, enabling the elderly to access the products through these identified start-ups.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

8) Consider the following statements with respective to *Global Minimum Tax (GMT)*

1. It is a minimum corporate tax rate for corporations all over the world to pay regardless of which jurisdiction they are registered in.
2. It would help countries to tackle Base Erosion and Profit Shifting (BEPS).

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2



9) Which of the following statement(s) is/ are *incorrect* with respect to *Blue-finned Mahseer*

1. It is mainly found in the Mota Mola River east of Pune and also found in other rivers of the Deccan Plateau.
2. It is listed as Least Concern under the IUCN Red List.

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

10) Consider the following statements with respect to *I-Familia*

1. It is a global database to identify missing persons through family DNA and help the police solve cases in member countries.
2. It was launched by the International Criminal Police Organization (INTERPOL).

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

11) Consider the following statements with respect to *Promoting Academic Research Conversion to Enterprise (PACE) Scheme*

1. Under the Scheme, scientists or senior researchers abroad of Indian origin can collaborate with Indian faculties for conducting joint researches in India.
2. It was launched by Biotechnology Industry Research Assistance Council (BIRAC).

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

12) The *Global Liveability Index, 2021*, was recently launched by?

- a. World Bank
- b. UN Habitat
- c. Economist Intelligence Unit
- d. Institute of Economics & Peace

13) Consider the following statements with respect to *Black Carbon*

1. It is a short-lived pollutant that is the second-largest contributor to warming the planet behind carbon dioxide (CO₂).
2. It is quickly washed out and can be eliminated from the atmosphere if emissions stop.
3. Black carbon (BC) deposits produced by human activity accelerate the pace of glacier and snow melt in the Himalayan region.



Which of the statement(s) given above is/are correct?

- a. 1 and 2 only
- b. 1 and 3 only
- c. 2 and 3 only
- d. 1, 2 and 3

14) Trirashmi Buddhist Cave complex is located in which of the following states?

- a. Karnataka
- b. Uttar Pradesh
- c. Maharashtra
- d. Madhya Pradesh

15) Keeling Curve, sometimes seen in the news recently, is associated with?

- a. Concentration of Carbon dioxide (CO₂)
- b. Impact of Education in Societal Wellbeing
- c. Economic inequality against Income per capita
- d. A chain of volcanoes formed above a subducting plate

16) Which of the following is the first country in the world to adopt Bitcoin as legal tender?

- a. Austria
- b. Colombia
- c. Venezuela
- d. El Salvador

17) Which one of the following statements regarding All India Survey on Higher Education (AISHE) 2019-20 is incorrect?

- a. Enrolment of female students is higher in Institutes of National Importance (INI)
- b. Female enrolment in higher education increases over 18% from 2015-16 to 2019-20
- c. Female participation in professional courses is lower in comparison to academic courses
- d. None of the above

18) *Pyrostria laljii*, a 15-meter-tall tree that belongs to the genus of the coffee family has recently been discovered from?

- a. Goa
- b. Kerala
- c. Karnataka
- d. Andaman Islands

19) Consider the following statements with respect to EnVision Mission

1. It is ISRO's Mission to Venus with contributions from European Space Agency.
2. The mission will monitor trace gases in the atmosphere and analyse its surface composition.

Which of the statement(s) given above is/are correct?



- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

20) Which of the following statement(s) is/ are correct with respect to *Protection of Heritage Trees Scheme*?

1. Under the proposal a tree with an estimated age of 50 years or more shall be defined as a heritage tree.
2. The heritage tree may belong to specific species, which will be notified from time to time.

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

21) Consider the following statements with respect to *Northern limit of Monsoon (NLM)*

1. It is a line delineating the regions where the monsoon has advanced from the regions where the monsoon is yet to set in.
2. Under the condition monsoon trough shifts northwards, resulting in drastic reduction in rainfall over the country outside the foot hills and southernmost Peninsula.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

22) Consider the following statements with respect to *WISA Woodsat*

1. It is the world's first wooden satellite, to be launched by the European Space Agency (ESA).
2. The mission of the satellite is to test the applicability of wooden materials in spacecraft structures and expose it to extreme space conditions.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

23) Consider the following statements with respect to *Deep Ocean Mission*

1. It is a mission mode project to explore deep ocean for resources and develop deep sea technologies for sustainable use of ocean resources.
2. Ministry of Science & Technology will be the nodal ministry for implementing this ambitious mission.

Which of the statement(s) given above is/are correct?



- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

24) Consider the following statements with respect to *Woolly Flying Squirrel*

- 1. It is a rarest mammal, endemic to Western Ghats.
- 2. It is listed as endangered species under IUCN Red list.

Which of the statement(s) given above is/are *incorrect*?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

25) Which of the following statement(s) is/ are correct with respect to *Atlantic Charter*

- 1. It outlines key security areas on which the U.S. and Russia plan to collaborate in future.
- 2. Revamped Atlantic Charter commits to bringing the pandemic to an end.

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

26) Which of the following statement(s) is/ are correct with respect to *Antarctic Circumpolar Current (ACC)*

- 1. It flows from North to South across Antarctica, which is formed in recent times due to anthropological factors.
- 2. It is the only current in the global ocean to close upon itself in a circumpolar loop.

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

27) Consider the following statements with respect to *Jhanda Satyagraha*

- 1. It focused on exercising the right and freedom to hoist the nationalist flag through the defiance of laws prohibiting the hoisting of nationalist flags.
- 2. The first Jhanda Satyagraha was held in the city of Nagpur in 1923 and later spread to many other parts of India.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only



- c. Both 1 and 2
- d. Neither 1 nor 2

28) *New Shephard*, sometimes seen in the news recently, is associated with?

- a. Space Station
- b. Space Tourism
- c. Space Telescope
- d. Space Defence Agency

29) Which of the following statement(s) is/ are correct with respect to *PASIPHAE*

1. It is an international collaborative sky surveying project steered by the NASA and ISRO.
2. It will be used in upcoming sky surveys to capture polarisation (B-mode signal) coming from very faint stars

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

30) *World Competitiveness Index 2021* is released by which of the following organizations?

- a. Institute for Management Development (IMD)
- b. World Economic Forum (WEF)
- c. International Monetary Fund (IMF)
- d. World Bank

31) With respect to *Reverse & Forward Osmosis*, consider the following statements:

1. Like Reverse osmosis (RO), Forward Osmosis (FO) is also a membrane based water treatment solution.
2. The Forward osmosis uses natural osmotic pressure to induce the flow of water through the membrane.
3. In reverse osmosis, the water is forced through the membrane using hydraulic pressure.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 and 3 only
- c. 1, 2 and 3
- d. None of the above

32) Consider the following statements with respect to *Water Technology Initiative (WTI)*

1. It aims to strengthen the R&D capacity to develop the research based solutions for existing and emerging water challenges facing the country.
2. It is an initiative of Ministry of Science and Technology, which directly caters to furthering the Sustainable Development Goal: 6.

Which of the statement(s) given above is/are correct?



- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

33) Consider the following statements with respect to *Green Hydrogen*

1. Hydrogen when produced by electrolysis using renewable energy is known as Green Hydrogen.
2. The production cost of Green hydrogen is very low when compared to the production costs of grey hydrogen.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

34) Which of the following statement(s) is/ are *incorrect* with respect to *Black Softshell Turtle*

1. They are found in ponds of temples in north-eastern India and Bangladesh.
2. It is listed as Vulnerable under IUCN Red list.

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

35) Consider the following statements with respect to *Biotech-KISAN Initiative*

1. It is an initiative of Department of Biotechnology, Ministry of Science and Technology.
2. It was launched with an objective to connect science laboratories with the farmers to find out innovative solutions and technologies to be applied at farm level.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

36) *Suicide Worldwide Report* is published by which of the following organizations?

- a. United Nations Human Rights Council (UNHRC)
- b. World Health Organization (WHO)
- c. Doctors without Borders
- d. United Nations Children's Fund (UNICEF)



37) Consider the following statements about *Tax inspectors without Borders* initiative

1. It is a joint initiative of the United Nations Environment Programme (UNEP) and the Organisation for Economic Cooperation and Development (OECD).
2. India is a partner jurisdiction of this initiative that aid Bhutan in strengthening its tax administration.

Which of the above statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

38) Consider the following statements about the recent *CPI and WPI inflation*

1. Retail Inflation (CPI) has crossed the RBI's upper limit of 6% recently.
2. The government stands to benefit from this inflation as it will lower the national debt in relation to the size of the economy.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

39) *Tambura* is a musical instrument belongs to which of the following category?

- a. Tata Vadya
- b. Ghana Vadya
- c. Sushira Vadya
- d. Avanaddha Vadya

40) *itat e-dwar*, sometimes seen in the news recently, refers to?

- a. It is an e-filing portal of Income Tax Appellate Tribunal
- b. It is a fabric recently granted GI tag in the Himachal Region
- c. It is an app for Indian pilgrims to register for Haj pilgrimage
- d. It is a tax system followed during Mughals for the protection of their subjects

41) With respect to the *Urban Learning Internship Program (TULIP)*, consider the following statements:

1. It is a platform to connect graduates to Urban Local Bodies and Smart Cities to co-create new solutions for our cities.
2. It is an initiative of Ministry of Housing and Urban Affairs (MoHUA).

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2



42) Vandana Aggarwal Committee, sometimes seen in the news recently, was constituted recently for which of the following purposes?

- a. To look into issues pertaining to India's Capital goods Sector
- b. To examine global best practices in ship financing and leasing
- c. To look into the feasibility of allowing life insurers to offer indemnity-based health policies
- d. To advise SEBI on measures required for transparency and simplification in mutual fund regulations

43) Which of the following statement(s) is/ are correct with respect to Anoxic Waters

- 1. It is caused due to the presence of the process of Eutrophication in the sea.
- 2. It is generally found in areas that have high inflow of water exchange.

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

44) Consider the following statements with respect to Indian Ocean Sea Turtle Agreement (IOSEA)

- 1. It aims to maintain and recover marine turtle populations by promoting cooperation among Governments
- 2. India is a signatory to the IOSEA of the Convention on Migratory Species (CMS).

Which of the statement(s) given above is/are incorrect?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

45) Consider the following statements with respect to Bankim Chandra Chattopadhyay

- 1. His most famous novel was Anand Math from which, the Bande Mataram, was later adopted as Indian National Song.
- 2. He started a monthly literary magazine named Durgeshnandini in 1897.
- 3. His first novel in English, named as Bangadarshan, is said to be the first published novel in English by an Indian.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 1 and 2 only
- c. 1 and 3 only
- d. 2 and 3 only

46) Consider the following statements with respect to Nasha Mukh Bharat Abhiyaan (NMBA)

- 1. It is a financial literacy campaign to actively engage the students of Higher Education Institutions to use digitally enabled cashless system.



2. It was launched by the Ministry of Education.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

47) Which of the following statement(s) is/ are correct with respect to *Registered Valuer*

- 1. A registered valuer is an individual or entity which is registered with the Insolvency and Bankruptcy Board of India (IBBI) as a valuer.
- 2. It was introduced in the Companies Act in 2017 in order to regulate the valuation of assets and liabilities linked to a company.

Select the correct answer using the codes given below:

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

48) Which of the following countries is not a part of *Coral Triangle (CT)*?

- a. Australia
- b. Indonesia
- c. Malaysia
- d. Philippines

49) Consider the following statements with respect to *Fund for Industrial Research Engagement (FIRE) Program*

- 1. It aims to utilize the expertise available in academic institutions and national laboratories to solve industry-specific problems for the larger benefit of society.
- 2. It was launched by the Science and Engineering Research Board (SERB) under the Industry Relevant R&D (IRRD) Scheme.

Which of the statement(s) given above is/are correct?

- a. 1 only
- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

50) Which of the following statement(s) is/ are correct with respect to *Article 371*

- 1. The Articles 371 to 371-J in Part XXI of the constitution contain special provisions for twelve states.
- 2. It falls under PART XXI titled 'Temporary, Transitional and Special Provisions' of the Indian Constitution.

Select the correct answer using the codes given below:

- a. 1 only



- b. 2 only
- c. Both 1 and 2
- d. Neither 1 nor 2

ANSWERS

1. b

- *Indian Institute of Technology, Ropar (IIT Ropar) in Punjab has recently developed a first-of-its-kind IoT device – AmbiTag.*

AmbiTag

- It is an Internet of Things (IoT) device which records real-time ambient temperature during the transportation of perishable products, vaccines and even body organs and blood.
- That recorded temperature further helps to know whether that particular item transported from anywhere in the world is still usable or perished because of temperature variation.
- This information is particularly critical for vaccines including Covid-19 vaccine, organs and blood transportation.
- Besides perishable items including vegetables, meat and dairy products it can also monitor the temperature of animal semen during transit.
- The device has been developed under Technology Innovation Hub – AWaDH (Agriculture and Water Technology Development Hub), a Govt of India project and it's Startup ScratchNest.

Working

- Shaped as USB device, AmbiTag continuously records the temperature of its immediate surroundings from -40 to +80 degrees in any time zone for a full 90 days on a single charge.
- Most of the similar devices available in the international market record data only for duration of 30- 60 days.
- It generates an alert when the temperature goes beyond a pre-set limit.
- The recorded data can be retrieved by connecting the USB with any computer.

2. a

- *The **Republic of China** for the first time allowed the couples to have a third child.*
- This comes as a further relaxation of family planning rules, five years after a “two-child policy” largely failed to boost birth rates.
- The Three Child Policy aims to actively address the ageing of population.
- The change comes after the recent release of China's once-in-a-decade population census that painted an alarming picture of declining births.
- Forecasts say the population could peak in the next couple of years and most likely by 2025, when India will become the world's most populous country.

3. c

- *The World Health Organisation (WHO) has recently recommended a set of names to label emerging coronavirus variants that are deemed to be of global concern.*
- The variant first identified in India, technically known as B.1.617.2, can now be described as 'Delta' and the so called 'UK variant' as 'Alpha' according to a note from the organization.
- India's health ministry had earlier objected to Delta being called the Indian variant.
- The existing scientific nomenclature system will continue and **the new names would only be to aid public discussion** using labels that were “**non stigmatizing**” to the countries where they were first identified.

Variants of Concern – Country of Origin

- 1. Alpha – United Kingdom



2. Beta – South Africa
3. Gamma – Brazil
4. Delta – India
- Other variants that too are known to be on the radar but less globally widespread and transmissible, or Variants of Interest, too had Greek names.
- A sublineage of the B.1.617 family is B.1.617.1 that was identified in India and now bears the popular label 'Kappa.'

4. b

Hallmarking of Gold

- The BIS has been running a hallmarking scheme for gold jewellery since April 2000.
- Hallmarked gold jewellery will be only in three grades – 14-carat, 18-carat and 22-carat instead of current availability of ten grades.
- It will contain four marks: BIS mark, purity in carat, assay centre's name and jewellers' identification mark.
- The rule is applicable only on sales by retailers and not to consumers.
- However, it is available for consumers who want to get their old jewellery hallmarked.
- In November 2019, the government had announced that hallmarking of gold jewellery and artefacts would be made mandatory across the country from January 15, 2021.
- However, the deadline was extended for four months till June 1 after jewellers sought more time in view of the pandemic.
- Recently union government further extended the deadline for mandatory hallmarking of gold jewellery and artefacts by a fortnight till June 15 in view of the COVID-19 pandemic, after which jewellers will be allowed to sell only 14, 18 and 22 carats of gold jewellery.

5. a

- *The eighth triennial conference of the International Nitrogen Initiative (INI) was hosted recently by Germany's Federal Environment Agency (Umweltbundesamt-UBA).*
- UN Sustainable Development Goals (SDGs) is the main focus of the conference.
- The conference was postponed from May last year due to the novel coronavirus disease (COVID-19) pandemic.
- The last INI conference was held in Melbourne, in December 2016, adopting Melbourne declaration.

International Nitrogen Initiative

- The International Nitrogen Initiative (INI) was set up in 2003 under the sponsorship of Scientific Committee on Problems of the Environment (SCOPE) and the International Geosphere-Biosphere Program (IGBP).

The key aims of the INI are to:

1. Optimize nitrogen's beneficial role in sustainable food production,
 2. Minimize nitrogen's negative effects on human health and the environment resulting from food and energy production.
- The program is currently a sustained partner of Future Earth.
 - The INI holds a conference every three years on different continents to discuss ideas and exchange knowledge on nitrogen issues.
 - INI is coordinated by a Steering Committee, led by a chair and six regional centre directors representing, Africa, Europe, Latin America, North America, South Asia and East Asia.
 - Steering Committee members serve a four year term.

Background

- South Asia is one of the global hotspots for nitrogen pollution.

- The Indian nitrogen assessment of 2017 has provided a huge impetus to the UN resolution, as well as to the ongoing South Asian nitrogen assessment.
- Millions of lives and livelihoods are affected by nitrogen pollution, apart from loss of fertilisers worth billions of dollars from farms.

6. c

- *NITI Aayog will launch the 3rd edition of “Sustainable Development Goals India Index & Dashboard, 2020-21: Partnerships in the Decade of Action”.*
- It covers 17 Goals, 70 targets, and 115 indicators.

SDG India Index & Dashboard

- Launched in 2018, the index has been monitoring progress on the SDGs in the country at the national and sub-national level.
- The index supports the States and UTs in identifying areas which require more attention; and promoting healthy competition among them.
- The Index, developed in collaboration with the United Nations in India, measures the progress at the national and sub-national level in the country's journey towards meeting the Global Goals and targets and has been successful as an advocacy tool to propagate the messages of sustainability, resilience, and partnerships, as well.

7. c

- *With the objective of focussing on the needs of India's fast-rising elderly population, the Ministry of Social Justice and Empowerment will launch the Senior care Ageing Growth Engine (SAGE) project.*

Senior care Ageing Growth Engine (SAGE) Project

- The project aims to select, support and create a “one-stop access” of elderly care products and services by credible start-ups.
- The initiative will be launched by the Ministry of Social Justice and Empowerment.
- Start-ups can apply for being a part of SAGE through a dedicated portal, SAGE, will also be launched.
- The Ministry of Social Justice & Empowerment will act as a facilitator, enabling the elderly to access the products through these identified start-ups.
- The SAGE project is shaped on the recommendations of the empowered expert committee (EEC) report on start-ups for elderly.

Background

- India's elderly population is on the rise, and as per surveys, the share of elders, as a percentage of the total population in the country, is expected to increase from around 7.5% in 2001 to almost 12.5% by 2026, and surpass 19.5% by 2050.
- Accordingly, there is an urgent need to create a more robust elder care ecosystem in India, especially in the post-COVID phase.

8. c

Global Minimum Tax (GMT)

- The global minimum tax rate would apply to companies' overseas profits.
- If countries agree on a global minimum, governments could still set whatever local corporate tax rate they want.
- But if companies pay lower rates in a particular country, their home governments could “top-up” their taxes to the agreed minimum rate, eliminating the advantage of shifting profits to a tax haven.
- It has been supported by the organisation for economic co-operation and development (OECD), International Monetary Fund (IMF) and group 20 major economies.

9. d

Blue-finned Mahseer

- The species is migratory, moving upstream during rains.
- It is very sensitive to dissolved oxygen levels, water temperature and sudden climatic changes, it just cannot bear pollution.
- They have cultural and religious significance as well as they are protected in 'temple sanctuaries' across India.
- Recently IUCN has moved Blue-finned Mahseer from Endangered to the Least Concern' status on its Red List.

10. c

- *The Interpol has recently launched a new global database named I-Familia.*

I-Familia

- It was launched to identify missing persons through family DNA and help the police solve cold cases in member countries.
- The platform applied cutting-edge scientific research and used the DNA of relatives to identify missing persons or unidentified human remains around the world.
- I-Familia has three components:
 1. A dedicated global database to host the DNA profiles provided by relatives, held separately from any criminal data
 2. DNA matching software called Bonaparte, developed by Dutch company Smart Research
 3. Interpretation guidelines developed by Interpol

11. b

- *The first CAR-T cell therapy (a type of gene therapy) was done at the Bone Marrow Transplant unit at ACTREC, Tata Memorial Center in Mumbai recently.*
- The CAR-T cells were designed and manufactured at Bioscience and Bioengineering (BSBE) department of IIT Bombay.
- This work is partly supported by **BIRAC-PACE scheme**.
- The TMC-IIT Bombay team are further supported to extend this project for conducting Phase I/II trial of their CAR-T product by DBT/BIRAC, through **National Bio-pharma Mission**.

Chimeric Antigen Receptor T-cell (CAR-T) therapy

- *The therapy has emerged as a breakthrough in cancer treatment.*
- *Clinical trials conducted globally have shown promising results in end stage patients, especially in patients suffering from Acute Lymphocytic Leukemia.*
- *Though this technology has a remarkable therapeutic potential for cancer patients, at present this technology is not available in India.*
- *Each patient's CAR-T cell therapy costs 3-4 crore (INR).*
- *The challenge therefore is to develop this technology in cost-effective manner and make it available for the patients.*

Promoting Academic Research Conversion to Enterprise (PACE)

- It aims to encourage/support academia to develop technology/product (up to PoC stage) of societal/national importance and its subsequent validation by an industrial partner.
- It was launched by Biotechnology Industry Research Assistance Council (BIRAC).
- The Scheme has two components:

Academic Innovation Research (AIR)

- The objective of AIR scheme is to promote development of Proof-of-concept (PoC) for a process/product by academia with or without the involvement of industry/LLP

Contract Research Scheme (CRS)

- It aims at validation of a process or prototype (developed by the academia) by the industrial partner/LLP

12. c

- *Economist Intelligence Unit (EIU) has recently launched the Global Liveability Index, 2021.*

Global Liveability Index, 2021

- COVID-19 has shaken up the annual ranking of most liveable cities, propelling New Zealand's Auckland to first place, replacing Vienna, which crashed out of the top 10 as the island nations of New Zealand, Australia and Japan fared best.
- The Austrian capital, Vienna, had led the list since 2018 and for years ran neck and neck with Melbourne at the top of the survey of 140 urban centres.
- New Zealand's elimination of COVID-19 within its borders through lockdown measures helped by its geographic isolation, however, gave its cities a big boost.
- The latest ranking is from 2019 as last year's was cancelled.

13. d

Black Carbon

- Black Carbon is formed through the incomplete combustion of fossil fuels, biofuel, and biomass, and is emitted in both anthropogenic and naturally occurring soot.
- Unlike historical carbon emissions, it is also a localised source with greater local impact.
- Deposits of BC act in two ways hastening the pace of glacier melt: by decreasing surface reflectance of sunlight and by raising air temperature.

14. c

Trirashmi Buddhist Cave Complex

- The Nasik Caves, or Trirashmi Caves are a group of 23 caves carved between the 1st century BCE and the 3rd century CE.
- Buddhist sculptures are a significant group of early examples of Indian rock-cut architecture initially representing the Hinayana tradition.
- Most of the caves are viharas except for Cave 18 which is a chaitya of the 1st century BCE.

15. a

- Despite a massive reduction in commuting and in many commercial activities during the early months of the pandemic, the amount of carbon in Earth's atmosphere in May reached its highest level in modern history.
- Scientists from the National Oceanic and Atmospheric Administration (NOAA) and the Scripps Institution of Oceanography at the University of California San Diego, said the findings, based on the amount of carbon dioxide in the air at NOAA's weather station on Mauna Loa in Hawaii, was the highest since measurements began 63 years ago.
- The measurement, called the **Keeling Curve** after Charles David Keeling, the scientist who began tracking carbon dioxide there in 1958, is a global benchmark for atmospheric carbon levels.
- The Keeling Curve is a graph of the accumulation of carbon dioxide in the Earth's atmosphere based on continuous measurements taken at the Mauna Loa Observatory on the Island of Hawaii from 1958 to the present day.
- Instruments perched on NOAA's mountaintop observatory recorded carbon dioxide at about 419 parts per million last month, more than the 417 parts per million in May 2020.

16. d

- *El Salvador became the first country in the world to adopt bitcoin as legal tender after the country's Congress has recently approved President Nayib Bukele's proposal to embrace the crypto currency.*
- The use of bitcoin has been touted for its potential to help Salvadorans living abroad to send remittances back home.
- In practice, El Salvador does not have its own currency and the U.S. dollar will also continue as legal tender.

17. a

- Union Education Minister has recently released the Report of All India Survey on Higher Education (AISHE) 2019-20.
- The Survey covers all institutions of Higher Education in the country, registered with AISHE code in AISHE portal.
- The report released by the Ministry of Education.
- Institutions are categorized in 3 broad Categories; University, College and Stand-Alone Institutions.

Key findings of the report

- Total enrolment in higher education has been estimated to be 38.5 million with 19.6 million boys and 18.9 million female.
- Female constitute 49% of the total enrolment.
- Gross Enrolment Ratio (GER) in Higher education in India is 27.1, which is calculated for 18-23 years of age group.
- GER for male population is 26.9 and for female, it is 27.3.
- For Scheduled Castes, it is 23.4 and for Scheduled Tribes, it is 18.0 as compared to the national GER of 27.1.
- Gender Parity Index (GPI) in Higher Education in 2019-20 is 1.01 against 1.00 in 2018-19 indicating an improvement in the relative access to higher education for females of eligible age group compared to males.
- Pupil Teacher Ratio (PTR) in Universities and Colleges is 28 if regular mode enrolment is considered whereas PTR for Universities and its Constituent Units is 18 for regular mode.
- Share of female students is lowest in Institutions of National Importance followed by Deemed University-Government, State Private University.
- Female participation in professional courses is lower in comparison to academic courses.

18. d

- A 15-meter-tall tree that belongs to the genus of the coffee family has recently been discovered from the **Andaman Islands** by a team of researchers from India and the Philippines.

Pyrostria laljii

- The new species, Pyrostria laljii, is also the first record of the genus Pyrostria in India, the researchers said.
- Plants belonging to genus Pyrostria are **usually found in Madagascar** but the recently discovered species is new to science.
- Pyrostria laljii has been assessed as '**Critically Endangered**' based on the International Union for Conservation of Nature's (IUCN) Red List criteria.
- Other physical features that distinguish the tree from other species of the genus is its umbellate inflorescence with 8-12 flowers.
- The colour of the flowers varies from white to cream, and turns brown after pollination.
- The fruit drupes of the tree are obovoid or subglobose, green to yellow or white, when mature turning pale yellow to brown.

19. b

EnVision Mission

- It is European Space Agency (ESA) led mission with contributions from NASA.
- The spacecraft will take about 15 months to reach Venus and will take 16 more months to achieve orbit circularisation.
- The spacecraft will carry a range of instruments to study the planet's atmosphere and surface.
- A radar provided by NASA will help to image and map the surface.

20. c



Protection of Heritage Trees

- Recently, the Maharashtra government has decided to make amendments to the Preservation of Trees Act of 1975, to introduce provisions for the protection of 'heritage trees'.
- Under the proposed amendment, a tree with an estimated age of 50 years or more shall be defined as a heritage tree.
- The state climate change department should also consider a tree's rarity, its botanical, historical, religious, mythological and cultural importance in defining a heritage tree.
- The local Tree Authority will have to ensure tree census to be carried out every five years along with counting of heritage trees.
- However, there has been an overall increase of over 18 per cent in female enrolment in higher education from 2015-16 to 2019-20.

21. a

- *The Northern Limit of Monsoon (NLM) continues to pass through lat. 20.5°N/ Long. 60°E, Diu, Surat, Nandurbar, Bhopal, Nowgong, Hamirpur, Barabanki, Bareilly, Saharanpur, Ambala and Amritsar.*

Terms used during southwest Monsoon Season (June to September)

Northern limit of Monsoon (NLM)

- A line delineating the regions where the monsoon has advanced from the regions where the monsoon is yet to set in.

Axis of Monsoon trough

- A northwest-southeast oriented trough across the northern plains, often extending over the Bay of Bengal.
- The normal position of the monsoon trough on sea level chart passes through Ganganagar-Allahabad-Kolkata to Head Bay.

Break Monsoon

- Monsoon trough shifts northwards and runs close to foot hills of Himalayas, resulting in drastic reduction in rainfall over the country outside the foot hills and southernmost Peninsula.

Off-shore trough

- The trough along the west coast which generally runs from Gujarat to Kerala coasts and is generally seen from surface to 0.9 km. above mean sea level.

22. c

- *The **European Space Agency (ESA)** has planned to put the **world's first wooden satellite, WISA Woodsat**, on Earth's orbit by the end of this year.*
- The mission of the satellite is to **test the applicability of wooden materials** like plywood in spacecraft structures and expose it to **extreme space conditions**, such as heat, cold, vacuum and radiation, for an extended period of time.
- It will be launched to space by the end of 2021 with a Rocket Lab Electron rocket from the Mahia Peninsula launch complex in New Zealand.
- The satellite, designed and built in Finland will orbit at around 500-600 km altitude in a roughly polar Sun-synchronous orbit.
- WISA Woodsat is a 10x10x10 cm nano satellite built up from standardised boxes and surface panels made from plywood, the same material that is found in a hardware store or to make furniture.

23. a

- *The Cabinet Committee on Economic Affairs chaired by Prime Minister Shri Narendra Modi, has recently approved the proposal of Ministry of Earth Sciences (MoES) on Deep Ocean Mission.*

Deep Ocean Mission

- The mission aims to explore deep ocean for resources and develop deep sea technologies for sustainable use of ocean resources.

- It will be a mission mode project to support the Blue Economy Initiatives of the Government of India.
- Ministry of Earth Sciences (MoES) will be the nodal Ministry implementing this multi-institutional ambitious mission.
- The estimated cost of the Mission will be Rs. 4077 crore for a period of 5 years to be implemented in a phase-wise manner.

Background

- Oceans, which cover 70 per cent of the globe, remain a key part of our life.
- About 95 percent of Deep Ocean remains unexplored.
- For India, with its three sides surrounded by the oceans and around 30 per cent of the country's population living in coastal areas, ocean is a major economic factor supporting fisheries and aquaculture, tourism, livelihoods and blue trade.
- Oceans are also storehouse of food, energy, minerals, medicines, modulator of weather and climate and underpin life on Earth.
- Considering importance of the oceans on sustainability, the United Nations (UN) has declared the decade, 2021-2030 as the Decade of Ocean Science for Sustainable Development.
- India has a unique maritime position. Its 7517 km long coastline is home to nine coastal states and 1382 islands.
- The Government of India's Vision of New India by 2030 enunciated in February 2019 highlighted the Blue Economy as one of the ten core dimensions of growth.

24. a

Woolly Flying Squirrel

- The woolly squirrel is typically found within the rugged Himalayan habitat that's situated at an altitude of 16,000 feet.
- For much of the 20th century, it had been thought to be extinct, until it had been rediscovered in 1994 in northern Pakistan.
- Scientists have discovered two new species of woolly flying squirrel, namely Tibetan woolly flying squirrel (*Eupetaurus tibetensis*) and also the Yunnan woolly flying squirrel (*Eupetaurus nivamons*).

25. b

Atlantic Charter

- It was signed by President Franklin D. Roosevelt (USA) and Prime Minister Winston Churchill (UK) in 1941.
- It outlined their goals for after World War II.
- Recently, the US President Joe Biden and British Prime Minister Boris Johnson have signed a revamped Atlantic Charter.
- It affirms the ongoing commitment to sustaining our enduring values and defending them against new and old challenges.
- It commits to combating the modern challenges of cyber threats and climate change and to bringing the pandemic to an end.

26. b

Antarctic Circumpolar Current (ACC)

- It flows from west to east around Antarctica, it was formed 34 million years ago.
- ACC is the only current in the global ocean to close upon itself in a circumpolar loop.
- This trait makes the ACC the most important current in the Earth's climate system because it links the Atlantic, Pacific and Indian Oceans and is the primary means of inter-basin exchange of heat, carbon dioxide, chemicals, biology and other tracers.
- The ACC is created by the combined effects of strong westerly winds across the Southern Ocean, and the big change in surface temperatures between the Equator and the poles.



27. a

- *The Minister of State (IC) for Culture Shri Prahlad Singh Patel has recently led the programme organized to observe the Flag Satyagraha in Jabalpur, Madhya Pradesh.*
- He hoisted the National Flag at Gandhi Bhavan, reminiscing the historic moments of the **Jhanda Satyagraha** held in Jabalpur in 1923 when the immortal martyrs first unfurled the flag at the Town Hall with great courage.

Flag / Jhanda Satyagraha

- It is a campaign of peaceful civil disobedience during the Indian independence movement.
- It focused on exercising the right and freedom to hoist the nationalist flag and challenge the legitimacy of the British Rule in India through the defiance of laws prohibiting the hoisting of nationalist flags and restricting civil freedoms.
- It was on March 18, 1923 that the first Tricolour was hoisted in Jabalpur, marking the start of 'Jhanda Satyagraha'.
- With the observance of the All India Flag Day on June 18, 1923, the Jhanda Satyagraha assumed national complexion with Nagpur as its headquarters and "Nagpur Chalo" as its slogan.
- Later the movement gains more importance and spread to many other parts of India.

28. b

- *The winner of the online auction conducted for the first seat on Blue Origin's New Shephard will be a part of New Shephard's first human flight on the 52nd anniversary of Neil Armstrong's moon landing.*

New Shephard

- It was named after astronaut Alan Shephard, the first American to go to space.
- New Shephard is meant to take tourists to space to experience microgravity that takes them 100 km above the Earth.
- New Shephard is a rocket system that has been designed to take astronauts and research payloads past the Karman line (the internationally recognized boundary of space).
- The idea is to provide easier and more cost-effective access to space meant for purposes such as academic research, corporate technology development and entrepreneurial ventures among others.
- The system is a fully reusable, vertical takeoff and vertical landing space vehicle that accelerates for 2.5 minutes before the engine cuts off.

29. b

PASIPHAЕ

- Polar-Areas Stellar-Imaging in Polarisation High-Accuracy Experiment (PASIPHAЕ) is an international collaborative sky surveying project steered by the Institute of Astrophysics, Greece.
- It will be used in upcoming sky surveys to capture polarisation (B-mode signal) coming from very faint stars that are so far away that their polarisation signals haven't been systematically studied.
- The distances to these stars will be obtained from measurements of the GAIA satellite.
- The survey will use two high-tech optical polarimeters to observe the northern and southern skies, simultaneously.

30. a

World Competitiveness Index 2021

- Recently, the Institute for Management Development (IMD) has released the World Competitiveness Index 2021.
- It is an annual ranking which was first published in 1989.
- It measures the prosperity and competitiveness by examining four factors i.e. economic performance, government efficiency, business efficiency, and infrastructure.
- It is led by Switzerland, while Sweden has moved up to the second position (from sixth last year).



- India has maintained 43rd rank on an annual World Competitiveness Index.
- Global Competitiveness Report (GCR) is a yearly report published by the World Economic Forum.

31. c

- *Narippaiyur, a village in Ramanathapuram District, a drought prone area situated in the South-East corner of Tamil Nadu will benefit from 20,000 litres per day of fresh water produced from sea water through **Solar Thermal Forward Osmosis (FO)** sea water desalination system.*

Difference between Forward Osmosis (FO) and Reverse Osmosis (RO)

- Like reverse osmosis (RO), forward osmosis is a membrane based water treatment solution.
- The main difference between reverse osmosis and forward osmosis is how water is driven through the membrane.
- In reverse osmosis, the water is forced through the membrane using hydraulic pressure.
- Forward osmosis uses natural osmotic pressure to induce the flow of water through the membrane.

Highlights of Forward Osmosis

- Operation at low hydraulic pressure allows forward osmosis process to be robust against fouling and mitigating compaction of fouling materials on the membrane surface.
- The FO system facilitates high recovery, low energy consumption, potential for resource recovery, especially in solutions of high osmotic pressure, easier and more effective cleaning of the membrane, longer membrane life and lower operating costs.

32. c

- *Narippaiyur, a village in Ramanathapuram District, a drought prone area situated in the South-East corner of Tamil Nadu will benefit from 20,000 litres per day of fresh water produced from sea water through **Solar Thermal Forward Osmosis (FO)** sea water desalination system.*
- The Water Technology Initiative, Department of Science & Technology (DST) has supported this field based effort in the district through the consortium members led by Indian Institute of Technology Madras (IITM), KGiSL Institute of Technology (KITE), Empereal- KGDS Renewable Energy (P) and ICT Mumbai.

Water Technology Initiative (WTI)

- It is an initiative of Department of Science & Technology, Ministry of Technology.
- It aims to strengthen the R&D capacity and capability to develop the research based solutions for existing and emerging water challenges facing the country in the area of water quality, quantity and water reuse and recycling.
- The initiative directly caters to furthering Sustainable Development Goal: 6 (Clean water and sanitation) which aims to ensure availability and sustainable management of water and sanitation for all.

33. a

- *India is all set to host a two day summit on Green Hydrogen initiatives on 22nd June, 2021 involving the BRICS nations.*
- The event will be anchored by India's largest power producer and one of the global energy majors, NTPC Ltd , a Maharatna CPSU under Ministry of Power.

Different Shades of Hydrogen

Grey Hydrogen

- It is produced with fossil fuels (i.e. hydrogen produced from methane using steam methane reforming (SMR) or coal gasification).
- The use of grey hydrogen entails substantial CO₂ emissions, which makes these hydrogen technologies unsuitable for a route toward net-zero emissions.

Blue Hydrogen

- It is produced from methane or coal using SMR or gasification with carbon capture (85-95%).



Turquoise Hydrogen

- It combines the use of natural gas as feedstock with no CO₂ production.
- Through the process of pyrolysis, the carbon in the methane becomes solid carbon black.
- A market for carbon black already exists, which provides an additional revenue stream.
- Carbon black can be more easily stored than gaseous CO₂.
- At the moment, turquoise hydrogen is still at the pilot stage.

Green Hydrogen

- Hydrogen when produced by electrolysis using renewable energy is known as Green Hydrogen which has no carbon footprint.
- It is the most suitable one for a fully sustainable energy transition.
- This gives Hydrogen the edge over other fuels to unlock various avenues of green usage.
- Green hydrogen has innumerable applications.
- Green Chemicals like ammonia and methanol can directly be utilized in existing applications like fertilizers, mobility, power, chemicals, shipping etc.
- Green Hydrogen blending up to 10% may be adopted in CGD networks to gain widespread acceptance.
- Further scaling up with greening of hard to abate sectors (like steel and cement) through hydrogen is to be explored.

Barriers

- **High Production Costs**
- Lack of Dedicated Infrastructure
- Energy Losses
- Lack of Value Recognition
- Need to Ensure Sustainability

34. b

Black Softshell Turtle

- They look almost the same as the Indian peacock softshell turtle (*Nilssonia hurum*), which is classified as Endangered in the IUCN Red List.
- Its distribution range also includes the Brahmaputra River and its tributaries.
- It is protected under IUCN Red List: Critically Endangered, CITES: Appendix I

35. c

- *The Department of Biotechnology (DBT) has issued a Special Call for North East Region as a part of its Mission Programme "Biotech-Krishi Innovation Science Application Network (Biotech-KISAN)", with the aim to understand the local problems of the NER farmers and provide scientific solutions to those problems.*

Biotech-Krishi Innovation Science Application Network (Biotech-KISAN)

- It is a scientist-farmer partnership scheme launched for agriculture innovation with an objective to connect science laboratories with the farmers to find out innovative solutions and technologies to be applied at farm level.
- It was launched by the Department of Biotechnology, Ministry of Science and Technology in 2017.
- It empowers farmers, especially women farmers.
- It aims to understand the problems of water, soil, seed and market faced by the farmers and provide simple solutions to them.
- The Scheme is for farmers, developed by and with farmers, it empowers women, impacts locally, connects globally, is Pan-India, has a hub-and spoke model and stimulates entrepreneurship and innovation in farmers.

36. b

Suicide Worldwide Report

- Suicide is defined as death caused by self-directed injurious behaviour with intent to die as a result of the behaviour.
- Recently, a report titled Suicide worldwide in 2019 was published by the World Health Organization (WHO).
- The global age-standardized suicide rate was 9.0 per 1,00,000 population for 2019.
- India has the highest suicide rate in the Southeast Asian region.

37. b

- It is a joint initiative of the United Nations Development Programme (UNDP) and the Organisation for Economic Cooperation and Development (OECD).
- The initiative was launched in Bhutan.
- India is a partner jurisdiction of this initiative.

38. c

- Both WPI and CPI is on the rise led by fuel and commodity prices.
- CPI, which is retail inflation has recently crossed the RBI's upper limit of 6% (i.e 4% with the band of 2% as inflation target for Monetary Policy Committee)
- Generally, Inflation benefits borrowers and hurts lenders.
- Thus, government, one of the biggest borrowers stand to benefit as high inflation will lower the national debt in relation to the size of the economy.

39. a

- In the Natya Shastra, compiled by Bharat Muni dated 200 B.C.-200 A.D., musical instruments have been divided into four main categories on the basis of how sound is produced.
1. The Tata Vadya or Chordophones- Stringed instruments
 2. The Sushira Vadya or Aerophones- Wind instruments
 3. The Avanaddha Vadya or Membranophones- Percussion instruments
 4. The Ghana Vadya or Idiophones- Solid instruments which do not require tuning.
- The Tata Vadya is a category of instruments in which sound is produced by the vibration of a string or chord.
 - The tamera is a long-necked plucked string instrument, originating from India, found in various forms in Indian music.
 - It supports and sustains the melody of another instrument or singer by providing a continuous harmonic bourdon or drone.

40. a

- *Union Minister for Law & Justice, Communications and Electronics & IT, Shri Ravi Shankar Prasad has recently launched the e-filing portal of Income Tax Appellate Tribunal (ITAT), 'itat e-dwar' in New Delhi.*
- The portal will enhance the accessibility, accountability and transparency in the day to day working of the ITAT.
- It would not only result in economization of the use of paper, savings in costs but also rationalization of the fixation of cases leading to quicker disposal of cases.
- The minister also said that the Cases of Income Tax Appellate Tribunal should be integrated in National Judicial Data Grid.

41. c

- *A report on performance of the the Urban Learning Internship Program (TULIP) was released recently.*

The Urban Learning Internship Program (TULIP) Report

- It was launched in 2020 in partnership with AICTE.



- TULIP is a platform to connect graduates to Urban Local Bodies and Smart Cities to co-create new solutions for our cities.
- TULIP envisions to create synergies between advancing functional skills in students and harnessing their energy and ideas to co-create solutions for the future of our cities.
- The TULIP program is being implemented through a partnership between Ministry of Housing and Urban Affairs (MoHUA) and AICTE.

42. b

- *The International Financial Services Centre Authority (IFSCA) has recently constituted a committee to examine global best practices in financing and leasing of ships, identify opportunities and devise a roadmap to enable such activities from GIFT IFSC.*
- This committee, to be chaired by Vandana Aggarwal, former Senior Economic Advisor, Government of India will include representatives from the Government of India, Gujarat Maritime Board and industry experts possessing domain knowledge.

Background

- India is strategically located on the world's shipping routes and has a large coastline of approximately 7500 kms.
- India also has 12 major and over 200 minor ports.
- Ministry of Shipping suggests that 95 percent of India's trading by volume and 70 percent by value is done via maritime transport.
- In spite of significant exposure to shipping, India is yet to develop as an international shipping hub.
- IFSCA aims to provide an enabling regulatory framework and facilitative environment so that GIFT IFSC can become an international hub for Ship Financing & Leasing activities thereby benefitting shipowners, lessors, carriers, ship operators, ship management companies and other stakeholders in the maritime ecosystem.
- The committee is mandated to examine the existing legal, regulatory, tax and other applicable frameworks, identify the bottlenecks pertaining to ship financing and leasing and recommend specific measures required which shall enable ship financing and leasing from IFSC at par with best international practices.
- The committee would submit its recommendations to IFSCA in three months.

Gujarat International Finance Tec (GIFT) City

- It is a business district near Ahmedabad in Gujarat.
- It is country's first operational greenfield smart city and international financial services centre.

43. a

Anoxic Waters

- Anoxic waters are areas of sea water, fresh water, or groundwater that are depleted of dissolved oxygen and are a more severe condition of hypoxia.
- The Black Sea happens to be the largest water body with a meromictic basin, which means the movement of water between the lower and upper layers of the sea is a rare phenomenon to find anywhere in the world.
- This condition is generally found in areas that have restricted water exchange.

44. d

Indian Ocean Sea Turtle Agreement (IOSEA)

- It puts in place a framework through which States of the Indian Ocean and South-East Asian region, as well as other concerned States, can work together to conserve and replenish depleted marine turtle populations for which they share responsibility.
- Recognizing that marine turtles have a myriad of socio-economic values, the agreement seeks to assure that any consumptive or non-consumptive use of turtles for the benefit of human beings is sustainable well into the future.

45. a



- *The Prime Minister, Shri Narendra Modi has recently paid homage to Rishi Bankim Chandra Chattopadhyay on his Jayanti.*
- *Bankim Chandra Chatterjee is said to have influenced Rabindranath Tagore, Sarat Chandra Chattopadhyay and Surendranath Dutt.*

Bankim Chandra Chatterjee / Bankim Chandra Chattopadhyay (1838-1894)

- He was born in an orthodox Bengali Brahmin family in Naihati, West Bengal and married at the age of 11.
- He played a crucial role in the literary Renaissance movement through his writings.
- He had a Law degree and was appointed as the Deputy Collector of Jessore in 1858. He retired from the service in 1891.
- ***He started a monthly literary magazine named Bangadarshan in April 1872.***
- Durgeshnandini, his first Bengali romance, was published in 1865.
- His famous novels include Kapalkundala (1866), Mrinalini (1869), Vishbriksha (1873), Chandrasekhar (1877), Rajani (1877), Rajsimha (1881), and Devi Chaudhurani (1884).
- His earliest works were published in a weekly newspaper named Sangbad Prabhakar.
- ***His first novel in English was titled, Rajmohan's Wife*** while his first novel in Bengali was named Durgeshnandini.
- Rajmohan's wife, is said to be the first published novel in English by an Indian.
- ***The legendary writer penned Vande Mataram on November 7, 1875.***
- The verses of Vande Mataram can also be found in his political novel, Anandamath which was published in 1882.
- It was primarily about Sanyasi army fighting the British soldiers.
- The tune of Vande Mataram was later given by Nobel Laureate Rabindranath Tagore.

46. d

- *Social Justice and Empowerment Minister Thawarchand Gehlot has recently launched the website for the Nasha Mukh Bharat Abhiyaan on the occasion of International Day Against Drug Abuse and Illicit Trafficking.*
- The day is observed worldwide to strengthen action and cooperation in achieving the goal of a sustainable world free of substance abuse.
- According to the National Comprehensive Survey conducted by the Ministry of Social Justice and Empowerment, there are more than 60 million drug users in the country of which a large number of users are in the age group of 10 to 17 years.

Nasha Mukh Bharat Abhiyaan

- Nasha Mukh Bharat Annual Action Plan for 2020-21 would focus on 272 most affected districts and launch a three-pronged attack combining efforts of Narcotics Bureau, Outreach/Awareness by Social Justice and Treatment through the Health Dept.

47. c

Registered Valuer

- It is in accordance with the Companies (Registered Valuers and Valuation) Rules, 2017.
- Under Section 458 of the Companies Act, IBBI has been specified as the authority by the central government.
- The valuer can get themselves registered for valuation of assets such as
 1. Land and building;
 2. Plant and machinery; and
 3. Securities and financial assets



- They can get registered for valuation of all three classes, and can undertake valuation of only the assets for which they have got the registration.

48. a

Coral Triangle (CT)

- The Coral Triangle (CT) is a roughly triangular area in the tropical waters around Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands and Timor-Leste.
- The Coral Triangle is located between the Pacific and Indian oceans.
- The World Wide Fund for Nature considers the region a top priority for marine conservation, and is addressing ecological threats to the region through its Coral Triangle Program.

49. c

- *Science and Engineering Research Board (SERB) partners with Intel India to launch first-of-its-kind initiative Fund for Industrial Research Engagement (FIRE) to advance deep tech-based research in India.*
- Through this Indian research community will soon be able to pursue industry-relevant research opportunities in the areas of deep technologies that are novel, transformative, and can have a ground-breaking impact on a national scale.
- It will increase research opportunities in the space of Artificial Intelligence (AI)/Machine Learning (ML), platform systems, circuits & architecture, Internet of Things (IoT), materials & devices, security, and so on from edge to cloud.

Fund for Industrial Research Engagement (FIRE)

- The FIRE program was launched under the Industry Relevant R&D (IRRD) Scheme of SERB.
- It aims to utilize the expertise available in academic institutions and national laboratories to solve industry-specific problems for the larger benefit of society.
- The scheme supports ideas that address a well-defined problem of industrial relevance, defined jointly with concerned industries, in a project mode through an open call at the national level by SERB.

50. c

Article 371

- Articles 371 to 371-J includes Maharashtra, Gujarat, Nagaland, Assam, Manipur, Andhra Pradesh, Telangana, Sikkim, Mizoram, Arunachal Pradesh, Goa and Karnataka.
- Its objective is to protect the cultural and economic interests of the tribal people of the states.
- It aims to deal with the disturbed law and order condition in some parts of the states or to protect the interests of the local people of the states.