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Carbis Bay Declaration

Unlawful Activities (Prevention) Act

Delhi HC verdict granting bail to UAPA-accused

Bitcoin

El Salvador's bitcoin push

Draft Lakshadweep Development Authority Regulation 2021 (LDAR)

Development at the cost of environment?

CHIME Telescope

CHIME telescope detects more than mysterious Fast Radio Bursts

Incredible Results

CSE 2019

4 Ranks in top 10	13 Ranks in top 50	22 Ranks in top 100

Rank 3
Pratibha Verma

Rank 6
Vishakha Yadav

Rank 8
Abhishek Saraf

Rank 10
Sanjita Mohapatra

CSE 2018

11 Ranks in top 50	28 Ranks in top 100	183 Ranks in the final list

Rank 11
Pujya Priyadarshni

Rank 16
Dhodmise Trupti Ankush

Rank 21
Rahul Jain

Rank 24
Anuraj Jain

Rank 31
Mainak Ghosh

CSE 2017

5 Ranks in top 50	34 Ranks in top 100	236 Ranks in the final list

Rank 3
Sachin Gupta

Rank 6
Koya Sree Harsha

Rank 8
Anubhav Singh

Rank 9
Soumya Sharma

Rank 10
Abhishek Surana

CSE 2016

8 Ranks in top 50	18 Ranks in top 100	215 Ranks in the final list

Rank 2
Anmol Sher Singh Bedi

Rank 5
Abhilash Mishra

Rank 12
Tejaswi Rana

Rank 30
Prabhash Kumar

Rank 32
Avdhesh Meena

CSE 2015

5 Ranks in top 50	14 Ranks in top 100	162 Ranks in the final list

Rank 20
Vipin Garg

Rank 24
Khumanthem Diana Devi

Rank 25
Chandra Mohan Garg

Rank 27
Pulkit Garg

Rank 47
Anshul Agarwal

CSE 2014

6 Ranks in top 50	12 Ranks in top 100	83 Ranks overall selections

Rank 4
Vandana Rao

Rank 5
Suharsha Bhagat

Rank 16
Ananya Das

Rank 23
Anil Dhameliya

Rank 28
Kushaal Yadav

Rank 39
Vivekanand T.S

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6th April to 10th May, 2021	Economics	Economics				
11th May to 15th June, 2021	Geography	Geography	Geography			
16th June to 21st July, 2021	Modern History	Modern History	Modern History	Modern History		
22nd July to 25th August, 2021	International Relations + World History	Polity	Polity	Polity	Polity	
26th August to 1st October, 2021	Ethics + Governance	Ethics + Governance	Economics	Economics	Economics	Economics
4th October to 8th November, 2021	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Geography	Geography	Geography
9th November to 14th December, 2021	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology	Modern History	Modern History
15th December to 18th January, 2022	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Polity
19th January to 22nd February, 2022	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT
23rd February to 30th March, 2022		International Relations + World History	International Relations + World History	International Relations + World History	International Relations + World History	International Relations + World History
31st March to 4th May, 2022			Focus Prelims	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India
5th May to 8th June, 2022			Focus Prelims	Focus Prelims	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology
After Prelims 2022			Ethics + Governance	Ethics + Governance	Ethics + Governance	Ethics + Governance
After Prelims 2022						Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper

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6th April to 10th May, 2021	Modern History	Modern History				
11th May to 15th June, 2021	Economics	Economics	Economics			
16th June to 21st July, 2021	Polity	Polity	Polity	Polity		
22nd July to 25th August, 2021	International Relations + World History	Geography	Geography	Geography	Geography	
26th August to 1st October, 2021	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology	Modern History	Modern History	Modern History	Modern History
4th October to 8th November, 2021	Ethics + Governance	Ethics + Governance	Ethics + Governance	Economics	Economics	Economics
9th November to 14th December, 2021	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT	Polity	Polity
15th December to 18th January, 2022	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Geography
19th January to 22nd February, 2022	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper
23rd February to 30th March, 2022		International Relations + World History	International Relations + World History	International Relations + World History	International Relations + World History	International Relations + World History
31st March to 4th May, 2022			Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology
5th May to 8th June, 2022				Focus Prelims	Internal Security + CSAT	Internal Security + CSAT
After Prelims 2022				Focus Prelims	Focus Prelims	Ancient India + Medieval India + Art & Culture + Post Independent India
After Prelims 2022				Ethics + Governance	Ethics + Governance	Ethics + Governance

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March (06, 07, 13, 14, 20, 21, 27 & 28) + April (03 & 04)	Economics					
April (10, 11, 17, 18, 24, 25) + May (01, 02, 08 & 09)	Geography	Geography				
May (15, 16, 22, 23, 29 & 30) + June (05, 06, 12 & 13)	Polity	Polity	Polity			
June (19, 20, 26 & 27) + July (03, 04, 10, 11, 17 & 18)	Modern History	Modern History	Modern History	Modern History		
July (24, 25 & 31) + August (01, 07, 08, 14, 15, 21 & 22)	Ancient India + Medieval India + Art & Culture + Post Independent India	Economics	Economics	Economics	Economics	
August (28 & 29) + September (04, 05, 11, 12, 18, 19, 25 & 26)	International Relations + World History	International Relations + World History	Geography	Geography	Geography	Geography
October (02, 03, 09, 10, 16, 17, 23, 24, 30 & 31)	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology	Polity	Polity	Polity
November (06, 07, 13, 14, 20, 21, 27 & 28) + December (04 & 05)	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Social Issues & Social Justice + Essay + Disaster Management + Compulsory Language Paper	Modern History	Modern History
December (11, 12, 18, 19, 25 & 26) + January '22 (02, 08, 09 & 15)	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT	Internal Security + CSAT	Economics
January '22 (16, 22, 23, 29 & 30) + February '22 (05, 06, 12, 13 & 19)	Ethics + Governance	Ethics + Governance	Ethics + Governance	Ethics + Governance	Ethics + Governance	Ethics + Governance
February '22 (20, 26 & 27) + March '22 (05, 06, 12, 13, 19, 20 & 26)		Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India	Ancient India + Medieval India + Art & Culture + Post Independent India
March '22 (27) + April (02, 03, 09, 10, 16, 17, 23, 24 & 30)			International Relations + World History	International Relations + World History	International Relations + World History	International Relations + CSAT
May '22 (01, 07, 08, 14, 15, 21, 22, 28 & 29) + June '22 (04)				Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology	Environment & Ecology + Science & Technology
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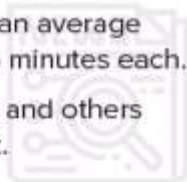
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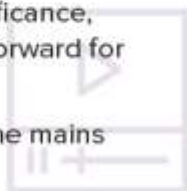
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POLITY

Structure, Organization and Functioning of the Judiciary

1. Plan to put Lakshadweep under Karnataka HC

» Prelims: High court jurisdiction of different UTs; Article 241 of the Indian Constitution

Context:

- The Lakshadweep administration has mooted a proposal to shift its legal jurisdiction from the Kerala High Court to the Karnataka High Court.

Background:

- Lakshadweep administration has been facing widespread protests over its policies.

- As many as 23 applications, including 11 writ petitions, have been filed against the Administrator and also against the alleged high-handedness of either the police or the local government of the islands.

- The proposal for shifting the legal jurisdiction from the High Court of Kerala to Karnataka comes amid these developments.

Details:

- The jurisdiction of a High Court can be shifted only through an Act of Parliament, according to the law.

- According to Article 241 of the Constitution, "Parliament may by law constitute a high court for a Union Territory or declare any court in any such territory to be a high court for all or any of the purposes of this Constitution,".

- Clause 4 of the same article mentions that "nothing in this article derogates from the power of Parliament to extend or exclude the jurisdiction of a high court for a state to, or from, any Union Territory or part thereof".

- Legal experts opine that changing of high court would also mean extra-burden on the exchequer as all the cases, at present under trial, would have to be heard again afresh.

Devolution of powers and finances up to the local levels

2. Rengma Nagas demand autonomous council

» Prelims: Autonomous district councils and sixth schedule areas

Context:

- The Rengma Nagas in Assam have written to Union Home Minister demanding an autonomous district council.

Background:

- Recently, an announcement was made that the Central and State governments would upgrade the Karbi Anglong Autonomous Council (KAAC) into a territorial council.

- The National Socialist Council of Nagaland (NSCN-IM) has said that the proposed plan is not acceptable as it alienates the ancestral land of the Rengma Nagas in Assam.

- The NSCN-IM asserted that Karbi Anglong, earlier known as Rengma Hills, was a victim of an aggressive influx of outsiders for vested interests.

- It highlighted that the Rengma issue was one of the important agendas of the Indo-Naga political talks.

Why are the Rengma Nagas demanding an autonomous district council?

- Rengma Nagas are demanding a separate legislative seat for Rengmas.

- The Rengma Naga Peoples' Council (RNPC) said that the Rengmas were the first tribal people in Assam to have encountered the British in 1839, but the existing Rengma Hills was eliminated from the political map of the State and replaced with that of Mikir Hills (now Karbi Anglong) in 1951.

- It asserted that during the Burmese invasions of Assam in 1816 and 1819, it was the Rengmas who gave shelter to the Ahom refugees.

- It said that the Rengma Hills was partitioned in 1963 between Assam and Nagaland at the time of the creation of Nagaland State and the Karbis, who were known as Mikirs till 1976, were the indigenous tribal people of Mikir Hills.

  * Therefore, the Rengma Hills and Mikir Hills were two separate entities till 1951. Karbis have no history in the Rengma Hills.

- More than 3,000 Rengma Nagas were forced to relocate to relief camps in 2013 after several people were killed in a series of attacks following a call given by a Karbi insurgent group.

- People who are presently living in Rengma Hills are from Assam, Arunachal Pradesh and Meghalaya. They do not know the Karbi language of Karbi Anglong.

What are Autonomous District Councils?

- As per the Sixth Schedule of the Indian Constitution, four states viz. Assam, Meghalaya, Tripura and Mizoram contain Tribal Areas which are different from the Scheduled Areas.

- Though these areas fall within the executive authority of the state, provision has been made for the creation of the District Councils and regional councils for the exercise of certain legislative and judicial powers.

- Each district is an autonomous district and Governor can modify/divide the boundaries of the said Tribal Areas by notification.

- In Assam, there are 3 Autonomous Councils under the Sixth-Schedule of the Indian Constitution.

  * Bodoland Territorial Council
  * Dima Hasao Autonomous District Council
  * Karbi Anglong Autonomous District Council

Miscellaneous

3. 'It's time to define limits of sedition'

» Prelims:

Context

- The Supreme Court (SC) asserted that it was time to define the limits of sedition.

Background:

- The SC, while doing so protected two Television channels from any coercive action by the Andhra Pradesh government for their reportage of the COVID-19 pandemic in the State.

Details:

- A three-judge SC Bench pointed out indiscriminate use of the sedition law against critics, journalists, social media users, activists and citizens for airing grievances about the governments' COVID-19 management, or even for seeking help to gain medical access.

- It was asserted that the ambit and parameters of the provisions of Sections 124A (sedition), 153A and 505 of the Indian Penal Code 1860 would require interpretation.

- It said, limits must be defined particularly in the context of the right of the electronic and print media to communicate news, information and the rights, even those that may be critical of the prevailing regime in any part of the nation.

- Besides, the SC had categorically told the States not to initiate penal action against the critics of COVID-19 management measures in an earlier order.

  * It ordered to immediately cease any direct and indirect threats of prosecution and arrest to citizens, who air their grievances.

Concerns:

Rising number of cases:

- As per the National Crime Records Bureau (NCRB), between 2016 and 2019 there was a 160% increase in the registration of sedition cases whereas the conviction rate during this period fell from 33.3% to 3.3%. The low conviction might be indicative of the arbitrary accusation of a citizen of sedition without any legal or factual foundation.

Not in line with the judicial precedents:

- The sedition provisions are being invoked solely based on word usage.

- This is not in line with the judicial observations in landmark cases like Kedar Nath Singh (1962) which said that incitement to violence is the gist of the offence of sedition and the Vinod Dua (2021) case, where the Court said that a journalist cannot be booked for sedition for expressing dissent.

Tool of political vendetta:

- There are concerns over misuse of the sedition provisions against political opponents.

Right to freedom of expression:

- A person must be given the right to fully express oneself even if it involves expression of his disaffection towards the state so long as he/she does not contemplate, promote, or incite violence or social disturbance.

- The use of sedition provisions seems incongruous with liberal democratic attitudes.

Structure, Organization and Functioning of the Judiciary

4. The promise and perils of digital justice delivery

» Prelims: e-courts project

» Mains: Potential benefits and concerns associated with digital justice delivery; recommendations

Context

- The e-Committee of the Supreme Court of India recently released its draft vision document for Phase III of the e-Courts project.

Background:

The e-Courts project:

- The e-Courts Project was conceptualized on the basis of the "National Policy and Action Plan for Implementation of Information and Communication Technology (ICT) in the Indian Judiciary – 2005" submitted by e-Committee, Supreme Court of India with a vision to transform the Indian Judiciary by ICT enablement of Courts.

  * E-committee is a body constituted by the Government of India in pursuance of a proposal received from the Hon'ble Chief Justice of India to constitute an e-Committee to assist him in formulating a national policy on computerization of Indian Judiciary and advise on technological communication and management related changes.

- The e-Courts Mission Mode Project, is a pan-India project, monitored and funded by the Department of Justice, Ministry of Law and Justice, Government of India for the District Courts across the country.

- The e-Courts project envisages:
    * To develop, install & implement decision support systems in courts.
    * To automate the judicial processes to the extent possible.

- Phases I and II of the e-Courts project had dealt with the digitisation of the judiciary, i.e., e-filing, tracking cases online, uploading judgments online, etc.

Potential benefits of digital justice delivery:

Increased transparency:

- Automation of judicial processes can help increase the transparency of the process by increasing the accessibility of information to its stakeholders.

Enhance judicial productivity:

- It will help enhance judicial productivity, both qualitatively & quantitatively by streamlining judicial processes.
    * Phase II of the e-Courts project saw the development of the National Service and Tracking of Electronic Processes, a software that enabled e-service of summons.

Efficient and time-bound delivery of justice:

- By enabling efficient & time-bound citizen-centric services delivery it can help rectify the long delays and difficulties for ordinary litigants and hence help ensure delivery of justice. It will help make the justice delivery system affordable, accessible, cost-effective, predictable and reliable.
    * Around 3.27 crore cases are pending before Indian courts, of which 85,000 have been pending for over 30 years.

Continued access to the judiciary:

- The digital justice delivery has helped ensure judicial accessibility despite the lockdowns induced by the COVID-19 pandemic. Notwithstanding some hiccups, the Supreme Court and High Courts have been able to function online despite physical courts being forced to shut down.

- The digital functioning of the courts enabled access to lawyers and litigants despite the lockdowns in place.

Details:

- Phase III of the e-Courts project continues with its commitment to the digitization of court processes, and plans to upgrade the electronic infrastructure of the judiciary.

- The vision document also envisages large-scale data collection exercise which could be used for future policymaking and help to make suitable interventions to address existing challenges in the system.

- The draft document proposes a 360-degree approach to data collection, wherein a 360-degree profile of each person would be created by integrating all of their interactions with government agencies into a unified database.

- The draft vision document for Phase III proposes an "ecosystem approach" to justice delivery, under which it suggests a "seamless exchange of information" between various branches of the State, such as between the judiciary, the police and the prison systems through the Interoperable Criminal Justice System (ICJS).

Concerns:

- While the objective of digitization of the judiciary is a welcome move, certain recommendations in the draft vision document for Phase III are a point of concern.

Will further exclusion and inequity:

- Given the fact that the first layer of data creation happens at local police stations, which have historically contributed to the criminalization of entire communities by labelling such communities as "habitual offenders", the proposed Interoperable Criminal Justice System (ICJS) will likely exacerbate existing class and caste inequalities that characterise the police and prison system.

Threat of profiling and surveillance:

- Given that the data collected, shared and collated through the e-Courts project will be housed within the Home Ministry under the ICJS, henceforth localised data will become more centralized. This increases the threat of profiling and surveillance.

- The 360-degree approach envisaged in the draft document poses the threat of targeted surveillance.

Privacy concerns:

- The data collection combined with extensive data sharing and data storage is a cause for concern given its possible implications on the Right to Privacy of the citizens.

- The integration of data allows the creation of an integrated database on a person with a variety of information relating to that individual, some of which may be purely civil, commercial or personal in nature.

- The lack of a data protection regime law in India further raises concerns over possible infringement on the right to privacy.

Recommendations:

- The article proposes abandoning the ecosystem approach. The e-Committee must prevent the "seamless exchange" of data between the branches of the state that ought to remain separate.

- The article also proposes that the e-Courts must move towards localisation of data, instead of centralization given the potential threat that such centralization poses.

- Given the potential advantage of data in addressing challenges in the judicial system, instead of altogether abandoning data collection, rather there is the need to focus on a system that can provide anonymous, aggregated, and statistical information about issues without identifying the individuals. This could be made possible by encouraging uniformity and standardisation of entry fields.

Conclusion:

- Technology can indeed help revolutionise India's ailing judicial system, however, it cannot be an end in itself and the use of technology needs to be ensured within the constitutional framework of the fundamental rights of citizens.

- Phase 3 of the e-Courts project must devise ways to harness technology for service delivery without increasing surveillance risks

Election Related Issues

5. Needed: full disclosure on electoral bonds

- » Prelims: Electoral bonds

- » Mains: Concerns associated with electoral bonds and political funding in general; recommendations in this direction

Background:

PIL against Electoral bonds:

- A Public Interest Litigation (PIL) was filed in the Supreme Court by the Association of Democratic Reforms (ADR), to stay the sale of a new set of electoral bonds before the recently held Assembly elections. The ADR PIL had challenged electoral bonds as being unconstitutional.

- The Supreme Court while downplaying the concerns of the corrupting influence of anonymous corporate and foreign money had refused to stay the sale of electoral bonds.

- Instead, the Supreme Court expressing doubts over the absolute anonymity of the electoral bonds had reasoned that the available information in the public domain could be used to ascertain political donations.

Concerns with the SC's observations:

- The article argues against the above Supreme Court's suggestion based on the following facts.

  - * Notably, the annual reports of all the potential donor companies and firms are not readily accessible on the website of the Ministry of Corporate Affairs.

  - * Also private firms, unlike companies, have no regulatory mandate to submit their annual reports except for filing their annual tax returns, since their functioning is regulated by Acts other than the Companies Act of 2013.

  - * Many registered companies while filing their annual financial statements, do not disclose political donations.

  - * The company statements might have a total aggregate amount of all donations, including philanthropic ones. Nowhere are donations to specific political parties required to be mentioned.

    - » The Finance Bill of 2017 amended Section 182 of the Companies Act of 2013 to remove the requirement for declaring disaggregated donations to political parties.

  - * That political parties do not need to disclose their electoral bond donors makes it extremely difficult to track political donations.

  - * The political parties are only required to submit annual audit reports with a total of all donations received via electoral bonds. This makes it very difficult to match a donation of a company to that received by a political party as only aggregate amounts are available.

  - * Even these annual audit reports are submitted with great delays.

  - * No ordinary person has the resources/time to navigate through documents available on government websites or analyze the income tax returns of companies to ascertain the political donations as suggested by the Supreme Court.

  - * Hence, the "match the following" suggestion of the Supreme Court to ascertain political donations is both impractical and incorrect.

Recommendations:

- Keeping in the spirit of the Right to Information (RTI) Act of 2005 which mandates easier access to information held by public authorities, companies and political parties should voluntarily disclose the identity of recipients and donors.

- Alternatively, the Supreme Court or the legislature could push for full and real-time disclosure, to truly realize the benefit of transparency and accountability as envisaged through the electoral bond scheme.

Concerns over Electoral Bonds:

A new form of anonymity:

- The introduction of electoral bonds has resulted in the anonymity of thousands of crores of political donations and thus has greatly reduced public and legislative oversight over such donations.

Skewed framework:

- The current electoral bond framework makes it possible for the ruling party via the State Bank of India (SBI) to have a full account of all donations being made via electoral bonds, to itself and to Opposition parties.

- However the parliament, the Election Commission and the Opposition parties do not have this information, nor do the public. This will invariably lead to a situation where the potential donors will be pushed to donate towards the ruling party.

Against the spirit of electoral process:

- The electoral bonds give political power to companies, wealthy individual donors, and foreign entities, thus diluting the principle of one voter – one vote – one value.

- Every vote is not equally valuable if companies can influence policies through hidden donations.

Other concerns associated with political funding:

Foreign funding:

- In 2016 and 2018, amendments were made to the Foreign Contribution (Regulation) Act (FCRA) through the annual Finance Bills, with retrospective effect. These amendments enabled Indian subsidiaries of foreign companies to make donations to political parties.

- These amendments in conjunction with electoral bonds allow anonymous financing by foreign entities opening Indian elections to the influence of foreign corporate and political donors.

Changes in corporate funding framework:

- Earlier, only profit-making domestic companies could contribute to political parties. However, post some amendments now even loss-making companies can contribute to political parties.

- This could lead to an eventuality where Indian political parties could be fully funded by foreign entity/domestic pressure groups through a shell company.

Miscellaneous

6. **A case to decriminalise suicide**

   » Mains: suicides as an emerging and serious health issue; Arguments both in favour of and against section 309.

Background:

Suicides in India:

- Suicide is an emerging and serious public health issue in India.

- The rate of suicides has been increasing in India over the years. According to the World Health Organization, India has the highest suicide rate in the Southeast Asian region.

- As per the National Crime Records Bureau, around 1,34,516 cases of suicide were reported in 2018 in India.

- Suicide has been the most common cause of death in the age group of 15–29 years.

  * Depression, chronic ill health, guilt, trauma, substance abuse, failure in exams, and loss of loved ones are some of the leading reasons for suicides in India.

Section 309:

- Attempt to commit suicide.—Whoever attempts to commit suicide and does any act towards the commission of such offence, shall he punished with simple imprisonment for a term which may extend to one year 1[or with fine, or with both].

Who can be booked under Section 309 IPC?

- Anyone who survives an attempted suicide can be booked under Section 309 IPC, which deals with "Attempt to commit suicide".

When was this section introduced?

- The law, brought in by the British in the 19th century, reflected the thinking of the time, when killing or attempting to kill oneself was considered a crime against the state, as well as against religion.

Wasn't Section 309 repealed?

- No. The section continues to remain in the IPC. What has happened though, is that The Mental Healthcare Act (MHCA), 2017, which came into force in 2018, has significantly reduced the scope for the use of Section 309 IPC — and made the attempt to commit suicide punishable only as an exception.

- Section 115(1) of The MHCA says: "Notwithstanding anything contained in section 309 of the Indian Penal Code any person who attempts to commit suicide shall be presumed, unless proved otherwise, to have severe stress and shall not be tried and punished under the said Code."

- Section 115(2) says that "The appropriate Government shall have a duty to provide care, treatment and rehabilitation to a person, having severe stress and who attempted to commit suicide, to reduce the risk of recurrence of attempt to commit suicide."

Issue

- There is lack of awareness among officers at the level of the police station about the relatively new MHCA, and they simply go by the IPC.

- However, the charge under Section 309 is often dropped subsequently, following consultations with senior officers

Arguments in favour of penal provisions of Section 309:

- While the right to life is a natural right embodied in Article 21 of the Indian Constitution, suicide amounts to an unnatural termination or extinction of life and, therefore, incompatible and inconsistent with the concept of the right to life.

- The judgment in Gian Kaur V. State of Punjab (1996) and the Supreme Court's Aruna Ramchandra Shanbaug v. Union of India (2011) judgment, has endorsed the above observation.

- There were occasions when people showed up at government offices and threatened to kill themselves if their demands were not met. It is in these cases, that the person does not intend to commit suicide but is using the threat as a way to unfairly pressure or blackmail the system, that this section is used.

Arguments against penal provisions of Section 309:

- The Bombay High Court in the Maruti Shripati Dubal v. State of Maharashtra (1986) case declared Section 309 unconstitutional based on the reasoning that the right to live will also include a right not to live or not to be forced to live.

- Similar views were expressed in the Chenna Jagadeeswar v. State of Andhra Pradesh and P. Rathinam v. Union of India (1994) cases. These judgments note Section 309 of the Indian Penal Code as being violative of Articles 14 and 21 of the Indian Constitution.

- The purpose of any punishment is to prevent a person from committing any crime. The prescribed punishments under Section 309 seem ineffective in preventing prospective suicides by deterrence.

- Rather than punishment, the person who made the suicide attempt on account of any possible mental disorders must be provided psychiatric and reformative treatment and not subjected to imprisonment.

Problems that can arise out of the use of this Section

- Use of this Section can potentially deprive a victim of treatment in the golden hour, as hospitals wait for a go-ahead from police in what would be seen as a "medico-legal case".

- It is possible that unscrupulous hospital authorities may misuse this situation and charge extra to "hush up" the case by not informing the police; similar extortion is possible on the part of corrupt police personnel as well.

Attempts in the past

- The Law Commission has twice, in 1971 and 2008, recommended the repeal of IPC Section 309.

- The IPC (Amendment) Bill, 1978, was even passed by the Rajya Sabha. But the Parliament had dissolved before it could be passed by the Lok Sabha and the Bill lapsed.

- In 2011, the Supreme Court also recommended that the Parliament should consider the feasibility of deleting this Section.

- In 2018 again, a bench headed by Justice D.Y. Chandrachud had observed that it was inhuman to punish a distressed person who failed to end her or his life by suicide.

Recommendations:

Repealing of Section 309:

- There is an urgent need to shift from penalizing attempts to suicide to providing psychological or mental treatment and support to the persons affected, given the presumption of severe stress in case of an attempt to die by suicide.

- Thus the article argues for the repealing of Section 309 of the Indian Penal Code.

Preventing suicides:

- Reducing social isolation and social disintegration

- Treating mental disorders

- If an individual has attempted suicide due to socio-economic reasons, then the state should provide financial incentives to resolve the problem.

- Psychological support and care should be given to the individual. The state can seek assistance from NGOs as well as religious missionaries for this purpose.

- Improving coping strategies of people who are at risk through the promotion of psychological motivational sessions and stress-reducing techniques like meditation and yoga.

- Reducing risk factors for suicide, such as poverty and social vulnerability.

Issues and Challenges Pertaining to the Federal Structure

7. Towards a more federal structure

» Prelims: Finance commission mandate and article 280 of the Indian Constitution

» Mains: Features of fiscal federalism in India; associated concerns and recommendations in this direction

Background:

- • Given the challenges to the unity of India at the time of independence, it was natural that India opted to be a Union unlike the U.S. and many other large countries which have federal governments.

  * Article 1 in the Constitution states that India, that is Bharat, shall be a Union of States.

- Unlike a federal system that divides power between national and local forms of government, the Indian model often referred to as quasi-federal has the Central government wielding more authority and power. Hence the constitutional system of India though basically federal has some striking unitary features. One such aspect is observed in the realm of fiscal federalism.

  * Fiscal federalism deals with the financial relations between units of governments in a federal government system. Fiscal federalism deals with the division of governmental functions and financial relations among levels of government.

Fiscal federalism in India:

- Unlike in federal systems of the U.S. and Switzerland, where both the federal and state governments collect direct taxes, in India, direct tax collection is the exclusive realm of the Central government. States normally derive their income from indirect taxes, most commonly from sales tax. Besides this, State List revenue sources include land revenue, excise on alcoholic liquor, estate duty, tax on vehicles, etc.

- State governments get funds from the Central government according to the Finance Commission's recommendations.

  * As per the latest Finance Commission recommendations, the Central government is supposed to distribute 41% of its gross tax revenues to the State governments.

  * The horizontal revenue distribution is based on parameters like population and poverty levels.

- A "fragmented" transfer system is a prime feature of the Indian fiscal federal arrangements between the union and the states. The transfer of financial resources from the union to the states flow through various streams which fall in either of the following categories:

  * General purpose transfers (i.e. states can spend these resources on their respective priorities which can be drawn up by them; or

  * Conditional transfers (i.e. the centre only transfers resources upon the condition that the states must use it for particular programs and schemes drawn up by the centre)

- A substantial proportion of the funds received by the states continue to be conditional transfers which are largely linked to the Centrally Sponsored Schemes.

- The cess levied by the Central government on various items which adds up to over ₹5 lakh crore is not shared with the State governments.

- In recent years, the fiscal relations between the union and state governments have undergone significant changes. Most significant is the introduction of the Goods and Services Tax which have further decreased the revenue collections for the states.

Concerns associated with lack of robust fiscal federalism:

Vertical Imbalances:

- The fiscal asymmetry in powers of taxation vested with the different levels of government in relation to their expenditure responsibilities prescribed by the Indian Constitution has led to vertical imbalances.

  * The central government is given a much greater domain of taxation, as against their expenditure responsibility.

  * At an all-India level, the States get 26% of their total revenue from the Central government.

- The vertical imbalances can have an adverse impact on India's growth and development.

Horizontal Imbalances:

- The horizontal devolution from the finance commissions, post-1990s, has essentially become a vehicle for coercing states to implement fiscal reforms as part of economic liberalization.

- This move has reduced the policy outreach of the government as they now solely rely on the finance commission, which in turn, leads to a serious problem of increasing regional and sub-regional inequities.

  * Some of the so-called poorer States get up to 50% of their total revenue from the Central government, making them even more dependent.

- It has caused an unfortunate surge in horizontal imbalances because of the differing levels of attainment by the states, resulting from the differential growth rates and their developmental status in terms of the state of social or infrastructure capital.

- This may potentially reduce the states' capacity to intervene in economic and social sectors.

Politicizing of the fiscal devolution:

- Though the financial devolution to states is based on criteria set by the Finance Commission, often politics intervenes and some States get

less and some more. Also, usually, the Central government does not meet the set target for vertical devolution.

• The economic power available to the Central government under this system allows the ruling parties at the Centre to use these funds to their advantage.

• This leads to various States either petitioning or coming into conflict with the Central government on this issue.

Issue of regional disparity:

• Maharashtra, Delhi and Karnataka, Tamil Nadu and Gujarat contribute 72% of the total tax revenue; however, they receive a lesser share of the revenue distributed by the Central government.

• This disparity is more evident when one compares the northern and southern states. States like Uttar Pradesh and Bihar continue to receive a substantial proportion of the revenue distributed despite lower levels of revenue contribution.

• Given the fact that the population growth rates in the south have come down to near zero, whereas the population in central and north India still continues to grow, the cross-subsidy from the south to the north will therefore only grow in the times to come.

• The concerns associated with the disparity of financial devolution along with concerns of the shifting of political power to the more populous northern states post a possible 2026 delimitation exercise have raised apprehensions of political marginalization in the southern states. This could fuel divisive politics in such states.

Recommendations:

• Given the many concerns associated with the current framework of fiscal federalism and the political challenges in addressing them, there is a serious need for redefining India's current fiscal federalism structure.

• In this direction, there is the need to provide greater economic power to the States so that they can directly collect more taxes and be less dependent on the Central government. The poorer States will need some support from the centre for a transition period.

• Fiscal empowerment of the states rather than the current top-down approach would bring the following benefits:

   * This would improve Centre-State relations given the reduced vertical imbalances.

   * This would not only help the states collect higher revenues, but could accrue critical

improvements in terms of efficiency, accountability, manageability and autonomy. Allocation of resources can be done more effectively by states and local governments.

   * Such a step would fiscally empower the states to undertake crucial developmental interventions.

   * Other benefits of fiscal decentralization include: regional and local differences can be taken into account; lower planning and administrative costs; competition among local governments favours organizational and political innovations; and more efficient politics as citizens have more influence.

Conclusion:

• Fiscal federalism is an important aspect of political federalism which needs to be recognized and nurtured to ensure the unity and integrity of the nation.

Miscellaneous

8. Méndez's anti-torture vision is still distant for India

   » Prelims: Mendez principles

• The 'Principles on Effective Interviewing for Investigations and Information Gathering', are also called the 'Méndez Principles'.

• It proposes practical measures to replace torture and coercive interrogation with rapport-based interviews, reinforced through legal and procedural safeguards at every step.

• The Méndez Principles thus represent a new standard for effective interviewing by police and others, while respecting human rights.

   * The Joint Parliamentary Committee has proposed 86 amendments and one new clause to the Bill. The Committee is expected to submit its final report in the Monsoon Session of Parliament in 2021.

Election Related Issues

9. Delimitation Exercise

   » Prelims: Delimitation process and delimitation commission

Context:

• The mainstream political leaders of Jammu and Kashmir met the Prime Minister at a meeting organised to reduce the trust deficit between the union government and the leaders of Jammu and Kashmir.

Details:

- The meeting has been described as an important step in the ongoing efforts towards a developed and progressive J&K.

- While committing to strengthen grassroots democracy, the PM called for quick delimitation of constituencies, after which legislative polls could be held.

- Home Minister insisted that the restoration of statehood will follow delimitation and elections.

- There are signals that this could lead to an early return of democratic governance and full statehood.

What is delimitation?

- Delimitation refers to the process of demarcation of the boundaries of parliamentary or assembly constituencies.

- The process is carried out every few years to ensure that each constituency has approximately an equal number of voters — the underlying logic being that a set number of voters have one representative in the Lok Sabha as well as in the state assemblies across the country.

Process

- It is performed by a high-powered independent body constituted under the Delimitation Act

- Headed by a retired Supreme Court judge, the Delimitation Commission includes the chief election commissioner or any of the two election commissioners, and the election commissioner of the state in question.

  * Since the commission is a temporary body with no full-fledged staff of its own, it relies on EC employees to carry out the long-drawn exercise.

  * Census data for each district, tehsil and gram panchayat is collected, and the new boundaries are demarcated.

- The orders of this commission are legally binding and not subject to scrutiny of any court of law.

J&K delimitation after August 5, 2019:

- In the erstwhile state of Jammu and Kashmir, the delimitation of Lok Sabha seats was governed by the Indian Constitution, but the delimitation of its Assembly seats was governed separately by the Jammu and Kashmir Constitution and Jammu and Kashmir Representation of the People Act, 1957.

- Jammu and Kashmir was kept out of the delimitation exercise when it was carried out in the rest of the country between 2002-2008.

- After the abrogation of Article 370 on August 5, 2019, Jammu and Kashmir lost its special status and became a Union Territory.

- A delimitation commission was constituted and asked to carve out Assembly and Parliament seats.

- Jammu and Kashmir has been under Centre's rule since June 19, 2018, following the collapse of the coalition government.

- It will be only after the completion of the delimitation exercise that the elections for the Assembly will be held.

On restoration of Special Status:

- The regional leadership seems to have come to terms that restoration of the special status of J&K cannot be negotiated with a government that abrogated Article 370.

- If at all there is a reversal, it will come through the courts.

Way Forward:

- It is early to conclude whether the all-party meeting will succeed in building the foundations of a new Jammu and Kashmir.

  * In deciding to engage with the political parties, the Centre has made a departure from its earlier position.

  * Decades of turmoil in J&K has created unique problems of governance and mistrust. The focus must be on building the trust and cooperation of the people of J&K.

- For most of the 20th century, New Delhi's policies towards this border region have moved between tight central control and a gentler federal grip that provided space for autonomous self-governance (through Article 370).

- 21st-century governance and empowerment require a contemporary federal solution.

  * The fresh consensus for a 'Naya' Jammu and Kashmir must capture the best practices of democratic governance globally.

- The first consequence of the completion of the delimitation exercise would be the restoration of the political process and eventually holding assembly polls in the UT.

- Jammu and Kashmir's leaders must arrive at a compelling blueprint for good governance within a framework of healthy federal relations that will be rooted in a vision for peace, prosperity and real empowerment.

  * The bedrock of such a vision must be the extraordinarily talented and gifted young people of the State.

- Centre and J&K leaders must ensure that the meeting leads to structured engagement.

10. <u>**Draft Lakshadweep Development Authority Regulation 2021 (LDAR)**</u>

Context:

- Policies introduced by Lakshadweep Administrator in Lakshadweep have sparked protests in the union territory.

About Lakshadweep

- The name Lakshadweep in Malayalam and Sanskrit means 'a hundred thousand islands'. "

- It is India's smallest Union Territory

- Lakshadweep is an archipelago consisting of 36 islands with an area of 32 sq km.

- It is a uni-district Union Territory and comprises of 12 atolls, three reefs, five submerged banks and ten inhabited islands.

- The capital is Kavaratti and it is also the principal town of the UT.

- The entry to Lakshadweep islands is restricted. One requires an entry permit issued by Lakshadweep Administration to visit these islands.
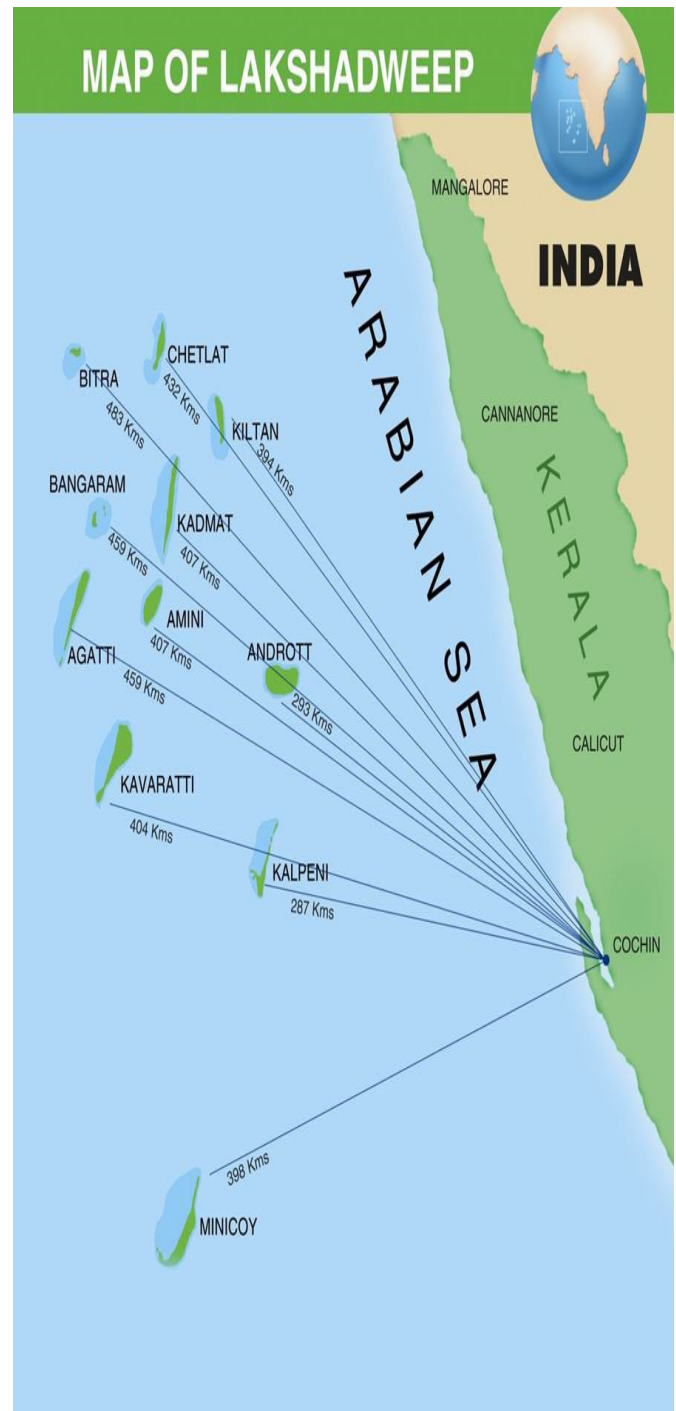
MAP OF LAKSHADWEEP

Issue:

- The Draft Lakshadweep Development Authority Regulation 2021 (LDAR) gives the administrator powers to remove or relocate islanders from their property, for town planning or any developmental activity.

Procedure:

- The draft Lakshadweep Development Authority Regulation (LDAR), 2021 will require ratification from the Union Home Ministry and the Cabinet before it is implemented.

- The Union Home Ministry is the administrating authority for the Union Territory of Lakshadweep.

- Any proposed change to the laws in Lakshadweep is to be brought through regulations, instead of a Bill as is the case in other UTs with a legislature such as Delhi and Puducherry.

- These regulations are then put up for public consultation and once the response is received, it is sent to the Union Home Ministry.

- The Ministry will examine the regulations, and only after it clears them will the draft be sent to the Union Cabinet for approval.

Lakshadweep Development Authority Regulation 2021

- The draft regulation grants the administrator the power to "declare any area to be a planning area" on the islands, for the purpose of development, and will also allow the administrator to acquire any land required for a public purpose under the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

- An authority thus created would be a body corporate with a government-appointed chairman, a town planning officer and three 'expert' government nominees besides two local authority representatives.

Development

- The draft regulation defines development as the "carrying out of building, engineering, mining, quarrying or other operations in, on, over or under land, the cutting of a hill or any portion thereof or the making of any material change in any building or land or in the use of any building or land..."

- These authorities are to prepare land use maps, carry out zonation for type of land use and indicate areas for 'proposed national highways, arterial roads, rings roads, major streets.... railways, tramways, airports... theatres, museums....playgrounds, stadia..."

Objective

- The draft intends to develop Lakshadweep like neighbouring Maldives, a renowned international tourist destination.

- It will usher in development and go a long way in improving the social and economic indicators on the islands

Concerns

Arbitrary rules

- The legislation vests such powers with the authority that it can prepare comprehensive development plans for any area and relocate people regardless of their will.

- It provides for forcible eviction, puts the onus on the owner to develop his holding as per the plan prepared by the authority as also to heavily penalise them in the event of non-compliance.

Maldives is hardly a suitable model.

- Water bungalows (favoured by the NITI Aayog) an expensive concept is hazardous to the coral

- It may collapse in Lakshadweep's turbulent monsoon. It should be noted that a wooden jetty installed at the diving school in Kadmat needs to be dismantled every monsoon.

Climate change, rising sea levels and the dying corals

- Lakshadweep has experienced catastrophic climate change-related coral mass mortality events

- Added to this, the increasing trend of commercial reef fishing is undermining the natural ability of reefs to recover from disturbance events.

- Of particular concern are lagoons, which are impacted by land-based pollution, boat traffic, dredging, and seagrass meadow decline.

  * Lagoons are vital to both populated and unpopulated atolls as critical resource areas and as reef insurance sites for climate resilience.

  * Unless urgent action is taken now to reverse these trajectories, scientific studies conclude that between reef decline, sea level rise, land loss, cyclones, and declining freshwater, the majority of low-lying atolls like Lakshadweep will become unliveable by mid-century.

- The plans for development the LDAR proposes are strangely unheeding of these self-evident realities.

Overriding of existing legislations and commitments:

- The proposed regulation imperils India's international commitments in meeting SDG goals, the CBD convention, CMS convention, UN Framework convention on Climate Change, among others.

Lakshadweep Animal Preservation of Regulation, 2021

- Animal Preservation Regulation bans slaughter of cows, calves, bulls or bullocks

- The new regulation not only bans cow slaughter, it also prohibits buying, selling, transportation or storing beef or beef products in any form. Violation will invite a maximum jail term of 10 years and fine of up to Rs 5 lakh.

- The regulation states that it provides for the preservation of animals suitable for milch, breeding or for agricultural purposes. For this purpose, no certificate will be given to slaughter cows, calves, bulls in the island.

- According to the regulation, the slaughter of animals, other than cows or bulls, for religious purposes will require a certificate from the authorities.

The Prevention of Anti-Social Activities Regulation (PASA)

- PASA provides for the administrator to order the detention of a person for a period of upto one year if the offender's actions "adversely affects the maintenance of public order"

- Section 3 of PASA states that "the administrator may if satisfied with respect to any person that with a view to preventing him from acting in any manner prejudicial to the maintenance of public order, it is necessary to do so, make an order directing that the person should be detained".

- The regulation further specifies that a person shall be deemed to be acting in any manner prejudicial to the maintenance of public order when he is engaged as a bootlegger or cruel person or dangerous person, or drug offender or immoral traffic offender or property grabber or cyber offender or money lending offender or depredator of environment or sexual offender.

Are there similar laws elsewhere?

- The PASA, however, isn't unique to Lakshadweep. Several states, including Kerala, Karnataka, Tamil Nadu and Uttar Pradesh have similar regulations.

Criticisms

- Politicians from opposition parties have however, questioned the need for PASA considering the crime rate on the islands is very low as compared to the rest of India.

A look at stats

- According to National Crime Records Bureau data, only 121 cases of crime were registered on the islands in 2017, 86 in 2018, 186 in 2019 and 89 in 2020.

The Lakshadweep Panchayat Regulation, 2021

- The law disqualifies those with more than two children from getting elected to the gram panchayat. However, the law will not disqualify anyone having more than two children if they have been elected before the regulation has been notified.

  * For those who already have more than two children, the regulation does not disqualify them provided they do not have further children after the date on which the rule comes into effect.

- The regulation also provides for reservation of 50 per cent seats in gram panchayats for women.

Conclusion

- Therefore, Lakshadweep requires a more prudent, less invasive approach to development

based on securing and enhancing critical ecological infrastructure of island, lagoon and reef, preparing local institutions adequately for the vicissitudes of climate change.

Miscellaneous

11. **National Security Act (NSA)**

   » Prelims: National Security Act provisions

   » Mains: Preventive Detention, Rights of an arrested person

- NSA empowers the Centre or a State government to detain a person to prevent him from acting in any manner prejudicial to national security.

Key points under National Security Act are:

- The act allows preventive detention for months

- States or Centre can detain people from acting in manner prejudicial to India's security

- A person can be detained if he/she is a threat to India's relations with foreign countries

- The Act is invoked to maintain public law and order

- It empowers the government to detain foreigners and regulate his/her presence or expel him/her from India

Historical Background

- Preventive detention laws in India date back to early days of the colonial era when the Bengal Regulation III of 1818 was enacted to empower the government to arrest anyone for defence or maintenance of public order without giving the person recourse to judicial proceedings.

- The British government enacted the Rowlatt Act of 1919 that allowed confinement of a suspect without trial.

Post-independence

- India got its first preventive detention rule when the government of Prime Minister Jawaharlal Nehru enacted the Preventive Detention Act of 1950. The NSA is a close iteration of the 1950 Act.

- After the Preventive Detention Act expired in 1969, the then Prime Minister, Indira Gandhi, brought in the Maintenance of Internal Security Act (MISA) in 1971

- Though MISA was repealed in 1977 after the Janata Party came to power, the successive government, led by Mrs. Gandhi, brought in the NSA.

Safeguards

- In the normal course, if a person is arrested, he or she is guaranteed certain basic rights. These include the right to be informed of the reason for the arrest.

- Section 50 of the Criminal Procedure Code (Cr. PC) mandates that the person arrested has to be informed of the grounds of arrest, and the right to bail.

- Sections 56 and 76 of the Cr. PC also provides that a person has to be produced before a court within 24 hours of arrest.

- Additionally, Article 22(1) of the Constitution says an arrested person cannot be denied the right to consult, and to be defended by, a legal practitioner of his choice.

None of the above rights are available to a person detained under the NSA

- A person could be kept in the dark about the reasons for his arrest for up to five days, and in exceptional circumstances not later than 10 days.

- Even when providing the grounds for arrest, the government can withhold information which it considers to be against public interest to disclose.

- The arrested person is also not entitled to the aid of any legal practitioner in any matter connected with the proceedings before an advisory board, which is constituted by the government for dealing with NSA cases.

Context

- Plea in Supreme Court against Manipur Activist's Detention Under National Security Act

ECONOMY

1. Biotech-KISAN Programme

» Prelims: Biotech-KISAN programme

Context:

- DBT issued a Special Call under Biotech KISAN Programme for improving Agriculture Productivity in the North East Region.

About the Biotech-KISAN Programme:

- It is a farmer-centric scheme for farmers, developed by and with farmers under the Department of Biotechnology, Ministry of Science and Technology.

- It is a pan-India program, following a hub-and-spoke model and stimulates entrepreneurship and innovation in farmers and empowers women farmers.

- It identifies and promotes local farm leadership in both genders. Such leadership helps to develop science-based farming besides facilitating the transfer of knowledge.

- The objective is to understand the problems of water, soil, seed and market faced by the farmers and provide simple solutions to them.

- The programme links available science and technology to the farm by first understanding the problem of the local farmer and then providing scientific solutions to those problems.

- The Biotech-KISAN hubs are expected to fulfil the technology required to generate agriculture and bio-resource related jobs and better livelihood ensuring biotechnological benefits to small and marginal farmers.

Miscellaneous

2. Convention on International Civil Aviation

» Prelims: Chicago convention; ICAO

- Convention on International Civil Aviation (also known as Chicago Convention), was signed in 1944. The Convention establishes rules of airspace, aircraft registration and safety, security, and sustainability, and details the rights of the signatories in relation to air travel.

- The International Civil Aviation Organization (ICAO) came into being in 1947. Subsequently, ICAO became a specialized agency of the United Nations linked to the Economic and Social Council (ECOSOC). The ICAO is charged with coordinating international air travel.

3. Energy efficiency measures in India

» Prelims: PAT scheme; Standards and labeling programme; BEE

» Mains: Significance of promoting energy efficiency and governmental measures in this direction

Context

- The Ministry of Power is implementing measures to save energy with an objective to reduce CO_2 emission levels in the environment from industries, establishments and by using equipment/appliances.

- The Power Ministry is implementing the PAT Scheme in this regard.

PAT Scheme:

- The Perform Achieve and Trade (PAT) Scheme is a key programme for large industries and establishments.

- This scheme aims to enhance the cost-effectiveness of energy savings by upgrading technologies or by taking in-house actions to minimize energy consumption.

- The scheme provides mandatory targets for the identified Large Units and the excess energy saved by them is issued as Energy Saving Certificate, which are tradable instruments.

- Different industries and establishments are assigned separate energy efficiency targets based on their levels of energy consumption and the potential for energy savings.

- Currently, the scheme extends to 13 most energy intensive sectors in the country including cement, iron and steel, fertilizer, thermal power plants, refineries, petrochemicals, railways and others.

- This initiative is currently leading to energy savings of about 17 MTOE (Million Tonnes of Oil Equivalent) and has resulted in the mitigation of about 87 million tonnes of CO_2

Standards and Labeling (S&L) Program:

- The Standards and Labeling (S&L) Program was introduced by the Bureau of Energy Efficiency (BEE).

- The objective of the program is to provide consumers with an informed choice about the energy savings potential and thereby the cost saving due to the products available in the market.

- The scheme includes the display of energy performance labels on key energy consuming equipment & appliances, with stipulation for minimum energy performance standards.

- As of now, it covers 28 appliances and 15000 models of energy efficient products have been awarded Star labels.

- This initiative has been effective in reducing the CO2 emissions of about 46 Million Tonnes every year.

Governmental schemes / Programmes / initiatives

4. GeM SAHAY Platform

» Prelims: GeM SAHAY platform

- The GeM-SAHAY portal can be utilised to provide frictionless financing for MSMEs on Government eMarketplace where they can get a loan at the point of acceptance of an order on the GeM platform.

- The country's leading lenders are associated with the SAHAY platform.

- With the portal, loan disbursement will be instantaneous, instead of the conventional in-principle approval of loan that may very often not culminate in an actual disbursal.

- The GeM SAHAY platform is 'lender agnostic', allowing for any lender, duly regulated by the Reserve Bank of India, to participate and provide capital and smart collection accounts to the sellers on GeM.

- Sellers applying for the loan facility will experience a seamless end to end digital experience with a mobile application.

- SAHAY project is being implemented by GeM in collaboration with the Indian Software Product Industry Round Table (iSPIRT), a non-profit tech think tank's volunteer team.

Governmental initiatives

5. Inland Vessels Bill receives Cabinet nod

» Prelims: Inland waterways in India; new bill provisions

» Mains: Significance of island waterways to India

Context:

- The Union Cabinet gave the nod to the Inland Vessels Bill, 2021.

Details:

- Inland Vessels Bill, 2021 will replace the Inland Vessels Act, 1917.

- Draft Inland Vessels bill proposes to streamline and regulate how vessels travel in the inland water fields of India.

- A total of 4,000 km inland waterways have been operationalised.

- The Bill will regulate the safety, security and registration of inland vessels.

- 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, and there will be no need to seek separate permissions from the States.

- The Bill provides for a central database for recording the details of the vessel, vessel registration and the crew on an electronic portal.

- It requires all mechanically propelled vessels to be mandatorily registered.

- All non-mechanically propelled vessels will also have to be enrolled at the district, taluk or panchayat or village level.

- It enlarges the definition of 'inland waters', by including tidal water limit and national waterways declared by the Central Government.

- It also deals with pollution control measures of Inland Vessels. This bill directs the Central Government to designate a list of chemicals, substances, etc. as pollutants.

Important legislations in news

6. Integrated Power Development Scheme (IPDS)

» Prelims: IPDS

- The scheme was launched in 2014 with the following objectives:

  * Strengthening of sub-transmission and distribution networks in the urban areas.

  * Metering of distribution transformers/feeders/consumers in the urban areas.

  * IT enablement of distribution sector and strengthening of distribution network.

  * Schemes for Enterprise Resource Planning (ERP) and IT enablement of balance urban towns.

  * Underground cabling.

- The scheme is under the Ministry of Power, GOI and works in the urban power distribution sector.

- All discoms will be eligible for financial assistance under the scheme.

- Power Finance Corporation Limited (PFC) has been designated as the Nodal Agency for operationalization and implementation of the scheme under the overall guidance of the Power Ministry.

Context:

- 50 KWP Solar roof top under the IPDS scheme inaugurated in Solan as part of 'Azadi ka Amrit Mahotsav'.

Governmental schemes / Programmes / initiatives

7. ITAT e-DWAR

» Prelims: ITAT e-DWAR portal

Context:

- ITAT e-DWAR launched by union Law Minister.

About ITAT e-DWAR:

- It is the e-filing portal of the Income Tax Appellate Tribunal (ITAT). The portal would enable the parties to file their Appeals, Miscellaneous Applications, documents, paper books, etc., electronically.

- 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.

Agricultural sector – GI Tags

8. Jalgaon Banana

» Prelims: Jalgaon Banana

» Mains: Significance of GI Tags

Context:

- GI certified Jalgaon banana exported to Dubai.

Jalgaon Banana:

- This is a fibre and mineral rich variety of banana that grows in Jalgaon district of Maharashtra, a banana cluster identified under Agri Export Policy.

- Jalgaon Banana got the GI certification in 2016.

- India is the world's leading producer of bananas with a share of around 25% in total output. Andhra Pradesh, Gujarat, Tamil Nadu, Maharashtra, Kerala, Uttar Pradesh, Bihar and Madhya Pradesh contribute more than 70% of the country's banana production.

Agricultural sector – GI Tags

9. Jardalu Mango

» Prelims: Jardalu Mango

» Mains: Significance of GI Tags

Context:

- First commercial consignment of GI certified Jardalu mangoes from Bihar exported to the United Kingdom.

Jardalu Mango:

- Jardalu or Zardalu mango is a unique variety of mango grown in Bhagalpur and adjoining districts of Bihar.

- It is a creamy yellow coloured fruit which possesses exceptional fruit quality and an enticing aroma. They are generally of small size (100 – 150 g).

- It received the GI tag in 2018.

Important legislations in news

10. Model Tenancy Act

» Prelims: Model Tenancy act provisions

» Mains: Significance and challenges

Context:

- The Union Cabinet approved the Model Tenancy Act.

What is meant by model act?

- A model Act means that it is not binding on any states. Which is to say, their approval by the Centre changes nothing on the ground unless states enact their own laws based on it.

- They can either borrow from the model Act or repeal their own laws to adopt it verbatim.

- That is because land is a state subject under the Constitution of India and it is the prerogative of state governments to regulate the housing markets.

Details

- The Act aims to bridge the trust deficit between tenants and landlords by clearly delineating their obligations.

- The Model Act requires that state set up a rent authority, which would be responsible for registering all rent agreements.

  * Such an authority would maintain records of all rent agreements under it and create a website for the tracking of the data.

- Among other things, the Model Act says that security deposit for residential premises shall not exceed two months' rent. For commercial property, a tenant will have to pay six-month rent.

  * Currently, this amount differs from one city to another. For instance, in Delhi, the deposit is usually two-three times

the monthly rent, but in Mumbai and Bengaluru, it can be over six times the monthly rent.

- The Model Tenancy Act says that if a landlord has fulfilled all the conditions stated in the rent agreement - giving notice etc - and tenant fails to vacate the premises on the expiration of the period of tenancy or termination of tenancy, the landlord is entitled to double the monthly rent for two months and four times after that.

- The tenant cannot sublet a part of or the whole property to someone else.

- Under this Act, the landowner would give a notice in writing three months before revising rent. The landlord cannot hike the rent in the middle of the tenure.

- According to the MTA Act, a landowner cannot cut power and water supply in case of a dispute with the tenant.

- The Act states that a landowner cannot enter the rented premises without 24-hour prior notice to carry out repairs or replacement.

- Under the Model Tenancy Act, unless otherwise agreed in the tenancy agreement, the landlord will be responsible for activities like structural repairs except those necessitated by damage caused by the tenant, whitewashing of walls and painting of doors and windows, changing and plumbing pipes when necessary and internal and external electrical wiring and related maintenance when necessary.

Dispute

- To ensure speedy redressal of disputes, the Act calls for establishing a separate Rent Court and Rent Tribunal in every state/UTs to hear appeals for matters connected to rental housing.

- Only the rent court and no civil court will have the jurisdiction to hear and decide the applications relating to disputes between landowner and tenant and matters connected with it.

- It calls for disposal of complaints and appeals by the Rent Court and Rent Tribunals within 60 days.

Significance:

- It will help overhaul the legal framework with respect to rental housing across the country, which would help spur its overall growth.

- It will enable the institutionalisation of rental housing by shifting it towards the formal market.

- Through this, vacant houses could be unlocked for rental housing purposes.

- It will enable the creation of adequate rental housing stock for all the income groups thereby addressing the issue of homelessness.

- It is expected to give a fillip to private participation in rental housing as a business model for addressing the huge housing shortage.

Challenges

- While the proposals of the Model Tenancy Act have been widely welcomed, their implementation may not be very simple. The Act is not binding on the states as land and urban development remain state subjects. It is still a matter of choice for states and Union Territories to repeal or amend their existing Acts.

Governmental schemes/Programmes/initiatives

11. **Sustainable Development Goals (SDG) India Index**

   » Prelims: SDG India index; SDG 2030

Context:

- NITI Aayog has launched the third edition of the Sustainable Development Goals (SDG) India Index 2020.

SDG India Index

- The index was first launched by NITI Aayog in 2018.

- The index has been comprehensively documenting and ranking the progress made by States and Union Territories towards achieving the Sustainable Development Goals.

- 100 being the highest score, it implies that the State/UT has achieved the targets set for 2030. '0' score implies that the state is at the bottom of the table.

- NITI Aayog has the twin mandate to oversee the adoption and monitoring of the SDGs in the country, and also promote competitive and cooperative federalism among States and UTs.

- The SDG India Index 2020–21, developed in collaboration with the United Nations in India, tracks the progress of all States and UTs on 115 indicators that are aligned to MoSPI's National Indicator Framework (NIF).

- In the current edition, 115 indicators incorporate 16 out of 17 SDGs, with a qualitative assessment on Goal 17 and cover 70 SDG targets.

Highlights:

KERALA ON TOP AGAIN

With a composite score of 75, Kerala topped the NITI Aayog's 2020 Index, based on the State's performance across 16 Sustainable Development Goals

A score of 100 implies that the State/UT has achieved the targets set for 2030. A score of 0 implies that it is at the bottom of the table

52   **2020 INDEX SCORE**   79

	Goal	Top States
GOAL-WISE TOP STATES	No poverty	Tamil Nadu
	Zero hunger	Kerala
	Good health and well-being	Gujarat
	Quality education	Kerala
	Gender equality	Chhattisgarh
	Clean water and sanitation	Goa
	Decent work and economic growth	Himachal Pradesh
	Industry, innovation and infrastructure	Gujarat
	Reduced inequality	Meghalaya
	Sustainable cities and communities	Punjab
	Responsible consumption and production	Tripura
	Climate action	Odisha
	Life below water	Odisha
	Life on land	Arunachal Pradesh
	Peace, justice and strong institutions	Uttarakhand

- This edition of the index report focuses on the significance of partnerships as its theme.
- India's overall SDG score improved by 6 points—from 60 in 2019 to 66 in 2020–21.
- According to the 2020 SDG Index, India saw significant improvement in the Sustainable Development Goals (SDGs) related to clean energy, urban development and health in 2020.
  - * All the States showed some improvement from last year's scores.
  - * Mizoram and Haryana saw the biggest gains.
- The SDGs on eradication of poverty and hunger both saw significant improvement.
- The SDGs that deal directly with wages and industrial growth reflect the fact that India's economy has taken a beating over the last year.
- There has been a major decline in the areas of industry, innovation and infrastructure as well as decent work and economic growth.
- Clean Water and Sanitation SDG also saw a drop.

- Kerala retained its position at the top of the rankings, with a score of 75, followed by Tamil Nadu and Himachal Pradesh, both scoring 72.
- Bihar, Jharkhand and Assam were the worst performing States.

Classification:

States and Union Territories are classified as below based on their SDG India Index score:

- Aspirant: 0–49
- Performer: 50–64
- Front-Runner: 65–99
- Achiever: 100

Issues:

- While India has scored better in the latest SDG Index, the methodological changes in the latest edition make a comparison between some SDGs over previous years difficult.
  - * In 2019, the indicators for inequality included the growth rates for household expenditure per capita among the bottom 40% of rural and urban populations, as well as the Gini coefficient (a measure of

the distribution of income) in rural and urban India.

* The 2018 indicators included the Palma ratio (metric for income inequality).

- Such economic measures have been omitted from the indicators used for this SDG for 2020.

- Greater weightage is given to social equality indicators, such as:

* The percentage of women and Scheduled Caste/Scheduled Tribe representatives in State Legislatures and the Panchayati raj institutions.

* Levels of crime against the SC/ST communities.

- The only economic indicator in 2020 is the percentage of the population in the lowest two wealth quintiles.

- Stark differences between the southern and western States on the one hand and the north-central and eastern States on the other in their performance on the SDGs, point to persisting socio-economic and governance disparities.

* These differences if left unaddressed, will aggravate federal challenges and outcomes, as seen in the public health challenges during the second wave across some of the worse-off States.

Way Forward:

- While the better score for India in its endeavour to achieve SDGs brings cheer, governments must work on addressing pressing issues such as increased inequality and economic despair.

Governmental schemes/Programmes/initiatives

12. Tax Inspectors Without Borders (TIWB)

» Prelims: TIWB initiative

Context:

- Bhutan's Tax Inspectors Without Borders (TIWB) programme launched in partnership with India.

About the TIWB Programme:

- It is a joint initiative of the United Nations Development Programme (UNDP) and the Organisation for Economic Cooperation and Development (OECD).

- The programme has been launched in Bhutan with India as the Partner Jurisdiction.

* India has provided the Tax Expert for this programme.

* This programme is expected to be of about 24 months' duration through which India in collaboration with the UNDP and the TIWB Secretariat 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 objective of the TIWB Initiative is to enable sharing of tax audit knowledge and skills with tax administrations in developing countries through a targeted, real time "learning by doing" approach.

- Selected experts will work with local tax officials directly on current audits and audit-related issues concerning international tax matters and general audit practices relevant for specific cases.

Miscellaneous

13. World Milk Day

» Mains: Dairy sector in India

Context:

- June 1 is observed as World Milk Day.

About World Milk Day:

- In 2001, World Milk Day was established by the Food and Agriculture Organisation of the United Nations to recognize the importance of milk as a global food, and to celebrate the dairy sector.

- The theme and focus of World Milk Day 2021 is: sustainability in the dairy sector with messages on nutrition.

Dairy sector in India:

- The dairy sector supports the livelihoods of millions of people in India.

- India is one of the largest producers of milk in the world.

- In 1955, India's butter imports were 500 tons per year and by 1975 all imports of milk and milk products were stopped as India became self-sufficient in milk production.

- India's success story in milk production was scripted by Dr Verghese Kurien, known as the "Father of the White Revolution" in India.

Financial Sector Related Issues

14. Bitcoin

» Prelims: Cryptocurreny related terminology; El Salvador's adoption of bitcoin as legal tender

» Mains: Significance/advantages and concerns associated with the adoption of Bitcoin as legal tender and recommendations

Context:

- El Salvador became the world's first sovereign nation to adopt bitcoin cryptocurrency as legal tender

Background:

Cryptocurrency:

- A cryptocurrency is a digital asset designed to work as a medium of exchange.
- Cryptocurrencies typically use decentralized control as opposed to centralized digital currency and central banking systems. Cryptocurrencies are built on the back of blockchain technology, a system of distributed, cryptographically-secured account keeping.
- Bitcoin is the first decentralized cryptocurrency.

Status of cryptocurrencies:

- Most countries have warned their citizens against investing in cryptocurrencies and transacting in them.
- Some countries have tried to use the blockchain technology to create government-sanctioned digital currencies. China, a hub of cryptocurrency activity, has issued a digital Yuan based on blockchain technology. The Bank of England has also proposed a digital Sterling.
- The RBI had virtually banned cryptocurrency trading in 2018. The Supreme Court had asked the Centre in 2019 to frame policies for crypto, and in 2020, struck down the curbs imposed by the RBI. India has allowed the treatment of cryptocurrencies as commodities.
- Bitcoin is the first and biggest of decentralized cryptocurrencies, which are increasingly becoming mainstream. Etherium, Tether, and Binance Coin are some of the many others that have emerged after Bitcoin.
- As per available reports by the end of 2021, at least 4-5 more nations will adopt bitcoin as their sovereign acceptable currency.

Details:

- As per the new law of El Salvador, Bitcoin, as a legal tender, can be used in any transaction and businesses will have to accept that payment form.
- The law also states that tax contributions can be paid via Bitcoin and exchanges in the cryptocurrency will not be subject to capital gains tax.
- Under the new law, El Salvador will promote necessary training and mechanisms so that the population can access bitcoin transactions. However, those who do not have access to technologies that can carry out bitcoin are excluded from being required to accept it as payment.

- The bitcoin-dollar exchange rate will be set by the market.

Significance/Relevance of the move:

Reduce the cost of remittances:

- El Salvador's economy is heavily reliant on remittances. According to World Bank data, remittances made up almost $6 billion in 2019, which was about 20% of the country's GDP.
- A large chunck of that $6 billion is lost to intermediaries who take a cut of the financial transactions in dollars.
- The adoption of Bitcoins will not only help El Salvadoreans save on transaction fees of banks and agencies but also offers a faster method to transfer such remittances.

Mitigate the negative effects of being a dollarized economy:

- El Salvador is among the few countries in the world that don't have their own fiat currency, and uses the US dollar as a legal tender. El Salvador fully 'dollarised' its economy in 2001.
    * There are 14-15 countries, which don't have their currency and they typically use the US dollar.
- One of the downsides of a dollarized economy is that it gets linked to the monetary policies of the Federal Reserve of the U.S.
- The U.S. Federal reserve has been increasingly setting rates that has been benefitting the U.S. economy but was harming the economic stability of El Salvador and Bitcoin was being adopted in order to mitigate these negative impacts.
- Bitcoin or any other form of cryptocurrency is as good as the dollars for such dollarized economies.

Boost financial inclusion:

- El Salvador's decision to make bitcoin a legal tender will boost financial inclusion in their country as majority of the population does not have access to formal banking channels.

Impetus to economy:

- The government also believes that the move will boost investments, tourism and innovation and bring economic development for the country.

Concerns:

- Experts have warned of the following concerns with the adoption of Bitcoin as a legal tender.

Decentralized control:

- Given the essentially decentralized control approach associated with cryptocurrencies like the Bitcoin as against the traditional centralized digital currency and centralized banking systems, they render government monetary policies ineffective. This would rob the administration of a vital tool to control the economy.

- They are even deemed a threat to the official currency and monetary system.

Anonymity:

- Governments and economic regulators across the world are wary of private cryptocurrencies also because of the lack of a central issuing authority or a central validating agency for transactions.

- Hence these currencies can exist and thrive outside the realm of authority and regulation.

- Their anonymous nature also goes against global money-laundering Its use in illegal online marketplaces that deal with drugs and child pornography has been well-documented.

Security risk:

- Bitcoin exchanges are digital and therefore vulnerable to hackers, operational glitches, and malware.

- By targeting and hacking a cryptocurrency exchange, hackers can gain access to thousands of accounts and digital wallets where the cryptocurrencies are stored.

  * Example- Gox hacking incident in 2014, which saw the Japanese exchange close down after millions of dollars in bitcoin were stolen.

High volatility:

- Cryptocurrencies as commodities have been highly volatile.

- They have witnessed massive swings in their values. After its introduction in 2009, Bitcoin saw its biggest gain in value last year, having started 2020 at $7,200 per coin and touching $65,000 in April of 2021, before falling to $30,000 in May.

- The move to make Bitcoin a legal tender brings financial risks to ordinary Salvadorans and their country, as the cryptocurrency gains and loses huge amounts of value in a short duration.

Carbon footprint:

- Another major problem associated with crypto currencies is the increasing energy use associated with them.

- The 'mining' of Bitcoin, where individuals or companies set up powerful systems to support the blockchain network, for which they are rewarded in the currency, consumes a lot of energy.

- Bitcoin production is estimated to generate between 22 and 22.9 million metric tonnes of carbon dioxide emissions a year. This is a major concern given the current efforts underway to mitigate GHG emissions in line with the Paris climate commitments.

Measures being taken to mitigate some of the challenges:

- The El Salvador government plans to protect citizens from the volatility of Bitcoin prices by guaranteeing quick convertibility to dollars.

- The government will enable the purchase of Bitcoins from people unwilling to hold Bitcoins through a $150-million trust created at the country's development bank.

- The use of Renewable energy for Bitcoin mining facilities will help address the concerns associated with the large carbon footprint associated with Bitcoins.

Way forward:

Need for legal definition of crytocurrency and a regulatory framework:

- The fact that cryptocurrency has no legal classification should not be the impetus to prohibit its use in India rather the RBI should come up with an appropriate regulatory framework for cryptocurrencies.

- The methodology adopted in countries like the U.K., Singapore and the U.S could offer valuable lessons for India in this regard.

  * The U.K. has classified cryptocurrency as property and this has helped pave the way for cryptocurrencies to be covered within a regulated legal framework of the economy.

  * The amenability of cryptocurrency transactions to the contract law framework in Singapore has helped establish a legal framework for cryptocurrency trading.

  * The trade in cryptocurrency is taxed in the U.S. which has helped in the oversight and regulation of cryptocurrency trading.

Balanced regulation:

- There is a need for a balanced regulation of the cryptocurrency which could allow private individuals the freedom to harness a powerful new technology like blockchain technology-based digital currency with appropriate regulatory standards.

- Such permissive regulation recognises the freedom of choice given to people for using a medium of exchange other than a central bank-backed fiat currency.

- Such an approach would be in line with the rising global trend of embracing cryptocurrencies that permit the growth of the cryptocurrency market subject to certain safeguards.

15. FCI rice to be used for ethanol production

» Prelims: Ethanol; National Bio fuel policy

» Mains: significance of biofuel for India; challenges in its adoption.

Context:

- The Central government has allocated 78,000 tonnes of rice procured for food security purposes to be diverted to ethanol production at a subsidised rate of ₹20 a kg.

- However, the share of rice in ethanol production is minuscule and maize would form the primary feedstock for grain-based ethanol production.

Details:

- This is part of the government's plan to double distilling capacities by 2025, partly by encouraging an increase in the share of grain-based ethanol production from the current focus on molasses-based production.

- Earlier, a road map advancing the target date for achieving 20% blending of ethanol in petrol by five years to 2025 was presented.

  * The last two years have seen blending levels of around 5%.

- The centre is targeting an ethanol production of 1,500 crore litres by 2025, out of which, 740 crore litres, would be from grain-based distilleries, with the remainder coming from sugar-based distilleries.

  * Currently, about a third of the 710-crore litre ethanol production capacity comes from grains.

  * Only 38 crore litres of grain-based ethanol is used for fuel.

Issue:

- It is believed that it is unethical as millions of migrant, daily wage, unorganised sector and self-employed workers face a dire shortage of food required even for minimum sustenance, apart from other deprivations of adequate shelter, monetary support for basic needs, and protection from COVID-19 disease.

- Critics assert that converting rice stocks into ethanol under the nose of hungry people is unacceptable.

Ethanol:

- Ethanol is a biofuel and a common by-product of biomass left by agricultural feedstock such as corn, sugarcane, hemp, potato, etc.

- It is produced mainly from molasses, a byproduct of sugar manufacture.

- Ethanol is basically alcohol of 99%-plus purity, which can be used for blending with petrol.

- Ethanol being a less polluting fuel will cut down carbon emissions.

16. 'Record' FDI inflows, yes, cause for celebration, no

» Prelims: FDI; FII; Portfolio investment; Hot money

» Mains: Critical analysis of the record FDI inflows

Background:

Record FDI inflow:

- Data released by the Commerce and Industry Ministry relating to foreign investment into India notes impressive Foreign Direct Investment (FDI) inflow.

  * India has attracted the highest ever total FDI inflow of $81.72 billion during the financial year 2020-21 and it is 10 percent higher as compared to the last financial year 2019-20.

  * This marks an impressive growth given that the global FDI inflows in 2020 had declined by 42% over the level in 2019, and inflows to developing countries had fallen by 12% following the first wave of the COVID-19 pandemic.

- The government credits the record level of inflows to FDI policy reforms, investment facilitation and ease of doing business reforms and also being indicative of the growth potential of the Indian economy.

Critical analysis of the development:

- The article raises doubts over the above development based on the following arguments.

Increased repatriation/disinvestment:

- There has been a 47.2% increase in repatriation/disinvestment and it has reached a record level of $27.0 billion in the current fiscal. Considering the net of repatriation/disinvestment, FDI inflows have actually declined by 2.4% in 2020-21, as compared to the previous year.

- The sustained sizeable repatriation of the long-term FDI does not bode well for the Indian economy.

High proportion of portfolio investment:

- A high proportion of the increased foreign capital inflow in 2020-21, can be attributed to the high increase in portfolio investment by foreign institutional investors (FIIs).

- This large increase in speculative capital does not bode well for an economy looking to recover from an economic slump.

- In principle, private equity funds do not make long-term greenfield investment and hence do not add much to fixed investment, output growth and employment creation.

Skewed distribution:

- The analysis of FDI inflows reveals that a substantial proportion of the equity inflows were directed towards a select few companies. Hence though FDI inflows were stronger in 2020-21, their distribution was highly skewed. The top five FDI deals account for a substantial share of the total FDI.

  * The RBI notes in its annual report that the coefficient of variation of FDI flows (based on transaction size) was larger during the pandemic period, implying a concentration in distribution of the FDI inflows.

- This skewed distribution of FDI points to the underlying weakness in FDI inflows during the year.

Doubts over productiveness of these investments:

- A major part of the foreign funds will flow towards acquisitions and will only facilitate the parent country to withdraw its investments without a proportional rise in actual investment into the economy.

- Thus these investments involve only a mere transfer of shares without creating productive assets in the country. This would make such investment ineffective in contributing to the revival of the Indian economy.

Concerns associated with acquisition inflows:

- The acquisition-related inflows will lead to foreign investors taking over existing businesses. The increased foreign capital will not only lead to the outflow of profits but also result in the increased influence of such investors in Indian businesses.

Skewed investments with respect to economic sectors:

- The services sector attracted nearly 80% of the total inflows with information technology-enabled services (ITeS) being the largest component. Wholesale and retail trade were the other prominent ones.

  * The investment in the services sector, though welcome, suffers from certain shortcomings like low employment generation potential.

- The manufacturing sector contrary to expectations received just 17.4% of the total inflows during 2020-21. According to the RBI, non-acquisition-related inflows into the manufacturing sector (Greenfield investments) were the lowest in 2020-21 even in absolute terms, over the past five years.

  * The FDI inflows have not been in sync with the government's priorities for the post-COVID-19 economic recovery based on the AatmaNirbhar Bharat Abhiyaan and anchored on the revival of the manufacturing sector through the Performance Linked Incentive (PLI) scheme.

Concerns over regional distribution:

- The regional distribution of the FDI inflows has not been uniform.

- While states such as Gujarat, Maharashtra and Karnataka account for a lion's share of the total FDI inflows, other regions account for a disproportionately lower amount of 23% of the remaining foreign equity capital. This is indicative of the skewed pattern of FDI inflows and gives rise to concerns of unbalanced growth.

Conclusion:

- The 'record' levels of FDI inflows during 2020-21 cannot be a cause for celebration as is revealed by a closer analysis of the FDI inflows. The government must focus on attracting FDI into India through appropriate interventions.

Indian Economy-Agriculture

17. **Are your staple rice and wheat losing their nutrients?**

   » Prelims: Biofortification

   » Mains: Reasons for depletion trend in grain density of micro nutrients; associated concerns and recommendations

Context:

- A recent study notes the depleting trends of essential nutrients in rice and wheat cultivated in India.

Details:

- The study notes that the currently produced rice and wheat grains as not having the same density of essential nutrients as those cultivated 50 years ago.

- There has been a depleting trend in grain density of zinc and iron in rice and wheat cultivated in India over the years.

Possible reasons:

Dilution effect:

- 'Dilution effect' is caused by decreased nutrient concentration in response to higher grain yield. This is due to the fact that the rate of yield increase is not compensated by the rate of nutrient take-up by the plants.

Decreased quantity of nutrients in soil:

- The increasing use of monoculture cropping patterns and intensive agricultural practices could have resulted in a scenario where the soils supporting plants could be low in plant-available nutrients.

Concerns:

- The lack of essential micronutrients like Zinc and iron in Rice and Wheat could adversely affect the nutritional security of billions of people globally.

* Rice and wheat constitute the staple food for over half of the global population.

* Counties like India which continue to battle micronutrient deficiency have diets composed mainly of rice, wheat, corn, and barley. The growing of newer cultivars of rice and wheat cannot be a sustainable option to alleviate zinc and iron malnutrition in Indian population.

Recommendations:

Biofortification:

• Apart from the initiatives such as providing micro nutrient supplementation pills to school children, there is also the need to concentrate options like biofortification.

* Fortification is the practice of deliberately increasing the content of an essential micronutrient, i.e. vitamins and minerals (including trace elements) in a food, so as to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health.

* Biofortification is the process by which the nutritional quality of food crops is improved through agronomic practices, conventional plant breeding, or modern biotechnology. It involves the breeding of food crops that are rich in micronutrients.

* Biofortification differs from conventional fortification in that biofortification aims to increase nutrient levels in crops during plant growth rather than through manual means during processing of the crops.

* Examples of biofortification projects include:

» iron-biofortification of rice, beans, sweet potato, cassava and legumes;

» zinc-biofortification of wheat, rice, beans, sweet potato and maize;

» provitamin A carotenoid-biofortification of sweet potato, maize and cassava; and

» amino acid and protein-biofortification of sourghum and cassava.

• The future breeding programmes of new cultivars should focus on improving the grain ionome (nutritional make-up) as a remedy to the observed trend of depleting micronutrient levels.

Sustainable agricultural practices:

• Given the ill effects of mono culture practices and intensive agricultural practices backed by intensive fertilizer usage, there is the need for moving towards more sustainable agricultural practices like organic farming, multi cropping and permanent agriculture which accord the necessary attention towards the overall health of the soil.

Indian Economy and issues relating to growth and development

18. **Centre moots ban on 'flash sales' on e-com sites**

» Prelims: Consumer protection (e-commerce) rules, 2020

» Mains: arguments in favour of and against the proposed new amendments

Context:

• The government has proposed changes to the Consumer Protection (e-commerce) Rules 2020.

Issue:

• The rapid growth of e-commerce platforms has brought into the purview the unfair trade practices of the marketplace e-commerce entities.

• Such platforms have been engaging in:

* manipulating search result to promote certain sellers

* preferential treatment to some sellers

* indirectly operating the sellers on their platform

* impinging the free choice of consumers

* selling goods close to expiration

Details:

• This proposal comes as a move to monitor deep discounts offered on e-commerce websites.

• The government has proposed banning all flash sales.

• The proposed amendments aim to bring transparency in the e-commerce platforms and further strengthen the regulatory regime to curb the prevalent unfair trade practices.

The proposed amendments:

• Appointment of Chief Compliance Officer, a nodal contact person for 24×7 coordination with law enforcement agencies, officers to ensure compliance to their orders and Resident Grievance Officer for redressing the grievances of consumers on the e-commerce platform.

• A framework for registration of every e-commerce entity with the Department for Promotion of Industry and Internal Trade (DPIIT) will be put in place.

• Mis-selling has been prohibited i.e selling goods and services by deliberate misrepresentation of information.

• Where an e-commerce entity offers imported goods or services, a filter must be incorporated to identify the country of origin and suggest alternatives of domestic goods.

- Provisions of fall-back liability for every marketplace e-commerce entity have been provided, in case a seller fails to deliver the goods or services due to negligent conduct.

Arguments in favour:

Regulating the e-commerce platforms:

- There have been concerns over the business practices of the leading e-commerce platforms in India.
    * They have been accused of having pricing practices that are skewed to favour select sellers on their platforms.
    * Their deep discounting policies have adversely impacted offline retailers and have been termed as unfair trade practice.
- The proposed amendments will further strengthen the regulatory regime to curb the prevalent unfair trade practices.
- The proposed amendments will bring the much-desired transparency in the e-commerce platforms and help prevent unfair trade practices by them.
- The ban on flash sales and deep discounting would encourage free and fair competition in the market.

Protecting consumer interests:

- There has been a massive increase in the number of consumer complaints against e-commerce platforms.
    * E-commerce tops the National Consumer Helpline's complaints chart.
- The amendments are aimed at protecting the interests of consumers.
- The provisions on mis-selling and fall back liability empower the customers against the e-commerce platforms to a great extent.
    * Mis-selling is selling goods and services by deliberate misrepresentation of information.

Arguments against:

Risks of over-regulation:

- The article argues that the draft e-commerce amendments are indicative of the Government's increasing keenness to exercise greater oversight over online platforms and warns that such an approach may prove detrimental in the longer run.
- Overregulation risks retarding growth and job creation in the hitherto expanding e-commerce sector.

Impact on platforms:

- The latest amendments aimed at preventing direct selling would also adversely impact several platforms that retail products supplied by vendors with arm's length ties. This could have a detrimental impact on their functioning thus adversely affecting not just the prospects of the company but also that of the lakhs of employees that these platforms employ.

Note:

- However, the Ministry of Consumer Affairs said that the conventional flash sale would not be banned, but that only predatory ones would be banned.
- It said that certain e-commerce entities were engaging in limiting consumer choice by indulging in 'back-to-back' or 'flash' sales wherein one seller on a platform does not carry any inventory or order fulfilment capability but merely places a 'flash or back-to-back' order with another seller controlled by the platform.
    * This prevents a level playing field and ultimately limits customer choice and increases prices.

Indian Economy and issues relating to growth and development

19. **Govt. unveils 6.28 lakh crore stimulus post 2nd COVID wave**

   » Prelims: Provisions of the new stimulus package

Context:

- The government has announced measures to support the sectors hit hard by the second Covid wave.

Relief Measures:

Health:

- ₹ 50,000 crore credit guarantee for new and ongoing projects outside metros.
- Funds for public projects to augment paediatric care, ICU beds, oxygen supply and medical personnel
    * A new scheme for strengthening public health infrastructure and human resources with an outlay of Rs. 23,220 crore was also announced.
- Interest rate capped at 7.95%.
- A fresh loan guarantee facility of ₹1.1 lakh crore for healthcare investments in non-metropolitan areas and sectors such as tourism.

Economy:

- The existing Emergency Credit Line Guarantee Scheme will be expanded by ₹1.5 lakh crore.
    * ECLGS was launched as part of the Atma Nirbhar Bharat Package in May 2020.
- A new scheme worth ₹7,500 crores announced for loans up to ₹1.25 lakh to small borrowers through micro-finance institutions.

- Indirect support for exports worth ₹1.21 lakh crore over the next five years.

- Under the new Loan Guarantee Scheme for COVID-affected sectors, working capital/personal loans will be provided to people in the tourism sector to discharge liabilities and restart businesses impacted due to the COVID-19 pandemic.

- The government has also made an additional allocation of Rs 19,041 crore for the ongoing BharatNet broadband project.

- The government extended the Atmanirbhar Bharat Rozgar Yojana, launched in October 2020 to encourage employment generation, by nine months until March 31, 2022.

- Free one-month visas for the first five lakh tourists.

Agriculture:

- New seed varieties will be made available for the farmers.

  * ICAR has developed bio-fortified crop varieties having high nutrients like protein, iron, zinc, vitamin-A.

  * These varieties are tolerant to diseases, insects, pests, drought, salinity, and flooding, early maturing and amenable to mechanical harvesting.

- A revival package of Rs 77.45 crore will be provided to North Eastern Regional Agricultural Marketing Corporation (NERAMAC).

- Additional Subsidy for DAP & P&K fertilizers has been announced.

- The existing sop to spur employment, where the government bears EPF contributions for new employees earning less than ₹15,000 a month for two years, has been extended till March 31, 2022.

Others:

- Extension of Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) from May to November 2021.

Significance:

- The focus was largely on extending loan guarantees and concessional credit for pandemic-hit sectors and investments to ramp up healthcare capacities.

- It is believed that these measures will help to stimulate economic activities, boost production & exports and generate employment.

However, economists opine that more steps may be needed to shore up the economy through the rest of the year.

Global initiatives in news

20. **Global minimum corporate tax rate**

  » Prelims: Concept of a global minimum corporate tax rate; OECD and BEPS

  » Mains: Significance and associated concerns of a global minimum corporate tax rate; Possible impact on India

Context:

- Finance Ministers from the Group of Seven (G7) nations have reached a landmark agreement in London setting a global minimum corporate tax rate.

Details:

- The Group of Seven nations have backed a minimum global corporation tax rate of at least 15%.

- They also seek to put in place measures to ensure that taxes are paid in the countries where businesses operate based on the principle of 'Significant Economic Presence'.

How would a global minimum tax work?

- The global minimum tax rate would apply to overseas profits of a multinational.

- The envisaged framework allows individual governments to 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, thus eliminating the advantage of shifting profits.

Reasons for the move:

- A global minimum corporate tax will allow the major economies to discourage multinationals from shifting profits — and tax revenues — to low-tax countries.

- This proposal from the major economies aims to reduce tax base erosion without putting their firms at a financial disadvantage, allowing competition on innovation, infrastructure and other attributes.

Significance:

Reduce tax base erosion:

- This measure will help close cross-border tax loopholes used by some of the world's biggest companies, thus will help limit base erosion and profit sharing (BEPS).

- Increasingly, income from intangible sources such as drug patents, software and royalties on intellectual property has migrated to the low tax jurisdictions, allowing companies to avoid paying higher taxes in their traditional home countries.

* As per some estimates, countries are losing $427 billion every year to tax havens. India suffers an annual loss of $10.3 billion from global tax abuse.

In tune with changed pattern of economy:

- This agreement marks a much necessary reform of the global tax system to make it fit for the current global digital age where cross-border digital services are gaining prominence.

End the so called race to the bottom and its negative consequences:

- The introduction of a global minimum corporate tax will contribute to ending the decades-long "race to the bottom on corporate tax rates", in which countries have resorted to ultra-low tax rates and tax exemptions to lure multinationals companies to invest.

- Such measures have cost such countries hundreds of billions of dollars whereas the corporate entities have only grown richer.

Form the basis of a global pact:

- This landmark agreement could form the basis of a worldwide deal.

- The Organization for Economic Cooperation and Development has been coordinating tax negotiations among 140 countries on rules for taxing cross-border digital services and curbing tax base erosion, including a global corporate minimum tax. The OECD and G20 countries aim to reach consensus on both by mid-year.

Move towards more equitable taxing rights:

- The agreement has committed to reaching an equitable solution on the allocation of taxing rights. It will focus on protecting the interest of the market countries by awarding such countries certain degree of taxing rights on the profits of the multinational enterprises.

- This will help ensure that MNCs would pay taxes where they operate and record their profits from based on the concept of 'Significant Economic Presence'.

Concerns associated with global minimum corporate tax:

Against the autonomy of nations:

- The calls for a global minimum corporate tax have been criticized by countries such as Ireland, which argue that this provision goes against the principle of fiscal autonomy. The proposal infringes upon the tax sovereignty of nations.

Render small economies uncompetitive:

- The global minimum tax rates would also render the smaller jurisdictions and economies incapable of competing with larger economies.

In a world where there are income inequalities across geographies, a minimum global corporation tax rate could crowd out investment opportunities for developing economies and play to the advantage of advanced economies.

- They argue that the fight against unfair tax competition envisioned through the global minimum corporate tax has become a fight against competitive tax systems which could actually prove beneficial for economic growth.

Scope for disagreements and implications:

- The U.S. push for a global minimum corporate tax rate can cause international disagreements. Several countries have taken a different approach to the rate of global minimum tax. While France and Germany have expressed support, the EU has raised concerns regarding the high rate proposed by the United States.

- The disagreements on tax allocations may actually lead to a tax-related trade war or entrenchment of unilateral levies which will only further harm both global and national economies already struggling amid the COVID-19 pandemic.

Impact on India:

- India has been part of the Pillar Two discussions and has not objected in principle to the proposal.

Positive:

- The proposal will help increase India's tax revenues since the proposal would also cover offshore structures set up by Indian companies.

  * Start-ups and large Indian conglomerates commonly use offshore structures for conducting global operations. Revenue from such operations is often retained offshore and not repatriated to India.

  * The State of Tax Justice report of 2020 notes that India loses over $10 billion in tax revenue due to the use of offshore structures, particularly through investments made by Indian residents through Mauritius, Singapore and the Netherlands.

Negative:

- The lower tax rate tool often used by India to attract foreign investment into India may become ineffective with the introduction of a global minimum corporate tax rate.

Measures taken:

- To address "the challenges posed by the enterprises who conduct their business through digital means and carry out activities in the country remotely", the government has the 'Equalisation Levy', introduced in 2016 following a recommendation by a panel constituted to deliberate on taxation of the digital economy.

- Also, the IT Act has been amended to bring in the concept of "Significant Economic Presence" for establishing "business connection" in the case of non-residents in India.

Conclusion

- Considering that companies that are able to take advantage of tax arbitrage possibilities are based out of the developed world, the benefits are likely to flow disproportionately to them.

- India must carefully weigh the costs and benefits of shifting to such an architecture. It needs to strike a balance between global rules and national priorities.

INTERNATIONAL RELATIONS

International Relations: Places in News

1. Bhashan Char

» Prelims: Bhashan Char island

» Mains: Rohingya issue- Implications for India

Context:

Several thousand Rohingya staged protests against living conditions on the Bhashan Char island – a cyclone-prone island off Bangladesh.

- The protest coincided with an inspection visit by officials from the United Nations refugee agency (UNHCR).

Details:

- Rohingya refugees who fled Myanmar in 2017 have been made to live in refugee camps near the Bangladesh-Myanmar border.
- About 8,50,000 people live in poor and cramped conditions in the Cox Bazar region in Bangladesh.
- In December 2020, the Rohingyas were moved to the Bhashan Char island from vast camps on the mainland.
  * Bangladesh has shifted 18,000 out of a planned 1,00,000 refugees to the low-lying silt island of Bhashan Char from the Cox's Bazar region.

Issue:

- Bhasan Char is vulnerable to going under water from tides and flooding.
- Much of it gets submerged during the monsoon.
- Located near the mouth of the river Meghna where it flows into the Bay of Bengal, Bhasan Char surfaced only in 2006 from the sediment deposited by the river.

International Relations: Places in News

2. Baihetan Dam

» Prelims: Baihetan dam; Yangtze river

- It is the world's second biggest hydroelectric dam on the Jinsha River, a tributary of the Yangtze
  * Yangtze is the longest river in Asia, the third-longest in the world and the longest in the world to flow entirely within one country.
  * It rises in the Tibetan Plateau and flows in an easterly direction to the East China Sea.
- It is part of Chinese efforts to curb surging fossil fuel demand by building more hydropower capacity
- Hydropower is losing support in other countries due to complaints dams flood communities and farmland and disrupt the ecology of rivers, threatening fish and other species.
- Despite criticism by environmentalists, Chinese leaders are building more dams in an effort to reduce reliance on coal and to curb surging demand for imported oil and gas.
- Once fully operational, the Baihetan Hydropower Station should eliminate the need to burn 20 million tons of coal annually

International Relations: Effect of policies and politics of developed and developing countries on India's interests

3. China-Sri Lanka Friendship Hospital opened

» Mains: Challenges to India from the increasing influence of China in Sri Lanka

Context:

- Sri Lankan President Gotabaya Rajapaksa inaugurated the China-Sri Lanka Friendship Hospital in Polonnaruwa.

China's Assistance to Sri Lanka:

- The hospital is built with a Chinese grant of $60 million and is said to be one of the largest in South Asia for nephrology care.

- China's earlier grant projects in Sri Lanka are also built as large public spaces. Eg. Bandaranaike Memorial International Conference Hall in Colombo, NelumPokunaMahindaRajapaksaThreate.

- In addition to sanctioning loans and a currency swap facility worth more than $2 billion since the pandemic struck, China also announced a $90 million grant to Sri Lanka in October 2020.

India's Concerns:

- India's grant assistance to Sri Lanka totals about $570 million.

- While the Polonnaruwa hospital has been inaugurated, the Jaffna Cultural Centre, built with Indian assistance of $11.5 million, whose construction was completed in 2020, awaits inauguration.

- China's rapidly growing presence in the Indian Ocean Region (IOR) and specifically in Sri Lanka is a cause of concern for India.

- While India is not a part of China's Belt and Road Initiative, China considers Sri Lanka to be a critical link in its global infrastructure-building initiative.

- India is concerned as Sri Lanka slips into deeper dependence and loan debt on China.

- Much of the world sees China-funded mega projects in Sri Lanka as debt traps for the island nation.

  * In 2017, Sri Lanka leased out a Chinese-built port (Hambantota) located near busy shipping routes to a Chinese company for 99 years to recover from the heavy burden of repaying the Chinese loan the country received to build it.

International Relations: Military Exercises

4. Exercise Sea Breeze

» Prelims: Exercise Sea Breeze

- Beginning in 1997, Exercise Sea Breeze brings Black Sea nations and NATO Allies and partners together to train and operate with NATO members in the pursuit of building increased capability.

- It is an annual multinational maritime exercise, involving sea, land, and air components

- It focuses on multiple warfare areas including amphibious warfare, land maneuver warfare, diving operations, maritime interdiction operations, air defense, special operations integration, anti-submarine warfare, and search and rescue operations.

International Relations: Effect of policies and politics of developed and developing countries on India's interests/ diaspora

5. Lhasa-Nyingchi Bullet Train

» Mains: Concerns associated with infrastructure development by the Chinese close to Indian border

Context:

- China has operationalised its first fully electrified bullet train in the region of Tibet

- It connects Lhasa and Nyingchi, a strategically located Tibetan border town close to Arunachal Pradesh.

Details

- The Lhasa-Nyingchi section is part of the Sichuan-Tibet Railway

- Capable of handling passenger and freight transportation, the electrified railway can run at a speed of 160km/h

- Compared to roads, the Lhasa-Nyingchi railway reduces the travel time from Lhasa to Nyingchi from 5 hours to approximately 3.5 hours
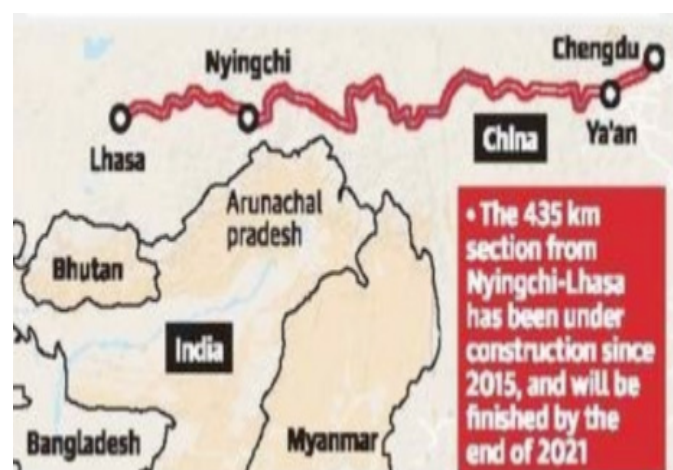
Concerns

- India will have to contend with a much-improved strategic border defence infrastructure and considerably enhanced Chinese military presence that will pose a long-term potential threat.

  * This will put India under additional military pressure.

  * Railway runs close to the Indian border near Arunachal Pradesh, it will enhance the PLA's mobility and connectivity on the border with India, especially in the eastern sector.

- The railway line will enable better control, consolidation and logistics supply to these border villages. Chinese scholars have already hailed this network as vital for delivering "strategic material" on the border.

- The related construction activity, as well as a huge influx of labourers, technicians and engineers, will raise temperatures on the Tibetan Plateau and accelerate the retreat of Tibet's glaciers, which are the source of the Indus and a number of rivers that feed into the Ganga.

  * One consequence will be the reduced flow of water.

International Relations: Effect of policies and politics of developed and developing countries on India's interests

6. New Atlantic Charter

  » Prelims: Atlantic charter

Context:

- US President Joe Biden and British Prime Minister Boris Johnson met for the first time to highlight their nations' famed special relationship.

Atlantic Charter:

- They inspected the documents related to the Atlantic Charter.

- Atlantic Charter is a declaration signed by British Prime Minister Winston Churchill and U.S. President Franklin D. Roosevelt in August 1941, setting out common goals for the world after Second World War.

- Those goals included free trade, disarmament and the right to self-determination of all people.

- It is often cited as a cornerstone of the trans-Atlantic "special relationship."

- The charter laid the foundation for the United Nations and NATO.

Details:

- The meeting took place on the eve of the G7 Leaders' Summit.

- The two leaders plan to sign a new Atlantic Charter.

- It would be in a pledge to "defend the principles, values, and institutions of democracy and open societies."

- The new Charter outlines modern-day threats including illicit finance, violent conflict & extremism, climate change, and global health crises like the Covid-19 pandemic.

- It looks to defend enduring values and is aimed at the challenge posed by countries like China and Russia with its promises to promote free trade, human rights and a rules-based international order, and to counter those who seek to undermine the alliances and institutions.

Miscellaneous

7. Tulsa race massacre 100 years later

  » Prelims: Tulsa race massacre

Context:

- The U.S. President Joe Biden officially recognised one of the worst incidents of violent racial hate in the country's modern history — the Tulsa Race Massacre of May-June 1921.

Tulsa:

- Tulsa was the affluent, predominantly African American neighbourhood of Greenwood, founded by descendants of slaves.

  * It had earned a reputation as the "Black Wall Street" of the U.S.

- Tulsa was especially known for being an unofficial sanctuary city for African Americans suffering the consequences of harsh segregation in pre-civil rights America.

Tulsa Race Massacre:

- There were widespread killings and damage to property in Tulsa, Oklahoma, targeting relatively well-to-do African Americans by rampaging white mobs.

- The lethal violence resulted in the deaths of hundreds, bodily injury to thousands and millions of dollars of damage to the homes and neighbourhoods burned down.

- Survivors, fearing reprisals had to hold on with an elaborate attempt to cover up the massacre and protect the perpetrators.

- For years, the massacre was barely mentioned in government circles, and in newspapers and textbooks.

- The Tulsa "Race Riot" Commission was formed to investigate the events in 1997 and officially released a report in 2001.

- The U.S President has now recognised the massacre. By doing so, he became the first sitting American head of state to recognise the incident.

Way Forward:

- This gives an opportunity to introspect the policy actions that have sought to bridge the racial discord that continues to haunt American society.

- The greater challenge for Mr. Biden's government is to take a step beyond the question of reparations to survivors and address the root causes of disparity that continue to plague American society.

- The President has planned to address racial discrimination:

  * In the housing market by issuing new rules on fair housing practices and curbing inequities in the home appraisal process.

  * By directing more federal spending to small and minority-owned businesses.

  * By closing the wealth gap between the African American community and others through new initiatives focused on economic opportunities for minorities.

International Relations: Important institutions

8. Use of chemical weapons by Syria: OPCW

  » Prelims: OPCW and Chemical weapons convention

Context:

- The head of the Organisation for the Prohibition of Chemical Weapons (OPCW) told the UN Security Council that its experts have investigated 77 allegations against Syria, and concluded that in 17 cases chemical weapons were likely or definitely used.

Details:

- In September 2013, Syria acceded to the convention as part of an agreement for the destruction of Syria's chemical weapons.

- He called it a disturbing reality that eight years after Syria joined the Chemical Weapons Convention, many questions remain about its initial declaration of its weapons, stockpiles and precursors and its ongoing programme.

> ### Organisation for the Prohibition of Chemical Weapons:
>
> - Organisation for the Prohibition of Chemical Weapons (OPCW) is the international chemical weapons watchdog.
>
> - It is an intergovernmental organisation and the implementing body for the Chemical Weapons Convention, which entered into force in 1997.

> * Chemical Weapons Convention is an arms control treaty.
>
> * It prohibits the large-scale use, development, production, stockpiling and transfer of chemical weapons and their precursors, except for very limited purposes.
>
> - The organisation promotes and verifies the adherence to the Chemical Weapons Convention, which prohibits the use of chemical weapons and requires their destruction.
>
>   * Verification consists both of evaluation of declarations by member states and onsite inspections.
>
>   * The main office of OPCW is in The Hague, Netherlands.
>
>   * In 2013, OPCW was awarded the Nobel Peace Prize.
>
>   * It has the power to report on whether chemical weapons were used in an attack it has investigated.
>
>   * It has the power to send inspectors to any signatory country to search for evidence of production of banned chemicals.
>
>   * It also can send experts to help countries to investigate crime scenes where chemical agents may have been used.

Note:

- • India established the National Authority for Chemical Weapons Convention (NACWC) under the Chemical Weapons Convention Act, 2000 for implementing the provisions of the Chemical Weapons Convention

Miscellaneous

9. Persecuted in Pakistan, ignored in India

  » Prelims: CAA, 2019; UN Convention on Refugees

Context:

- Hundreds of Pakistani Hindus having faced persecution on the ground of their religious identity in Pakistan have migrated to India in search of security and citizenship. But ambiguous rules and regulations have left them stateless for years.

Three waves of migration of Hindus to India:

- The president of the SeemantLokSangathan (an organisation working for the welfare of migrants) points out that there have been three waves of migration of Hindus to India from Pakistan.

1.   The first was during and after Partition.

2.   During the 1971 war, about 90,000 persons migrated to India.

3.   The third wave started as a result of a backlash against Hindus during the Ram temple movement and after the demolition of the Babri Masjid

- Migrants still continue to come to India.

- Also, the Taliban's capture of power in Afghanistan in 1996 led to a change in atmosphere in Pakistan, with the minority communities in the Balochistan and Sindh provinces increasingly being targeted.

Issues:

- Since 2014, most Hindu migrants have been entering India, into western Rajasthan and northern Gujarat, on a pilgrim visa.

  * They leave their family members in Pakistan in the hope that they can travel later when they find employment in India. However, they are disappointed when they are left to fend for themselves.

- The migrants are mostly Dalits from the Meghwal, Koli, Bhil, Jatav, Kumawat and Mali communities.

  * They are considered underprivileged on both sides of the international border.

- The number of Pakistani Hindu migrants staying in 21 settlements in the Jodhpur district is estimated to be about 30,000.

- They live in inhumane conditions with no access to electricity, water, toilets and sanitation.

- Due to the red-tapism in the citizenship camps organised by the Home Ministry, migrants from Pakistan have been wandering from one camp to another, but in vain.

- Many have even failed to get a long-term visa which would enable them to find a private job or take up self-employment.

- While they have failed to find any gainful employment, the pandemic-related lockdowns have only made matters worse.

- Besides, they are ostracised in India for being Pakistanis.

- While some migrants have got citizenship after completing the mandatory 11 years of stay for eligibility under the Citizenship Act of 1955, they struggle daily to get food, water, healthcare and education.

- The children of these migrants are the worst affected. Schools reluctantly give them admission and do not provide them emotional support and counselling.

- A new issue that the migrants are now facing is inaccessibility to vaccines.

Citizenship – Bone of contention:

- In May 2021, the Union Home Ministry issued a notification inviting non-Muslim migrants residing in 13 districts of five States to apply for Indian citizenship.

- It also empowered the Collectors of these districts to grant citizenship certificates.

- However, the notification is applicable to migrants belonging to the Hindu, Sikh, Buddhist, Jain, Parsi and Christian communities from Pakistan, Bangladesh and Afghanistan.

- The Home Ministry has made it clear that the latest notification is not related to the contentious Citizenship (Amendment) Act (CAA) of 2019.

  * The CAA will reduce the requirement of 11 years of aggregate stay in India to five years for citizenship, which would help fast-track the applications of migrants.

- Civil rights groups have called for taking measures to smoothen and hasten the process for grant of citizenship to migrants irrespective of their religious identity.

Rules and regulations:

- The Pakistani Hindu migrants are caught in a vicious circle of poverty and vulnerability. They face an unresponsive government and uncertain legislation.

- These migrants cannot expect to get the status of refugees because India is not a signatory to the 1951 UN Convention Relating to the Status of Refugees, nor its 1967 Protocol.

- All foreign nationals, including asylum-seekers, are governed by the provisions of the Foreigners Act, 1946; the Registration of Foreigners Act, 1939; the Passport (Entry into India) Act, 1920; and the Citizenship Act, 1955, as well as the rules and orders framed under these laws.

- The Union government possesses the power to detain and deport foreigners and restrict their movements.

- The Indian government has no international obligation to enact legislation for refugees.

- For accessing legal entitlements and services, Indian citizenship is the only viable option for migrants.

- Most of the migrants are illiterate and unable to decipher the rules and regulations, which makes them vulnerable to deceit and exploitation by government officials.

- After getting citizenship, obtaining documents such as ration cards and caste certificates is not an easy task. They find it difficult to avail the benefits of healthcare, education and employment schemes.

Way Forward – Improving the lives of migrants:

- Pakistan High Commission should be persuaded to withdraw the increased fee for renunciation of Pakistani citizenship (mandatory before getting their Indian citizenship).

- They should be provided with easy facilities for the renewal of passports and identity cards.

- United Nations High Commissioner for Refugees should be approached for incorporating the minority migrants in its regular programmes for refugees.

- The gaps in livelihood development and rehabilitation status should be identified at the State level.

- A robust policy for rehabilitation needs to be introduced at the Central level for migrant families.

Miscellaneous

10. When two is too little

- » Prelims: TFR; Replacement level fertility; Dependency ratio

- » Mains: Concerns associated with state demographic intervention as observed in China; Indian experience and recommendations for India's population control policy

Context:

- China's Communist Party has introduced a "three child policy".

Background:

China's family planning policy:

- In a bid to limit the population explosion in China, it resorted to strong state-led demographic interventions. It was in this direction that it adopted its "one child policy" of 1979.

- It offers a reward and assistance system and preferential policies for those following family planning rules.

  * After the one child policy, China's fertility rate fell from 2.75 in 1979 to 1.69 in 2018.

- Recognizing the ill effects of its one child policy, China relaxed its stance on the number of children and introduced the two child policy in 2015. However, this measure too failed to boost birth rates

  * The recent population census recorded 12 million births in 2020, the lowest number since 1961.

Concerns associated with Chinese policy of family planning:

- Population control measures have landed China in a population crisis.

- China's demographic interventions have had the following unintended social and economic consequences.

Social consequences:

- The limitations on the number of children and the gender discrimination prevalent in the society led to a deeply gender-imbalanced population. Couples have been resorting to sex-selective abortions and this has reduced the sex ratio considerably. The skewed sex ratio has detrimental consequences for society.

- The number of aged people has been increasing steadily in China. As per the census, there were 264 million in the 60 and over age group, accounting for 18.70% of the population. The fast ageing population and the availability of very few people to take care of them would have a detrimental impact on their quality of life.

Economic consequences:

- The rapidly ageing population has reduced the workforce population and increased the dependency ratio.

  * The dependency ratio is an age-population ratio of those typically not in the labour force (the dependent part – ages 0 to 14 and 65+) and those typically in the labour force (the productive part – ages 15 to 64). It is used to measure the pressure on the productive population. A low dependency ratio means that there are sufficient people working who can support the dependent population. A higher ratio indicates more financial stress on working people.

- The rapidly ageing population threatens to limit the growth prospects of China.

Moral concerns:

- The intrusive family planning policy goes against the right to freedom of choice for the parents.

- The strict enforcement of the child policies in China has led to forced abortions and sterilisations.

Reasons for Chinese shift in family planning policy:

- The shift to the three child policy marks an acknowledgement of the consequences of China's intrusive family planning measures.

- The shift to the three child policy is aimed to improve China's population structure. It intends to tackle the challenge of the ageing population, and preserve the country's human resource advantages.

Lessons for India from Chinese experience:

- India has been toying with the idea of population control measures through a two-child norm, which found mention in the Prime Minister's Independence Day speech two years ago.

- The Chinese experience should serve as a warning for India that coercive population strategies can be counter-productive.

Indian experience:

Population growth in India:

- India, with 1.37 billion people, is the second-most populous country in the world. A report from the United Nations released in June had said that around 2027, India is set to overtake China as the world's most populous country.

- Birth rates are falling, but the population continues to grow as more than 30% of the people are young and in the reproductive age group.

Skewed progress:

- India has done very well with its family planning measures and the current fertility rate is at the replacement level fertility of 2.1, which is desirable.

  * Replacement level fertility is the level of fertility at which a population exactly replaces itself from one generation to the next.

- However, the pattern has been skewed. In some states like Sikkim, Andhra Pradesh, Delhi, Kerala and Karnataka, the total fertility rate is way below replacement level. The low fertility rates in Sikkim and Lakshadweep have led to challenges of an ageing population, shrinking workforce and an increase in sex-selective practices.

Recommendations for India:

Family planning as a national priority:

- Given that unchecked population growth could go against the efforts to bring millions of people out of poverty and undo the benefits of higher welfare spending for the poor, India needs to treat population stabilization and family planning as a national priority.

Addressing structural issues:

- Notably, even other developing countries, without stringent child-limitation policies like that of China, have also experienced declines in total fertility rates.

- This seems to suggest the fact that the mere relaxation or even abolishing of birth quotas would not help in raising the fertility rate and there is the need for governments to acknowledge and address structural problems like reducing the child-rearing costs (education and nutrition) borne by prospective parents. This critical aspect needs to be prioritized.

Focusing on population stabilization:

- India needs to focus its attention on population stabilisation measures rather than resort to coercive measures

* Population stabilization is a stage when the size of the population remains unchanged. It is also called the stage of zero population growth. Country-level population stabilization occurs when births plus in-migration equals deaths plus out-migration.

- The measures needed in this direction could include the following:

  * Incentivise later marriages and childbirths; ensuring a sufficient gap between childbirths.

  * Stepping up access to contraceptive choices and addressing socio-cultural barriers towards contraception.

  * Offering family planning support and investing in behaviour-change communication strategies and family planning.

International Relations: Relations between India and neighbouring countries

11. Comments to avoid in long-standing ties

  » Prelims: Teesta river and map based facts

  » Mains: India- Bangladesh relations- significance and challenges

Context:

- The article authored by the former High Commissioner to Bangladesh and Foreign Secretary Krishnan Srinivasan analyzes the India-Bangladesh bilateral relations.

Challenges in the India-Bangladesh relationship:

Border issue:

- India and Bangladesh share an approximately 4,100-kilometre land border.

- Despite the friendship remaining solid, the border has been sensitive. At least 25 Bangladeshis were killed in the first six months of 2020 along the border by Indian forces, according to a rights watchdog.

- Human trafficking and smuggling of arms, cattle, drugs through the unfenced borders is a serious security threat for India.

- Illegal migrants from Bangladesh pose socio-economic challenges in the bordering states.

River water sharing:

- The Teesta water dispute remains unresolved. This has had a drag on taking the relationship to a higher level.

- India and Bangladesh share almost 54 Transboundary rivers.

Trade imbalance:

- Despite robust trade relations between the two neighbours, there is a highly skewed balance of trade in favour of India. This has been a cause of concern for Bangladesh and there have been repeated calls from it to urgently address the trade imbalance by India adopting favourable trade policies.

  * Bangladeshi Foreign minister had recently called on India to provide a tariff-free facility for exports from Bangladesh

China factor:

- China is making deep inroads into Bangladesh by ramping up infrastructure investments (energy projects) and expanding economic cooperation.

Increasing radicalization:

- Bangladesh has continued to face challenges from radical forces.
- Groups like Harkat-ul-Jihad-al-Islami (HUJI) operating out of Bangladesh have been espousing anti-India sentiments.

Turbulent past:

- The turbulent history of Partitions; East Bengal that became East Pakistan and then Bangladesh, attended by enormous bloodshed and the abuse of human rights, has left emotional wounds.

Irritants in the relation:

- The Citizenship (Amendment) Act and the proposed National Register of Citizens have created a negative impression about India in Bangladesh.
- Statements being made by the politicians have strained the otherwise friendly relationship between the two neighbours.

Significance of the relationship:

For India:

- Can provide easy connectivity to the landlocked Northeastern states.

  * There has been considerable improvement in connectivity between India and its Northeast by land, river and the use of Bangladeshi ports.

- Important for the security of NE India as cooperation with Bangladesh can help neutralise/tackle the insurgent groups which otherwise seek refuge in neighbouring countries.
- Partnership can help balance China's growing influence in the region.
- Bangladesh is India's largest trading partner in South Asia. It offers a large market for Indian goods and also an avenue for investment.
- There are at least 100,000 Indian nationals now living and working in Bangladesh.

For Bangladesh:

- Bangladesh is nearly surrounded on all territorial sides by India.
- India is a major source of FDI into Bangladesh.
- Receives developmental assistance and lines of credit from India.
- Co-operation in the power sector:

  * It imports over 1200 MW of electricity from India.

  * Joint collaboration over Roopur nuclear plant.

- Humanitarian aid in times of need.

Unique relationship between India and Bangladesh:

- India shares a unique relationship with Bangladesh given the otherwise troubled bilateral relations in the Indian subcontinent.

  * India played a leading role in Bangladesh's liberation struggle and was its sole economic supporter in its early years of independence.

  * A significant proportion of the Bangladeshi population treasure the linguistic and cultural ties with adjacent India.

  * The cordial resolution of the dispute regarding the delimitation of the maritime boundary between India and Bangladesh marks a high mark of the bilateral relationship wherein international relations have been marred by an otherwise hostile approach to such issues. Eg. – South China Sea dispute.

  * The implementation of the Land Boundary Agreement is also a landmark event in the bilateral relationship in a region otherwise marked by border disputes.

Conclusion:

- To a certain degree, both India and Bangladesh depend on each other for security and stability.
- As quid pro quo for India's support to Bangladesh, while India expects that Bangladesh would keep India's concerns in mind when devising and pursuing its policies, India too should respect the sensibilities of the neighbouring country.
- India-Bangladesh relationship as a major pillar of India's 'neighbourhood first' policy. It is imperative for India to bolster ties with Bangladesh as a priority.
- India should leverage its unique relationship with Bangladesh to revive the bonhomie and address the issues adversely affecting the partnership.

12. The coming together of the powerful five

» Prelims: BRICS

» Mains: Initiatives taken by BRICS; Potential/ significance of the grouping and challenges therein

Context:

- In the light of India gearing up to host 2021's BRICS summit, the article analyses the potential of the grouping while also discussing the challenges being faced by the group.

  * BRICS is the acronym coined to associate five major emerging economies: Brazil, Russia, India, China, and South Africa.

Background:

History of BRICS:

- In 2006, leaders of the BRIC countries met in St. Petersburg, Russia, and the grouping was formalized.

- In 2009 the first BRIC summit was held in Yekaterinburg.

- South Africa was admitted in 2010 and attended the annual summit in 2011.

Challenges:

- The grouping is facing several challenges which have rendered the grouping ineffective in realizing its true potential.

Disputes between the member countries:

- There are multiple economic, territorial, and political disputes between the five constituent countries.

  * Border tension between India and China.

Economic underperformance:

- As against the original conception of BRICs as economies that would drive global economic growth in the future, no member apart from China, have fulfilled their economic potential.

  * South Africa's debt-laden economy and the negative current account have led to predictions of an economic collapse in the next decade.

  * Brazil's poor handling during the Covid-19 crisis has ranked it amongst the world's worst-affected countries, and its recovery is expected to be delayed.

  * India's economic slowdown has been a major concern.

Inherent divisions in the group:

- There is inherent differences between the members of the group with respect to the economic clout and power they enjoy in the global institutions.

  * China economic prowess remains unmatched in the group. While Russia and China enjoy higher per capita income indicative of economic development the other three members of the group have much lower per capita income levels.

  * Also given that China and Russia are already members of the UN Security Council, It remains to be seen how far they will go in advocating for the other BRICS members to be a part of a reformed Security Council.

Increasing alignment with the west:

- India, Brazil and South Africa have equal, if not stronger, strategic ties with western powers as compared to the other two members of the group- China and Russia.

- India's membership of the U.S.-India-Australia-Japan Quadrilateral Strategic Dialogue (Quad) and India's increasing alignment with the U.S. has cast a shadow over the future of the BRICS.

Lack of common vision:

- Disagreements between its members and lack of a common vision are major concerns in the grouping.

  * China's decision to launch the trillion-dollar Belt and Road Initiative in 2017 was opposed by India, and even Russia did not join the BRI plan, although it has considerable infrastructure projects with China.

Significance:

Equitable world order:

- BRICS was envisaged as an alternate grouping of emerging economies that challenge the post-War world order and establish a more equitable world order.

Significant initiatives:

- BRICS has created the New Development Bank (NDB), the BRICS Contingent Reserve Arrangement fund to deal with liquidity crunches, and a BRICS payment system proposing to be an alternative to the SWIFT payment system.

Political alignment:

- While the economic was the major Planck of cooperation between the member countries, political alignment has also been observed in certain instances.

- They have called for more inclusion in the multilateral world order, decrying U.S.-Europe backed military interventions, and expressing independent stances on several world events.

  * The recent BRICS ministerial meeting came out with the first "standalone" joint

statement on reforming multilateral institutions, including the UN and the UNSC, International Monetary Fund and World Bank and the World Trade Organization.

* The BRICS ministerial meeting also came out with an important agreement to support negotiations at the WTO for the waiver of trade-related intellectual property rights (TRIPs) for vaccines and medicines to tackle the Coronavirus pandemic. BRICS support at the WTO for the TRIPs waiver negotiations will be a boost for the effort.

Miscellaneous

13. 'China, India, Pak. expanding nuclear arsenal'

» Prelims: SIPRI

What's in News?

- Swedish think tank Stockholm International Peace Research Institute (SIPRI) Year Book 2021 has been released.

Highlights:

- The overall number of warheads in global military stockpiles appears to be increasing.

    * It signals that the declining trend that characterised global nuclear arsenals since the end of the Cold War has come to a halt.

- China is in the middle of significant modernisation and expansion of its nuclear weapon inventory. India and Pakistan also appear to be expanding their nuclear arsenals.

    * India and Pakistan are seeking new technologies and capabilities that dangerously undermine each other's defence under the nuclear threshold.

    * China's evolving profile as a nuclear weapons state is compounding India's security challenges.

- The nine nuclear-armed states — the U.S., Russia, the U.K., France, China, India, Pakistan, Israel and North Korea — together possessed an estimated 13,080 nuclear weapons at the start of 2021

- Russia and the U.S. together possessed over 90% of global nuclear weapons.

International Relations: Effect of policies and politics of developed and developing countries on India's interests

14. Cold peace

» Prelims: Geneva summit

» Mains: Significance of thaw in relations between US and Russia for India

Context

US President Joe Biden met Russian President Vladimir Putin in Geneva.

Details:

- The world leaders met for the first time in a decade.

    * They last met when the Russian leader was prime minister and Biden was serving as vice president, in 2011

- Relations between the two countries have hit the lowest point in recent years since the end of the Cold War.

    * The U.S. has accused Russia of interfering in its elections and launching cyberattacks and criticised its stifling of internal dissent.

    * Russia has slammed America's interventionist foreign policy.

History of the U.S.-Russia ties:

- There are structural issues in the U.S.-Russia ties.

- When Russia ended its post-Soviet strategic retreat and adopted a more assertive foreign policy under Mr. Putin (partly in response to NATO expansion into eastern Europe) the West saw it as a threat to its primacy.

- The 2008 Georgia war severely affected the relations between democratic Russia and the West.

- In 2014, the annexation of Crimea renewed tensions.

    * Russia was thrown out of the G8, and western sanctions followed.

- Ties hit rock bottom with allegations that Russian intelligence units carried out cyberattacks and ran an online campaign to get Donald Trump elected President in the 2016 U.S. election.

- Russia, which had amassed troops on the Ukraine border, sees NATO's expansion into its border region as a threat

Significance of the meeting:

- All these geopolitical and bilateral issues cannot be resolved in one summit. They can take measures to prevent relations from worsening.

- The Geneva summit has set a pragmatic tone for engagement between the two competing powers.

- The summit demonstrated a willingness to strengthen engagement and reduce tensions.

- Despite the differences, the leaders held talks on all critical issues, bringing diplomacy to the centre stage.

- They have decided to return their Ambassadors to the Embassies.

- They announced a strategic stability dialogue to discuss terms of arms control measures.

Way Forward:

- Both countries should be ready to address their critical concerns.

- They must agree to a cold peace, which would help in addressing other geopolitical problems such as Syria.

- Russia should understand the importance of cooperating with the West. Permanent hostility with other powers cannot be of much help to Russia.

- The U.S. should be less pessimistic about Russia's foreign policy goals. Russia, despite its weakened economic status, remains a great power.

Conclusion:

- The message from Geneva is that the leaders wanted to establish rules of engagement so that the countries can better address their differences and seek common ground on issues of mutual interest. With some predictability in ties with Russia, Mr. Biden can strengthen his China-focused foreign policy. And with a less hostile America, Mr. Putin can retain Russian influence in its backyard.

International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's Interests

15. A Cold War relic that's seeking a new purpose

- » Prelims: NATO-members; Washington treaty
- » Mains: Challenges/concerns associated with NATO

Context

- The 2021 Brussels summit of the North Atlantic Treaty Organization (NATO).

  - * A NATO summit is the gathering of the leaders of NATO's 30 member countries.

Background:

- The North Atlantic Treaty Organization is an intergovernmental political and military alliance between 30 European and North American countries.

  - * NATO happens to be the world's largest military alliance.

- It is based on the Washington Treaty or North Atlantic Treaty which was signed in 1949 by 12 founding members.

  - * NATO's essential and enduring purpose is to safeguard the freedom and security of all its members by political and military means.

- * Collective defence is the major aspect of the Treaty and is enshrined in Article 5, whereby the member states agree to mutual defence in response to an attack by any external party.

- * The collective defence principle states that "an attack against one ally is considered as an attack against all allies".

- The Soviet Union's imposition of the Berlin blockade of 1948-49 and the support to the coup in Czechoslovakia in 1948 galvanized the war-ravaged European nations to come together under an American security blanket as a counter to the Soviet Union's communist expansion in the region. The formation of NATO, and its Soviet counterpart, the Warsaw Pact, in 1955, marked the beginning of the Cold War era.

- Originally formed by 12 Allied powers to counter the massive Soviet armies stationed in Eastern and Central Europe after the Second World War, the membership and mandate of the organization has increased over the years. Starting with 12 founding countries, NATO currently has 30 members.

- NATO's Headquarters is located in Brussels, Belgium.

Details:

- Major topics under discussion included NATO's role in the changing geostrategic environment and concrete measures to adapt the Alliance, as part of the NATO 2030 agenda.

- At the NATO Summit, the NATO Leaders took decisions on a wide range of topics to address the current and future security challenges. This included Russia's pattern of aggressive behaviour, terrorism, cyberattacks and disruptive technologies, the rise of China, and the security implications of climate change.

Concerns:

Source of concern for US and Russia bilateral relations and its implications:

- Tensions with Russia have been an inevitable outcome of NATO's bid to expand eastward into what Russia considers its sphere of influence.

  - * NATO's membership today stands at 30, having added 14 members between 1999 and 2020.

- The move to bring countries such as Ukraine, Georgia and Moldova under NATO has led to a confrontation with Russia.

- Russia in a move which it claims sought to protect its interests, annexed Crimea and has stationed its troops in Georgia and Moldova. This has increased concerns over escalation of tensions in the region further.

Potential source of conflict between the US and China:

- In the latest communiqué issued following the recent summit, NATO for the first time, explicitly described China as a security risk. The communiqué notes China's stated ambitions and assertive behaviour as presenting systemic challenges to the rules-based international order and to areas relevant to NATO alliance's security.

- The U.S. is trying to push NATO to take a stronger position towards China in line with the U.S.'s growing conviction of China being a threat to its global supremacy and need for it to be contained.

- China has reacted strongly against this observation and has warned against artificially creating confrontations.

- Academicians have pointed that unlike the Soviet Union, China offers no alternative vision of society that should make Western capitalism insecure and view the U.S. led policy as nothing but regressive policy based on American exceptionalism. This could only lead to increased confrontation.

- The paradigm shift of NATO's mandate from collective defence, which implied a known adversary, to collective security, which is open-ended, and might require action against any number of threats, including unknown ones and non-state actors does not augur well for global peace and security and could render the NATO liable to misuse for vested interests.

Differences between the member nations:

- The continued persistence of NATO could be the fact that it has been a mutually beneficial arrangement for the members. The NATO alliance offers security to European member countries, while for the U.S., it has been an vehicle for power-projection around the world

  * The European members have been able to enjoy absolute security at a cheap price in exchange for a marginal loss in autonomy.

  * For the U.S., NATO has been a vehicle for power-projection around the world including in places such as Iraq, Afghanistan and Libya. The US views NATO as a tool to ensure the primacy of American interests across the globe. It has been able to get its NATO allies to be part of the US's wars in Afghanistan, Iraq by getting them to send troops and invest resources.

- Recent years have witnessed some differences between the member nations.

  * The sharing of the burden of financial resources between the member nations has been an area of friction between the U.S. and the European states as the US bears nearly 70% of NATO's bills. Some members do not send troops to conflict outside Europe and most contribute less than their share of financial resources

  * There has been growing differences between the increasingly assertive European member nations and the U.S. with European nations being wary of being dragged into confrontations that may necessarily not serve Europe's interests.

    » For example, with respect to the recent NATO communiqué, both France and Germany have sought to distance themselves from NATO's official position on China. NATO's European member states have sought to underplay the security threat posed by China in the North Atlantic region and view China as only an economic rival and adversary.

International Relations: India's bilateral relations with Russia

16. **The comrades and their divergent perspectives**

  » Mains: India-Russia divergent perspectives in global geopolitics and its impact on the bilateral relations

Context:

- The article discusses the increasingly divergent perspectives of India and Russia in global geopolitics and analyzes its potential impact on bilateral relations.

Russia's perspectives:

On India-China standoff:

- Russian President through his recent statement on the India-China border standoff and ongoing de-escalation talks had emphasized the need to debar any "extra-regional power" to interfere in the process.

- The foreign policy experts point out this as an indication of Russia's indifference towards India's legitimate concerns and the downplaying of China's coercive military pressure against India.

On Quad and the Indo-Pacific strategy:

- Russia through its criticism of the Quad and the Indo-pacific strategy has been reinforcing China's claim that the Quadrilateral Security Dialogue or Quad is aimed at containing Beijing's influence in the Indo-Pacific region.

- Russia has rejected the Indo-Pacific construct in favour of the Asia-Pacific one on the grounds that the Indo-Pacific construct is primarily an American initiative designed to contain both China and Russia.

India's deepening relationship with the West:

- Russia views the India-U.S. rapprochement as part of U.S. attempts to expand its zone of influence.

India's stand:

On standoff with China:

- India claims the Chinese incursion and break from the status quo as being factors for the current standoff and terms China as the aggressor.

- China's border moves seem to be part of its larger effort to undermine India's global position and to reduce India to a state of isolation and impotence in global affairs.

- Given China's increasingly assertive behaviour, which goes against all the conventional rules of international politics, India seems to be attempting to rally support for itself against Chinese hegemony.

On Quad and Indo-Pacific strategy:

- India's support for the Indo-Pacific construct is an indication of India's attempt to re-imagine a new geostrategic maritime role for itself beyond the confines of the Malacca Strait and the Gulf of Aden.

- India has repeatedly asserted that no country can have a veto on India's participation in the Quad and it will be led by its national interest objectives.

On strategic ties with the U.S. led west:

- The bitterness and mistrust between the Union of Soviet Socialist Republics (USSR) and China during the Cold War provided India leeway to use USSR as a counterweight against the Chinese. However, the disintegration of the USSR changed this. Russia was much weaker than the erstwhile USSR and incapable of helping India balance the potential threats from China and this pushed India to diversify its relationships with other countries as an external balancing strategy against China.

- Russia had been trying to build a trilateral grouping of Russia-India-China against a U.S.-led unipolar world. Though India did become a part of this grouping in the initial years, China's dismissive attitude toward Indian capabilities, coupled with an emerging China-Pakistan nexus, prevented the success of this trilateral. India, instead, invested its diplomatic energies in rapprochement with the United States and has built a strategic partnership with the U.S.

- Given Russia's inability to influence the India-China relationship and given the increasing hegemony of China, multilateral forums such as the Russia-India-China (RIC) grouping and BRICS (Brazil, Russia, India, China and South Africa) have little practical value for Indian diplomacy.

- India has become integrated in the global economic order and has strategic economic relations with the U.S. led west.

- India has shed its traditional reliance on Russia for arms imports and has started to buy sophisticated weapons from a wider global market including countries such as the U.S., Israel and France.

- As part of its external balancing strategy, India has also deepened its ties with Japan and Australia.

- The increasingly assertive behavior of China seems to be only pushing India into a closer relationship with the U.S. which considers China a threat to its own global supremacy.

Other irritants in the bilateral relation:

- The deepening engagement between Russia and Pakistan has generated some unease in India. The increasing military cooperation via defence equipment sales and "friendship" exercises between the two armies point to the deepening of ties between the two countries.

The author's take:

- The article criticizes the current Russian foreign policy as being based on a flawed assessment of the current situation. It warns against obsessive preoccupation with Russia's 'status' rivalry with the U.S.

- The article suggests that Russia in fact stands to gain immensely from the multilateralism that the Indo-Pacific seeks to promote, and being China's junior partner only undermines Russia's great-power ambitions.

Conclusion:

- Despite some great changes in the global and regional politico-security environment, India has been able to maintain amicable ties with Russia. However, the recent events seem to be straining this bilateral relation.

- The divergent perspectives of India and Russia have only increased over the last few years.

- While India continues to engage with Russia, it cannot endorse the Russian perspective on the Indo-Pacific and the Quad.

- The recent Geneva summit between the U.S. and Russian Presidents holds immense significance for India given that a normalisation of relations between Washington and Moscow will have a profound impact not just on the two countries but will also diminish Russia's propensity to closely coordinate its South Asian policies with China.

- The Russian attitude toward China's growing power and influence will be the touchstone of Russia's relations with India as an increasingly pro-Beijing Russia might adopt more aggressive blocking of India's policy agendas.

International Relations: India's foreign policy

17. Staging a comeback, re-energising India's Africa policy

» Prelims: African Union; Delhi declaration;

» Mains: India-Africa relations- Significance of the relationship; challenges and recommendations

Context:

- The article analyzes the India-Africa bilateral relations and carries out a critical review of India's Africa foreign policy implementation.

India-Africa relations:

- The relations between India and Africa have long historical roots. For many centuries, the peoples of the two parts of the world have interacted at the levels of economics, politics, and socio-cultural practices.

- After independence, India rapidly built up political ties with the newly independent countries and freedom movements in sub-Saharan Africa as well as with the countries in northern Africa. In the 1950s, 60s and 70s, India enjoyed strong political and brotherly bonds with many of the African nations.

    * India was one of the key organizers of the Asian-African Conference, held in Bandung, Indonesia, in 1955.

- India's ties with Africa have been stepped up in the last two decades both bilaterally and with the regional economic communities, initially with the Southern African Development Community (SADC) and Team-9 and continentally through the African Union (AU).

- A structured engagement with Africa took shape in 2008 with the First India Africa Forum Summit (IAFS-I). The Third India Africa Forum Summit (IAFS-III) of 2015 was a landmark event with delegations representing all African countries.

- The 'Delhi Declaration 2015-Partners in Progress: Towards a Dynamic and Transformative Development Agenda' was adopted at the conclusion of IAFS-III and so was the India-Africa Framework for Strategic Cooperation.

- The current administration too has designed a forward-looking strategy to deepen relations with African countries and has backed it with the requisite political will in expanding the multi-faceted engagement with African nations.

Significance of Africa for India:

- Africa is considered a foreign policy priority by India for the following reasons.

Economic aspects:

- Africa today is definitely a 'happening continent'.

- Africa is home to over half a dozen of the fastest-growing countries of this decade which has led to some referring to Africa as the future growth pole of the world. Africa has witnessed rapid expansion in sectors like tourism, banking, telecommunications, manufacturing and agriculture.

- Most of Africa is experiencing moderate to healthy economic growth rates, which is fuelling the growth of its middle class and demand for more goods and services. Africa's growing middle class, already expected to be bigger than India's, continues to boost consumption, construction and private investment.

- Thus Africa will be a high priority area for India in the economic and commercial sphere.

- Indian exports to Africa of manufactured products like medicines, automobiles, two-wheelers, iron and steel products, plastics, machinery and engineering processes, etc. as well as refined petroleum products are quite substantial and growing. Africa provides an alternate destination to such manufactures from India whose exports to traditional destinations in Europe and North America are on the decline, and helps to prop up the 'Make in India' campaign.

- India is among Africa's largest trading partners. India's exposure in terms of investments in Africa is also considerable. Thus bilateral trade and investment compel India to pay attention to the African market.

    * The bilateral trade is valued at $55.9 billion in 2020-21.

    * India's top five markets today are South Africa, Nigeria, Egypt, Kenya and Togo. The countries from which India imports the most are South Africa, Nigeria, Egypt, Angola and Guinea.

    * India's top three exports to Africa are mineral fuels and oils (processed petroleum products), pharmaceutical products and vehicles.

    * Mineral fuels and oils (essentially crude oil) and pearls, precious or semi-precious stones are the top two imports accounting for over 77% of our imports from Africa.

Geographical aspects:

- India and Africa share a millennial old connection given the geographic proximity of India and Africa. In that sense, Africa is a neighbour and both share large coastal areas along the strategic Indian Ocean region.

Substantial Diaspora population:

- A significant number of people of Indian origin have, over two centuries of outward migration, made large parts of southern and eastern Africa their home.

- Members of the Indian diaspora reside in around 46 countries of Africa. Indians in Africa account for 12.37% of the total diaspora in India over time.

- The large populations of Indians within Africa could be the cause of the political support Africa is seeing from India now.

Source of critical commodities:

- Africa supplies a vast basket of goods to India which is dominated by commodities, particularly crude oil, gas, pulses and lentils, leather, gold and other metals, all of which India lacks in sufficient quantities.

- The diverse sources in Africa provide some protection against the vulnerability of depending on just one or two regions for their supply.

Geopolitical aspects:

- African countries tend to take a unified stand on such multilateral issues after discussions and deliberations at the African Union consisting of 55 members. Africa's support would be inevitable for India's policy agenda of UN reforms and India's bid for a permanent UN Security Council seat.

  * India and Africa have often held common positions in global platforms and worked together to guard the interests of other developing countries.

- A robust relationship with Africa constitutes an important part of India's South-South Cooperation platform.

China factor:

- Trade between China and Africa has been increasing at an exponential pace and China is currently Africa's largest trading partner.

- The increasing economic heft of China has resulted in China enjoying critical political support among the political classes of Africa.

- China enjoys a significant military presence in the region.

  * In July 2017, China set up its first overseas military base in Djibouti as a logistics facility for peacekeeping missions on the continent.

- There have been increasing international concerns over the significant political, economic, and military roles that China is playing in the African continent, more so for India given the increasing Chinese presence on the coastline of the strategic Indian Ocean.

  * Various security analysts have described the increasing presence of China as part of its "String of Pearls" geopolitical and military strategy in the Indian Ocean.

- Thus cultivating good relations with African nations is an inevitable need for India to counter the Chinese plans in the Indian Ocean region.

Significance of India for Africa:

Developmental aid:

- Through its Technical and Economic Cooperation (ITEC) programme India has been providing technical assistance through human resource development to other developing countries, with African countries being the greatest beneficiaries of it.

- India has been aiding development in Africa by contributing to African institutions through training and capacity-enhancing assistance.

  * India has invested substantial amounts to establish educational institutions and training programs in several African countries.

  * In 2006, India launched its flagship aid initiative in Africa by constructing the $125 million Pan-African e-Network, the continent's largest tele-education and telemedicine initiative. The network links 47 African countries with schools and hospitals in India through satellite and fibre-optic links.

- The values that steer India's development cooperation — demand-driven, conditionality free and based on the principle of partnership among equals — are appreciated in Africa.

Aiding economic growth:

- India has been a major aid contributor to economic development in the African continent through grants and concessional lines of credit.

Medical aid:

- The availability of Indian-manufactured drugs has also been essential in the fight against the HIV and AIDS pandemic in Africa.

- Even as the COVID-19 era began in March 2020, New Delhi took new initiatives to assist Africa through prompt despatch of medicines and later vaccines.

Security aspects:

- In security matters, India has also assisted African countries to fight against terrorism through the provision of arms and training of military personnel.

- India also participates in UN-led peacekeeping missions across Africa.

Concerns:

- Following are some of the concerns with regard to India-Africa relations.

Bilateral economic relations:

- India-Africa trade is on a decline. According to the Confederation of Indian Industry, bilateral trade in 2020-21 has fallen by $10.8 billion compared to 2019-20, and $15.5 billion compared to the peak year of 2014-15.

- The composition of the India-Africa trade has not changed much over the two decades thus indicating the failure to diversify the bilateral trade relations.

- India's investments in Africa too have witnessed a decline from $3.2 billion in 2019-20 to $2.9 billion in 2020-21. Total investments from India into Africa over the last 25 years account for only about one-third of China's investment in Africa.

Global competition for Africa and India found lagging:

- Africa has experienced a sharpened international competition, known as 'the third scramble', in the first two decades of the 21st century.

- A dozen nations from the Americas, Europe and Asia especially the United States, the European Union (EU), China, Japan and India have striven to assist Africa in resolving the continent's political and social challenges and, in turn, to benefit from Africa's markets, minerals, hydrocarbons and oceanic resources, and thereby to expand their geopolitical influence.

- Africans have been deeply affected by the COVID-19 pandemic and remain ill-equipped to tackle it.

- While China has successfully used the pandemic to expand its footprint by increasing the outflow of its vaccines, unfortunately, India's 'vaccination diplomacy' has suffered during the devastating second wave of the pandemic in India. India which has traditionally ensured the flow of aid to Africa has been found wanting as it has been caught up in coping with the novel coronavirus pandemic.

India's changed foreign policy priorities:

- Geopolitical tensions in Asia and the imperative to consolidate its position in the Indo-Pacific region have compelled India to concentrate on its ties with the United Kingdom, the EU, and the Quad powers, particularly the U.S. Consequently, the attention being paid to Africa is on the wane.

Way forward:

- For mutual benefit, Africa and India should remain engaged at all levels – political and economic.

- The future engagement must recognize and acknowledge the historical and current context of relations between India and Africa and the effect of cross-cutting multilateral issues between the two as envisaged in the Delhi Declaration.

- India should focus on according Africa an important place in its diplomacy and economic engagement.

  * The third India-Africa Forum Summit was held in 2015. The pending fourth summit of the India-Africa Forum Summit should be held as soon as possible.

  * Fresh financial resources for grants and concessional loans to Africa must be allocated.

  * India should seek to improve the economic relations with emphasis on developing and deepening collaborations in health, space and digital technologies.

- To overcome the China challenge in Africa, increased cooperation between India and its international allies seems inevitable.

  * Just like the recent India-EU Summit where Africa has been identified as a region for a partnership-based approach, similarly, India should propose a robust partnership plan for Africa in the Quad deliberations.

International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests

18. G7

» Prelims: G7 members; Recent summit- highlights; B3W initiative and Carbis bay declaration

» Mains: Strengths and challenges of G7

- The Group of 7 (G7) is an informal group of seven countries — the United States, Canada, France, Germany, Italy, Japan and the United Kingdom, the heads of which hold an annual summit with European Union and other invitees.

- 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.

- The G7 draws its roots from a meeting between the current G7 members, excluding Canada that took place in 1975.

  * At the time, the global economy was in a state of recession due to the OPEC oil embargo.

  * As the energy crisis was escalating, US Treasury Secretary decided that it would be beneficial for the large players on the world stage to coordinate with each other on macroeconomic initiatives.

- After this first summit, the countries agreed to meet annually and a year later, Canada was invited into the group which marked the official formation of the G7 as we know it.

- The G7 became the G8 with Russia's admission into the group in 1998. But it reverted to the G7 in 2014, following Russia's annexation of Crimea.

Meetings

- 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.

- At the end of the summit, the country hosting the meeting will publish a document called a communique which will outline what has been agreed upon during the meeting.

Agenda

The G7 summit provides a forum for member countries to discuss shared values and concerns.

- While it initially focused on international economic policy, in the 1980s, the G7 extended its mandate to include issues related to foreign policy and security as well.

- In recent years, G7 leaders have met to formulate common responses to challenges encompassing counterterrorism, development, education, health, human rights and climate change.

Cornwall summit

- The G7 summit was held at a resort in Cornwall, in the south-west of England. The following are the major takeaways from the day of the summit.

"Build Back Better World" (B3W) project:

- The "Build Back Better World" (B3W) project envisages to collectively mobilize hundreds of billions of infrastructure investment for low- and middle-income countries.

- The B3W project aims to offer a "values-driven, high-standard and transparent" partnership.

Carbis Bay Declaration:

- The 'Carbis Bay Declaration' is a landmark global health declaration aimed at preventing future pandemics under which G7 leaders have committed to use all their resources.

- The declaration based on the independent report titled '100 Days Mission to Respond to Future Pandemic Threats' contains actionable recommendations on how governments and others can quickly respond to any future outbreaks.

- The G7 Carbis Bay declaration includes the following interventions:

    * Slashing the time taken to develop and licence vaccines, treatments and diagnostics for any future disease to under 100 days

    * Reinforcing global surveillance networks and genomic sequencing capacity

    * Support for reforming and strengthening the World Health Organization (WHO)

- Under the Carbis Bay Declaration, the UK, which holds the presidency for the G7 Leaders' Summit 2021, will establish a new centre to develop vaccines to prevent zoonotic diseases spreading from animals to humans.

- The G7 nations are expected to collectively agree to provide a billion doses of Covid-19 vaccine in an effort to end the pandemic in 2022.

Tackling China:

- The summit saw leaders addressing the issue of "strategic competition" with China. The various initiatives announced during the summit can be viewed as moves to counter China and its moves.

    * The B3W project is aimed to counter China's Belt and Road infrastructure (BRI) initiative. The emphasis on a transparent partnership stands in strong contrast to China's BRI which has been widely criticized for pushing countries with unsustainable debt levels.

    * The G7 Carbis Bay declaration on reinforcing global surveillance networks to identify early threats from diseases appears as a veiled reference to China's failure to notify the world early regarding the COID-19 pandemic.

    * The UK which holds the presidency for G7 Leaders' Summit 2021, has invited India, along with Australia, South Korea and South Africa, as guest countries. The presence of India, Australia and South Korea at the G7 summit is seen as a nod to the recognition of their discontent with the influence of China.

Strengths of the G7:

- The group is officially organized around shared values of pluralism, representative government, and globalism. It steadfastly promotes liberal democracy.

- Though it began as a forum for economic cooperation, over the years, the G7 has taken up a host of issues ranging from economic growth to environmental issues and terrorism.

- The G7 has been a formal, high-profile venue for discussing and coordinating solutions to major global issues in varied areas like trade, security, economics, and climate change. It has catalyzed or spearheaded several major global initiatives. The G7 agreement on a global minimum corporate tax being such an example.

- Given the significant economic prosperity they enjoy, the member countries wield enormous power and international influence in global affairs.

Challenges:

Internal differences:

- The transactional approach to international relations under the Trump administration of the U.S. had cast doubts over the future of the G7.

- The Brexit issue has cast a shadow over the ties between the U.S. and the U.K. The current U.S. administration has steadfastly opposed Brexit and has raised concerns over Britain's dispute with the EU over Northern Ireland.

- There continue to be some differences over economic issues between the member countries. Example- Taxation of the Big Tech.

Decline in economic dominance:

- From collectively producing around 70% of the world's GDP during the initial years, this number has come down to 40% over the years.

The rise of other groupings:

- The group has been criticized for its outdated and narrow global representation. The narrow global representation has also resulted in its ineffectualness to an extent.

- The larger G20 has become a more relevant multilateral body due to the inclusion of developing economies such as Brazil, China, India and South Africa.

Conclusion:

- The summit coming after a tumultuous period marked by transactional approach to international relations under the Trump administration of the U.S. is an indication of the new administration's intent to build closer coordination with traditional allies in the Global North and renewed multilateralism.

- Despite the existing challenges to the G7, the G7's ability to set the tone for cooperation on global issues has not diminished and this needs to be used to revive the emphasis on multilateral co-ordination and co-operation in the spirit of globalization.

- The G7 will have to take along other nations in the broader G20 to increase the effectiveness of its initiative.

International Relations: Bilateral, regional and global groupings and agreements involving India and/or affecting India's Interests

19. **G7 accommodates Indian stand on need for Internet curbs**

   » Prelims: G7 summit

Context:

- India signed off on a joint statement by G-7 and guest countries on "open societies" after making its reservations known to the negotiators from G-7 countries.

Details:

- The 'Open Societies Statement' was adopted at the end of a G7 outreach session titled 'Building Back Together—Open Societies and Economies' where India's Prime Minister was invited as a lead speaker.

- The joint statement was signed by the G-7 countries, and India, South Korea, Australia and South Africa.

  * The British Prime Minister Boris Johnson termed them "Democracies 11".

- While the statement is directed at China and Russia, India has been under scrutiny over

  * Internet curbs in Jammu and Kashmir.

  * Face-off over its new IT rules with tech giants such as Twitter.

- The 'Open Societies Statement' reaffirm and encourage the values of "freedom of expression, both online and offline, as a freedom that safeguards democracy and helps people live free from fear and oppression".

- The statement also refers to "politically motivated internet shutdowns" as one of the threats to freedom and democracy.

India's Stand:

- India has been a special guest to the G-7/G-8 since 2003.

- However, it has also maintained its independent course, especially on political issues.

- India voiced concerns about some clauses in the joint communiqué on Open Societies which condemned rising authoritarianism, net shutdowns, manipulation of information, and rights violations.

  * These are the areas where the Indian government has often been criticised.

- India's External Affairs Minister who had participated in the G-7 Foreign Ministers meeting had said that "open societies and personal freedoms require careful nurturing. Must be on guard against fake news and digital manipulation."

- India signed off on the statement after making its reservations known to the negotiators from the G-7 count.

- Government sources said that India's tough negotiations on the joint communique had ensured that the original language criticising Internet shutdown was amended to include India's concerns.

  * "Politically motivated Internet shutdowns" clarified that national security and public order concerns are an exception to the need for Internet freedoms.

Conclusion:

- India had one of the largest number of Internet shutdowns in 2020. In the present, the Indian Government will be expected to walk the talk on its commitments at the G-7 outreach, especially in the areas of information clampdowns.

ART AND CULTURE

Art and Culture - Important Personalities

1. Kabir Das

» Prelims: Kabir Das

» Mains: Contributions by Kabir Das to the bhakti movement in India

Context:

• Kabir Das Jayanti is observed on the JyeshthaPurnimatithi, as per the Hindu lunar calendar. It marks the birth anniversary of Bhakti saint Kabir Das.

About SantKabir Das:

• Kabir Das was a 15th century mystic poet-saint who profoundly influenced the Bhakti movement in India.

• Born in Varanasi, he was a disciple of Bhakti saint Ramananda.

• He is said to have criticised organised religion and questioned many meaningless practices of both Hinduism and Islam.

• Kabir's poems and Dohas written in vernacular Hindi influenced by Braj and Awadhi dialects inspire people to this day.

  * A major part of Kabir's work was collected by Guru Arjan Dev, the fifth Sikh guru, who incorporated them into the Sikh scripture, Guru Granth Sahib.

  * Kabir's works consist mostly of two-line couplets, known as 'Kabir ke Dohe'.

  * His greatest work is the Bijak (the 'Seedling').

Art and Culture - Festivals

2. Raja Parba

» Prelims: Raja Parba

» Mains: Relevance of local festivals in cultural heritage of India

Context:

• PM greeted the people of Odisha on the occasion of Raja Parba.

What is Raja Parba?

• Raja Parba is a festival celebrated in Odisha.

• The second day signifies beginning of the solar month of "Mithuna" marking the beginning of rains.

• The festival falls in mid-June.

• The first day is called Pahili Raja, second day is called MithunaSankranti, and the third day is Bhudaaha or Basi Raja.

• It is believed that the mother Goddess Earth or the divine wife of Lord Vishnu undergoes menstruation during the first three days.

• The fourth and final day is called Vasumatisnana (bathing of Mother Earth). Women worship a stone that symbolises the Mother Earth. They give her a bath with turmeric paste, offer her flowers and smear her with Sindoor.

• The term Raja has come from Rajaswala (meaning a menstruating woman) and during medieval period the festival became more popular as an agricultural holiday remarking the worship of Bhudevi, who is the wife of Lord Jagannath.

• During the first three days, women are given a break from household work and time to play indoor games. Girls adorn traditional saree and apply alatha on foot. All people abstain from walking barefoot on earth.

- During the Parba, Odia people do not undertake any construction works or tilling that requires the earth to be dug. And by not doing such activities, they pay ode to Mother Earth who needs a break from routine work.
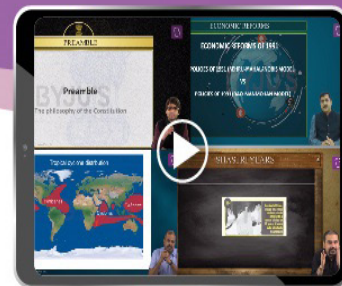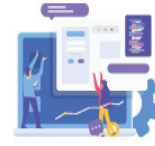
SCIENCE AND TECHNOLOGY

Awareness in the field of Space

1. CHIME telescope

» Prelims: CHIME telescope; Fast Radio bursts

Context

- Scientists with the Canadian Hydrogen Intensity Mapping Experiment (CHIME) Collaboration have assembled the largest collection of Fast Radio Bursts (FRBs) in the telescope's first FRB catalogue.

Fast Radio Bursts (FRB)

- FRBs are oddly bright flashes of light, registering in the radio band of the electromagnetic spectrum, which blaze for a few milliseconds before vanishing without a trace.
- FRBs have been spotted in various and distant parts of the universe, as well as in the Milky Way.
- Their origins are unknown and their appearance is highly unpredictable.

Details:

- CHIME collaboration includes researchers at the Pune-based Tata Institute for Fundamental Research (TIFR) and the National Centre for Radio Astrophysics (NCRA).
- It is a large stationary radio telescope in British Columbia, Canada.
- CHIME comprises four massive cylindrical radio antennas located at the Dominion Radio Astrophysical Observatory, operated by the National Research Council of Canada.
- The telescope receives radio signals each day from half of the sky as the Earth rotates.
- CHIME focuses incoming signals using a 'correlator'.
  * Correlator is a powerful digital signal processor that can work through huge amounts of data, at a rate of about seven terrabytes per second.
  * This enables CHIME to reconstruct and look in thousands of directions simultaneously, helping it detect FRBs a thousand times more often than a traditional telescope.

Observations:

- The telescope has detected 535 new fast radio bursts in its first year of operation itself (2018-2019).
- Most bursts likely originated from far-off sources within distant galaxies.
- Scientists have recorded FRBs that repeat and those that don't.

- Repeating FRBs last slightly longer and emit more focused radio frequencies than bursts from single, non-repeating FRBs.
- They are evenly distributed in space, seeming to arise from all parts of the sky.
- Scientists calculated that bright fast radio bursts occur at a rate of about 800 per day across the entire sky.

Significance:

- Catching sight of an FRB is considered a rare thing in the field of radio astronomy.
- Prior to the CHIME project, radio astronomers had only caught sight of around 140 bursts in their scopes since the first FRB was spotted in 2007.
- CHIME project has nearly quadrupled the number of fast radio bursts discovered to date.
- With more observations, astronomers hope to find out their extreme origins and properties.
- They plan to use the bursts, and their dispersion estimates, to map the distribution of gas throughout the universe.

Miscellaneous

2. MoU for Promotion of Cultivation and Production of Medicinal Plants

» Prelims: CSIR-NBRI

Context:

- MoU for Promotion of Cultivation and Production of Medicinal Plants signed between the National Medicinal Plant Board (NMPS) and the National Botanical Research Institute (CSIR-NBRI).

Details:

- The MoU will facilitate the development of Quality Planting Material (QPM) of medicinal plants and herbs identified by the NMPB.
- It will also help in the establishment of their nurseries for QPM, development, promotion, conservation and cultivation of the appropriate medicinal plants in different agro-climatic zones, including the threatened medicinal plant species and plants for the high-altitude regions.

About National Botanical Research Institute (NBRI):

- The CSIR-National Botanical Research Institute (NBRI) is a constituent research institute of the Council of Scientific and Industrial Research (CSIR).

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- Originally set up as the National Botanic Gardens (NBG) by the State Government of Uttar Pradesh, it was taken over by the CSIR in 1953.

- It was renamed to its current name in 1978.

- Objectives:

  * Basic and applied research on plant diversity and prospection, plant-environment interaction and biotechnological approaches for plant improvement.

  * Development of technologies for new plant and microbial sources of commercial importance

  * Building up germplasm repository of plants of indigenous and exotic origin, including rare, endangered and threatened species

  * Providing expertise and assistance for identification, supply and exchange of plants and propagules, garden layout and landscaping

  * Dissemination of scientific knowledge and technologies on plants and microbial resources through publications, training, capacity building and extension activities

Science and Technology - Achievements of Indians in science and technology; indigenization of technology and developing new technology

3. **New eco-friendly process enhances fatigue life of aluminium alloy used in aerospace components**

   » Prelims: Corrosion; Fatigue life

   What's in the News?

   - Indian scientists have developed an environmental-friendly process, which can provide excellent corrosion resistance to the high-strength aluminium (Al) alloys extensively used in aerospace, textile, and automotive applications.

   - It involves an electrochemical method for the production of an oxide film on the metallic substrate.

   Background:

   - High-strength aluminium alloys are extensively used in aerospace, textile, and automotive applications owing to their low density and high specific strength.

   - Aluminium alloy components are used in landing gear, wing spar, fuselage, aircraft skins or outer surface and pressure cabins; parts which need resistance against wear, corrosion damages, and enhanced fatigue life.

   - Currently, the widely used technique to enhance corrosion resistance is the hard anodizing (HA) process.

   * This process involves an electrolyte-based coating deposition using sulphuric/oxalic based electrolytes, which emits not only toxic fumes but are also hazardous to handle during processing.

   The new development:

   - In order to cater to the growing demand for cleaner industrial processes, an environmental-friendly process called micro-arc oxidation (MAO) has been developed at the International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), an autonomous institute under the DST.

   Micro-arc Oxidation (MAO):

   - The process which involves an alkaline electrolyte is capable of providing better wear and corrosion resistance compared to the HA process.

   - It is a high-voltage driven anodic-oxidation process, which through an electrochemical method, produces an oxide film on metallic substrates.

   - The MAO process developed at ARCI has been patented in India and abroad.

Governmental Initiatives

4. **SERB-FIRE**

   » Prelims: SERB-FIRE program

   What is SERB-FIRE?

   - SERB-FIRE is a program of the Science and Engineering Research Board (SERB) for funding industry relevant research engagement.

   - SERB has signed a Letter of Intent (LoI) with a group of industries to institute the SERB-FIRE program to stimulate industry-relevant research in India.

   - SERB-FIRE is 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.

   - With this initiative, the Indian research community will 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.

   - This is a first-of-its-kind initiative to advance deep tech-based research in India by SERB in partnership with Intel India.

   - SERB-FIRE is a novel initiative to bring together industry and academia on a common platform to exchange ground-breaking ideas and co-promote innovative research.

   - The focus of the program is on futuristic science and technology thematic areas.

Benefits:

- It is expected to 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.

- The FIRE program is a joint government and industry initiative with a co-funding mechanism to promote innovative technology solutions and strengthen academic research through collaboration with key research and development (R&D) organizations in India.

- Having been conceived in collaboration with Intel India, it is also being extended to other industry members, which would increase its impact and reach.

Awareness in the field of Communication technology

5. Swathes of Internet go down after cloud outage

» Prelims: Cloud computing

Context:

- Dozens of websites briefly went offline around the globe after an outage at the cloud computing service Fastly.

Fastly:

- Fastly is a content delivery network, or CDN.

- It provides vital but behind-the-scenes cloud computing edge servers to many of the web's popular sites.

- These servers store, or cache, content such as images and video in places around the world so that it is closer to users, allowing them to fetch it more quickly and smoothly.

- CDN helps websites move content using less-congested routes, enabling them to reach consumers faster.

Details:

- Fastly said it had identified a service configuration that triggered disruptions.

- Major futures markets in the U.S. dipped sharply minutes after the outage.

- The incident demonstrates how vital a small number of behind-the-scenes companies are for running the Internet.

Error 503:

- The 503 Service Unavailable error is an HTTP status code that means the website's server is simply not available right now.

- It means that the server is unable to handle the information request.

- Most of the time, it occurs because the server is too busy or because there's maintenance being performed on it.

Awareness in the field of Biotechnology

6. Planning for a biosecure future

» Mains: Synthetic biology- significance and concerns; Lacunae in current approach to bio-security and India's vulnerability

Context:

- The article analyzes the biosecurity concerns of synthetic biology.

Synthetic biology:

- Synthetic biology is a field of science where new organisms, biological parts and devices can be created and existing natural life forms can be redesigned.

- Synthetic biology encompasses a broad range of methodologies from various disciplines, such as biotechnology, genetic engineering, molecular biology, molecular engineering, systems biology, membrane science, biophysics, chemical and biological engineering, electrical and computer engineering, control engineering and evolutionary biology.

- Due to more powerful genetic engineering capabilities and decreased DNA synthesis and sequencing costs, the field of synthetic biology is rapidly growing. There has been a rapid rise in synthetic biology in the last two decades.

Significance of synthetic biology:

- Genetic engineering is finding increasing application in the area of medical treatment by re-engineering cells. Genetic engineering is being used to modify plants to improve resistance to pests in crops and to induce desirable qualities like resistance to droughts, waterlogging and developing faster-growing dwarf varieties. This can help ensure food security.

Threat posed by synthetic biology:

- While synthetic biology can be used for human betterment, there are many risks associated with the technology which must be addressed before it becomes widely accessible.

  * Much is still to be understood of the possible long term implications of genetic engineering.

  * Insufficiently trained staff, inadequately safeguarded facilities, and lack of proper protocols can also lead to accidental leaks of experimental pathogens.

  * There is also the possibility of deliberate misuse. A planned attack using highly infectious pathogens synthetically

engineered in a lab could have a devastating impact on the target country.

Lacunae in current approach to biosecurity:

Lack of focus on biosecurity:

- As against the focus on the threat posed by weapons of mass destruction like nuclear and chemical weapons, there has been very little focus on threats emanating from biological sources.
- Nuclear weapons, facilities and material are tightly controlled through strong treaties and institutional arrangements. Unlike this, the fields of biology or synthetic biology are not regulated internationally despite growing military interest in synthetic biology applications and their potential misuse.

Ineffectiveness of the BTWC:

- There is the Biological and Toxin Weapons Convention (BTWC) of 1972 which regulates bio-weapons, however, it suffers from the following shortcomings.
    * There is no implementing body to oversee this convention which almost renders the convention ineffective.
    * The BTWC also does not have a verification clause, nor does it have clearly laid down rules and procedures to guide research in the concerned field.
        » The BTWC while bans bio-weapons, research for medical and bio-defence purposes are allowed. This is liable for misuse since bio-defence research routinely uses pathogens and toxins for experimental purposes, processes, know-how and outcomes of bio-defence research could potentially be used to create bio-weapons.
    * Initiatives to enhance the transparency of treaty-relevant biological facilities and activities to help deter violations of the BTWC have not been accepted by the member states.

India's vulnerability:

- India remains grossly underprepared in the domain of biosecurity.
    * There is poor disease surveillance to detect any threat in its early stages.
    * Insufficient coordination among various government departments dealing with biosecurity issues.
        » Implementation of biosafety guidelines is the responsibility of the Science and Technology Ministry and the Environment Ministry. However, labs dealing with biological research are set up under the Indian Council of Medical Research and the Indian Council of

Agricultural Research, which are under the Ministries of Health and Agriculture, respectively.

    * The bad state of the healthcare system renders India ineffective in tackling any possible outcomes of a bio attack.
    * India, with its porous borders and ill-trained border control institutions, is ill-prepared for defending against pathogens or dangerous biological organisms or agents arriving from abroad.

Conclusion:

- The COVID-19 pandemic and its devastating impact have challenged the traditional imagination of national security with even the most developed and rich countries crumbling under the impact of the pandemic.
- The COVID-19 pandemic should serve as a wake-up call to recognize the biosecurity concerns of synthetic biology and the national security studies henceforth will have to consider the threat posed by synthetic biology.
- COVID-19 pandemic is an indication of the potential impact of bio-weapons that can come from labs.
- In fact, all exponential technologies such as synthetic biology, artificial intelligence and nanotechnology have to be understood and regulated to counter any unforeseen national and global security implications.
    * Exponential technologies can be defined as those technologies that allow change at an accelerated speed.
- The upcoming November 2021 BTWC review conference must take stock of the advances in the field of synthetic biology, address the thinning line between biotechnology research and bio-weapons research, and consider international measures for monitoring and verification.

Awareness in the field of Space

7. **Chinese astronauts dock with new space station**
    » Prelims: Chinese space missions- Tiangong; Space station

What's in News?

- The first group of Chinese astronauts have entered the country's under-construction space station.

Details:

- The Shenzhou-12 spaceship carried the three astronauts to Tianhe
    * Tianhe is the main module of its first permanent space station by China.

- This is a major step in China's plans to have a fully functioning space station by 2022.

    * China's first space station called Tiangong is set to be functional by the end of 2022 and is the second space station only after the International Space Station.

    * The Space Station China is building is called Tiangong which means "Heavenly Space".

SECURITY AND DEFENCE

Defence Equipment

1. Agni-P missile

» Prelims: Agni-P missile; ballistic missiles of India

Context

- A new-generation nuclear-capable ballistic missile, Agni-P (Prime) has been successfully test-fired by the Defence Research and Development Organisation (DRDO).

Agni-P:

- Agni-P is a new-generation advanced variant of the Agni class of missiles.
- Its range capability is between 1,000 and 2,000 km.
- The missile is fully made up of composite material.
    - * Composites are lightweight, have better strength and offer more design and production flexibility over conventional materials.
- Agni Prime comes in a canisterised configuration.

Canisterisation:

- In this configuration, a missile mated with a nuclear warhead is sealed in a canister, which is placed atop a road-mobile launcher.
- Canisterisation significantly enhances the mobility of a missile.
- In canisterised configuration, a missile requires very short preparation time and can be launched at short notice.
- Canisterisation also increases the reliability of a missile and its shelf-life.
- A canisterised missile can be fired directly from the canister or cylindrical container containing the missile by elevating it.

Agni class missiles

- The Agni class of missiles are the mainstay of India's nuclear launch capability which also includes the Prithvi short-range ballistic missiles, submarine-launched ballistic missiles and fighter aircraft.
- The longest of the Agni series, Agni-V, an Inter-Continental Ballistic Missile (ICBM) with a range of over 5,000 km, has already been tested several times and validated for induction.
- Earlier, India had tested Agni-5 intercontinental ballistic missile in canisterised configuration.

Defence Equipment

2. ALH Mk-III

» Prelims: ALH Mk-III

Context:

- Coast Guard inducted Advanced Light Helicopters (ALH) Mk III.

Details:

- The state-of-the-art helicopters are indigenously designed and manufactured by Hindustan Aeronautics Limited (HAL), Bengaluru.
- Advanced Light Helicopter (ALH) Mk III is an indigenously-built multirole helicopter with Shakti engine manufactured by Hindustan Aeronautics Limited (HAL).
- The Mk III version of the ALH has an all-glass cockpit with HAL's Integrated Architecture Display System (IADS) and will be used for search and rescue special operations and coastal surveillance.
- The customized Mk-III is powered by "Shakti" (Safran Ardiden 1H1) engines.

Significance:

- These helicopters are fitted with modern surveillance radar and electro-optical equipment, which enable them to undertake the role of maritime reconnaissance in addition to providing long-range Search and Rescue, both by day and night.
- In addition to special operations capabilities, ALH MK III is also fitted with a heavy machine gun to undertake constabulary missions.
- A removable medical Intensive Care Unit (ICU) is fitted on ALH MK III helicopters to airlift critically ill patients

Miscellaneous

3. Conditional exemption to Survey of India from Unmanned Aircraft System (UAS) Rules, 2021

» Prelims: SVAMITVA scheme; Survey of India

What's in the News?

- Ministry of Civil Aviation (MoCA) and Directorate General of Civil Aviation (DGCA) have granted conditional exemption to the Survey of India (SoI) from Unmanned Aircraft System (UAS) Rules, 2021.

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Reasons for the exemption:

- The drone deployment permission has been granted for large scale mapping of inhabited areas of villages under the central government SVAMITVA scheme.

- This permission grant will allow Large Scale Mapping (LSM) by Survey of India using drones.

- The aerial surveillance would generate high resolution and accurate maps to confer ownership property rights.

- Based on these maps or data, property cards would be issued to the rural household owners.

Survey of India:

- It is the national survey and mapping organisation of the country and functions under the Ministry of Science & Technology.

- The oldest scientific department under the Indian Government, it was set up in 1767.

- In its assigned role as the nation's Principal Mapping Agency, Survey of India bears a special responsibility to ensure that the country's domain is explored and mapped suitably, provide base maps for expeditious and integrated development and ensure that all resources contribute with their full measure to the progress, prosperity and security of our country now and for generations to come.

- It is headed by the Surveyor-General of India, whose office is situated in Dehradun.

Military Exercises

4. Indo-Thai CORPAT

» Prelims: CORPAT exercise

Context:

- The 31st edition of the India-Thailand Coordinated Patrol (Indo-Thai CORPAT) between the Indian Navy and the Royal Thai Navy

Details:

- India and Thailand have been conducting CORPAT biannually along their International Maritime Boundary Line (IMBL) since 2005.

- CORPAT builds up understanding and interoperability between navies and facilitates institution of measures to prevent and suppress unlawful activities like Illegal Unreported Unregulated (IUU) fishing, drug trafficking, maritime terrorism, armed robbery and piracy.

- It further helps enhance the operational synergy by exchange of information for prevention of smuggling, illegal immigration and for the conduct of Search and rescue (SAR) operations at sea.

Miscellaneous

5. Innovations for Defence Excellence (iDEX)

» Prelims: iDEX; DIO

» Mains: Measures being taken to promote indigenization of defence equipment

Context:

- Defence Minister has approved budgetary support of Rs 498.8 crore to Innovations for Defence Excellence (iDEX) – Defence Innovation Organisation (DIO) for the next five years.

What is iDEX?

- iDEX was launched in 2018 to achieve self-reliance and foster innovation and technology development in the field of Defence and Aerospace by engaging MSMEs, start-ups, individual innovators, Research and Development institutes, academia, etc.

- iDEX will also provide them with grants/funding and other support to carry out R&D which has good potential for future adoption for Indian defence and aerospace needs.

- It was promulgated by the Department of Defence Production, Ministry of Defence.

- Objectives of iDEX:

  * Facilitate rapid development of new, indigenized, and innovative technologies for the Indian defence and aerospace sector, to meet needs for these sectors in shorter timelines.

  * Create a culture of engagement with innovative start-ups, to encourage co-creation for defence and aerospace sectors.

  * Empower a culture of technology co-creation and co-innovation within the defence and aerospace sectors.

- iDEX will be funded and managed by a 'Defence Innovation Organization (DIO)' which has been formed as a 'not for profit' company as per Section 8 of the Companies Act 2013 for this purpose, by the two founder members i.e. Defence Public Sector Undertakings (DPSUs) – HAL & BEL.

- iDEX will function as the executive arm of DIO, carrying out all the required activities while DIO will provide high-level policy guidance to iDEX

Miscellaneous

6. Project Seabird

» Prelims: Project seabird

- It is a naval infrastructure project which entails the creation of a naval base at Karwar (Karnataka) on the west coast of India.

- Upon completion, this $3 billion program and effort will provide the Indian Navy with its largest naval base on the west coast and also the largest naval base east of the Suez Canal.

- The new and expanded naval complex will be able to support several major warships and submarines and yard crafts.

- A specialised dockyard repair and maintenance facilities (with piers, wharfs, revetments, quay walls, etc.), covered dry berths for ships and submarines, new technologically advanced security and communication systems, a Naval Air Station (including multiple runways, hangars, housing, ordnance handling areas, services, personnel support infrastructure, etc.), various utilities systems as well as housing and residential complexes at multiple locations are some of the other facilities that the base will feature.

- The project involves several technical and environmental challenges owing to the partially hilly terrain.

Miscellaneous

7. Unlocking war histories with a purpose

» Prelims: Important military operations

- In the light of the recent announcement by the Defence Minister on archiving, declassifying and compiling war histories, here is a compilation of a few operations of significance in Indian history.

Exercise Brasstacks (1986-87):

- Operation Brasstacks was a major combined arms military exercise of the Indian Armed Forces in the Rajasthan state of India to simulate the operational capabilities of the Indian armed forces. It was one of the biggest mobilization of Indian forces on the Indian subcontinent.

- The military exercise heralded the transformation of Indian warfighting doctrine, tactics, techniques and procedures in conventional warfighting, particularly in the plains and the desert.

Operation Meghdoot:

- Operation Meghdoot (1984) was the codename for the Indian Armed Forces' operation to seize control of the Siachen Glacier in Kashmir.

Operation Falcon:

- Operation Falcon (1986) was launched along the borders of Arunachal Pradesh to counter the Chinese army. MI 26 helicopters were used to airlift an entire Brigade south of the Indo-China border.

- Indian Army took up positions along the ridges they had lost in 1962 and overlooked the entire Sumdorong Chu range.

Operation Pawan:

- Operation Pawan (1987) was the code name assigned to the operation by the Indian Peace Keeping Force to take control of Jaffna from the Liberation Tigers of Tamil Eelam.

Defence equipment

8. DRDO tests enhanced range Pinaka rocket

» Prelims: Pinaka rocket

What's in News?

From a Multi-Barrel Rocket Launcher (MBRL) at integrated test range, Chandipur in Odisha, the DRDO successfully test-fired:

- the enhanced range versions of the indigenously developed 122 mm calibre rocket

- the extended range version of indigenously developed Pinaka rocket

Details:

- Both the Pinaka and the 122 mm rockets were developed by the Pune-based Armament Research and Development Establishment and High Energy Materials Research Laboratory with manufacturing support from Economic Explosives Limited, Nagpur.

- 122mm rockets have been developed for Army applications and can destroy targets up to 40 km.
  * This enhanced rocket system would replace the existing 122mm Grad rockets.

- The enhanced range version of the Pinaka rocket system can destroy targets at distances up to 45 km.

Defence Equipment Production

9. Defence Ministry notifies 108 negative imports

» Mains: Initiatives being taken to promote indigenization of defence equipment

Context:

- The Defence Ministry has notified the second negative import list.

Details:

- The negative import list has been renamed as the 'positive indigenisation list'.

- The 108 items in the list can now be only purchased from indigenous sources.

- The new list takes the total number on the list to 209.

- Indigenisation of defence purchases is planned to be implemented progressively with effect from December 2021 to December 2025.

Second positive indigenisation list:

- It comprises complex systems, sensors, simulator, weapons and ammunitions like helicopters, next generation corvettes, Air Borne Early Warning and Control (AEW&C) systems, tank engines, medium power radar for mountains, Medium Range Surface to Air Missile (MRSAM) weapon systems and many more such items.

- 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.

- Import substitution of ammunition which is a recurring requirement has been given special focus.

Significance:

- The government wants to reduce the dependence on imported items in defence and give a push to the Atmanirbhar Bharat initiative.

- The domestic industry is given the opportunity to manufacture for fulfilling the needs of the armed forces.

- The manufacturers could be private sector players or Defence Public Sector Undertakings (DPSUs).

- It provides an excellent opportunity for start-ups and Micro, Small and Medium Enterprises (MSMEs).

Cyber Security

10. The world is hardly wired for cyber resilience

- » Prelims: Recent cyber attacks; terminology associated with cyber security

- » Mains: Challenges associated with recent cyber attacks and measures needed to promote cyber security

Background:

- There have been a series of high profile cyber-attacks in recent months.

  * The end of 2020 witnessed the 'SolarWinds' cyberattack involving data breaches across critical wings of the U.S. government like defence, energy and state.

  * Early 2021 witnessed a cyberattack by a Chinese group called Hafnium. Thousands of U.S. organizations were hacked and remote control was gained over the affected systems.

  * Then there was the ransomware attack on Colonial Pipeline (which is the main supplier of oil to the U.S. East Coast) by Russia/East Europe-based cybercriminals, styled DarkSide. Colonial Pipeline had to pay out several million dollars as ransom to unlock its computers and release its files.

* A Russia-backed group, Nobellium, had launched a phishing attack on 3,000 e-mail accounts, targeting USAID and several other organisations.

* Recently JBS SA, the U.S. subsidiary of a Brazilian meat processing company, was the target of a ransomware attack.

Challenges:

Targeting critical civilian targets:

- Unlike the traditional approach to cyber warfare, cyber attacks are now being employed against civilian targets of critical importance. The fact that most nations have been concentrating mainly on cyber defences to protect military and strategic targets has left civilian targets vulnerable to attacks.

- Unlike previously where the banking and financial services were most prone to ransomware attacks, recently even oil, electricity grids, and health care are being increasingly targeted.

- Defending critical civilian targets against cyberattacks is almost certain to stretch the capability and resources of governments across the globe.

Increasing sophistication of the cybercriminals:

- The technical competence of cybercriminals has only increased. They have been employing advanced methods like 'penetration testers' to probe high secure networks.

- Zero day software vulnerabilities are being increasingly used for cyber attacks such as ransomware, phishing and spear phishing.

  * A zero-day is a computer-software vulnerability unknown to those who should be interested in its mitigation. Until the vulnerability is mitigated, hackers can exploit it to adversely affect programs, data, additional computers or a network.

  * Ransomware is malware that employs encryption to hold a victim's information at ransom. A user or organization's critical data is encrypted so that they cannot access files, databases, or applications. A ransom is then demanded to provide access.

  * Phishing is a type of social engineering attack often used to steal user data, including login credentials and credit card numbers or to deploy malicious software on the victim's infrastructure like ransomware. It occurs when an attacker, masquerading as a trusted entity, dupes a victim into opening an email, instant message, or text message.

  * Spear phishing is the fraudulent practice of sending emails ostensibly from a known or trusted sender in order to induce targeted individuals to reveal confidential information.

- Cybercriminals are becoming more sophisticated in their modus operandi. They first steal sensitive data in targeted computers before launching a ransomware attack thus resulting in a kind of 'double jeopardy' for the targeted victim.

Diversification of motivation for the attacks:

- The motivation for cyberattacks has also diversified beyond just geopolitical and profits, with 'insider threats' due to discontent with the management or personal reasons also emerging as a possible threat.

Targeting of high value and vulnerable sectors:

- Notably, the number of cyberattacks on healthcare systems has increased and cybercriminals are increasingly trying to gain access to patients' data. The available data aggravates the risk not only to the individual but also to entire communities.

Challenges associated with data protection:

- With data becoming valuable in an increasingly digitized world, attacks on data and data systems are bound to intensify.

- More than three quintillion bytes of data are generated every day and several billion devices are interconnected to billions of endpoint devices and are exchanging petabytes of sensitive data, on the network. This is only bound to grow. Ensuring data protection of this huge quantity of data is going to be a herculean task.

Way forward:

Improve awareness and preparedness:

- Businesses need to be aware of the nature of the cyber threat to their businesses and take adequate precautionary measures.

- Officials in the public domain and also company boards need to carry out regular vulnerability assessments and create necessary awareness of the growing cyber threat.

- There is the need for improved defences against actual, and potential, cyberattacks by all countries across continents.

Zero trust-based environment:

- Cybersecurity professionals are now engaged in building a 'Zero Trust Based Environment', viz., zero trust on end point devices, zero trust on identity, and zero trust on the network to protect all sensitive data.

- Zero Trust Based environment technologies employ: software-defined solutions for agile perimeter security, secure gateways, cloud access security, privileged access management, threat intelligence platforms, static and dynamic data masking, etc.

Adopting deep technology:

- Building deep technology in cyberspace is essential. New technologies such as artificial intelligence, machine learning and quantum computing present new opportunities which need to be harnessed.

Miscellaneous

11. **Pakistan to remain on FATF greylist**

   » Prelims: FATF and grey list

Context:

- Financial Action Task Force (FATF) has retained Pakistan on the grey list or the list of countries under increased monitoring.

Background:

- Pakistan was put on the grey list by the FATF in 2018 and the country has been struggling to come out of it.

- FATF had laid down 27 benchmarks for Pakistan to comply with, in order to be taken off the grey list.

- In February 2021, three outstanding benchmarks (out of 27) blocked its exit from the grey list.

Details:

- Pakistan is now retained in the grey list as FATF judged it deficient in prosecuting the top leadership of UN Security Council-designated terror groups, including Lashkar-e-Taiba, Jaish-e Mohammad, Al Qaeda and Taliban.

- Besides, the FATF handed down another six-point list of tasks, mainly on money laundering actions.

- Grey-listing carries no legal sanctions, but it attracts economic strictures and restricts a country's access to international loans.

   * A loss of $10 billion to the economy annually is estimated for every year Pakistan has been on the grey list.

- If Pakistan comes out of the FATF 'Grey List', it will be easy for the country to get financial aid from the IMF, World Bank, ADB and the European Union, helping improve its precarious financial situation.

Why does India want Pakistan on the Grey List?

- India is apprehensive about Pakistan's commitment to discourage terror actors from using its territory to launch attacks in India.

- Besides, it is believed that terrorist groups in Pakistan have access to support at the official level inside the country.

Pakistan's response:

- Pakistan's Energy Minister has accused India of attempting to politicise the process at the FATF.

12. Flying terror

» Mains: Security threat posed by drones and recommendations to tackle this challenge

Context:

• In the first such instance in India, drones were used to attack an Indian Air Force base in Jammu. Explosive devices were dropped from drones triggering blasts.

• There have been reports of at least two more subsequent attempts to use drones to attack military targets.

History of use of drones in warfare:

• In 2018, Syrian rebels used homemade drones to attack Russian military bases in Syria.

• There has been an assassination attempt on the Venezuelan President Nicolas Maduro using an explosive-laden drone.

• In 2019, Houthi rebels claimed responsibility for bombing Saudi oil installations using drones.

Concerns:

Technology backed terrorism:

• The use of drones represents a new mode of terrorism characterized by the increasing use of technology. This helps reduce costs and the risk of identification for terrorists while increasing their efficacy. The exponential proliferation of new technologies and Artificial Intelligence will only make the threat posed by drones increase exponentially.

Redundancy of available tools to counter drones:

• The conventionally available tools would be redundant in combating the threat posed by drones. Since drones fly very low it is extremely difficult to detect them using radars and they also leave little by way of reaction time once detected.

Easy accessibility:

• The fact that drones are available in open markets for very cheap prices makes them easily accessible for terrorists to procure. This could enable even individuals with sufficient motivation and skills to carry out drone attacks without the threat of being identified by intelligence agencies.

• Thus drones offer the non-state actors cheap and affordable ways of targeting the security agencies.

Increased capacity of drones:

• Drones have developed significantly and acquired massive leaps in capability. The increased speed, range, manoeuvrability and load-carrying capacity have turned them into potential weapons that could be used to target adversaries. Such drones can hit strategic targets and cause huge damage.

• Small size, stealth drones pose a lethal threat to strategic installations.

No comprehensive regulation:

• The existing international framework for controlling the proliferation of technology that can be weaponized, such as the Wassenaar Arrangement and Missile Technology Control Regime, may be termed ineffective in addressing the threat posed by drones.

• The Wassenaar Arrangement aims to promote transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies. The aim is also to prevent the acquisition of these items by terrorists.

Recommendations:

• Requisite measures in terms of anti-drone capabilities, as well as policy measures, should be put in place to counter the threat posed by drones.

• Requisite Counter-Unmanned Aircraft Systems capability must be developed and made available. There is an urgent need for an anti-drone system shielding critical installations in the country. This could involve anti-drone techniques like drone jammers, Directed Energy Weapons such as lasers and the use of suitable guns, missiles and other hard kill options.

• Enhanced international cooperation and consensus on the development and deployment of technologies are required to combat such new methods of terror attacks.

• Tighter regulation of drones sales and operations needs to be implemented to prevent their use for terrorist activities.

13. IS returnees

» Prelims: NIA

» Mains: Arguments both in favour of and against accepting IS returnees into India; recommendations

Context:

• The four Indian women who accompanied their husbands to join the Islamic State in Khorasan Province (ISKP), imprisoned in Afghanistan, are unlikely to be allowed to return to the country.

Details:

• The National Investigation Agency (NIA) had filed a chargesheet in 2017 after a group of 21 men and women from Kerala, left India in 2016 in batches to join the ISKP in Afghanistan. They crossed over to Afghanistan on foot from Iran.

- In April 2021, the head of the National Directorate of Security (the national intelligence and security service of Afghanistan) reported 408 members of the Islamic State from 13 countries.

- These women are among thousands of Islamic State fighters and affiliates that surrendered before the Afghanistan authorities in 2019.

Should India accept Islamic State returnees?

Yes

- One, under the Indian Penal Code, Section 3, any citizen of India can be tried in India for any offence committed in India, abroad, or even in outer space.

- Two, Reports also say that they may be a grave threat to India's security and can't return.

  * If they are coming back to India, will be in the custody of our security forces.

  * They can be taken to court and held in custody till the court gives a verdict. While in custody, they cannot be of any threat to the security of India

- Three, they have their families here. In Nimisha's case, her mother has said that there is a granddaughter who is four years old.

  * It is necessary for that child to be with the grandparents, if the parents are not able to look after her.

  * So, there is no reason for India to stand in the way of their return when Afghanistan has asked for it.

- Even if these particular young women were brainwashed and radicalised, we as a state have a duty to get them back and de-radicalise them.

  * The Universal Declaration of Human Rights says everyone has the right to leave any country, including his own, and to return to his country

  * The International Covenant on Civil and Political Rights says no one shall be arbitrarily deprived of the right to enter his own country.

No

- ISIS is losing territory in Syria and Iraq, it is believed the fighters after their return to homeland may carry out attacks. These operatives are trained in do it yourself terrorism.

  * This kind of terrorism is taught so that these operatives are self-sufficient and can carry out lone wolf attacks.

- Further it must be noted that in the several attacks that have been carried out in different parts of the world, most of the perpetrators who have returned to their homeland from the ISIS mainland. This was in fact very evident in the Paris attack.

- On their return, if they manage to get away, then they will radicalise the locals. If they are kept in jails then they would radicalise within the prison

Conclusion:

- Therefore, France model may be followed and the Afghanistan authorities can be requested to put them on trial there.

  * France did not take back the French ISIS members captured in Iraq.

ENVIRONMENT AND ECOLOGY

Species in news - Flora

1. **Argostemmaquarantena**

   » Prelims: Argostemma quarantena

   What's in News?

   A new plant species belonging to the coffee family has been spotted in the Wagamon hills in Kerala.

   - It has been named Argostemmaquarantena to commemorate the millions who have died in the pandemic.

   - It is a herbaceous species from the family Rubiaceae.

     * Herbaceous plants are plants that have no persistent woody stem above ground.

   - It was found along the Idukki-Kottayam border.

Environmental Degradation

2. **Atmospheric Aerosols**

   » Prelims: Aerosols- sources and effects

   - Aerosols are minute particles suspended in the atmosphere. When these particles are sufficiently large, we notice their presence as they scatter and absorb sunlight. Their scattering of sunlight can reduce visibility (haze) and redden sunrises and sunsets

   - Aerosols interact both directly and indirectly with the Earth's radiation budget and climate.

     * As a direct effect, the aerosols scatter sunlight directly back into space.

     * As an indirect effect, aerosols in the lower atmosphere can modify the size of cloud particles, changing how the clouds reflect and absorb sunlight, thereby affecting the Earth's energy budget.

   - The bulk of aerosols—about 90 percent by mass—have natural origins. Volcanoes, for example, eject huge columns of ash into the air, as well as sulfur dioxide and other gases, yielding sulfates.

   - The remaining 10 percent of aerosols are considered anthropogenic, or human-made, and they come from a variety of sources. Though less abundant than natural forms, anthropogenic aerosols can dominate the air downwind of urban and industrial areas.

   Sources

   - volcanic eruptions (producing volcanic ash and sulphate)

   - sea spray (sea salt and sulphate aerosols)

   - desert storms (mineral dust)

   - coal power plants

   - Automobiles, incinerators, smelters, are prolific producers of sulfates, nitrates, black carbon, and other particles.

   - Deforestation, overgrazing, drought, and excessive irrigation can alter the land surface, increasing the rate at which dust aerosols enter the atmosphere.

   - Even indoors, cigarettes, cooking stoves, fireplaces, and candles are sources of aerosols.

   Context:

   - Aerosol particles below 3 nm which can reach sizes having climatic impacts, formed frequently in urban locations in India.

   Details:

   - Scientists, tracing the concentration, size and evolution of aerosol particles smaller than 3 nanometres at an urban location in India, have found frequent formation of sub-3nm aerosol particles in the atmosphere.

   - This is critical as a major fraction of these newly formed particles can reach to sizes of cloud condensation nuclei where they have climatic impacts.

   - The formation of small molecular clusters of sub-3nm size is technically called aerosol nucleation and the subsequent growth of these newly formed clusters to 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 area is largely unexplored in India, though globally, it is extensively studied.

   The Study:

   - Scientists from the University of Hyderabad measured neutral sub-3nm particles for the first time at an urban location in India.

   - The study was conducted with support from the Department of Science & Technology (DST) under Climate Change Programme Division.

   - The research showed that a pool of sub-3nm particles is often present in the atmosphere, but how fast these clusters grow depends on various factors.

   - The team found a strong positive correlation between sub-3nm particle concentrations and sulphuric acid concentrations, confirming the potential role of sulphuric acid in the formation of sub-3nm particles.

- Other vapours such as ammonia, amines and organics also play a crucial role in the growth of the newly formed particles.

Miscellaneous

3. **Bharitalasuchustapani**

   » Prelims: Bharitalasuchustapani.

   - The Yerrapalli Formation of the Pranhita-Godavari Basin in Telangana has had several fossils unearthed from it.

   - One of the species identified includes a carnivorous reptile that lived 240 million years ago. It has been named Bharitalasuchustapani.

   - Studies have revealed that the reptile belonged to a family of extinct reptiles named Erythrosuchidae.

   - The Bharitalasuchustapani were robust animals with big heads and large teeth, and these probably predated other smaller reptiles. They were approximately the size of an adult male lion and might have been the largest predators in their ecosystems.

   - Apart from this erythrosuchid reptile, the fossil assemblage of the Yerrapalli Formation includes many other extinct creatures such as ceratodontid lungfish, rhynchosaur and allokotosaurian.

Environmental Degradation

4. **Black Carbon**

   » Prelims: Black carbon- sources

   » Mains: Impact of Black Carbon

Black carbon is a component of soot emitted by the incomplete combustion of fossil fuels, biofuel and biomass.

- Chemically, it is a component of fine particulate matter (PM ≤ 2.5 μm).

- It is a kind of aerosol that is emitted from gas and diesel engines, coal-fired power plants, and other sources that burn fossil fuel.

- Black carbon particles consist of nearly pure elemental carbon with some oxygen and hydrogen bound into layered, hexagonal structure.

- How is black carbon formed?

  * BC may be formed either by carbonization (charring) of organic matter during combustion (charcoal particles) or by condensation from the gas phase in reducing flames (soot particles).

  * It is formed by the incomplete combustion of fossil fuels, wood and other fuels.

* The complete combustion of fossil fuels would convert all the carbon present in the fuel into carbon dioxide but combustion is never complete.

* Therefore, in the process of combustion, carbon dioxide, volatile organic compounds, carbon monoxide and organic carbon and black carbon particles are all formed.

* All these together form soot and BC is a component of it.

- Black carbon is a climate pollutant. Although it has a short life span (4 – 12 days) after it is released, it has a significant direct and indirect impact on the climate, agriculture and human health.

- According to some estimates, black carbon is the second-largest contributor to global warming after carbon dioxide

Major Sources of Black Carbon Emission

Black carbon is produced both naturally and anthropogenically (out of human activities) by the incomplete combustion of fossil fuels, biomass, etc.

- The major sources are emissions from diesel engines, cooking stoves, wood burning and forest fires.

- Household cooking and heating account for 58% of global black carbon emissions.

- The developing world contributes to almost 88% of black carbon emissions as a result of open biomass burning and residential solid fuel combustion.

- China and India together account for 25-35% of global BC emissions.

- India is the second largest emitter of BC in the world with the emissions expected to increase in the coming years. The largest contributor in India is the Indo-Gangetic Plains.

- BC emissions are the highest around the major source regions of this pollutant. Because of this, there are regional hotspots of atmospheric solar heating. Some of these hotspot areas are the Indo-Gangetic Plains, most of Indonesia and SE Asia, eastern China, Mexico and Central America, equatorial regions of Africa and most of Peru and Brazil.

Impact of Black Carbon

Black carbon has impacts on human health, climate as well as vegetation and ecosystems.

Impact on health

- Black carbon is a major component of fine PM air pollution which is the leading environmental cause of poor health and premature deaths.

- Being extremely fine (2.5 micrometres or smaller) these particles can penetrate the deepest parts of the lungs and enable the transport of toxic compounds into the bloodstream.

- It causes a range of ill-effects on health and has been linked to premature deaths with lung and heart disease, heart attacks, strokes, aggravated asthma, chronic respiratory disease including bronchitis, and other cardio-respiratory symptoms.
- It can also lead to premature deaths in children due to acute lower respiratory infections such as pneumonia.

Impact on climate

- Direct warming effect: Black carbon absorbs solar energy and warms the atmosphere. It is very effective in absorbing light and heating up its surroundings. Its warming impact is 460-1,500 times stronger than carbon dioxide.
- Indirect warming effect: When BC falls to earth with precipitation, it darkens the surface of snow and ice, reducing their albedo, warming the snow, and hastening melting
    * The Arctic and glaciated regions such as the Himalayas are particularly vulnerable to melting as a result.

Impact on vegetation and ecosystems

- BC has effects on vegetation because it can deposit on plant leaves and increase their temperatures.
- It can reduce the amount of sunlight that reaches the earth and modify rainfall patterns, which can have far-reaching consequences on human lives and the environment.

Context:

- New study to help in the accurate estimation of black carbon over the Himalaya.

Details:

- Scientists at the Aryabhatta Research Institute of Observational Sciences (ARIES) in collaboration with scientists from the University of Delhi, IIT Kanpur and Space Physics Laboratory, ISRO have made extensive observations of black carbon and elemental carbon.
- They have estimated monthly and wavelength-dependent values of Mass Absorption Cross-Section (MAC) over the central Himalayan region for the first time.

Significance of the study:

- Black carbon (BC) is a key contributor to global warming and its accurate estimation will help in improving weather and climate predictions.
- BC is the second most important global warming pollutant after CO2.
- The researchers have derived the values of MAC – an essential parameter which is used for obtaining Black Carbon mass concentrations.
- According to the ARIES team, the higher resolution multi-wavelength and long-term observations used in calculating MAC will help

improve the performance of numerical weather prediction and climate models in estimating the warming effects caused by BC emissions.

- The precise knowledge on BC at various wavelengths will help in source apportionment studies done to constrain the sources of BC emissions. This can thus serve as important information to form the mitigation policies.

Species in news – Fauna

5. Black softshell turtle

» Prelims: Black softshell turtle

- Black softshell turtle (Nilssonianigricans) is a species of freshwater turtle.
- It is found in India (Assam) and Bangladesh.
- It is called Bostami turtle or Mazari.
- Until sightings along the Brahmaputra's drainage in Assam, the black softshell turtle was thought to be "extinct in the wild" and confined only to ponds of temples in northeastern India and Bangladesh.
- The International Union for Conservation of Nature has in 2021 listed the turtle as "critically endangered".
- It does not enjoy legal protection under the Indian Wildlife (Protection) Act of 1972.
- It has traditionally been hunted for its meat and cartilage, traded in regional and international markets.
- Their shell is light and flexible. This allows them to move more easily in open water, or in muddy lake bottoms. It also allows them to move much faster on land than most turtles.

Context:

- A major temple in Assam has signed a memorandum of understanding with two green NGOs for the long-term conservation of the rare freshwater black softshell turtle or the Nilssonianigricans.

Details:

- A vision document 2030 was also launched after Turtle Survival Alliance India and Help Earth signed the pact involving the HayagrivaMadhava Temple Committee.

- The temple, revered by both Hindus and Buddhists, is at Hajo.

Environmental Conservation Efforts

6. Climate Action Network

- » Prelims: Climate Action Network; Climate Change performance Index

- Climate Action Network (CAN) is a powerful global network of more than 1,500 civil society organisations in over 130 countries driving collective and sustainable action to fight the climate crisis and to achieve social and racial justice.

- Its objective is to promote government and individual action to limit human-induced climate change to ecologically sustainable levels.

- CAN continues to seek alignment and build bridges with partners and stakeholders across the climate movement and beyond to pressure governments to take bold and urgent climate action to end the era of fossil fuels and address the needs of the most vulnerable people impacted by the climate crisis.

- CAN members place a high priority on both a healthy environment and development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission).

Climate Change Performance Index

- Published annually since 2005, the Climate Change Performance Index (CCPI) tracks countries' efforts to combat climate change.

- As an independent monitoring tool it aims to enhance transparency in international climate politics and enables comparison of climate protection efforts and progress made by individual countries.

- Germanwatch, the NewClimate Institute and the Climate Action Network publish the index annually.

Places in News

7. DihingPatkai

- » Prelims: Dihing Patkai National Park, Raimona National park

What's in News?

- Assam government has notified DihingPatkai (DehingPatkai) as a National Park.

Details:

- Recently, Raimona National Park was created in western Assam's Kokrajhar district.

- The five older National Parks in the State are Kaziranga, Manas, Nameri, Orang and Dibru-Saikhowa.

- UNESCO World Heritage Sites in the state: Kaziranga and Manas National Parks.

- Tiger reserves: Nameri, Orang, Kaziranga and Manas National Parks.

Dihing Patkai National Park:

- The national park straddles across eastern Assam's Dibrugarh and Tinsukia districts.

- Dihing is the name of the river that flows through this forest and Patkai is the hill at the foot of which the sanctuary lies.

- It is a major elephant habitat and 310 species of butterflies have been recorded there.

- The park has 47 species each of reptiles and mammals, including the tiger and clouded leopard.

- The national park encompasses the erstwhile DehingPatkai Wildlife Sanctuary, the Jeypore Reserve Forest and the western block of the Upper Dihing Reserve Forest.

- Short stretches of the Dirak and BuriDihing rivers have been included in the park.

Miscellaneous

8. HTBt cotton

- » Prelims: Genetic Engineering Appraisal Committee

- » Mains: Significance and concerns associated with transgenic crops

- Bt cotton is the only transgenic crop that has been approved by the Centre for commercial cultivation in India.

  * It has been genetically modified to produce an insecticide to combat the cotton bollworm (a common pest).

- The HTBt cotton variant adds another layer of modification. It makes the plant resistant to the herbicide glyphosate. This has not been approved by regulators.

  * It is feared that glyphosate has a carcinogenic effect.

  * The unchecked spread of herbicide resistance to nearby plants through pollination could create a variety of superweeds.

Context:

- The illegal cultivation of herbicide-tolerant (HT) Bt cotton has seen a huge jump in 2021.

Issues:

- Seed manufacturers claim that the sale of illegal seed packets has more than doubled from 30 lakh in 2020 to 75 lakh in 2021.

- The illegal seeds are sold using the brand name of prominent companies.

- Farmers are at risk with such illegal cotton seed sale as there is no accountability of the quality of seed; it pollutes the environment.

- The industry is losing legitimate seed sale.

- The government is losing revenue in terms of tax collection.

Cultivation of the genetically modified cotton variant has serious environmental and economic consequences.

Way Forward:

- Genetic modification could bring about changes that can be harmful to humans in the long run. GM crops must be released commercially only after their long-lasting effects are studied.

- In India, the Genetic Engineering Appraisal Committee (GEAC) is the apex body that allows for the commercial release of GM crops.

  * Use of the unapproved GM variant can attract a jail term of 5 years and a fine of Rs 1 lakh under the Environmental Protection Act, 1989.

- The Centre has made the policy to ban this variant. The State governments must take action.

- HT seed sales are carried mostly by unorganised and fly by night operators. Action must be taken to stop such sales and punish offenders.

Initiatives in News

9. India Plastic Challenge – Hackathon 2021

» Prelims: India Plastic Challenge

Context:

- Environment Minister launched the India Plastic Challenge – Hackathon 2021.

About the Hackathon:

- It is a campaign calling upon start-ups/ entrepreneurs and students of Higher Education Institutions (HEIs) to develop innovative solutions to mitigate plastic pollution and develop alternatives to single use plastics.

- The two-month-long 'Plastic Hackathon 2021' campaign focuses on plastic waste management and elimination of identified single-use plastics.

- The campaign seeks to come up with suitable alternatives to single-use plastics and identify new ways of plastic waste management.

- Under the campaign a series of events will be organized on reducing plastic waste generation, recognizing the need for effective plastic waste management, increasing the awareness of suitable alternatives, sustainable consumption and production and extended producer responsibility.

- It also includes conducting essay competitions for school children.

- The campaign is being organized by the Federation of Indian Chambers of Commerce and Industry (FICCI), United Nations Environment Programme (UNEP) and GIZ (Deutsche GesellschaftfürInternationaleZusammenarbeit), a German organization working jointly with partners in India for sustainable economic, ecological, and social development.

Initiatives in News

10. 'Operation Olivia' to the rescue of Olive Ridleys

» Prelims: Olive Ridley turtles; Operation Olivia

Context:

- Indian Coast Guard's "Operation Olivia".

Olive Ridley turtle:

- The olive ridley sea turtle (Lepidochelysolivacea), also known commonly as the Pacific ridley sea turtle, is a species of turtle in the family Cheloniidae.

- The species is one of the most abundant of all sea turtles found in the world.

- It is primarily found in warm and tropical waters, primarily in the Pacific and Indian Oceans, but also in the warm waters of the Atlantic Ocean.

Nesting habits:

- Mating occurs in the offshore waters of the breeding grounds and females then come ashore to nest. Sea turtles generally return to their natal beach, or where they were born, to lay eggs as adults.

- The Olive Ridley have a unique nesting habit. They indulge in mass nesting called

  * An arribada is a mass-nesting event when thousands of turtles come ashore at the same time to lay eggs on the same beach.

- Breeding and nesting of the Olive Ridley Turtles is observed from November to December.

Threat:

- Heavy predation of Olive Ridley turtle eggs by dogs and wild animals

- Dense fishing activity along the coasts of Andhra Pradesh, Odisha and Bengal, especially ocean-going trawlers, mechanized fishing boats and gill-netters pose a severe threat to turtles.

- Beach soil erosion

Conservation status:

- The Olive Ridley is listed as vulnerable under the International Union for Conservation of Nature's Red list.

- It is included in Schedule I of the Indian Wildlife Protection Act, 1972, and in the Appendix I of the Convention of International Trade in Endangered Species of Wild Fauna and Flora.

Details:

- The annual "Operation Olivia" helps protect Olive Ridley turtles as they congregate along the Odisha coast for breeding and nesting

  * There are three beaches along the Odisha coast including Gahirmatha, the mouth of the Devi river, and Rushikulya.

- The Coast Guard carries out round-the-clock surveillance from November till May utilising Coast Guard assets and helps enforce laws near the rookeries

- Measures taken include the enforcement of the following laws near the rookeries.

  * The compulsory use of turtle excluder devices (TED) by trawlers in the waters adjoining nesting areas

  * Prohibiting the use of gill nets on turtle approaches to the shore

  * Curtailing turtle poaching.

Miscellaneous

11. Globally Important Agricultural Heritage System (GIAHS)

  » Prelims: Globally Important Agricultural Heritage System (GIAHS) sites in India

  » Mains: significance of Globally Important Agricultural Heritage System (GIAHS) status

- The Koraput traditional agriculture was accorded the Globally Important Agricultural Heritage System (GIAHS) status in 2012.

  * Globally Important Agricultural Heritage Systems (GIAHS) are outstanding landscapes of aesthetic beauty that combine agricultural biodiversity, resilient ecosystems and a valuable cultural heritage. Located in specific sites around the world, they sustainably provide multiple goods and services, food and livelihood security for millions of small-scale farmers.

  * GIAHS status helps to promote public understanding, awareness about sustainable agriculture and to safeguard the social, cultural, economic and environmental goods and services that provide to family farmers, smallholders, indigenous peoples and local communities.

- Globally Important Agricultural Heritage Systems (GIAHS) was started by the Food and Agricultural Organisation (FAO), an agency of the United Nations.

- The other recognised GIAHS sites in India include the following:

  * Kuttanad Below Sea Level Farming System of Kerala.

  * Pampore Saffron Heritage of Kashmir.

Places in News

12. Pakke Tiger Reserve

  » Prelims: Pakke Tiger Reserve, Nameri national Park

- Pakke Tiger Reserve is located in the foothills of the eastern Himalaya in Arunachal Pradesh.

- It shares a boundary with Nameri National Park in Assam.

- Papum Reserve Forest lies to the east of Pakke Tiger Reserve.

- Pakke is a haven for hornbills in north-east India, with four of the nine species – the Great Hornbill, the Wreathed Hornbill, the Oriental Pied Hornbill and the Rufous-necked Hornbill- found here. This makes the area extremely important for hornbills, especially considering that hunting and habitat loss threaten hornbill species in the rest of Northeast India.

Places in News

13. Papikonda National Park

  » Prelims: Papikonda National Park

- Papikonda National Park is located in the East Godavari and West Godavari districts of Andhra Pradesh.

- It is an Important Bird and Biodiversity Area and home to some endangered species of flora and fauna.

- Godavari River flows through the national park.

Species in news - Fauna

14. Pygmy hogs released in Manas National Park

  » Prelims: Pygmy Hog; Manas National Park

  » Mains: Indicator species; Biodiversity conservation efforts and methodology

Context:

- Release of captive-bred pygmy hogs into Manas National Park of western Assam.

Pygmy hog:

- Pygmy hogs (porculasalvania) are one of the world's rarest and smallest wild pigs.

- The pygmy hog is native to dense alluvial grasslands in the southern foothills of the Himalayas. Endemic to India, they are restricted to very few locations around Manas National Park in north-western Assam.

  * Once found along a narrow strip of tall and wet grassland plains on the Himalayan foothills – from Uttar Pradesh to Assam, through Nepal's terai areas and Bengal's duars – it was thought to have become extinct in the 1960s. But in 1971 it was "re-discovered" with a small population in the Barnadi Wildlife Sanctuary.

Threat:

- With just around 250 animals in the wild, the pygmy hog is one of the world's most threatened mammals.

- The main threats pygmy hogs face are loss and degradation of their grassland habitat due to human settlements, agricultural encroachments, dry-season burning of grasslands, livestock grazing, commercial forestry and flood control schemes. These constitute major threats to their survival.

Conservation status:

- Due to a small wild population, estimated at less than 250 individuals, and a highly restricted range, the pygmy hog is currently listed as 'Critically Endangered' on the IUCN Red List of Threatened Species.

- The pygmy hog is designated as a Schedule I species in India under the Wildlife Protection Act, 1972.

Details:

- This is the second batch of captive-bred pygmy hogs to have been reintroduced into the wild under the Pygmy Hog Conservation Programme (PHCP) in a year.

  * The Pygmy Hog Conservation Programme aims to increase the population of pygmy hogs in the wild.

  * The Pygmy Hog Conservation Programme (PHCP) follows a two-pronged action plan: conservation breeding of the animal against possible early extinction and re-introduction in selected sites, and habitat management.

- The number of pygmy hogs reintroduced into the wild under the PHCP has been more than their current original global wild population. Thus the present efforts will go a long way in bringing back the pygmy hog from near extinction.

Significance:

Restoration of grasslands:

- The Pygmy Hogs are intrinsic to the health of grasslands. Hence their conservation is a must for better protection and restoration of alluvial grasslands in the southern foothills of the Himalayas.

- Given the fact that pygmy hogs choose dense grasslands as their habitat, conservation efforts directed at pygmy hogs will also help improve the health of the grassland ecosystem in the area.

- Wet grasslands apart from serving as habitat to endangered species like the one-horned rhino, tiger, hog deer, eastern barasingha, water buffalo, hispid hare, and the Bengal florican, also serve as buffer against floods in the monsoons, while maintaining high groundwater level in the dry season, thereby benefitting agriculture and the farming community that live on its fringes.

Indicator species of grassland ecosystem:

- The pygmy hog is an indicator species. Its presence reflects the health of its primary habitat, the tall, wet grasslands of the Terai.

  * Indicator species are animals, plants, or microorganism that reflect the biotic or abiotic state of an environment; reveal evidence for the impacts of environmental change; or indicate the diversity of other species.

  * Indicator species serves as a measure of the environmental conditions that exist in a given locale and are thus used to monitor changes in the environment.

    » Examples – greasewood indicates saline soil; mosses often indicate acid soil. Tubifex worms indicate oxygen-poor and stagnant water unfit to drink.

Additional information:

- Haematopinusoliveri, known commonly as the pygmy hog-sucking louse, is a critically endangered species. It is an ectoparasite found only on another critically endangered species, the pygmy hog.

Species in news - Fauna

15. **Pyrostrialaljii**

    » Prelims: Pyrostria laljii.

Context:

- A new species belonging to the genus of the coffee family has recently been discovered from the Andaman Islands.

Details:

- The new species has been named Pyrostrialaljii.

- The new species has been reported from the Wandoor forest in South Andaman.

* The other places in the Andaman and Nicobar Islands where the tree could be located are the Tirur forest near the Jarawa Reserve Forest and the ChidiaTapu (MundaPahar) forest.

• It is also the first record of the genus Pyrostria in India.

   * Plants belonging to the genus Pyrostria are usually found in Madagascar.

   * While the genus Pyrostria is not found in India, there are several genera from the family Rubiaceae that are common in India. These plants include cinchona, coffee, adina, hamelia, ixora, galium, gardenia, mussaenda, rubia, morinda.

• Pyrostrialaljii has been assessed as 'Critically Endangered' based on the International Union for Conservation of Nature's (IUCN) Red List criteria.

Initiatives in news

16. **United Nations Convention to Combat Desertification**

   » Prelims: UNCCD; Land Degradation Neutrality; UNCCD 2018 – 2030 Strategic Framework

   » Mains: Desertification-Causes and concerns; Measures to prevent or control it

   • Established in 1994, UNCCD is a sole legally binding environment convention that links development and environment to sustainable land management. The UN Convention to Combat Desertification aims to combat desertification and the ill-effects of drought.

   • The convention obliges national governments to take measures to tackle the issue of desertification.

   • The convention's 2018 – 2030 Strategic Framework is a comprehensive international commitment to attain Land Degradation Neutrality (LDN) aiming at:

      * The restoration of productivity of degraded land.

      * Enhancing the livelihoods of people dependent on them.

      * Mitigating the impact of droughts on vulnerable populations

   • The convention focuses on having a bottom-up approach to achieve its goals, by involving the local communities.

   • The UNCCD is one of the three Rio Conventions, the other two being:

      * Convention on Biological Diversity (UNCBD)

      * United Nations Framework Convention on Climate Change (UNFCCC)

   • The three Rio Conventions work in close collaboration with each other.

What is Desertification?

   • Desertification is the process by which the biological productivity of drylands (arid and semiarid lands) is reduced due to natural or manmade factors. Desertification does not imply the expansion of existing deserts.

   • Some of the causes of desertification are deforestation, over-cultivation, overgrazing, imprudent irrigation practices, etc.

UNCCD and India

India ratified the Convention to Combat Desertification in 1996.

   • The nodal ministry for the convention in India is the Ministry of Environment, Forest and Climate Change.

   • India is also a part of the Bonn Challenge, which is an international effort to bring 150 million hectares of the world's degraded and deforested land into restoration by 2020, and 350 million hectares by 2030.

UNCCD 2018-30 Strategic Framework

The UNCCC 2018-30 strategic framework reaffirmed the 2030 Agenda for Sustainable Development and the Addis Ababa Action Agenda which is an integral part of it and recognizing the important impact that UNCCD implementation will have on the overall achievement of their objectives. The following are the important points of UNCCC 2018-30 strategic framework:

1. Achieve UNCCD objectives and also the objectives of 2030 agenda for sustainable development.

2. Achieve particularly the targets of Sustainable Development Goal 15 by 2030.

3. Enhance the ecosystems; services.

4. The strategic objectives are:

   • Affected ecosystems improvement

   • Desertification combating

   • Sustainable land management

   • Living conditions of affected population improvement

   • Drought effects mitigation, adaptation and management

   • Global environmental benefits generation

   • Mobilization of substantial and additional financial and non-financial resources to implement the objectives of UNCCD

17. This time for Male

» Prelims: Small Island Developing States and SAMOA Pathway

» Mains: Threats faced by small island nations

Small Island Developing States:

- Fifty-two countries and territories are presently classified as Small Island Developing States (SIDS) by the United Nations OHRLLS.

  * The UN-OHRLLS is the Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States.

- The three geographical regions in which SIDS are located are: the Caribbean, the Pacific, and the Atlantic, the Indian Ocean and the South China Sea (AIS).

- The aggregate population of all the SIDS is 65 million, slightly less than 1% of the world's population, yet this group faces unique social, economic, and environmental challenges.

  * Their remote geography makes them extremely reliant on external markets for essential goods. The remoteness from international markets, high transportation costs poses an economic challenge to these nations.

  * Climate change and the rising sea levels are an existential threat to these islands. They are also highly vulnerable to hurricanes and cyclones.

Barbados Programme of Action:

- The Barbados Programme of Action (BPoA) of 1994 prescribed specific actions that would enable SIDS to achieve sustainable development. The Barbados Declaration contained a statement of political will underpinning these commitments.

SAMOA Pathway:

- The SAMOA Pathway adopted in 2014 recognizes the adverse impacts of climate change and sea-level rise on SIDS' efforts to achieve economic development, food security, disaster risk reduction and ocean management, among other challenges. The SAMOA Pathway aims to address the unique challenges faced by SIDS and to support their development.

18. A fabled wonder in danger

» Prelims: UNESCO's list of world heritage in danger; GBR

» Mains: Threats to GBR; associated concerns and recommendations for way forward

Context:

- The World Heritage Committee's drawing up of a resolution to inscribe Australia's Great Barrier Reef (GBR) on the 'List of World Heritage in Danger'.

  * Given the geological history of the GBR and the vast diversity of marine life that it hosts, it was listed under UNESCO's World Heritage List in 1981

Background:

GBR under threat:

- The 2019 Outlook Report of the Great Barrier Reef Marine Park Authority, notes with concern the long-term state of the ecosystem deteriorating from poor to very poor.

  * The Outlook Report records widespread and significant declines in many coral species since 2014. It notes the decline in coral larvae and the reduction of adult brood stock.

Threats:

- The reef system faces severe environmental threats.

Climate change risks:

- The climate change crisis has led to warming of the ocean waters and has also contributed to rising sea levels. This has contributed to the GBR experiencing three big events of coral bleaching in 2016, 2017 and 2020.

Environmental pollution:

- Increasing use of chemicals in the agricultural sector and the farm run-off and the coastal pollution has been a big challenge to the GBR.

Impact of developmental activities:

- The coastal development and other commercial uses of the GBR like limestone mining has impacted the reef ecosystem.

- The Carmichael Coal Mine project with its increased shipping traffic through the Great Barrier Reef heritage area could have a negative impact on the reef

Other factors:

- Coral growth is also endangered by the proliferation of crown-of-thorns starfish, which consumes them.

Concerns:

Ecological:

- The destruction of the GBR will negatively impact the delicate ecological balance between the various organisms in the reef ecosystem.

- The GBR hosts an assemblage of fishes and invertebrates in the reefs, including the dugongs, green turtles and other species in seagrass meadows, and sharks, rays, anemones, sponges, worms.

Economic:

- The GBR is a major tourist destination.

- In 2015-16, tourism, fishing, recreational uses and scientific activities contributed an estimated $6.4 billion to the Australian economy.

- The threat to the GBR will thus an economic impact on Australia.

Conclusion:

- The updated Reef 2050 Plan that Australia is pursuing for conservation of the GBR ecosystem should incorporate the urgent need for resolute action on climate and pollution threats to the GBR.

Miscellaneous

19. HC dismisses plea on 5G

  » Prelims: 5G technology in India

Context:

- The Delhi High Court has termed the petition filed by actor Juhi Chawla against the roll-out of 5G technology in India as defective and done for media publicity.

Background:

- The actor had moved the Delhi High Court against the rollout of 5G technology in India.

- In her plea, she alleged that no person, animal, bird, insect & plant will be able to avoid exposure to levels of RF radiation that are 10 to 100 times greater than what exists today.

- The plea also demanded that the department concerned should certify that 5G technology is safe for humans and also animals and birds.

- This lawsuit by the actor and environmental activist has rekindled the debate on the possible harmful effect of 5G on humans.

What is 5G technology, and how is it different?

- 5G stands for 5th generation mobile network.

- It is a new global wireless standard after 1G, 2G, 3G, and 4G networks.

- The new network has been designed for enhanced connectivity across devices – cell phone or an IoT device in a smart home.

- The wireless technology is meant to deliver much higher data transfer speeds than what was possible on 4G. Also, 5G uses higher frequency waves than earlier mobile networks.

- Higher frequency means a shorter wavelength.

   * 5G waves are able to travel a shorter distance than 4G waves.

   * Therefore, an extensive network of 5G requires more ground-based transmitters.

What are the concerns?

- 5G emits its own electromagnetic radiation like all other radio waves. The concern is that these radiations can be harmful to humans and other organisms.

- Besides, critics and studies claim that the increased number of transmitters will further increase exposure to the radiation, potentially impacting a much wider number of people and animals.

Arguments against the claims:

- Though the studies are accurate in their own regard, none of them conclusively points out an impact to humans from Radio Frequency Radiations.

- While the case that 5G is harmful to humans is not as strong, there are concrete understandings of radiations that suggest no such connection is possible.

   * Radio wave band that is used for mobile phone networks (including 5G) is non-ionising. Such radio waves lack sufficient energy to cause cellular damage by breaking DNA apart.

Existing guidelines:

- Higher energy radiation levels such as medical x-rays and gamma rays are known to have health risks with extended exposure.

   * For such energy waves, there are strict advisory limits for exposure.

- Guidelines on the use of radio waves are also in place, and the 5G spectrum falls easily under those limits.

Miscellaneous

20. Energy inefficiency can short circuit cooling India

  » Prelims: Urban Heat island effect; India's cooling action plan; Star labelling Programme and the Energy Conservation Act, 2001.

  » Mains: Concerns associated with energy inefficient cooling appliances and recommendations to enable shift to more efficient cooling appliances

Background:

- Rising temperatures and heat waves are a growing threat to India as climate change accelerates.

   * As per the Union Ministry of Earth Sciences' first national climate change report, 'Assessment of Climate Change over the Indian Region', India's average temperature had risen by 0.7 degrees Celsius from 1901-2018.

- Global warming will lead to more frequent and intense heat waves.

* In the last three decades alone, there have been 660 heat waves across India causing 12,273 deaths.

Context:

• India, with currently low penetration levels of Air Conditioners (ACs), will likely require substantial cooling services to keep citizens healthy and productive.

• The India Cooling Action Plan projects the number of room air conditioners to become about four times in the next 10 years, and about 10 times in the next 20 years, making India the world's largest energy user for cooling.

Concerns

• The warmer it gets, the more we use air conditioning. The more we use air conditioning, the warmer it gets.

  * Cooling will likely be at the forefront of India's adaptation to climate change, but if cooling needs are met with inefficient ACs, it could be the bane of India's mitigation efforts.

• Air conditioning and refrigeration units run on electricity that relies primarily on fossil fuels to generate power. As the need for cooling rises, so too will the need for electricity.

• Air-conditioning units funnel heat outside, exacerbating the so-called "Urban Heat Island" effect, which makes cities warmer than the countryside.

• Use of coolants called Hydro Fluoro Carbons (HFCs)

• In 1987, countries around the world signed the Montreal Protocol, an agreement to phase out use of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs).

  * CFCs and HCFCs were used as refrigerants in air conditioning units and fridges, propellants in aerosol sprays, and fire suppressants in extinguishers.

• Scientists had found the gases were depleting the ozone layer, the atmospheric shield that filters the Sun's harmful ultraviolet radiation from reaching the Earth's surface.

• Scientists invented HFCs to take their place. HFCs don't damage the ozone layer, but as with their predecessors, they are potent greenhouse gases – as much as several thousand times stronger at absorbing heat than carbon dioxide.

• There is a lack of knowledge of the Star Labelling programme among the general populace.

* The Star labelling Programme has been formulated by the Bureau of Energy Efficiency, under the Energy Conservation Act, 2001.

* Presently, the program covers a star rating for 26 appliances/equipment including refrigerators and air conditioners.

* The objectives of the labelling program are to provide the consumer with an informed choice about energy-saving and thereby the cost-saving potential of the marketed household and other equipment.

* Energy labelling is one of the most cost-effective policy tools for improving energy efficiency and lowering the energy cost of appliances.

• Higher upfront cost:

  * The higher upfront cost of the higher star rated appliances serves as a disincentive to buy such products upfront.

Way forward

• Technological improvements will be important step to reducing the impact of space cooling. In fact, testing and development for HFC replacements should be strengthened

  * The LED revolution was spurred by innovation but also by better energy efficiency labeling on products and the discontinuing of out-of-date technology. Something similar needs to happen with air conditioning.

• Green urban spaces can help keep people safe and cool during heat waves and hot summers. Simple solutions can involve introducing more trees and parks and lightening the color of roads and building materials.

• Behavioral changes will be an important complement to policy and technological developments.

• As air conditioning is powered by electricity, shifting to a greater percentage of renewable resources could help reduce carbon emissions

• The Cool Biz campaign is a Japanese campaign initiated by the Japanese Ministry of the Environment from summer 2005 as a means to help reduce Japanese electricity consumption by limiting the use of air conditioning.

  * This was enabled by changing the standard office air conditioner temperature to 28 °C (or about 82 °F) and introducing a liberal summer dress code in the bureaucracy of the Japanese government so staff could work in the warmer temperature.

• Use of High Albedo Painting

  * These are Heat Reflective Paints

* It will help in Reduction of Roof Temperature

* Energy cost saving for Air-Conditioned Building

• Awareness campaigns on the benefits of energy efficiency along with subsidies and financial incentives that help with the higher upfront costs can help drive up the adoption of more efficient technologies.

• Encouraging the use of passive cooling alternatives including energy efficient building designs can help provide the desired thermal comfort with reduced dependence on energy intensive cooling technologies.

Conclusion

• The impending cooling demand transition in India offers a potential advantage. Because a majority of investments in cooling technologies, infrastructure, and behaviours are yet to be made, there is a unique opportunity to lock-in energy efficient consumption patterns.

Environmental conservation

21. New waste water treatment technology

» Prelims: Electro-coagulation and Electro-flotation

What's in the News?

• A new technology developed by a professor at the Chemical Engineering Department in Jadavpur University, Kolkata can reduce costs for low and medium scale enterprises.

Background:

• Low-income group users mostly cannot afford the high cost of treatment technologies available for handling oily wastewater generated at their source points.

• As a result, large amounts of untreated oily wastewater is discharged into the aquatic bodies without following the guidelines of the Pollution Control Board.

New Technology:

• The new technology uses a combination of Electrocoagulation and Electroflotation Enhanced Membrane Module (ECEFMM) techniques for wastewater treatment.

• Electrocoagulation is a waste water treatment technique that uses electrical charge for changing the particle surface charge, allowing suspended matter to form aggregates.

• Electroflotation is the separation of suspended particles from water using hydrogen and oxygen bubbles generated by passing electricity through water.

• The innovation being an economically feasible wastewater treatment technology (both in terms of capital and recurring investment) for low-scale

and medium enterprises, has a good market potential.

• Moreover, unlike other conventional treatments, it can break the highly stable oil-water emulsion through electric discharge and simultaneously separates oil from water with high efficiency.

• The technology was developed with support from the Advanced Manufacturing Technologies programme of the Department of Science & Technology (DST), Government of India.

• Benefits of the new technology:

* Requires less manpower.

* Does not need high-end technical adequacy for its operation.

* Low cost

* Recovered oil can be further used as an industrial burner oil, furnace oil, mould oil, hydraulic oil and so on.

Environmental conservation

22. Saving biodiversity, securing earth's future

» Prelims: Global biodiversity hotspots

» Mains: Biodiversity conservation; National Mission on Biodiversity and Human Well-Being

Background

• India's vast and rich biodiversity gives the nation a unique identity. The country has varied ecosystems across land, rivers, and oceans. The country is home to nearly 8% of global biodiversity on just 2.3% of global land area, and containing sections of four of the 36 global biodiversity hotspots.

Context

• The article talks about the need for rebuilding the relationship with nature, saving biodiversity with a view to securing Earth's future.

Value of forests:

• While it is not possible to arrive at the precise economic value of all ecosystem services provided by biodiversity, according to estimates, forests alone yield services worth more than a trillion rupees per year.

• The value would be much greater with grasslands, wetlands, freshwater, and marine added.

Concerns:

• Present times are witnessing worldwide declines in biodiversity.

• Globally, 7% of intact forests have been lost since 2000.

• Recent assessments indicate that over a million species might be lost forever during the next several decades.

- Climate change and the pandemic add to the existing stresses on the natural ecosystems.

- The pandemic has exposed the dysfunctional relationship between humanity and nature.

- Some of the issues that have come to the fore are:

  * the emergence of infectious diseases

  * lack of food and nutritional security

  * rural unemployment

  * climate change, with all its stresses on nature, rural landscapes, and public health.

National Mission on Biodiversity and Human Well-Being (NMBHWB):

- In 2018, the Prime Minister's Science, Technology and Innovation Advisory Council (PM-STIAC) in consultation with the Ministry of Environment, Forest, and Climate Change and other Ministries approved an ambitious National Mission on Biodiversity and Human Well-Being (NMBHWB).

- A Bengaluru-based Biodiversity Collaborative is working with the National Biodiversity Authority to hold consultations and prepare road maps of the Mission.

- The mission will be steered by a core of the country's leading biodiversity science and conservation organisations, from public, academic, and civil society sectors.

Significance of the Mission:

- Mission programmes offer nature-based solutions to numerous environmental challenges, including degradation of rivers, forests, and soils, and ongoing threats from climate change, with the goal of creating climate-resilient communities.

- Scientific inputs, especially related to geospatial informatics and policy, can guide the development of strategies for conservation and ecosystem management.

- The Mission will:

  * strengthen the science of restoring, conserving, and sustainably utilising India's natural heritage

  * embed biodiversity as a key consideration in all developmental programmes, particularly in agriculture, ecosystem services, health, bio-economy, and climate change mitigation

  * establish a citizen and policy-oriented biodiversity information system

  * enhance capacity across all sectors for the realisation of India's national biodiversity targets and United Nations Sustainable Development Goals (UN SDGs).

- It will allow India to emerge as a leader in demonstrating the linkage between the conservation of natural assets and societal well-being.

- The Mission's comprehensive efforts will empower India to restore, and even increase natural assets by millions of crores of rupees.

- Mitigation programmes will lessen the impacts of climate change and other natural disasters, such as pandemics and floods.

Way Forward:

- One of the ways to mitigate climate change and curtail future outbreaks of infectious diseases is to repair the dysfunctional relationship with nature.

- The concept of One Health for all living organisms, including the invisible biota in soils that sustain the agricultural systems must be rethought and reimagined.

  * Integrating human health with animal, plant, soil and environmental health has both the preventive potential to curtail future pandemics along with the interventional capability for unexpected public health challenges.

- India can rejuvenate agricultural production systems and increase rural incomes from biodiversity-based agriculture.

  * It will also help create millions of green jobs in restoration and nature tourism.

- There is a need for an extensive cadre of human resources required to meet the enormous and complex environmental challenges.

  * This will require training professionals in sustainability and biodiversity science, along with an investment in civil society outreach.

- Preserving biodiversity is directly relevant to the social, economic, and environmental well-being of people.

Miscellaneous

23. Study on the cold desert of Ladakh

  » Prelims: Westerlies; Slack water deposits

Context:

- The study conducted by the Wadia Institute of Himalayan Geology, Dehradun found that the cold desert Ladakh was actively flooding during the post-glacial warming.

Details:

- The study has shown that the region once experienced large floods that rose much above the present-day river level.

- It implies that in the scenario of global warming, when the higher Himalaya regions are expected to respond dramatically, flood frequency in Ladakh may increase, which may call for serious urban and rural planning.

- Large floods that naturally occur in major rivers of India fed by melting snow and glaciers and a continental scale precipitation regime of Indian Summer Monsoon (ISM) and Westerlies and East Asian Summer Monsoon (EASM) significantly modify the landscape and impact lives and economy of all that encroached into its geomorphic domain.

- These floods are of various kinds and origin (Glacial/landslide lake outbursts, cloud bursts, excessively strong monsoon) and have different forcing factors and frequencies and therefore add large uncertainty in flood prediction models.

- The researchers travelled through the tough terrains of Zanskar and Indus drained Himalaya and looked minutely into geological signatures of past floods in the Ladakh region that date between 15-3 thousand years before present.

- Flood leaves a stack of fine sand and silts at places along its channel where the flood energy drastically reduces, for example, wider segments of river valleys, confluences, behind rock embayments which is called Slack Water Deposits (SWDs).

  * The SWDs were located at several locations along the Zanskar and Indus rivers, counted vertically for the number of floods, and were dated using technology called Optically Stimulated Luminescence (OSL) and Accelerator Mass Spectrometry of 14C.

  * The flood deposits were also analysed for their source.

- This analysis showed that the cold desert once experienced a large flood that rose to more than 30 m above the present-day river level.

- The active flood plains nearer to river were also utilized by Humans, possibly as camping sites and cooking as indicated by presence of hearths at several locations and levels of flood deposits.

- A detailed genomic and isotopic-based study of these anthropogenic relics may further help understand the geographical antiquity of migrating humans and the kind of food and vegetation they were living on.

Initiatives in News

24. Making peace with nature

- » Prelims: Bonn challenge; New York declaration on forests and UN Decade on Ecosystem Restoration

- » Mains: Ecosystem degradation- causes and impact; Significance of ecosystem restoration and steps to be taken

Context:

- The World Environment Day 2021 celebrations witnessed the launch of the UN Decade on Ecosystem Restoration 2021 – 2030.

Background:

- During the Bonn Challenge 3.0 high-level meeting in 2018, El Salvador announced plans to propose a United Nations Decade on Ecosystem Restoration 2021–2030, aimed at boosting existing efforts to restore degraded ecosystems.

  * The Bonn Challenge aims to restore 350 million hectares of degraded ecosystems globally by 2030.

- Subsequently in 2019, the UN General Assembly officially adopted the resolution declaring 2021–2030 the UN Decade of Ecosystem Restoration.

Environmental degradation:

- Environmental degradation is the deterioration of the environment through depletion of resources such as quality of air, water and soil; the destruction of ecosystems; habitat destruction; the extinction of wildlife; and pollution.

- Ecosystems and the environment are being degraded at an unprecedented rate.

- Humanity is facing a "triple environmental emergency" of biodiversity loss, climate disruption and escalating pollution.

Effect on human beings:

- Environmental degradation is one of the ten threats officially cautioned by the high-level panel on Threats, Challenges and Change of the United Nations.

- Environmental degradation leads to the reduction of the capacity of the environment to meet social and ecological objectives and needs.

  * The degradation of land and marine ecosystems undermines the well-being of 3.2 billion people and costs about 10 per cent of the annual global gross product in loss of species and ecosystems services.

  * Key ecosystems that deliver numerous services essential to food and agriculture, including supply of freshwater, protection against hazards and provision of habitat for species such as fish and pollinators, are declining rapidly.

  * Currently, about 20 per cent of the planet's vegetated surface shows declining trends in productivity with fertility losses linked to erosion, depletion and pollution in all parts of the world. By 2050 degradation and climate change could reduce crop yields by 10 per cent globally and by up to 50 per cent in certain regions.

- The COVID-19 pandemic is a direct result of the degradation of natural areas, species loss, and exploitation. The clearance of forests has led to zoonotic pathogens more frequently jumping from wildlife to humans, creating public health emergencies.

Ecosystem restoration:

- Ecosystem restoration is defined as a process of reversing the degradation of ecosystems, such as landscapes, lakes and oceans to regain their ecological functionality; in other words, to improve the productivity and capacity of ecosystems to meet the needs of society.

- Ecosystem restoration would focus on re-establishing ecological integrity.

- This can be done by allowing the natural regeneration of overexploited ecosystems or by planting trees and other plants or by adopting soil enhancement measures or improved and sustainable management practices.

UN Decade on Ecosystem Restoration:

- The UN Decade on Ecosystem Restoration aims to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean.

- It is a joint initiative by the UN Environment Programme and the UN Food and Agriculture Organization.

- The UN has called for the restoration to nature of a total area the size of China.

- Ecosystem restoration promoted through this UN Decade takes a multi-functional landscape approach, looking at the mosaic of interdependent land uses in which ecological, economic, social, and development-based priorities can find convergence, balance, and complementarity.

- As part of the efforts towards ecosystem restoration, there would be an emphasis on building a strong, broad-based global movement to facilitate global cooperation for the restoration of degraded and destroyed ecosystems. The initiative will aim to enhance cooperation and resource mobilization to increase the flow of financial resources, technologies, knowledge, and capacity building to countries and jurisdictions working towards ecosystem restoration.

Significance of the effort:

- Ecosystem restoration benefits people and nature.

Counter triple environmental emergency:

- The initiative will help counter the 'triple environmental emergency' that the world faces today of climate disruption, biodiversity loss and escalating pollution.

- The envisaged efforts could contribute about a third of the needed climate change mitigation, as well as protect nature and biodiversity. Ecosystem restoration could remove up to 26 gigatons of greenhouse gases from the atmosphere by reviving natural carbon stores.

- The initiative can help halt the collapse of biodiversity by rebuilding homes for wildlife by restoring forests.

Move towards a more sustainable future:

- The envisaged efforts will help put the world on track for a sustainable future.

- Mainstreaming ecosystem restoration in policy and planning will help address current developmental challenges due to land degradation, biodiversity loss, and climate change vulnerability through climate change mitigation and adaptation.

Benefits to humans:

- Ecosystem restoration approach offers significant benefits to humans.

  * Ecological integrity will help ensure food security and water supply for humans and will thus help manage the associated risks of conflict and migration.

  * A well-planned ecosystem restoration approach offers an unparalleled opportunity for job creation. The enhanced opportunities for livelihood can help end poverty.

  * The initiative also makes economic sense given that the restoration of 350 million hectares of degraded terrestrial and aquatic ecosystems by 2030 could generate US$9 trillion in ecosystem services. The benefits obtained from ecosystem generation on average exceed the costs of the initial investment tenfold, whereas the cost of inaction is at least three times the cost of ecosystem restoration.

Raise awareness:

- The initiative will help raise awareness of the importance of functional ecosystems for human well-being and productive activities, local development and the economic sustainability of society.

Link with other initiatives:

- Ecosystem restoration is recognized as a key component in achieving targets under some important international conventions and agreements.

  * Ecosystem restoration is fundamental to achieving the Sustainable Development Goals, mainly those on climate change, poverty eradication, food security, water and biodiversity conservation.

* It would also be an important pillar of international environmental conventions, such as the Ramsar Convention on Wetlands, the Strategic Plan for Biodiversity 2020 and its Aichi Biodiversity Targets, the United Nations Framework Convention on Climate Change and Paris Agreement, the United Nations Convention to Combat Desertification and its target of Land Degradation Neutrality

* Planned activities during the UN Decade on Ecosystem Restoration are also designed to contribute to the Bonn Challenge to restore degraded and deforested land.

Link with health:

- Healthier ecosystems and a healthier respect for the wild spaces of our world will give us a healthier planet and healthier people.

- Ecosystem restoration is a necessary intervention to counter the increasing number of zoonotic pathogens jumping onto humans. The recent COVID-19 pandemic is an illustration of this.

Steps to be taken:

GHG mitigation:

- There must be a concerted effort to reduce carbon dioxide emissions as part of climate change mitigation efforts.

    * Globally the net carbon dioxide emissions should reduce by 45% by 2030 compared to 2010 and must reach net-zero emissions by 2050 to be able to achieve the 1.5°C Paris Agreement target.

- This needs the transformation of energy systems, land use, agriculture, forest protection, urban development, infrastructure, and lifestyles.

Conserving biodiversity:

- The ecosystem restoration approach must be aligned with conserving and restoring biodiversity given the critical importance that biodiversity plays in maintaining ecological balance.

More sustainable approach:

- There is an urgent need to transform the economic, financial and production systems towards sustainability.

- This would require eliminating environmentally harmful subsidies, considering natural capital in calculating the wealth of the nation and investing in low-carbon and nature-friendly technologies. Such an approach will help minimize air and water pollution and waste.

- The world should work towards creating food systems that work with nature and reduce waste.

- The government has to incentivize financial flows and investment patterns towards sustainability by appropriate policy measures and fiscal support.

Participative approach:

- Transformational ecosystem restoration requires a participative approach.

- The initiative will only succeed if everyone plays a part. While efforts from national governments are vital, everyone has a role to play, including the private sector, NGOs and individuals.

Conclusion:

- In the light of the "triple environmental emergency" that the world faces today, reconciling humanity with nature is essential.

- There has never been a more urgent need to restore damaged ecosystems.

- Ecosystems support all life on Earth. The healthier our ecosystems are, the healthier the planet – and its people.

Additional information:

- The New York Declaration on Forests (NYDF) is a voluntary and non-binding international declaration to take action to halt global deforestation by 2030.

- In 2019, India raised its ambition for restoration, promising an increase in restored degraded land from 21 to 26 million hectares by 2030 under the Bonn Challenge

Places in News

25. Assam seeks realignment of tracks through wetland

» Prelims: Deepor Beel and other Ramsar sites in India

» Mains: Balancing the need for development with environmental conservation

Context:

The Assam government has proposed the realignment of a broad-gauge railway line through the DeeporBeel.

- Clearance from the National Green Tribunal is expected once the eco-sensitive zone is declared by the concerned authorities.

Issue:

- Several elephants have been run over on the railway track between the elevated Rani Reserve Forest and the sanctuary.

- The elephants use four corridors crossing the track to often bathe and feed on the aquatic plants in the wetland.

- Besides, it creates noise pollution and disturbs the migratory birds.

DeeporBeel:

- DeeporBeel is an 'Important Bird Area' site as designated by Birdlife International.

- It is a bird sanctuary that shelters over 200 species of birds, including about 70 species of migratory birds.

- It is also designated a wetland of international importance under the Ramsar Convention of Wetlands.

   * The wetland is also used by elephants as a major corridor.

   * It is considered one of the largest and important riverine wetlands in the Brahmaputra Valley of lower Assam. It is a permanent freshwater lake.

   * It is located about 10 km southwest of Guwahati in Assam.

HEALTH ISSUES

1. **Chimeric Antigen Receptor T-cell (CAR-T) therapy**

   » Prelims: CAR-T cell therapy; National Bio-Pharma mission

   Context:

   • Department of Biotechnology supported first CAR-T cell therapy conducted at ACTREC, Tata Hospital in Mumbai.

   Background:

   • The Chimeric Antigen Receptor T-cell (CAR-T) therapy has emerged as a breakthrough in cancer treatment.

   • Clinical trials have shown remarkable results especially for patients suffering from Acute Lymphocytic Leukaemia.

   • However it is extremely expensive (each patient's CAR-T therapy costs Rs 3-4 crores) in India and therefore, unavailable in the country.

   • The manufacturing complexity is a major reason for the therapy cost.

   • In order to promote and support development of CAR-T cell technology against cancer and other diseases, BIRAC and DBT have taken initiatives and launched specialized calls to invite proposals in the last 2 years.

   CAR-T Therapy in India:

   • In June 2021, the first CAR-T cell therapy was done at the Bone Marrow Transplant unit at ACTREC, Tata Memorial Centre in Mumbai.

   • This is a "first in India" gene therapy in early phase pilot clinical trial.

   • The trial was conducted by IIT Bombay and Tata Memorial Hospital, Mumbai partly supported by the BIRAC-PACE scheme.

   • The central government's National Biopharma Mission-BIRAC has approved 19.15 Cr to the team for conducting a first-in-human phase-1/2 clinical trial of the CAR-T cells.

   Chimeric Antigen Receptor T-cell Therapy:

   • It is a type of treatment in which a patient's T cells (a type of immune system cell) are changed in the laboratory so they will attack cancer cells.

   • T cells are taken from a patient's blood. Then the gene for a special receptor that binds to a certain protein on the patient's cancer cells is added to the T cells in the laboratory.

   • The special receptor is called a chimeric antigen receptor (CAR). Large numbers of the CAR T cells are grown in the laboratory and given to the patient by infusion.

   • It is used to treat certain types of blood cancers and is being studied for the treatment of other cancers also.

2. **'Delta plus' and an emerging public health threat**

   » Prelims: Delta plus variant; Variant of interest and variant of concern classification

   » Mains: Concerns associated with the new variant

   Context:

   • Concerns around the world and in India about 'Delta plus' variant of the SARS- CoV-2

   Background:

   Delta plus variant:

   • Formally known as 1 or B.1.617.2.1, the Delta plus is an emerging form of the Delta variant (B.1.617.2).

   • It has an additional mutation called K417N, which has previously been identified in the Beta variant and the Gamma variant.

     * This mutation in the virus's spike protein facilitates entry into human host cells.

       » The spike protein, an important component of the coronavirus, stimulates the virus's entrance into human cells and causes infection.

   • It is currently a "variant of interest", and hasn't been classified as a "variant of concern" yet in the World Health Organization's list.

   • Research is on to understand its transmissibility, virulence.

   Concerns:

   High number of mutations:

   • The Delta variant has a number of mutations that have allowed it to dominate in several countries, thus posing new challenges to the management of the pandemic.

   High infectiveness:

   • The K417N mutation found in the Beta variant and the Gamma variant has been characterised as being highly infectious and thus there are the concerns of a new wave associated with this variant.

* In the light of a recent spike in positivity rate in some districts of Maharashtra and the increase in the delta plus variants recorded from these districts experts have warned that Delta plus variant might be the reason behind a third wave of the COVID-19 pandemic.

Impact of the vaccines on the new variant:

- Given the fact that the delta plus variant has significant differences compared to the strain that has been used by pharma companies to design vaccines, there are doubts being expressed on whether the existing vaccines would be effective against the delta plus variant.

- Studies to determine the potency of Covishield and Covaxin against the Delta variant have indicated that while antibodies continued to be produced against the variant, they were fewer antibodies produced than those produced against the strain used by companies to prepare their vaccines.

Render monoclonal antibody treatment ineffective:

- A major concern with the AY.1 is the presence of the K417N mutation. Previous studies have associated the mutation with resistance to the newly developed monoclonal antibody treatment drug, Casirivimab and Imdevimab.

- The mutation presumably allows the new variant to "escape" antibodies in the monoclonal antibody treatment regimes.

Diseases in news - Ebola

3. Ebola outbreak in Guinea is over: WHO

» Prelims: Ebola

- Ebola virus disease (EVD) is a rare but severe, often fatal illness in humans.

- It affects humans and nonhuman primates, such as monkeys, gorillas and chimpanzees.

- It is thought that fruit bats of the Pteropodidae family are natural Ebola virus hosts.

- Ebola is introduced into the human population through close contact with the blood, secretions, organs or other bodily fluids of infected animals such as fruit bats, chimpanzees, gorillas, monkeys, forest antelope or porcupines found ill or dead or in the rainforest. Ebola then spreads through human-to-human transmission humans through contact with bodily fluids such as blood.

- The 2014–2016 outbreak in West Africa was the largest Ebola outbreak since the virus was first discovered in 1976. The outbreak started in Guinea and then moved across land borders to Sierra Leone and Liberia.

- The average EVD case fatality rate is around 50%.

- Vaccines to protect against Ebola have been developed and have been used to help control the spread of Ebola outbreaks.

Context:

- The World Health Organization officially announced the end of Guinea's second Ebola outbreak.

Diseases in news – H10N3 bird flu

4. H10N3 bird flu

» Prelims: H10N3 bird flu

China reported the world's first human infection of the H10N3 bird flu.

- It has said that the risk of it spreading widely among people was low.

- China has described H10N3 as low pathogenic — less likely to cause death or severe illness in birds.

- Several strains of bird flu have been found among animals in China but mass outbreaks in humans are rare.

- The last human epidemic of bird flu in China occurred in late 2016 to 2017, with the H7N9 virus.

Miscellaneous

5. Indemnity to vaccine makers yet

» Prelims: Indemnity

Context:

• The Union government has still not taken a final decision on the indemnity to either foreign or local COVID-19 vaccine manufacturers.

Background:

• Pfizer and Moderna have been demanding indemnity as a pre-condition to enter into supply contracts with India.

• Local manufacturer Serum Institute of India (SII) is also seeking the same.

• The government said it was considering the requests, and is yet to take a decision.

What is indemnity?

• The indemnity will protect manufacturers from any potential civil-legal liability or immunity from being sued by people for any unforeseen complications arising from their COVID-19 vaccine.

Why are manufacturers demanding indemnity?

• The vaccines were developed at record speed and were approved for emergency use.

• As the processes were expedited, there is a possibility of potential unknown side-effects.

• Therefore, the vaccine makers have demanded the governments to support them by providing them indemnity.

Pfizer enjoys such immunity in the US, UK and most other countries where it is supplying COVID-19 vaccines.

What happens in case the Government allows indemnity?

• Indemnity is only a contractual arrangement between the vaccine manufacturer and the government will be privy.

• In case people suffer from a grave injury, disability and death linked to the vaccine, indemnity doesn't stop people from suing the manufacturer.

• Liability under the legislation will be intact. They can recover the losses contractually from the government.

Way Forward:

• There is a need to strengthen adverse event following immunisation (AEFI) reporting and investigations.

• Government must be more transparent on indemnity arrangements.

• At present, there is no compensation mechanism available for COVID-19 vaccine linked serious adverse events or for that matter any vaccine.

• Public health activists say the government should create a compensation mechanism.

Miscellaneous

6. International Yoga Day

» Prelims: Yoga day; AYUSH

Context:

• Seventh International Yoga Day observed on 21 June, 2021.

Details:

• The theme for this year's International Day of Yoga is "Yoga for Wellness".

• The International Yoga Day was declared by the UNGA in 2014 on India's initiation.

• On the occasion of the 7th Yoga Day, the Prime Minister launched the M-Yoga App.

   * The app will provide users with a collection of videos and audio practice sessions that they can do in the comfort of their own homes, as and when they wish.

   * The app can be used as a daily yoga companion for persons aged 12-65 years.

   * The mYoga app was developed through a "review of scientific literature and extensive international expert consultation processes," according to the WHO website.

   * The app is a work of collaboration between the World Health Organisation (WHO) and the Ministry of AYUSH, Government of India.

   * It is available in English, Hindi and French and will soon be available in other UN languages.

• The m-Yoga (mobile-Yoga) Project was undertaken by WHO and the AYUSH Ministry in 2019. It focused on the following areas:

   * Common Yoga Protocol for General Wellness

   * Yoga for mental health and resilience

   * Yoga for adolescents

   * Yoga for pre-diabetes

Governmental Initiatives

7. "JaanHaiToJahaanHai" Campaign

» Prelims: Jaan Hai To Jahaan Hai campaign

» Mains: Initiatives being taken to address vaccine hesistancy

Context:

- "JaanHaiToJahaanHai" Awareness Campaign launched by the Union Minority Affairs Minister.

Details:

- It is a nationwide awareness campaign to create awareness on Corona vaccination in rural and remote areas of the country and also to "Crush and Curb" the rumours and apprehensions regarding the on-going vaccination drive.

- The campaign has been launched from Rampur, Uttar Pradesh.

- Under the campaign, various religious leaders, prominent people from social, educational, cultural, medical science and other fields are giving effective messages to the people to get vaccinated. Street plays will also be organised across the country.

- The campaign has been launched by the Minority Affairs Ministry along with various socio-educational organisations, NGOs and Women Self Help Groups.

Novel treatment approaches

8. SPAG9

  » Prelims: Immunotherapy

Context:

- DBT-NII received Trademark for India's First Indigenous Tumour Antigen SPAG9.

Details:

- India's first indigenous tumour antigen SPAG9 was discovered by Dr Anil Suri in 1998 who is heading the Cancer Research Program at NII (National Institute of Immunology, New Delhi)

  * The Cancer Research Program is funded by the Department of Biotechnology (DBT).

- The SPAG9 antigen has received the trademark ASPAGNIITM. Currently, ASPAGNIITM is being used in Dendritic Cell (DC) based immunotherapy in cervical, ovarian cancer and will also be used in breast cancer.

DC-based Immunotherapy:

- Immunotherapy is a new approach that exploits the body's inner capability to put up a fight against cancer.

- With this approach, either the immune system is given a boost, or the T cells are "trained" to identify recalcitrant cancer cells and kill them.

- In this personalised intervention, those patients expressing SPAG9 protein can be treated with DC-based vaccine approach.

- In DC-based vaccine, patient's cells called monocytes from their blood are collected and modified into what are called dendritic cells.

- These dendritic cells are primed with ASPAGNIITM and are injected back to the patient to help the 'fighter' cells, or T-cells, in the body to kill the cancer cells.

- DC-based immunotherapy is safe, affordable and can promote antitumor immune responses and prolonged survival of cancer patients.

Background:

- Cancer kills 8.51 lakh people in India every year.

- According to the WHO, one in 10 Indians will develop cancer during their lifetime, and one in 15 will die of cancer.

Miscellaneous

9. Unani Medicine

  » Prelims: Unani medicine

- The Unani system of medicine originated in Greece, however, its present form was saved by the Arabs.

- Unani medicine is also known as UnaniTibb, Arabian medicine, or Islamic medicine.

- It is a healing philosophy that takes from ancient Greek medicine. In Arab, Unani means 'Greek.'

- It assumes the four main elements – Fire, Water, Air and Earth which corresponds to four humours – Phlegm, Black bile, Blood, and Yellow bile respectively.

- Unani was introduced in India by the Arabs and Persians.

Context:

- All India Unani Conference and Aligarh Muslim University's A.K. Tibbia College have demanded just treatment for the Unani system of medicine in the newly formed National Commission for Indian System of Medicine.

Issue:

- It has been pointed out that the Unani System that has a considerable presence in the country and abroad has been clubbed with regional systems of Siddha and Sowa Rigpa in the Commission.

- The Ministry of AYUSH has permitted Ayurvedic postgraduates of surgery to perform surgical procedures while ignoring the right of Unani postgraduates in surgery with similar course contents and training.

- An appeal has been made for an independent board, fair distribution of resources and appropriate representation in the Commission.

National Commission for Indian System of Medicine:

- The National Commission for Indian System of Medicine Bill, 2019 was introduced in RajyaSabha in 2019 and was passed by both the houses of the parliament in 2020.

- The Bill sought to repeal the Indian Medicine Central Council Act, 1970 and provide for a holistic medical education system.
- It established a National Commission for Indian System of Medicine (NCISM).

Functions of the NCISM:

- Framing policies for regulating medical institutions and medical professionals of the Indian System of Medicine.
- Assessing the requirements of healthcare-related human resources and infrastructure.
- Ensuring compliance by the State Medical Councils of Indian System of Medicine of the regulations made under the Bill.
- Ensuring coordination among the autonomous boards set up under the Bill.

Issues related to public health - Multi drug resistance

10. Why bacteria develop multi-drug resistance

» Prelims: bacterial evolution; fitness cost

Context:

- Research into the process of evolution of bacteria, from the Population Biology Lab at Indian Institute of Science Education and Research, Pune.

Background:

Bacterial evolution:

- Bacterial evolution refers to the heritable genetic changes that a bacterium accumulates during its life time, which can arise from adaptations in response to environmental changes or the immune response of the host.
- Because of their short generation times and large population sizes, bacteria can evolve rapidly.

Fitness cost of antibiotic resistance evolution:

- The cost to the 'fitness' of an organism is its ability to replicate and survive in a competitive environment.
- Consider an antibiotic which targets an important biological pathway. Mutations that confer antibiotic resistance often involve modification of the target enzyme to prevent antibiotic binding. These mutations often make these enzyme suboptimal compared to evolutionary optimized "wild-type" version.
- This can reduce fitness, manifesting as decreased virulence, transmission, and growth rate in antibiotic-free environment. However, despite being less fit under normal growth conditions, this mutant can survive under conditions of antibiotic treatment. So this is a trade-off also known as fitness cost.

- Thus when bacteria become fit in one environment, they either lose fitness or fail to increase fitness in other environments. Thus the evolution of antibiotic resistance carries a fitness cost, expressed in terms of reduced competitive ability in the absence of antibiotics.
- If antibiotic resistance could be acquired by bacteria without any "fitness cost" all the human bacteria (as well as all the environmental ones) would be pan-resistant already. The differing fitness cost associated with different bacteria's is the reason why some bacteria evolve multi-drug resistance while others do not.
  * Gram-positive bacteria are more resistant to antibiotics and the Gram-positive bacteria have a significantly greater fitness costs associated with resistance mutations when compared with Gram-negative bacteria.

Details:

- E. coli bacteria which was selected for the study, were evolved in fluctuating and steady environments and observed. During evolution, the fitness costs experienced by bacteria under constant and fluctuating environments were analysed using whole-genome, whole-population sequencing analysis
- Population size was found to be an important factor. The population size determined the kind of mutations available to the bacteria, which in turn, leads to the type of fitness costs they evolve.
- The study concluded that when the environment is fluctuating, large (but not small) populations can by-pass the effect of fitness cost better.
  * Large populations were able to develop certain compensatory mutations that allowed them to survive in different environments.
  * Larger populations contained greater number of mutations which enabled them to bypass the fitness costs.

Diseases in news-COVID19

11. A policy difficult to defend

» Prelims: Herd immunity

» Mains: Concerns associated with the new vaccination policy; Recommendations

Context:

- India's new vaccination policy.

Liberalized vaccination policy:

- Under the new vaccination policy, States will no longer have to bear the responsibility or expenses of procuring vaccines; the Centre will procure vaccines on behalf of the States as the single purchaser and provide them to states free of cost.

- Of the total domestic production of vaccines in India, 75% has been reserved for exclusive government purchase while 25% of the total vaccines have been opened up for private sector procurement.

A look at numbers

- Analysis of actual inoculations till May 30 shows that private centres account for barely 7.5% of total doses administered.
- In almost 80% of districts, the public sector has provided over 95% of all vaccine doses so far.
  - * The private sector's share is less than even 1% ¡n half the districts, especially in predominantly rural areas and ¡n the Northeast.
- Even the little the private sector has done is concentrated in a few urban pockets, with just 25 districts in some of the country's largest metropolises accounting for 54% of all private vaccination.
  - * The highest shares of private hospitals in vaccination are, not surprisingly, ¡n urban mega sprawls like Bengaluru, Delhi, Hyderabad, Mumbal, Kolkata and Chennai
  - * The analysis raises questions about whether a 25% quota for the private sector is justified by actual performance.

Concerns:

- The article expresses concerns over the provision to reserve 25% of the vaccines for the private sector based on the following arguments.

Demand supply mismatch:

- The private sector's share of total manufactured vaccines is not proportional with the private sector's share of total vaccination centres, which are much lesser than the number of government vaccination centres.
- The demand for free vaccines at the government centres continues to be high and the proposed share for the private sector might result in a demand-supply mismatch between government and private centres.

Doubts over ability to pay:

- The allocation of a 25% share for private vaccination entails an implicit assumption that 25% of the population is willing and able to pay for the vaccine. This goes against available evidence which notes that the affluent form only a small fraction of the uppermost 25% of India's population based on income.

Depress vaccine demand generation:

- The move to divert 25% of the vaccines through the private health sector could disincentivize vaccine uptake and depress vaccine demand generation.

Crowding out effect:

- With the need for online registration for free vaccination, the affluent class with greater digital awareness is more likely to block slots for free vaccination. This can lead to a 'crowding out' effect for the poorer sections.

Policy incoherence:

- A large chunk of the proposed self-payers for vaccination are likely to be younger, productive individuals, who are at lesser risk of severe disease and mortality than the elderly.
- Hence the new policy fails to consider the age structure into vaccination policy and its possible implications.

Improbability of achieving herd immunity:

- Though some may argue that the new vaccination policy is driven by herd immunity considerations, which estimate that vaccination of 60% to 80% of the population can help limit the spread of the infection, the resultant disparities along geographic and socioeconomic lines which could result from the new policy would not be consistent with the notion of herd immunity.
- It is critical to note that vaccinating the poorer and marginalised sections, even if it is free of charge, is much more challenging than vaccinating the easily accessible better-off sections.

Inequity:

- An inadvertent consequence of the new policy is that it would result in higher out-of-pocket expenditure. This would amount to deepening the already existing inequities in India.

Way forward:

Increase share of government's uptake of vaccines:

- Given that vaccine as a commodity has much higher social benefits than private benefit, there is the urgent need to increase the government's share of total vaccines.

Engagement with private sector:

- The private sector is marked by greater reach, innovative processes, and efficiency. These strengths of the private sector need to be sufficiently exploited as part of a strategic purchasing framework which could also reduce the cost of vaccines for the private sector and thus help vaccine uptake.

Issue related to health sector

12. **Rural health care needs fixing, and now**

   » Prelims: National Health Policy 2017; Astana declaration

   » Mains: Lacunae in rural health infrastructure; Significance of primary healthcare and recommendations in this direction

Background:

The pandemic has exposed the lack of robust healthcare infrastructure in India:

- The two consecutive waves of COVID-19 and the lack of adequate and timely health care infrastructure in the country have led to a health crisis in India.

- The second wave of the pandemic has also affected the rural areas and the rural people are struggling to get timely and quality health care.

- A key takeaway from the pandemic is that India needs to focus on improving its health infrastructure more so in the rural areas.

Lacunae in rural health infrastructure:

- Despite the rural areas supporting a substantial share of the Indian population, rural areas continue to be plagued by the issue of inadequate and poor health infrastructure. As a result, our vast rural populace remains deprived of critical health interventions.

  * Out of the 139 crore population of India, around 91 crore people are living in 649,481 villages of India accounting for about 65% of the Indian population.

- As against the ideal of one Primary Health Centre (PHC) for every 10 villages, India has only one PHC for 25 villages. As per this metric India has a shortfall of 3,594 PHCs.

- Similarly, there is a shortfall of community health centres (CHCs) as well.

  * CHCs act as a referral centre covering a population of 80,000 people to 1.20 lakh people.

- The CHCs are also grossly understaffed. There is a shortfall of 81.8% specialists at CHCs.

- The number of hospital beds per capita continues to be low in India with rural areas having far lesser hospital beds as compared to urban areas.

  * As per the Human Development Report 2020, India has eight hospital beds for a population of 10,000 people. While for China the number stands at 40 beds for a population of 10,000 people.

- The number of medical colleges and hospitals continue to be low in rural areas.

Significance of primary health care:

Lessen the burden on tertiary level:

- If the SHCs work effectively, there will be less pressure on PHCs. If the PHCs function well, then there will be minimal pressure on CHCs and so on.

- PHC system can tackle up to 80% of health needs and can reduce the need for specialized health care services. Thus strengthening the primary health infrastructure will help lessen the burden on hospitals.

Economic viability:

- A robust rural healthcare infrastructure with a healthy linkage between the SHCs, PHCs and CHCs will help treat the disease/s at the primary level itself. This will help India save money and resources being spent at tertiary level health care which is often costly.

Correction of the inverted pyramid pattern in India:

- The focus on primary health care will help correct the inverted pyramid of Health Services provision and utilization pattern being observed in India.

  * A large proportion of health services in India are delivered at the secondary and tertiary levels whereas the demand is high at the primary level. Thus, the pattern of service utilisation and delivery is inverted in India.

- The reorganization and strengthening of the health services at the primary level (supply side) while also changing the behaviour of people to use the services at the primary level (demand side) will help India correct the inverted pyramid as discussed above.

Better health outcomes:

- A robust primary health infrastructure has the advantage of early detection of diseases and timely interventions. Thus it will invariably lead to better health outcomes for the patients.

Potential for adoption of preventive and health promotion approach:

- Given that primary healthcare acts as the first point of contact between the health infrastructure and a large proportion of the general populace in our country, they can be used to promote a preventive approach to healthcare.

  * As per an estimate of WHO, non-communicable diseases (NCDs) such as hypertension, diabetes and cardiovascular diseases cause nearly 5.87 million (60%) of all deaths in India. Given the difficulty of a healthcare infrastructure being able to cater to such a large population, a preventive and promotive healthcare approach becomes inevitable.

- As part of Ayushman Bharat, the Government is supporting the States for strengthening Sub Centres and Primary Health Centres as Health and Wellness Centres for the provision of comprehensive primary care that includes preventive and health promotion at the community level with a continuum of care approach. Under this scheme, universal screening, prevention and management of common non-communicable diseases have been rolled out across the country

Recommendations:

Primary healthcare approach:

- The 2018 Astana Declaration acknowledges Primary Health Care (PHC) approach as being the most effective way to sustainably solve today's health and health system challenges. Hence such an approach becomes inevitable for a healthy India.

- As per WHO, primary health care is a whole-of-society approach to health and well-being centred on the needs and preferences of individuals, families and communities. It ensures that people receive comprehensive care – ranging from promotion and prevention to treatment, rehabilitation and palliative care – as close as feasible to people's everyday environment.

Sub-district based health system in India:

- Considering the large size of districts in India, effective planning in health services and tackling inequities in health outcomes need a sub-district unit-level planning. Thus the planning and implementation of funding and human resources should focus on these lines.

- There should be a greater focus on establishing block level health units.

Addressing the shortfall in rural healthcare infrastructure:

- Villages need adequate health services.

- The number of PHCs should be expanded and also these PHCs should have the provision of some beds and other minimum necessary facilities.

- The CHC must be equipped with the necessary infrastructure and trained medical personnel.

- Regular health camps need to be organized for areas without necessary access to the healthcare infrastructure.

- The chain of SHCs, PHCs and CHCs must be designed to take care of the multiple health needs of our people.

Focussing on health outcomes:

- Apart from higher budgetary allocations to the health sector, there is also a need to ensure that the money being spent improves health facilities and improves health outcomes.

  * In India, the recent National Health Policy 2017 has proposed to spend two-thirds or more of Government spending on the PHC system.

- The healthcare facilities in the rural areas must be able to provide regular and comprehensive healthcare needs based on the World Health Organization (WHO)'s principle of Universal Health Coverage.

  * Universal Health Coverage ensures that all people have access to needed health services (including prevention, promotion, treatment, rehabilitation and palliation) of sufficient quality to be effective while also ensuring their affordability.

Collective responsibility:

- Despite health being a State subject, the state and central governments must take up the task of improving the healthcare infrastructure in rural areas as a collective responsibility.

- Additionally, the governments must also engage with all kinds of rural community organisations such as panchayats, gram sabha, notified area committees, municipal bodies and non-governmental organisations to realize the potential benefits that such a collaborative approach can yield.

Issues related to health sector

13. <u>South Asia's healthcare burden</u>

  » Mains: Concerns associated with health sector in India and recommendations for improving it

Background:

- Despite recording comparatively lower infection and mortalities in the first wave of the pandemic, South Asia has been devastated from the second wave.

- India, the largest country in South Asia, has been the most affected. The "super spreader" events, fragile health infrastructure, citizens not following health protocols, and logistical mismanagement have resulted in record infections and death rates during the second wave.

- Pakistan, Bangladesh, Nepal and Sri Lanka also remain vulnerable to more infections and deaths due to the pandemic.

  * Bhutan is the only exception so far in South Asia. Bhutan's success in tackling the pandemic stems from a well-funded and prepared public health system with stringent measures, responsible citizenship, and an accountable government.

Details:

- The article discusses some of the common lacunae in the health systems of the South Asian countries of India, Pakistan and Bangladesh, which have contributed to worsening the impact of the second wave of the COVID-19 pandemic.

Concerns:

Inadequate public health infrastructure:

- As against the World Health Organization's (WHO) prescribed standard of 1 doctor for 1000 people, India's public healthcare sector has been operating at 0.08 doctors per 1,000 people.

- India has only half a bed available for every 1,000 people, which is inadequate even for normal scenarios. Bangladesh and Pakistan have a bed to patient ratio of 0.8 and 0.6, respectively, and a doctor availability of less than one for every 1,000 people.

Low state investment into health sector:

- State investment in the health sector remains highly inadequate. Major public sector investments in India, Pakistan, and Bangladesh have been towards infrastructure and defence, with health taking a backseat.

  * India spends a little over 1% of the Gross Domestic Product (GDP) on the health sector. While India has the world's third-largest military expenditure, its health budget is the fourth-lowest.

  * In Pakistan, while the defence budget was increased despite the pressure of the pandemic, the spending on health has remained stagnant.

  * The gross underfunding of the health sector over the years has led to a crumbling public healthcare system in Bangladesh.

High out of pocket expenditure:

- The booming private medical sector at the cost of the public health sector has resulted in very high out-of-pocket health expenditure.

- While ideally, out-of-pocket expenditure should not surpass 15% to 20% of the total health expenditure, it is 62.67%, 73.87% and 56.24%, for India, Bangladesh and Pakistan respectively.

Skewed distribution of healthcare facilities:

- Despite housing a large rural population, the existing health facilities largely cater to the urban population. The rural areas have limited access to quality and affordable healthcare facilities.

Recommendations:

- The South Asia countries must prioritize investments in healthcare systems and step up investment in their public healthcare sectors.

- The countries must also work towards broadening equitable access to healthcare through universal health coverage schemes.

Conclusion:

- Given the high chances of another pandemic wave, South Asian countries via a well-thought-out vision and backed by requisite political commitment need to direct special attention and resources towards strengthening the health systems. The reforms should make the public healthcare sector sustainable and pro-poor.

Miscellaneous

14. Row over study on bat viruses in Nagaland

  » Prelims: Filoviruses

Context

- There was a study conducted by National Centre for Biological Sciences (NCBS) in the remote jungles of Nagaland

  * NCBS is part of the Tata Institute of Fundamental Research (TIFR), which in turn comes under the Department of Atomic Energy (DAE).

- It involved a study of bat-to-human transmission of deadly viruses

Partners involved in the study

- Partnering NCBS were Duke-NUS Medical School and the Uniformed Services University of the Health Sciences (USUHS), an institution funded by the US Department of Defense (DoD) and located in Bethesda, Maryland.

- The study itself was funded by the US Defense Threat Reduction Agency (DTRA), also an agency of the US DoD.

Why Nagaland?

- The LongpfuriiYimchungii, a Naga sub-tribe, live in Mimi village in Nagaland

  * The village is situated along the Indo-anmar border and comprises around 200 households, mainly occupied by 3 clans namely Bomrr, Whourr and Mer.

- They participate in a unique, annual Bat Harvesting Festival in mid-October.

  * Bat harvesting involves hunting bats for their meat

- They believe that bat consumption can cure ailments such as diarrhoea, body pain, as well as increase virility.

- During this festival, the intensity of contact between bats and human is tremendous.

  * Many of the bat hunters get bitten by bats posing a high risk of disease transmission in case the bat which they bit them harbour deadly virus.

- This festival in Nagaland is just one illustration of the many traditional practices that bring a large number of humans and wildlife in close contact with each other.

Objective of Study

- The study provided an opportunity to understand about zoonotic spillover.

- Bats, as it is now well known, are reservoirs for several zoonotic pathogens, including filoviruses.

* Filoviruses include the deadly Ebola, and are known to cause haemorrhagic fever in human beings.

* Filovirus is a family of virus that is different from coronavirus

Publication

- The field work for the Nagaland study was done in 2017 and its report was published in 2019 by the scientific journal PLOS Neglected Tropical Diseases.

Investigation

- In February 2020, just as the world was beginning to confront the Covid outbreak, the Indian Council of Medical Research (ICMR) announced a probe into the NCBS Nagaland study.

Concerns

- Union Ministry of Health began felt that appropriate permissions had not been taken by the National Centre for Biological Sciences (NCBS) and the Tata Institute of Fundamental Research (TIFR) from the Indian Council for Medical Research (ICMR) before accepting foreign funding and collaborations for the study.

- According to the Health Ministry report, the study didn't have the requisite approval of ICMR. And the facility at NCBS was not equipped in terms of biosafety and biosecurity to undertake such testing.

Impact

- Some scientists have voiced concerns about a "chilling effect" in the name of bio-security, on much needed scientific freedoms for research, which involves the collection of possibly infectious samples and studies on mutations.

Is there a Wuhan connection to the Indian study?

- No. The Indian study looked at filoviruses (such as Ebola and Marburg), while the Wuhan studies, which originally collaborated with the U.S. University of North Carolina (UNC) and were funded by the National Institutes of Health (NIH), looked at coronaviruses SARS and MERS.

Way forward

- Northeast India is a part of the Eastern-Himalayan and the Indo-Myanmar Hotspot.

    * The rich biodiversity in the region combined with high levels of hunting and deforestation increases the contact between domestic animals, wildlife and humans.

    * This potent mix of high biodiversity and the intense human interaction with wildlife can lead to the emergence of novel infectious diseases.

- So should we crack down heavily on the Tribes? No. It would not solve the larger problem of hunting and infectious diseases. It can besolved with awareness and education programmes,

more access to other protein sources, and better access to health care.

Conclusion

- As long as the issue of the origin of the virus that was first detected in Wuhan remains unresolved, questions will linger.

Issues Related to Health Sector

15. **A place for disruptive technology in India's health sector**

    » Prelims: Disruptive technologies and associated terminologies

    » Mains: Possible applications of disruptive technologies in the medical sector

Context:

- In the light of the health crisis brought out by the COVID-19 pandemic, the article discusses the relevance of disruptive technology and its applications in the medical sector.

Blockchain technology:

- The term 'Blockchain' denotes a shared immutable record of a chain of transactions, each comprising one block, with the blocks being held together by cryptographic keys. These keys or signatures are stored in shared ledgers, joined by a mesh of nodes, or processes that connect them. Each node has a copy of the whole chain, being constantly synchronized and kept up to date.

- The advantages of blockchain technology include its tamper-resistant nature, the decentralized nature of the digital ledgers, and the impossibility of changing a published transaction subsequently within the user community that shares the ledger. This technology is also called digital ledger technology (DLT).

Medical blockchain:

- The health blockchain would contain a complete indexed history of all medical data, including formal medical records and health data from mobile applications and wearable sensors that can be stored in a secure network and authenticated.

Application in healthcare:

- Blockchains in healthcare can be envisaged in the following areas:

Securing patient data:

- Keeping important medical data safe and secure is the most popular blockchain healthcare application at the moment, given that data breach of patient records has been a major challenge.

- Blockchain technology can help conceal the identity of any individual with complex and secure codes that can protect the sensitivity of medical data.

Streamline medical care:

- The time-consuming process of obtaining access to a patient's medical records exhausts staff resources and delays patient care. Blockchain-based medical records offer a cure for these ills.

- The decentralized nature of the technology creates one ecosystem of patient data that can be quickly and efficiently referenced by doctors, hospitals, pharmacists and anyone else involved in treatment. In this way, blockchain can lead to faster diagnoses and personalized care plans.

- Thus blockchain medical records can help streamline care.

Medical supply chain management and drug traceability and safety:

- Blockchain has immense applications in pharmaceutical supply chain management, and it can virtually guarantee full transparency in the shipping process right from the manufacturing centre up until it reaches the consumer.

Complementing genomics:

- Blockchain is a perfect complement for the growing genomics field as it can safely house billions of genetic data points. Thus medical blockchain offers potential for point-of-care genomics management and the innumerable benefits that it offers to medical treatment.

Big data analytics:

- Big data analytics examines large amounts of data to uncover hidden patterns, correlations and other insights. Analysis of big data allows analysts, researchers and business users to make better and faster decisions using data that was previously unusable.

Big data in the medical sector:

- In healthcare, big data uses specific statistics from a population or an individual to research new advancements, reduce costs, and even cure or prevent the onset of diseases. In recent years, healthcare data collection has moved into the digital realm, making analysis faster and more accurate.

Application in healthcare:

- Applications of big data analytics can help improve the patient-based service, through early disease detection, generate new insights into disease mechanisms, monitor the quality of the medical and healthcare institutions as well as provide optimized hospital healthcare treatment regimes.

Artificial intelligence:

- Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing (NLP), speech recognition and machine vision.

AI in healthcare:

- Artificial intelligence in healthcare refers to the use of complex algorithms designed to perform certain tasks in an automated fashion. When researchers, doctors and scientists inject data into computers, the newly built algorithms can review, interpret and even suggest solutions to complex medical problems.

Application in healthcare:

- AI offers a number of advantages over traditional analytics and clinical decision-making techniques. Learning algorithms can become more precise and accurate as they interact with training data, allowing humans to gain unprecedented insights into diagnostics, care processes, treatment variability, and patient outcomes.

- AI can help deploy more precise, efficient, and impactful interventions at exactly the right moment in a patient's care.

Developing the next generation of radiology tools:

- As per some experts, artificial intelligence will enable the next generation of radiology tools that are accurate and detailed enough to replace the need for tissue samples in some cases.

Expanding access to care in underserved regions:

- Shortages of trained healthcare providers, including ultrasound technicians and radiologists can significantly limit access to life-saving care in developing nations around the world.

- Artificial intelligence could help mitigate the impacts of this severe deficit of qualified clinical staff by taking over some of the diagnostic duties typically allocated to humans.

- For example, AI imaging tools can screen chest x-rays for signs of tuberculosis, often achieving a level of accuracy comparable to humans. This capability could be deployed through an app available to providers in low-resource areas, reducing the need for a trained diagnostic radiologist on site.

Creating more precise analytics:

- Artificial intelligence can allow for more detailed and precise analysis of tests and scans that may escape the human eye.

Monitoring health:

- There has been increased access to devices with sensors that can collect valuable data about their health. Example- Smartphones with step trackers; wearables that can track heartbeat. This has helped generate large quantities of health-related data.

- Collecting and analyzing this data – and supplementing it with patient-provided information through apps and other home monitoring devices – can offer a unique perspective into individual and population health. Artificial intelligence will play a significant role in extracting actionable insights from this large and varied treasure trove of data.

- AI can provide earlier warnings for conditions like seizures or sepsis.

Revolutionize clinical decision making:

- Artificial intelligence can help power predictive analytics and clinical decision support tools that can help provide clues to problems long before they might otherwise be identified using traditional approaches.

    * Immunotherapy is one of the most promising avenues for treating cancer. By using the body's own immune system to attack malignancies, patients may be able to beat stubborn tumours. However, only a small number of patients respond to current immunotherapy options, and oncologists still do not have a precise and reliable method for identifying which patients will benefit from this option. Machine learning algorithms and their ability to synthesize highly complex datasets may be able to illuminate new options for targeting therapies to an individual's unique genetic makeup.

Internet of Things:

- The Internet of things describes the network of physical objects that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet.

- The Internet of Medical Things, or IoMT (which is defined as a connected infrastructure of medical devices, software applications, and health systems and services) is shaping healthcare applications.

- There are hospitals, in China, that use 5G-powered temperature measurement devices at the entrance to flag patients who have fever/fever-like symptoms. Other robots measure heart rates and blood oxygen levels through smart bracelets and rings that patients wear.

Autonomous systems:

- An autonomous robot is a robot that performs behaviours or tasks with a high degree of autonomy. Autonomous robotics is usually considered to be a subfield of artificial intelligence, robotics, and information engineering.

Application in healthcare:

- There have been numerous reports of field hospitals using robots to care for COVID-19 affected patients and even sanitize wards. Autonomous systems could potentially help reduce the chances of hospital staff contracting infectious diseases from patients.

    * The Sawai Man Singh government hospital in Jaipur has held trials with a humanoid robot to deliver medicines and food to COVID-19 patients.

- Medical autonomous systems can help improve health delivery to a great extent. These systems can also help provide medical care delivery in dispersed and complex environments wherein there is a shortage of skilled manpower.

    * Autonomous systems in the medical sector could include autonomous critical care system, autonomous intubation, autonomous cricothyrotomy and other autonomous interventional procedures.

Cloud computing:

- Cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet to offer faster innovation, flexible resources, and economies of scale.

Application in healthcare:

- Cloud computing could facilitate collaboration and data exchanges between doctors, departments, and even institutions and medical providers to enable the best treatment.

Quantum computing:

- Quantum computing is the exploitation of collective properties of quantum states, such as superposition and entanglement, to perform computation.

- Quantum-enhanced machine learning algorithms are particularly relevant to the medical sector.

Application in healthcare:

- In the healthcare industry, quantum computing could help accelerate diagnoses, and personalize medicine.

- In genomic medicine, quantum computers may lead to quick sequencing of DNA, opening up the possibility of personalized medicine.

- It can help speed up drug design and development.
- In health care data collection, quantum mechanics and the related computer power may assist on several levels, including with data storage, data transmission, and data security.

Challenges in the adoption of disruptive technologies:

- The large scale adoption of these technologies should consider the ethical appropriateness of digital technologies and acknowledge the digital divide in society.
- Other challenges include the non-standardisation of health data, organisational silos, data security and data privacy concerns, and also the high upfront costs involved in the adoption of these technologies.

Recommendations:

- The adoption of the above technologies should be complemented by a robust strategy integrating human, financial, organisational and technological resources.
- The adoption of disruptive technologies should be complemented by drawing upon local knowledge. Community nurses, doctors, and health workers in developing countries do act as frontline sentinels and can provide valuable information at scale and pace. Thus the local/ traditional knowledge and experiences need to be used with modern technology.

Conclusion:

- The disruptive technologies discussed above can play an important role in improving the health sector in general and improve the welfare of societies.
- The application of the disruptive technologies discussed above in the medical sector can help realize the ideal of universal health coverage (UHC).

Issues related to health sector

16. The debate around gain-of-function research

- » Prelims: Gain of function research
- » Mains: Gain of function research- Significance, associated concerns and recommendations

Context:

- With the re-emergence of the lab-leak origin theory for the SARS-CoV-2, questions are being raised on gain-of-function research.
  - * The Wuhan Institute of Virology was said to have conducted gain-of-function research on coronaviruses.

Gain-of-function research:

- Gain of function research is medical research that deliberately alters an organism in a way that increases its pathogenesis, transmissibility, or host range.
- Gain-of-function research involves altering a gene, or introducing a mutation in a pathogen to study its transmissibility, virulence and immunogenicity.
  - * When mutations occur, they alter the structure of the virus resulting in altered functions.

Significance:

- The gain of function research helps better understand the functioning of the virus and helps identify possible targets for development of vaccines and therapeutics against the virus.
- The study gains all the more significance given the increasing incidence of 'escape mutants', i.e., drug-resistant strains. This necessitates the continual need to develop new antiviral drugs and additional options, such as immunotherapy.
- The gain of function research provides valuable insights into better predicting of emerging infectious diseases and ways to control the disease better in future. Thus it involves a more proactive approach to tackling future pandemics and helps keep science and governments battle-ready for future pandemics.

Concerns:

- Gain-of-function research involves genetic engineering of virus. The long term impact of such human intervention remains uncertain.
- Gain-of-function research involves manipulations that make certain pathogenic microbes more deadly or more transmissible. Thus some form of gain of function research carries inherent biosafety and biosecurity risks, and are thus also referred to as dual use research of concern (DURC).
  - * Dual Use Research of Concern (DURC) is life sciences research that, based on current understanding, can be reasonably anticipated to provide knowledge, information, products, or technologies that could be directly misapplied to pose a significant threat with broad potential consequences to public health and safety.
- In case of gain-of-function research, there is the potential to cause harm through accidental or deliberate escape of the altered pathogens from labs.
- Such research also raises ethical concerns because of the potential risk posed by virulent pathogen to people.

Recommendations:

- Further research in this domain should be backed by an objective risk-benefit analysis. The studies should gauge whether the benefits of conducting such research outweigh the risk of pathogens escaping from labs.

- There should be responsible use of life sciences research, focusing on mitigation and prevention of biorisks.

- All possible steps need to be taken to ensure the safety of the procedure. The WHO must develop a Global Guidance Framework for member states to follow in this direction. This should provide operational guidance on the containment of biohazards and levels of biosafety that all institutions involved in research, development and handling of these microorganisms must comply with.

- To mitigate the associated risks while allowing the benefits of such research, various governments have mandated that DURC experiments be regulated under additional oversight by designated institutions and government agencies. This approach needs to be adopted in every country.

- There is the need to ensure greater transparency about such research given that unnecessary secrecy over such research makes it liable for misuse. There should be broader community engagement/consultation, and more transparent GOFR decision- and policy-making.

Additional information:

- In India, all activities related to genetically engineered organisms or cells and hazardous microorganisms and products are regulated as per the "Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/ Genetically Engineered Organisms or Cells Rules, 1989".

SOCIAL ISSUES

1. Protection Officers

» Mains: Government measures to counter the challenge of domestic violence

Context

• 'Training Programme of Protection Officers in addressing Domestic Violence' launched by the National Commission for Women.

Details:

• The series has been launched by NCW in collaboration with the Lal Bahadur Shastri National Academy of Administration (LBSNAA) to address the specific needs of Protection Officers in responding to survivors of domestic violence.

• The training aims to focus on the role of different stakeholders/service providers including police, legal aid services, health system, service providers, shelter services, one stop centres, etc.

About Protection Officers:

• Protection Officers act as facilitators between the aggrieved woman and the court in cases of domestic violence.

• They help the aggrieved woman in filing complaints and application before the Magistrate to obtain the necessary relief and also assist to obtain medical aid, legal aid, counselling, safe shelter and other required assistance.

• Under the Protection of Women from Domestic Violence Act, 2005, the duties of the Protection Officers are:

  * to assist the Magistrate in the discharge of his functions under this Act;

  * to make a domestic incident report to the Magistrate, in such form and in such manner as may be prescribed, upon receipt of a complaint of domestic violence and forward copies thereof to the police officer in charge of the police station within the local limits of whose jurisdiction domestic violence is alleged to have been committed and to the service providers in that area;

  * to make an application in such form and in such manner as may be prescribed to the Magistrate, if the aggrieved person so desires, claiming relief for issuance of a protection order;

  * to ensure that the aggrieved person is provided legal aid under the Legal Services Authorities Act, 1987 and make available free of cost the prescribed form in which a complaint is to be made;

  * to maintain a list of all service providers providing legal aid or counselling, shelter homes and medical facilities in a local area within the jurisdiction of the Magistrate;

  * to make available a safe shelter home, if the aggrieved person so requires and forward a copy of his report of having lodged the aggrieved person in a shelter home to the police station and the Magistrate having jurisdiction in the area where the shelter home is situated;

  * to get the aggrieved person medically examined, if she has sustained bodily injuries and forward a copy of the medical report to the police station and the Magistrate having jurisdiction in the area where the domestic violence is alleged to have been taken place;

  * to ensure that the order for monetary relief under section 20 is complied with and executed, in accordance with the procedure prescribed under the Code of Criminal Procedure, 1973.

• The Protection Officers are appointed by the state government in each district and they shall be women as far as possible

2. Sankalp Se Siddhi – Mission Van Dhan

» Prelims: Mission Van Dhan; TRIFED

Context

• Minister for Tribal Affairs launched the tribal livelihoods initiative 'Sankalp Se Siddhi – Mission Van Dhan'.

About Sankalp Se Siddhi – Mission Van Dhan:

• The mission was launched to promote local products manufactured by tribal artisans to ensure the sustainable livelihood of the tribal population across India.

• Through this, tribal people will get new employment opportunities and they themselves will be able to become entrepreneurs.

- TRIFED plans to expand its operations through convergence of various schemes of different Ministries and Departments and launch the various tribal development programs in Mission Mode under "Sankalp Se Siddhi – Mission Van Dhan" for expediting its implementation in a Mission mode.

- Now all the schemes of the Ministry of Tribal Affairs will be available on a single platform.

Social Issues –Related to Women

3. Recognising caste-based violence against women

» Prelims: Intersectionality

» Mains: Intersectional approach to feminism

Intersectionality:

- Intersectionality is an analytical framework for understanding how aspects of a person's social and political identities combine to create different modes of discrimination and privilege.

- Intersectionality identifies multiple factors of advantage and disadvantage. Examples of these factors include gender, caste, sex, race, class, sexuality, religion, disability and physical appearance. These intersecting and overlapping social identities may be both empowering and oppressing.

Intersectional approach to feminism:

- An intersectional approach to feminism acknowledges that while women share similar experiences of discrimination, harassment, sexism, inequality and oppression on the basis of their sex and gender, not all women are equally disadvantaged or have equal access to resources, power and privilege.

  * For example, intersectional discrimination faced by black women in the U.S., intersectional discrimination faced by women from SC and ST classes in India.

- Thus intersectionality approach seeks to recognise the multiple grounds of marginalisation faced by women.

Patan Jamal Vali v. State of Andhra Pradesh case:

- The Supreme Court in its judgement in the Patan Jamal Vali v. State of Andhra Pradesh case addresses this intersectionality of caste, gender and disability.

- The Supreme Court, argued for such an intersectional approach, to take into account the multiple marginalities that the rape victim had to face and which could have contributed to her facing sexual violence. It noted how multiple sources of oppression operated cumulatively to produce a specific experience of subordination for the blind Dalit woman

Social Issues –Related to transgenders

4. In India, looking beyond the binary to a spectrum

» Prelims: Related court cases

The article talks about the need to grant marriage rights to same-sex couples in India, at the earliest.

Civil Rights for LGBTQIA+ community:

- The LGBTQIA+ community is a community of Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual and other identities that make up a diverse group of individuals with varying sexual orientations and gender identities.

- The last two decades have witnessed tremendous progress in establishing civil rights for the LGBTQIA+ community.

International jurisprudence:

Globally, the recognition of the unequal laws discriminating against the LGBTQIA+ community has acted as a trigger to reform and modernise legal architecture to become more inclusive and equal.

- As a result of a verdict by the Constitutional Court of South Africa, the Civil Union Act, 2006 was enacted, enabling the voluntary union of two persons above 18 years of age, by way of marriage.

- In Australia, the Same-Sex Relationships (Equal Treatment in Commonwealth Laws – General Law Reform) Act 2008 was enacted to provide equal entitlements for same-sex couples in matters of, inter alia, social security, employment and taxation.

- In England and Wales, the Marriage (Same Sex Couples) Act 2013 enabled same-sex couples to marry in civil ceremonies or with religious rites.

- In 2015, the Supreme Court of the United States decided that the fundamental right to marry is guaranteed to same-sex couples. It held the denial of marriage rights to same-sex couples to be a grave and continuing harm, serving to disrespect and subordinate gays and lesbians.

Courts and civil rights:

- In India, marriages are solemnised under personal laws such as the Hindu Marriage Act, 1955, Indian Christian Marriage Act, 1872, Muslim Personal Law (Shariat) Application Act, 1937.

- At present, same-sex and queer marriages are not clearly recognised in India. However, we are not deprived of judicial guidance.

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- Arunkumar and Sreeja vs The Inspector General of Registration and Ors.

    * In this case, the Madurai Bench of the Madras High Court employed the interpretation that the term 'bride' under the Hindu Marriage Act, 1955 includes transwomen and intersex persons identifying as women.

    * Therefore, a marriage solemnised between a male and a transwoman, both professing the Hindu religion, is deemed to be a valid marriage under the Act.

    * It expands the scope of a term used in the Hindu Marriage Act, 1955 in a progressive manner and sets the stage for re-imagining the marriage rights of the LGBTQIA+ community.

- Shafin Jahan vs Asokan K.M. and Others (Hadiya case)

    * In this case, the Supreme Court said that the right to choose and marry a partner was considered to be a constitutionally guaranteed freedom.

    * SC held that the "intimacies of marriage lie within a core zone of privacy, which is inviolable" and "society has no role to play in determining our choice of partners".

- From the logical interpretation of these judgements, it is apparent that any legal or statutory bar to same-sex and queer marriages must necessarily be held to be unconstitutional and specifically violative of Articles 14, 15 and 21 of the Constitution of India.

Expanding the scope of marriage:

- The domain of marriages cannot be immune to reform and review.

- Reform of the Hindu Marriage Act, 1955 to bring self-respect marriages under its very umbrella, is seen as a strong move towards breaking caste-based practices within the institution of marriage.

    * Self-respect marriages were legalised in Tamil Nadu (later, in Puducherry) through amendments to the Hindu Marriage Act, 1955.

    * Self-respect marriages have done away with priests and religious symbols such as fire or saptapadi.

    * Solemnisation of such marriages requires only an exchange of rings or garlands or tying of the mangalsutra.

- Similarly, understanding the needs of the LGBTQIA+ community, the law must expand the institution of marriage to include all gender and sexual identities.

- At least 29 countries in the world have legalised same-sex marriage.

Conclusion

- It is time for India to review its existing legal architecture in order to legalise marriages irrespective of gender identity and sexual orientation.

EDUCATION

1. All India Survey on Higher Education (AISHE) 2019-20

» Prelims: AISHE- Highlights of the report; GER and GPI

Context:

- Report of All India Survey on Higher Education (AISHE) 2019-20 released.

Details:

- This Report provides key performance indicators on the current status of higher education in the country.

- It has been compiled by the Ministry of Education based on voluntary uploading of data by institutions of Higher Education listed in aishe.gov.in portal in specially designed formats of data collection.

- This is the tenth such report in the series of All India Survey on Higher Education (AISHE) annually released by the Education Department.

Highlights of the Report:

- In the last five years from 2015-16 to 2019-20, there has been a growth of 11.4% in student enrolment.

- The rise in female enrolment in higher education during the period is 18.2%.

- Gross Enrolment Ratio (GER), the percentage of students belonging to the eligible age group enrolled in Higher Education, in 2019-20 is 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 in Higher Education in 2019-20 is 26.

Educational sector – Governmental initiatives

2. NISHTHA Capacity Building Programme

» Prelims: NISHTHA program

Context

- The Ministry of Tribal Affairs and NCERT jointly organised a NISHTHA Capacity Building Programme for teachers and principals of the Eklavya Model Residential Schools (EMRS).

Details

- The National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA) is a capacity building programme for "Improving Quality of School Education through Integrated Teacher Training".

- The participants will be trained on integrated learning outcomes, school-based assessment, and new techniques in education that will address the multiple needs of students. This will be organized by the National Resource Groups (NRGs) and State Resource Groups (SRGs) at the national and state level.

- The ultimate aim of the NISHTHA Scheme is to motivate and strengthen the teachers skills in critical thinking and handling of diverse situations while at the same time enabling them to act as first level counsellors. Along with this, they will also develop skills on Learning Outcomes, Competency Based Learning and Testing, School Safety and Security.

Upon the completion of the NISHTHA Scheme the following are the likely outcomes:

- Improvement in learning for students.

- Creation of an inclusive classroom environment.

- Teachers will be attuned to the social, emotional and psychological needs of the students.

- Teachers will be trained to develop social qualities for the student's holistic development.

- Fostering and development of a healthy and safe school environment.

- Inclusion of ICT in learning and development.

- Creation of a stress-free assessment based on learning competencies.

- Phasing out of rote learning and adoption of competency and activity based learning.

- New initiatives will be more noticeable by teachers and school heads alike.

- School heads will be better able to implement new initiatives and create an environment for academic and administrative leadership.

Educational sector – Governmental initiatives

3. Performance Grading Index (PGI)

» Prelims: Performance Grading Index

» Mains: Initiatives to improve educational sector in India

Context

- Union Education Minister approved the release of Performance Grading Index (PGI) 2019-20 for States and Union Territories of India.

About the Performance Grading Index:

- The Government has introduced the Performance Grading Index with a set of 70 parameters to catalyse transformational change in the field of school

- The PGI for States and Union Territories was first published in 2019 with the reference year 2017-18.

- The PGI exercise envisages that the index would propel States and UTs towards undertaking multi-pronged interventions that will bring about the much-desired optimal education outcomes.

- The PGI 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.

Highlights of the 2019-20 PGI:

- 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 Tamil Nadu have improved overall PGI score by 10%, i.e., 100 or more points.

- Andaman & Nicobar Islands, Lakshadweep and Punjab have shown improvement by 10% (8 points) or more in the PGI domain: Access.

- In the PGI domain: Infrastructure and Facilities, thirteen States and UTs have shown improvement by 10% (15 points) or more. Andaman & Nicobar Islands and Odisha have shown improvement by 20% or more.

- Arunachal Pradesh, Manipur and Odisha have shown more than 10% improvement in the PGI domain: Equity.

- Nineteen States and UTs have shown improvement by 10% (36 points) or more in the PGI domain: Governance Process. Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Manipur, Punjab, Rajasthan and West Bengal have shown improvement by at least 20% (72 points or more).

Score range	colour
901-950	
851-900	
801-850	
751-800	
701-750	
651-700	
601-650	
551-600	
0-550	
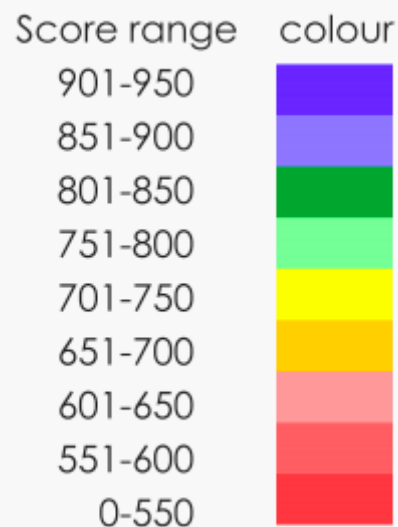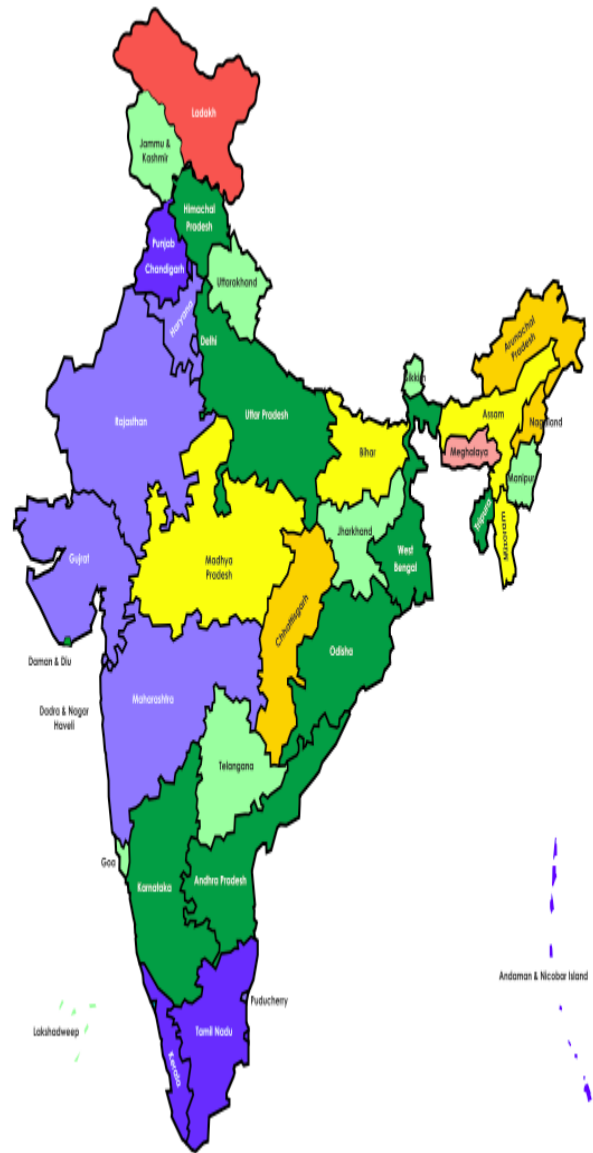
Miscellaneous

4. QS World University Rankings 2022

» Mains: Poor performance of India in world university rankings

Context:

• Three Indian institutes in the top 200 ranks of the QS World University Rankings 2022.

What's in the News?

• IISc Bengaluru ranked number 1 in the world for research under these rankings. The institute secured a rank of 186 in the universities ranking.

• IIT Bombay secured the 177th position whereas IIT Delhi the 185th rank .

QS World University Rankings:

• QS World University Rankings is an annual publication of university rankings by Quacquarelli Symonds (QS).

* Quacquarelli Symonds is a British company specialising in analysing higher education institutions.

• The first edition of the university rankings was released in 2004, then known as the Times Higher Education–QS World University Rankings, since QS had released the ranking in collaboration with the Times Higher Education (THE) magazine.

• From 2010 onwards, both QS and THE release separate rankings.

Issues relating to Education

5. E-Content for Children with Disabilities

» Prelims: PM e-VIDYA initiative; DIKSHA portal

Context:

• Government releases guidelines for the development of e-Content for Children with Disabilities.

Background:

• The PM e-VIDYA initiative was launched in May 2020 with an aim to unify all efforts related to digital/online/on-air education.

• The programme envisages the development of special e-content for children with disabilities (CwDs).

• The Dept of School Education and Literacy under the Education Ministry had formed an expert committee to come up with guidelines for developing e-content for these children.

• Accordingly, the committee submitted its report titled "Guidelines for the Development of e-Content for Children with Disabilities".

Salient highlights of the guidelines:

• e-Content for CwDs should be developed based on the four principles of 'perceivable, operable, understandable and robust'.

• e-Content including text, tables, diagrams, visuals, audios, videos etc. should comply with national and international accessibility standards.

• Distribution platforms on which content is uploaded (e.g. DIKSHA) and Reading platforms/devices on which content is accessed and interacted (e.g. e-pathshala) must comply with technical standards.

Issues relating to Education

6. Blended learning won't work

» Mains: Arguments in favour of and against blended learning approach recommended by UGC; recommendations

Context:

• The recent circular by the University Grants Commission (UGC) proposing the shift to a blended learning (BL) approach under which the higher educational institutions (HEI) would teach 40% of any course online and the rest 60% offline.

Arguments in favor:

Student-friendly:

• As against the traditional classroom model which is teacher-directed, top-down, and employs a one-size-fits-all approach, BL is student-driven, bottom-up, and customizable.

• BL could also bring in the much-needed flexibility in assessment and evaluation patterns as envisioned in the recent National Education Policy.

• This flexibility in the teaching and learning environments will lead to improved student learning outcomes and also enhance self-learning opportunities for working students.

Scope for institutional collaborations:

• BL would provide for increased opportunities for institutional collaborations at a distance. This will have a perceptible impact on the quality of education that such a system can provide for.

Enhanced role of a teacher:

• The enhanced student-teacher interactions envisioned in the BL system will enable teachers to have a greater influence and effect on students' learning.

• The adoption of a BL system will result in the shifting of the role of the teacher from being a mere knowledge provider to that of a coach and mentor.

Concerns:

Cost factor:

- The shift to a BL system will require a substantial upfront investment. Given that 60.56% of the 42,343 colleges in India are located in rural areas and 78.6% are privately managed, there are doubts over whether such institutes will be able to successfully implement BL. Only the big and elite institutions would be able to invest in technology and provide such learning.

- Even if these institutes are able to implement such a system, the fee that they will have to charge to cover up the investments will be high and may prove to be unaffordable for all sections of society.

Digital divide:

- Given that internet penetration in India continues to be low with a skewed distribution between urban and rural areas, the shift to the BL system could exacerbate the existing digital divide resulting in the exclusion of a large number of rural students.

  * As per available estimates, Internet penetration is only 45% as of January 2021.

Fails to acknowledge the heterogeneous nature of the student community:

- Given the fact that the students entering higher education come from diverse backgrounds, a uniform approach may not be the ideal way forward.

- Expecting the students to switch over quickly to collaborative and technology-enabled learning will be stressful for them and may accentuate the existing dropout rate in higher education.

Reduction in social contact:

- Given that the BL system will entail a reduction of the student engagement in classroom environments, there are doubts over the ability of the BL system to accrue all-round formation of the student including the development of their intelligent quotient, emotional quotient, social quotient, physical quotient and spiritual quotient.

- These are critical for personality development, character building and career formation as envisioned in the recent National Education policy which calls for 'all round education of a student".

Recommendations:

Closing the digital divide:

- The government should ensure equity in access to technology and bandwidth for all HEIs across the country free of cost.

Appropriate teacher education:

- Digital training programmes for teachers should be ensured to help them adapt to the new system. This will make them more effective.

Re-designing of the curriculum:

- The new system needs to be complemented with a re-designed curriculum right from the school level up to the higher education level.

Conclusion:

- The blended learning (BL) approach could lead to the actualisation of the three cardinal principles of education policy: access, equity and quality provided the associated concerns are adequately addressed.

HISTORY

Important personalities/events associated with India's freedom struggle

1. Ram Prasad Bismil

» Prelims: Ram Prasad Bismil; Hindustan Republican Association; Kakori Conspiracy

» Mains: Role played by revolutionaries in the Indian freedom struggle

- He was born to a Municipality employee Muralidhar and his wife. He learnt Hindi at home and Urdu from a Moulvi. In spite of his father's objections, he was admitted to an English medium school.

- He also joined the Arya Samaj founded by DayanandaSaraswati. This had a profound influence on him.

- When he was 18 years old, Bhai Parmanand, a prominent Hindu Mahasabha leader was sentenced to death. This angered him and stirred patriotic feelings in him.

- He was also a prolific writer from a very young age. On reading Parmanand's death sentence, he composed a Hindi poem titled 'MeraJanm' (My Birth).

- He also translated English and Bengali works into Hindi.

- He formed an organisation Matrivedi and got in touch with GendaLal Dixit, a school teacher. They both shared revolutionary ideas and wanted to organise the youth of the country to fight the British government.

- Meanwhile, Bismil also published original and translated works all with patriotic and nationalistic themes to distribute them to the public.

- Bismil was involved in the Mainpuri Conspiracy of 1918 in which police found a few young people including Bismil selling books that were proscribed by the government. Bismil escaped arrest by jumping into the Yamuna River.

- He also attended the 1921 session of the Indian National Congress at Ahmedabad.

- Bismil was one of the chief founders of the Hindustan Republican Association (HRA) along with SachindraNathSanyal and Jadugopal Mukherjee.

  * The organisation was founded in 1924 and its constitution was drafted chiefly by Bismil.

  * The HRA produced many pamphlets which sought to inspire people to fight the government through revolutionary activities.

Kakori Conspiracy Case

- Bismil is perhaps most remembered for the Kakori Conspiracy Case. He was the mastermind behind the plan which was to loot a train carrying government money. The incident occurred on 9th August 1925 at Kakori, near Lucknow. Bismil, along with nine other revolutionaries stopped the train and looted the government treasury. The radicals used semi-automatic pistols for the plot. One passenger was accidentally killed in the incident which made it a murder case.

- Apart from Bismil, some of the others involved in the train robbery were Ashfaqulla Khan, Chandrasekhar Azad, RajendraLahiri, Manmathnath Gupta.

- The government came down heavily on the revolutionaries. Over 40 people were arrested in connection with the case although many were unrelated to it. Some people were let off after the trial. But others were found guilty and convicted.

- The legal process lasted 18 months. Bismil, Lahiri, Khan and Thakur Roshan Singh were awarded death sentences. Some others were deported to the Cellular Jail in Port Blair while others were given prison sentences of varying lengths.

- While lodged in Gorakhpur Central Jail, Bismil went on a hunger strike demanding to be treated as a political prisoner.

- Despite widespread outrage over the death sentences, and support from various Indian political leaders for the revolutionaries, the government did not budge.

- Bismil was hanged on 19th December 1927 at Gorakhpur Jail. He was just 30 years old.

ETHICS

Probity in Governance

1. Social trust

» Mains: Low social trust in governance- factors responsible and implications; measures needed to increase social trust

Meaning

- Social trust is a belief in the honesty, integrity and reliability of others – a "faith in people."

Significance of social trust:

- As Aristotle observed 2400 years ago, human beings are by nature social creatures. Social trust is the underlying foundation of relationships among individuals, groups, and other components of a society.

- Without trust in others' actions, people may have to consider too many contingencies and uncertainties to take action, destroying the foundation of community and society. Without social trust, a country's economy cannot perform well, because transaction costs – costs in undertaking economic transactions by economic entities – would be too high.

- Hence, social trust is a key determinant of social and economic development as well as of human well-being.

Low social trust in governance:

- Historically, Indians have had low social trust and more so when it comes to trust in governance.

Factors contributing to low social trust:

- The past experiences of citizens while availing government services where requests have not been responded to has added to a sense of apprehension when it comes to governance.

- Corruption in the system adds to the apprehension among the citizens.

- The power imbalances wherein the citizens feel that they do not have any recourse for their grievances.

Implications of low trust:

- The low social trust leads to apathy, disengagement and a 'nothing will happen' mindset among the citizenry.

- This while discouraging the citizens from availing their legitimate right to service from government agencies and reducing citizen participation in governance also serves to deepen the sense of non-accountability among the government servants.

Measures that can help increase trust:

- Given that trust is experiential, the social trust in governance is built as consumers get consistent information and predictability and quality in the delivery of services, over time, every time.

- The availability of a mechanism to hold the service provider accountable is fundamental to building trust.

- Increased transparency which allows citizens and civil society groups to view the performance data for their localities through open dashboards and empowering citizens to provide a star rating (feedback) upon completion of service can help build social trust in governance.

- The use of e-technology for the delivery of services which reduces the scope for corruption and helps increase transparency in the system is an important intervention to help increase social trust in governance.

Conclusion:

- The government service delivery mechanism should imbibe the above measures to increase social trust in governance. This over time will help ensure that the trust deficit is reversed, and citizen participation increases.

Ethical Issues in International Relations

2. The proportionality principle

» Mains: Just war theory and the proportionality principle in warfare

Context

- In the light of the recent conflict between Israel and Hamas, the article analyzes the concept of proportionality principle under the just war theory.

Just war theory:

- The just war theory is a doctrine of military ethics.

- The just war theory specifies conditions for morally judging if it is just to go to war, and conditions for how the war should be fought.

- The two criteria considered under just war theory are "right to go to war" (jus ad bellum) and "right conduct in war" (jus in bello).

Jus ad bellum:

- This considers criteria for judging the morality of going to war.

  * Just cause – The reason for going to war needs to be just.

* Just authority – Only duly constituted public authorities may wage war.

* Just intention – The Just Intention (or Right Intention) condition in Just war theory sets a limit to the extent of the war. Even given a Just authority and a Just cause, it is possible for a warring state to go beyond the bounds of its justification. A just war is limited to the pursuit of the avowed just cause. A just war is limited to the pursuit and securing of the Just Cause. This mandates that force may be used only in a truly just cause and solely for that purpose.

* Last resort – Force may be used only after all peaceful and viable alternatives have been seriously tried and exhausted or are clearly not practical.

Jus in bello:

• These criteria concern the moral conduct within war. Jus in bello directs how combatants are to act or should act.

* Military necessity – An attack or action must be intended to help in the defeat of the enemy; it must be an attack on a legitimate military objective.

* Distinction – The acts of war should be directed towards enemy combatants and not towards non-combatants caught in circumstances they did not create.

* Proportionality – The attacker must make sure that the harm caused to civilians or civilian property is not excessive in relation to the military advantage anticipated by such an attack. This principle is meant to limit excessive and unnecessary death and destruction.

* Fair treatment of prisoners of war or those who no longer pose a threat.

* No immoral methods of warfare – Combatants may not use weapons or other methods of warfare that are considered immoral, such as mass rape or using weapons of mass destruction (e.g., nuclear/ biological weapons).

The proportionality principle:

• The proportionality principle requires military commanders to assess two important factors before every military strike.

* They must examine the direct military advantage anticipated from an attack. The target must be a military target, such as a weapons depot. Notably, a seemingly civilian object, used by the adversary for military purposes (for example, a residential building used to store weapons) may also be considered a lawful target.

* The military commanders must assess, based on available information, what the expected collateral damage would be in terms of lives of civilians and civilian property. They must implement all feasible precautions to mitigate harm to civilians and civilian objects.

• The principle of proportionality aims to balance the military needs of states, who fight to protect civilians, with humanitarian imperatives.

Conclusion:

• The just war theory postulates the belief that war, though may have terrible consequences is not always the worst option. Just wars are supposed to be proportional responses to aggression.

• The harmful consequences of a war may be limited with the right conduct. Right conduct will ensure that the costs of war do not exceed the benefits of such a war.

• The just war theory is not intended to justify wars but to prevent them, by showing that going to war, except in certain limited circumstances, is wrong, and thus motivate states to find other ways of resolving conflicts.

• As against the popular notion that all's fair in war (and love), nations, armies, and individual soldiers at war are expected to adhere to standards of conduct. Armies not showing such legal or moral restraint and acting contrary to the Just war criteria are usually in violation the international rule of law. Such states or individuals must be held accountable by domestic or international law.

GOVERNANCE

Miscellaneous

1. Infodemic

» Mains: Threat posed by Infodemics and Infodemic management

- Infodemic is defined as an excessive amount of information in digital and physical environments about a problem that is typically unreliable and spreads rapidly.

Threat posed by infodemics:

- Given that infodemics often include false and misleading material, rumours, they contribute to spreading false information.
- Infodemics are also used to exploit the crisis for propaganda or for profit.
- Mis- and disinformation can be harmful to people's physical and mental health.
- The infodemic that has accompanied the COVID-19 pandemic has caused confusion and risk-taking behaviours that can harm health. It also leads to mistrust in health authorities and undermines the public health response. Thus an infodemic can intensify or lengthen outbreaks by undermining the global response to the pandemic.
- Furthermore, disinformation is polarizing public debate on topics related to COVID-19; amplifying hate speech; heightening the risk of conflict, violence and human rights violations; and threatening long-terms prospects for advancing democracy, human rights and social cohesion.

Infodemic management:

- Infodemic management is the systematic use of risk- and evidence-based analysis and approaches to manage the infodemic and reduce its impact on health behaviours during health emergencies.
- It involves:
  * Listening to community concerns and questions
  * Promoting understanding of risk and health expert advice
  * Building resilience to misinformation
  * Engaging and empowering communities to take positive action

Miscellaneous

2. Operation Pangea

» Prelims: Operation Pangea; INTERPOL

- Coordinated by INTERPOL, Operation Pangea, is a well-established international effort to disrupt the online sale of counterfeit and illicit health products.

Context:

- More than 1.1 lakh web links, including websites and online marketplaces, have been taken down in an operation against the sale of fake and illicit medicines and medical products.

Details:

- The operation codenamed "Operation Pangea XIV" involved the police, customs and health regulatory authorities of 92 countries.
  * Indian agencies also participated in the operation.
- It resulted in the removal of the largest number of web links since the first "Operation Pangea" conducted in 2008.
- Raising public awareness of the potential dangers of buying medicines online was also part of Operation Pangea XIV.

Concerns:

- Unauthorized and counterfeit medicines can be dangerous for a number of reasons. They could be ineffective or contaminated.
- These illegally traded products constitute a calculated threat to patients' health.
- They contain either none of the declared active substances or else less than the amount stated.
- In an attempt to obstruct simple tests, some of them contain active substances in smaller amounts than those stated.

Important aspects of governance

3. Norms for employing retired officials defined

» Prelims: CVC

What's in News?

- The Central Vigilance Commission (CVC) has laid down a defined procedure to be followed by government organisations for getting vigilance clearance before employing a retired official on a contractual or consultancy basis.

Issue:

- The CVC said that the absence of a uniform procedure sometimes led to a situation where officials with tainted past or cases pending against them were engaged.

Procedure:

- Before offering employment to retired All India Services and Group A officers of the Central government or their equivalent in other organisations owned or controlled by the Centre, vigilance clearance from the employer organisation (from which the officer has retired), should be obtained.

- In case a retired officer served in more than one organisation, clearance has to be obtained from all of them where the person was posted in the 10 years prior to retirement.

- Simultaneously, a communication seeking clearance should also be sent to the CVC.

- If there is no response within 21 days, vigilance clearance should be deemed to have been given.

    * If the employee is found involved in any vigilance-related matter or not cleared from the vigilance point of view, the employer organisation would be responsible for all consequential actions.

- CVC directed all government organisations to formulate rules to ensure the cooling-off period is observed.

Government Initiatives

4. Surakshit Hum Surakshit Tum Abhiyaan

» Prelims: Aspirational districts programme

Context:

- NITI Aayog&Piramal Foundation launched Surakshit Hum Surakshit Tum Abhiyaan in 112 Aspirational Districts.

About the Program:

- The Surakshit Hum Surakshit Tum Abhiyaan was launched to assist district administrations in providing home-care support to Covid-19 patients who are asymptomatic or have mild symptoms.

- It is part of a special initiative, Aspirational Districts Collaborative, in which local leaders, civil societies and volunteers work with district administrations to address emerging problems across key focus areas of the Aspirational Districts Programme.

- It will be led by district magistrates in partnership with over 1000 local NGOs.

- The program will train over 1 lakh volunteers to connect with patients through inbound/outbound calls.

- The campaign is expected to play a key role in district preparedness for managing nearly 70% of Covid cases at home, reducing pressure on the health system, and stemming the spread of fear amongst the people.

- The campaign will also undertake capacity building of citizens for correct usage of Oxygen concentrators that have been supplied to these districts.

- NGOs will mobilize local volunteers to provide home-care support to those affected, based on the guidelines of the Ministry of Health and Family Welfare.

Miscellaneous

5. Rules regulating cable TV network amended

Context:

- The Information and Broadcasting Ministry has amended the rules regulating cable television networks.

Details:

- The amendment provides for a statutory mechanism for complaints raised by citizens regarding any content broadcast.

- At present, there are over 900 TV channels that are required to comply with the Programme and Advertising Code laid down by the Ministry of Information and Broadcasting under the Cable Television Network Rules.

- The Cable Television Networks (Amendment) Rules, 2021, provides for a three-level grievance redressal mechanism:

    * self-regulation by broadcasters

    * self-regulation by the self-regulating bodies of the broadcasters

    * oversight by an Inter-Departmental Committee at the level of the Centre.

- A viewer could file a complaint directly to the broadcaster, who would have to respond within 15 days.

- If the complainant was not satisfied with the response, the complaint could be escalated to the self-regulating bodies set up by TV channels, which should deal with the case in 60 days.

    * Such appeals would be dealt with by the Inter-Departmental Committee set up under the Oversight Mechanism.

    * The Committee would be headed by the Additional Secretary in the Ministry of Information and Broadcasting.

    * Its members would be from the Ministry of Women and Child Development, Home Ministry, Ministry of Electronics and Information Technology, Ministry of External Affairs, Ministry of Defence, and representatives of other Ministries and organisations, including experts, as decided by the Centre.

- This third tier was not only kept aside to hear the appeals, it could take up complaints that come directly to the Centre.

6. **Unlawful Activities (Prevention) Act (UAPA)**

   » Prelims: UAPA provisions

Context:

- The Delhi High Court granted bail to three students of Jawaharlal Nehru University and Jamia Millia Islamia arrested under the Unlawful Activities (Prevention) Act (UAPA) in connection with the northeast Delhi riots in 2020.

Details:

- The court criticised the Delhi Police for casually invoking provisions of UAPA against the three accused noting that the line between the constitutionally guaranteed "right to protest" and "terrorist activity" had been blurred.

  * The three accused students were protesting against the enactment of the Citizenship Amendment Act (CAA).

- The court remarked that, in spite of the fact that the definition of 'terrorist act' in UAPA is wide and somewhat vague, the phrase 'terrorist act' cannot be permitted to be casually applied to criminal acts that fall squarely within the definition of conventional offences.

- The court cautioned that imposing extremely grave and serious penal provisions engrafted in sections 15, 17 and 18 of the UAPA upon people would undermine the intent and purpose of the law.

UAPA's origin:

- The 'terrorist act', including conspiracy and act preparatory to the commission of a terrorist act, were brought within the purview of UAPA by an amendment made in 2004 when the Prevention of Terrorism Act (POTA) was repealed.

- POTA's precursor, the Terrorist & Disruptive Activities (Prevention) Act (TADA) was repealed in 1995.

Courts Observation:

- To understand the concept and construction of 'terrorism', the High Court referred to various Supreme Court (SC) judgments where the issue has already been dealt with.

- In Hitendra Vishnu Thakur versus State of Maharashtra case, SC said:

  * "A 'terrorist' activity does not merely arise by causing disturbance of law and order or of public order. The fallout of the intended activity must be such that it travels beyond the capacity of the ordinary law enforcement agencies to tackle it under the ordinary penal law.

  * "Every terrorist may be a criminal but every criminal cannot be given the label of a 'terrorist' only to set in motion the more stringent provisions of TADA."

- The bail orders also refer to how the Supreme Court itself, in the 1994 case of Kartar Singh v State of Punjab, flagged similar concerns against the misuse of another anti-terror law, the Terrorists and Disruptive Activities (Prevention) Act, 1987.

Bail under UAPA

- UAPA prohibits granting bail if there are reasonable grounds for believing that the prosecution's case might be prima facie true.

- The problem with this is that often the prosecution's version was accepted without serious cross-examination.

- Supreme Court previously had put the defendants in an even more difficult situation, by effectively prohibiting courts from engaging in a substantial examination of the merits of a case during the bail hearings.

Delhi HC order

- This order reiterates the fact that courts still have a lot of room to subject the government's case to scrutiny even in bail hearings.

- They can examine, as this order has done, how the law has been applied, and they can even look into evidentiary questions.

Concerns associated with UAPA

- The dilatory trial procedures ensure lengthy periods of pre-trial incarceration for the accused who are presumed guilty of heinous terror crimes.

- Access to the judiciary remains woefully limited for most of the thousands incarcerated under this widely-used law — as per the government's figures, 5,922 were arrested under the UAPA between 2016 to 2019 alone

Conclusion

- Even within the draconian constraints of the UAPA, much can be achieved if a responsive and independent judiciary follows the basic principles of natural justice and due process.

GEOGRAPHY

Geography - Space missions

1. DAVINCI+ and VERITAS

» Prelims: DAVINCI+ and VERITAS; Magellan Mission and Japan's Akatsuki mission

» Mains: Significance of the study of Venus

DAVINCI+

- It is short for 'Deep Atmosphere Venus Investigation of Noble gases, Chemistry, and Imaging' and is the first US-led mission to the planet's atmosphere since 1978.

- It will try to understand Venus' composition to see how the planet formed and evolved.

- This mission also consists of a descent sphere that will pass through the planet's thick atmosphere and make observations and take measurements of noble gases and other elements.

- This mission will also try to return the first high resolution photographs of a geological feature that is unique to Venus. This feature, which is called "tesserae" may be comparable to Earth's continents.

  * The presence of tesseraes may suggest that Venus has tectonic plates like Earth.

VERITAS

- The second mission called VERITAS is short for 'Venus Emissivity, Radio Science, InSAR, Topography, and Spectroscopy' and will map the planet's surface to determine its geologic history and understand the reasons why it developed so differently from Earth.

- VERITAS will orbit Venus with a radar that will help to create a three dimensional reconstruction of its topography which might be able to tell scientists if processes such as plate tectonics and volcanism are still active there.

- This mission will also map the emissions from Venus's surface that may help in determining the type of rocks that exist on Venus–a piece of information that is not exactly known yet.

- It will also determine if active volcanoes are releasing water vapour into the atmosphere.

Significance

- The results from DAVINCI+ are expected to reshape the understanding of terrestrial planet formation in the solar system and beyond. Taken together, both missions are expected to tell scientists more about the planet's thick cloud cover and the volcanoes on its surface.

- Further, scientists speculate about the existence of life on Venus in its distant past and the possibility that life may exist in the top layers of its clouds where temperatures are less extreme.

Venus

- For those on Earth, Venus is the second-brightest object in the sky after the moon. It appears bright because of its thick cloud cover that reflects and scatters light.

- But while Venus, which is the second closest planet to the Sun, is called the Earth's twin because of their similar sizes, the two planets have significant differences between them.

- Venus also does not have a moon and no rings.

Hottest Planet

- For one, the planet's thick atmosphere traps heat and is the reason that it is the hottest planet in the solar system, despite coming after Mercury, the closest planet to the Sun.

- Surface temperatures on Venus can go up to 471 degrees Celsius, which is hot enough to melt lead

Orbit and Rotation

- Venus' rotation and orbit are unusual in several ways. Venus is one of just two planets that rotate from east to west. Only Venus and Uranus have this "backwards" rotation.

  * This means on Venus the Sun rises in the west and sets in the East.

- One day on Venus is equivalent to 243 Earth days because of its backward spinning, opposite to that of the Earth's and most other planets.

Have humans visited Venus?

- Because of the planet's harsh environment, no humans have visited it and even the spacecraft that have been sent to the planet have not survived for a very long time.

Spacecraft from several nations have visited the planet

- The first such spacecraft was the Soviet Union's Venera series (the spacecraft, however, could not survive for long because of the planet's harsh conditions),

- Followed by NASA's Magellan Mission that studied Venus from 1990-1994.

- Japan's Akatsuki mission is studying the planet from Orbit.

Geography - Governmental initiative

2. Deep Ocean Mission

» Prelims: Deep Ocean Mission- Programmes; UN International Seabed authority

» Mains: Significance of Deep Ocean Mission

- Deep Ocean Mission is a central sector scheme.

- The mission proposes to explore the deep ocean similar to the space exploration started by ISRO about 35 years ago.

- The focus of the mission will be on deep-sea mining, ocean climate change advisory services, underwater vehicles and underwater robotics-related technologies.

- Its two key projects include:

  * A desalination plant powered by tidal energy.

  * A submersible vehicle that can explore depths of at least 6,000 metres. It will allow a crew to hunt the floor for precious metals.

Details:

- The mission is expected to cost ₹4,077 crore over the next five years.

- The Ministry of Earth Sciences (MoES) will be the nodal Ministry implementing this multi-institutional mission.

- India has been allotted a site of 75,000 square kilometres in the Central Indian Ocean Basin (CIOB) by the UN International Sea Bed Authority for the exploitation of polymetallic nodules (PMN). These are rocks scattered on the seabed containing iron, manganese, nickel and cobalt.

- There are six components to the programme.

  * A manned submersible vehicle will be developed to carry three people to a depth of 6,000 metres with a suite of scientific sensors and tools. An integrated mining system will be also developed for mining polymetallic nodules at those depths in the central Indian Ocean.

  * Ocean Climate Change Advisory Services will be developed. It would entail developing a suite of observations and models to understand and provide future projections of important climate variables on seasonal to decadal time scales.

  * Deep sea flora and fauna, including microbes, will be searched. Studies would be carried out to sustainably utilise them.

  * Potential sources of hydrothermal minerals that are sources of precious metals formed from the earth's crust along the Indian Ocean mid-oceanic ridges would be explored and identified.

  * A detailed engineering design would be prepared for offshore Ocean Thermal Energy Conversion (OTEC) powered desalination plants.

  * The final component is aimed at grooming experts in the field of ocean biology and engineering.

Significance:

- With its success, India will be among a handful of countries able to launch an underwater mission at such depths.

- It aims to translate research into industrial applications and product development through on-site business incubator facilities.

- Polymetallic nodules (PMN) are rocks scattered on the seabed containing iron, manganese, nickel and cobalt.

  * Being able to lay hands on a fraction of that reserve can meet the energy requirement of India for the next 100 years.

Context

- The Union Cabinet has approved the deep ocean mission.

Geography - Resources and their distribution

3. Rare earth metals at the heart of China-U.S. rivalry

» Prelims: Rare earth metals and their uses.

Context

- Recently, the U.S. Senate passed the U.S. Innovation and Competition Act, aimed at countering China's technological ambitions.

  * Among many other interventions, the bill also aimed at improving American competitiveness in the rare earth metals market. The bill includes several provisions to help improve critical minerals supply chains.

Background:

Rare earth metals:

- Rare earth metals are a group of 17 elements – lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, scandium, yttrium – that appear in low concentrations in the ground. They are lustrous silvery-white soft heavy metals.

- Although they are more abundant than their name implies, they are difficult and costly to mine and process cleanly.

Use of rare earth metals:

- Rare earths find application in a wide range of products including rechargeable batteries for electric and hybrid cars, advanced ceramics, computers, DVD players, wind turbines, catalysts in cars and oil refineries, monitors, televisions, lighting, lasers, fiber optics, superconductors, mobiles and glass polishing as well as military jet engines, satellites and lasers.

- Lanthanum is needed to manufacture night vision devices.

- These rare minerals are essential to the manufacture of electric vehicles, wind turbines and drones considered very important sectors in the coming future.

  * Rare earth minerals like neodymium, praseodymium and dysprosium, are crucial to the manufacture of magnets used in wind turbines and electric cars. Hence the transition to green energy is dependent on the availability of these critical rare earth metals.

China's dominance in rare earth metals:

- The rare earth metals are largely extracted and refined in China.

  * Most of the rare earth metal reserves are located within China. After China, the major rare earth countries based on reserve volume are Vietnam, Brazil, and Russia.

  * China hosts most of the world's processing capacity and in 2017, China accounted for 81% of the world's rare earth production.

- In 2019, the U.S. imported 80% of its rare earth minerals from China, while the EU gets 98% of its supply from China.

Details:

- Rising tensions between the United States and China have sparked concerns over China's dominant position as a supplier of rare earths.

- China's dominance in the critical rare earth metals, key to the future of manufacturing, is a cause of concern for the U.S., given that China could as well use its dominance in the sector to cut off supplies to the west in case of a geopolitical friction.

  * Example – Japan accused China of halting rare earth supplies for political reasons (in the aftermath of a diplomatic dispute between China and Japan in 2010), sparking recognition worldwide of the risks of dependence on one supplier.

- Recognizing the fact that the failure to expand its semiconductor production, or reroute rare earths supply chains, could leave the U.S. at a strategic disadvantage in the years ahead, the act makes several recommendations in this regard.

  * The U.S. aims to boost domestic production and processing of rare earths and lithium, another key mineral component, while working with allies to increase sustainable global supply and reduce reliance on competitors like China.

  * Recycling has also emerged as a potential source for rare earth minerals. Scaling up recycling could help meet a substantial proportion of the demand for rare earth metals.

Additional information:

- The Mountain Pass mine is located in California, U.S.

  * The Mountain Pass Mine is an open-pit mine of rare-earth elements. In 2020 the mine supplied 15.8% of the world's rare-earth production.

Geography- Geology

4. **Clues from meteorite to Earth's mantle**

   » Prelims: Shocked meteorite; earth structure

   » Mains: Indirect method of study of earth's internal structure

Context:

- Study of the Kamargaon meteorite by researchers from the Indian Institute of Technology (IIT) Kharagpur.

Background:

Kamargaon meteorite:

- In 2015, a meteorite fell near the town of Kamargaon in Assam, India.

- The meteorite originated in the asteroid belt between Mars and Jupiter and was sucked in by Earth's gravity.

- Based on its mineral composition, it was classified as a chondrite, a variety of stony meteorite.

Shocked meteorite:

- The kamargaon meteorite is a shocked meteorite. It means that the meteorite has gone through high-pressure and high-temperature conditions.

- These meteorites would have survived high-pressure and high-temperature events during their formation and fall on Earth (impact event) due to the planet's gravitational pull.

  * The meteorite has experienced the kind of pressure around 24 Giga Pascal (equivalent of pressure found in Earth's mantle), which is 2,50,000 times more than the atmospheric pressure and temperatures up to 2,500 degrees Celsius.

Structure of the Earth:

- The Earth is composed of three layers — the crust, mantle and core.

  * The upper crust layer is relatively thin, followed by the intermediate silicate mantle and then the centre iron-nickel alloy core.
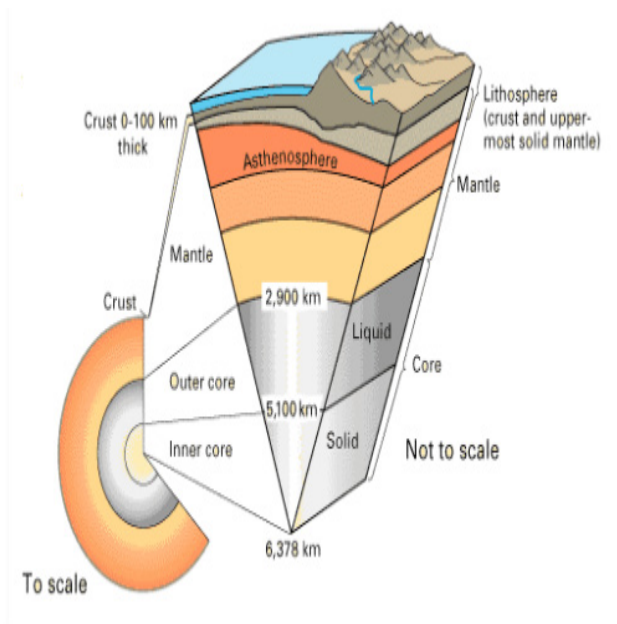
Details of the study:

Meteorite composition:

- The meteorite is mostly made up of a substance known as Olivine.

  * Olivine is a rock-forming mineral found in dark-coloured igneous rocks and has a very high crystallisation temperature compared to other minerals. It is considered an important mineral in Earth's mantle.

Olivine dissociation:

- Olivine breaks down into Bridgmanite and Magnesiowustite under high temperature and pressure conditions like those observed in the Earth's lower mantle.

  * The mantle faces high temperature and pressure. When materials are transported to the lower mantle by convection or subduction, there would be high-temperature conditions in the lower mantle.

- Using new high-resolution electron microscopy and spectroscopy, researchers studied the dissociation reaction of olivine in the Kamargaon meteorite. They have found mechanisms and reactions that may be driving the transformation of olivine.

Significance of the study:

Understanding of the mantle:

- The meteorite provides a valuable sample of naturally occurring high-pressure minerals like those believed to make up the Earth's mantle. Thus the analysis of the shocked meteorite offers new clues about the Earth's mantle and its process of formation.

Challenges in the study of structure of the earth:

- While much is known about the crust composition and formation, very little is known about the mantle and the core due to their inaccessibility.

- Given the relative inaccessibility of deeper layers of the earth, the only way to study material from such immense depths is through volcanic eruptions and magma samples. The study of different meteorites also provides valuable insights into the formation of the earth.

Better understanding of geophysical phenomenon:

- The understanding of the olivine dissociation, which is one of the most important reactions that largely control the properties in the Earth's interior will better understand the geophysical phenomenon associated with it.

- The samples found in the meteorite are similar to those observed on plate tectonics and could prove useful in studying earthquakes and volcanic activities.

Geography- Miscellaneous

5. **Glacial Lake Atlas of Ganga River Basin Released**

   » Prelims: Glacial lake outburst flood

What's in the news?

- The Ministry of Jal Shakti has released an updated atlas of glacial lakes that are part of the Ganga river basin in the wake of mounting concerns over the impact of climate change on Himalayan glaciers.

Details:

- About 4,707 glacial lakes have been mapped in the Ganga basin.

- In December 2020, a similar exercise had been carried out for the Indus River 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.

- Glacial lakes are identified in nine different types, majorly grouped into four categories based on its process of lake formation, location, and type of damming material.

Area covered in the map:

- The area mapped spans from the origin of the Ganga River to the foothills of the Himalayas covering a catchment area of 2,47,109 sq. km.

- The study portion of the Ganga River basin covers a part of India and transboundary region.

Benefits of the Atlas:

- Provides a comprehensive and systematic glacial lake database for Ganga River basin with size > 0.25 ha.

- Can be used as reference data for carrying out change analysis, both with respect to historical and future time periods in the context of climate change impact studies.

- Provides an authentic database for regular or periodic monitoring of changes in spatial extent (expansion/shrinkage), and formation of new lakes.

- Can be used in conjunction with glacier information for their retreat and climate impact studies.

- Can be useful in identifying potential critical glacial lakes and consequent GLOF

- The information can be used for disaster mitigation planning and related programmes.

Miscellaneous

6. Vamsadhara verdict

  » Prelims: Vamsadhara river; new Inter-state water dispute tribunal bill provisions

River Vamsadhara

- River Vamsadhara is an important east-flowing river between Mahanadi and Godavari, in Southern Odisha and North Eastern Andhra Pradesh.

- It originates in the Kalahandi district of Odisha, flows in Odisha, along its boundary with Andhra Pradesh and finally joins the Bay of Bengal at Kalingapatnam, Andhra Pradesh.

- Vamsadhara water dispute is between the states of Andhra Pradesh and Odisha.

Context:

- Chief Minister of Andhra Pradesh has welcomed the judgment of Vamsadhara River Water Tribunal permitting Andhra Pradesh to construct Neradi barrage across the Vamsadhara River.

MISCELLANEOUS

1. Burmese grapes 'Leteku'

Context

- APEDA facilitated exports of Burmese grapes 'Leteku' to Dubai.

About Leteku:

- Burmese Grapes are also known as 'Leteku' in the Assamese language.
- They are grown in the Darrang district of Assam.
- They are found in abundance in the north eastern region of India.
- Burmese grapes grows in evergreen forests on a wide range of soils.
- The fruit is harvested and used locally, eaten as a fruit, stewed or made into wine.
- It is also used medicinally to treat skin diseases. The bark, roots and wood are harvested for medicinal uses.
- The fruit is oval, coloured yellowish, pinkish to bright red or purple, 2.5–3.5 cm in diameter, glabrous, with 2–4 large purple-red seed, with white aril.

2. CEO Water Mandate

Context

- NTPC joined UN's CEO Water mandate.

What is the CEO Water Mandate?

- The CEO Water Mandate is a UN Global Compact initiative to demonstrate commitment and efforts of companies to better their water and sanitation agendas as part of long term Sustainable Development Goals.
- The CEO Water Mandate is designed to assist companies in the development, implementation, and disclosure of comprehensive water strategies and policies.
- It also provides a platform for companies to partner with like-minded businesses, UN agencies, public authorities, civil society organizations, and other key stakeholders.
- The Mandate is a commitment platform for business leaders and learners to advance water stewardship.
- Endorsing companies commit to action across six key elements and report annually on progress.

- In implementing water stewardship, endorsing companies also identify and reduce critical water risks to their businesses, seize water-related opportunities, and contribute to water security and the Sustainable Development Goals.
- The six commitment areas are:
    * Direct operations
    * Supply chain and watershed management
    * Collective action
    * Public policy
    * Community engagement
    * Transparency
- The CEO Water Mandate is a special initiative of the UN Secretary-General and the UN Global Compact, implemented in partnership with the Pacific Institute.

3. Cicadas

- Cicadas are insects belonging to the family Cicadidae in the order Hemiptera.
- Each brood of periodical cicadas has a specific range, but all are found in the eastern and midwestern United States.

Uniqueness

- Periodical cicadas are best known for their extraordinary, highly synchronized life cycles.
- They spend most of their lives—13 or 17 years, depending on the species—in larval form, burrowed beneath the soil and feeding on fluids from plant roots.
- During this time, they complete five developmental stages, known as "instars", entirely underground. The fifth-instar nymphs emerge from the ground by making holes and then transform into adults, only to perish approximately four weeks later

Development

- As adults, they gather in so-called chorus groups, where the males sing to woo the females.
- After mating, the female lays eggs in thin twiggy branches of trees, and then dies.
- The eggs hatch and the nymphs drop into the earth like rain, burrowing into it.
- About 95% of the nymphs die, and the ones that are left feed on root sap and remain underground, till it is time to emerge.

Are there periodical cicadas in India?

- There are three species of cicadas found in the Indian subcontinent — Chremistica mixta (found in Sri Lanka), C. seminiger (found in the Nilgiri hills) and C. ribhoi (discovered in Ri-Bhoi district of Meghalaya).

Significance

- Cicadas are mostly beneficial. They prune mature trees, aerate the soil, and once they die, their bodies serve as an important source of nitrogen for growing trees.

4. Fukuoka Grand Prize

- The award was established by Japan's Fukuoka city and the Fukuoka City International Foundation

- It is given to individuals and organisations for their work in preserving Asian culture.

- There are three prize categories: Grand Prize, Academic Prize, and Arts and Culture Prize.

What's in News?

- Journalist Palagummi Sainath has been awarded the Fukuoka Grand Prize for 2021.

- The Grand Prize has earlier been awarded to Muhammad Yunus from Bangladesh, historian Romila Thapar, and sarod maestro Amjad Ali Khan. Eleven Indians have received the Fukuoka Prize so far.

5. INS Sandhayak

Context

- Indian Navy's oldest Hydrographic Survey Ship INS Sandhayak Decommissioned.

About INS Sandhayak:

- INS Sandhayak, the Navy's oldest hydrographic survey ship was decommissioned after rendering 40 years of service to the nation.

- INS Sandhayak undertook over 200 major hydrographic surveys in the Western and Eastern coasts of the Indian peninsula, the Andaman Sea, and surveys in neighbouring countries including Sri Lanka, Myanmar and Bangladesh.

- The ship also took part in important operations like Operation Pawan in Sri Lanka (1987), Operation Rainbow for Humanitarian Assistance in the aftermath of the Tsunami in 2004 and the maiden Indo-US HADR Exercise Tiger-Triumph in 2019.

- Note:- Hydrographic survey is the science of measurement and description of features which affect maritime navigation, marine construction, dredging, offshore oil exploration/offshore oil drilling and related activities.

6. International Day against Drug Abuse and Illicit Trafficking

Context

- June 26 is observed as the International Day against Drug Abuse and Illicit Trafficking.

Details:

- The aim of the day is to strengthen action and cooperation in achieving the goal of a world free of drug abuse.

- The theme for 2021 is "Share Drug Facts to Save Lives".

Significance of International Day Against Drug Abuse & Illicit Trafficking

- The UN fights against the menace of drug abuse through various bodies.

- The UNODC or the United Nations Office on Drugs and Crime leads the fight against illicit drugs, as well as an international crime.

- The UNODC was formed in 1997 and has field offices all over the globe.

- The UN observes international days to raise public awareness about issues, get support from governments and international bodies, as well as engage individuals and communities in combating severe problems and concerns.

- The international day is marked to recognize the severe impact drug abuse and addiction is having on people's lives, and also on societal peace, development, and growth.

7. Juneteenth

The U.S. is set to declare a federal holiday commemorating the end of slavery on June 19th or Juneteenth.

- Juneteenth commemorates June 19, 1865, when Union soldiers brought the news of freedom to enslaved Black people in Galveston, Texas.

- It is on this day that the enslaved Black people in Galveston learned that the Emancipation Proclamation had freed them.

- This move is considered a major step forward in recognizing the wrongs of the past.

8. Saral Sanchar Portal

Context

- Department of Telecommunications (DoT) expanded the Saral Sanchar Portal.

About Saral Sanchar Portal:

- 'SARAL SANCHAR' (Simplified Application For Registration and Licenses) is a web-based portal for Issuing various types of licenses and registration certificates.

- It is a part of the various digital initiatives being undertaken by the Dept of Telecommunications, Ministry of Communications, GOI.

- The portal ensures transparency and more efficiency in the process of issuance of licenses and registration certificates.

- Applicants can apply by filling up the prescribed application form online and uploading the documents and application form with digital signature.

- The portal envisages that applicants get prompts and alerts at various stages of application submission so that all necessary requirements are complied with before submitting the application.

- On this portal, application for Access Services, Internet Services and other licenses are being received.

- The following types of licenses/authorizations shall be issued from this portal:
   * Unified License
   * Unified License-Virtual Network Operator
   * WPC Licenses (Wireless Planning and Coordination)

Latest initiative launched on Saral Sanchar Portal:

- The Wireless Planning and Coordination Wing (WPC) of the DoT launched an initiative to facilitate online licensing for use of Spectrum to conduct experiments, demonstrations, etc.

- The scope of the portal has been expanded for the receipt, processing and grant of licenses for spectrum to conduct experiment, demonstration, testing, manufacturing, etc.

- With this addition, nearly all the permissions required from the WPC Wing, which include permissions for equipment type approval, satellite licenses, amateur licenses, allocations by Standing Committee of Radio Frequency Allocation, etc. have become online.

9. Toycathon-2021

- This is a special kind of hackathon where students and teachers from schools and colleges, design experts, toy experts and start-ups will get together to crowd source ideas for developing toys and games that are based on Indian culture and ethos, local folklore and heroes, and Indian value systems.

- While this will greatly help India develop into a global hub for toys and games, it will also help our children to understand the ethos and values of Indian culture as envisaged in the National Education Policy 2020.

- The Toycathon is based on nine themes viz. Indian Culture, History, Knowledge of India and Ethos; Learning, Education and Schooling; Social and human values; Occupations & specific fields; Environment; Divyang ; Fitness and sport; Out of the box, creative and logical thinking and Rediscovering/redesigning traditional Indian toys.

- It will have three variants of tracks – junior, senior and start-up.

- It is an inter-ministerial initiative. The participating agencies are the Ministry of Education, the Ministry of Women & Child Development, the Ministry of Textiles, the Ministry of Information & Broadcasting, DPIIT, Ministry of MSME, Innovation Cell (Education Ministry) and the AICTE.

- There are categories for both online and physical toys.

10. XraySetu

What is XraySetu?

- It is a new AI-driven platform that can help in early intervention through rapid screening of COVID-19 with the help of Chest X-ray interpretation over WhatsApp for doctors who have access to X-ray machines.

- The solution can work with low-resolution images sent via mobiles.

- It is quick and easy to use and can enable detection in rural areas.

Background:

- As the pandemic rages on in the rural areas, it is critical to drive rapid testing, contact tracing and create dedicated containment zones.

- Even in some cities, these tests take over a week to give results; the situation is even more challenging in rural India.

- Easy alternative tests are necessary as RT-PCR tests also give a 'false negative' for some variants.

Who created XraySetu?

- It has been developed by ARTPARK (AI & Robotics Technology Park) in collaboration with Niramai and the Indian Institute of Science (IISc), Bengaluru.
   * ARTPARK is a not-for-profit foundation established by IISc with support from the GOI's Dept of Science & Technology (DST).
   * Niramai is a Bangalore-based healthtech startup.

How XraySetu functions:

- The doctor can visit www.xraysetu.com and click on the 'Try the Free XraySetu Beta' button.

- The platform will then redirect the person to another page, wherein he or she can choose to engage with the WhatsApp-based chatbot via web or smartphone application.

- Alternatively, the doctor can also send a WhatsApp message to a mentioned phone number to start the XraySetu service.

- Then they just need to click the picture of the patient's X-ray and obtain the 2-page automated diagnostics with annotated images in a few minutes.

- While extending the probability of the COVID-19 contraction, the report also highlights a localized heatmap for a quick perusal for the doctor.

- The solution has a sensitivity performance of 98.86% and specificity performance of 74.74%.

11. World Food Safety Day

Context

- June 7 is observed as World Food Safety Day.

About World Food Safety Day:

- June 7 was proclaimed as the World Food Safety Day in 2018 by the United Nations General Assembly.

- The theme of World Food Safety Day 2021 is 'Safe food today for a healthy tomorrow'.

    * The theme stresses that production and consumption of safe food has immediate and long-term benefits for people, the planet and the economy.

- The day is celebrated worldwide to draw attention to the fact that food is not only an agricultural or trade commodity but is also a public health issue.

12. FBI-run app tricks criminal gangs globally, 800 arrested

Context

- FBI unveiled a global sting operation leading to police raids and drug seizures in 16 nations.

Details:

- The operation is known as Trojan Shield.

- Earlier two encrypted platforms – EncroChat and Sky ECC were taken down.

    * These had been used by criminal gangs to organise drug trafficking.

    * With the gangs looking for a new means of communication, the FBI covertly developed an app called ANOM and installed it on modified mobile phones.

- The sting operation was an unprecedented blow to organised crime in countries around the world.

- More than 32 tonnes of drugs including cocaine, cannabis, amphetamines and methamphetamines were seized along with 250 firearms, 55 luxury cars and more than $148 million in cash and cryptocurrencies

PRACTICE QUESTIONS

1. **Consider the following pairs:**

   1. Point Calimere Wildlife and Bird Sanctuary: Tamil Nadu

   2. Pench Tiger Reserve: Arunachal Pradesh

   3. Pobitora Wildlife Sanctuary: West Bengal

   Which of the above pairs is/are correctly matched?

   A. 1 only

   B. 1 and 3 only

   C. 2 and 3 only

   D. 1, 2 and 3

2. **Which of the following statements is/are correct?**

   1. The original Constitution did not contain provisions with respect to tribunals. The 44th Amendment Act of 1976 added a new Part which deals with tribunals.

   2. Tribunals under Article 323 A can be established by any 'Appropriate Legislature' by passing a law.

   3. The chairman and members of the State Administrative Tribunals (SATs) are appointed by the Governor after consultation with the Chief Justice of the High Court concerned.

   Options:

   A. 1 and 2 only

   B. 1, 2 and 3

   C. 2 and 3

   D. None

3. **Arrange the following hills from East to West:**

   1. Naga Hills

   2. Mikir Hills

   3. Jaintia Hills

   4. Garo Hills

   Options:

   A. 1-2-3-4

   B. 2-3-4-1

   C. 3-4-1-2

   D. 4-1-2-3

4. **The chairman and members of National Human Rights Commission are appointed by the President on the recommendations of a committee consisting of**

   1. Prime Minister

   2. Speaker of the Lok Sabha

   3. Deputy Chairman of the Rajya Sabha

   4. Leaders of the Opposition in both the Houses of Parliament

   5. Central Home Minister

   Options:

   A. 1, 2, 3 and 4 only

   B. 1, 2 and 4 only

   C. 1, 3 and 4 only

   D. 1, 2, 3, 4 and 5

5. **In which of the following regions of India are shale gas resources found? (UPSC 2016)**

   1. Cambay Basin

   2. Cauvery Basin

   3. Krishna-Godavari Basin

   Select the correct answer using the code given below.

   A. 1 and 2 only

   B. 3 only

   C. 2 and 3 only

   D. 1, 2 and 3

6. **Consider the following statements:**

   1. It is binding on the President to nominate 12 members to Rajya Sabha.

   2. The nomination of members is a discretionary power of the President.

   3. A member cannot be renominated after the term is over.

   Which of the above statements is/are incorrect?

   A. 1 & 2 only

   B. 2 & 3 only

   C. Only 3

   D. All of the above

7. **Purchasing Managers' Index or PMI is an economic indicator, which is derived after monthly surveys of different companies. For manufacturing PMI, the questionnaire is sent to manufacturing companies. The questions are related to 5 key variables:**

1. New orders
2. Output
3. Employment
4. Suppliers' delivery times
5. Stock of items purchased

Which one of the following reflects the correct increasing order according to their weights?

A. 5-4-3-2-1
B. 1-2-3-4-5
C. 1-3-4-2-5
D. 5-4-2-3-1

8. **Vande Bharat Mission is related to:**

A. Bringing back stranded Indians from foreign destinations after suspension of regular international flights due to Covid-19

B. Evacuation of Indian citizens from South Sudan

C. India's role in anti-piracy operations in Djibouti

D. None of the Above

9. **'Van Dhan Yojana' deals with:**

A. Financial inclusion

B. Tax relief for street vendors

C. The six-month moratorium on term loans announced by the Reserve Bank of India during Covid-19 lockdown

D. Economic development of tribals

10. **The object of the Butler Committee of 1927 was to**

A. Define the jurisdiction of the Central and Provincial Governments

B. Define the powers of the Secretary of State for India

C. Impose censorship on national press

D. Improve the relationship between the Government of India and the Indian States

11. **Which of the following is not the function of the National Commission for Protection of Child Rights (NCPCR)?**

A. Present to the central government an annual report on the safeguards available to the children

B. Inquire into violation of child rights and recommend initiation of proceedings in such cases

C. Undertake and promote research in the field of child rights

D. Deciding the quantum of reservation of seats for children belonging to economically weaker sections in all private unaided schools.

12. **Which of the following statements regarding Sexual Harassment of Women at Workplace Act 2013 is/are correct?**

1. The Act envisages the setting up of the Internal Complaints Committee (ICC) at every office of the organisation or institution, having more than 100 employees, to hear and redress complaints pertaining to sexual harassment.

2. An aggrieved woman can file a written complaint to ICC within three months from the date of the incident.

3. Before initiating an inquiry, steps are to be taken to settle the matter between her and the respondent through conciliation.

Options:

A. 1 & 2 only
B. 1 & 3 only
C. 2 & 3 only
D. All of the above

13. **Consider the following statements about the India Cycles4Change challenge:**

1. The India Cycles4Change challenge was launched in 2020 as a response to the COVID-19 pandemic by the Ministry of Health & Family Welfare.

2. The challenge was launched last year under the Atmanirbhar Bharat Abhiyan.

Which of the above statements is/are correct?

A. Only 1
B. Only 2
C. Both
D. None

14. **Consider the following statements:**

1. The Shanghai Cooperation Organisation (SCO) is a permanent intergovernmental international organisation announced in 2001 in Shanghai.

2. The Heads of State Council (HSC) is the supreme decision-making body in the SCO.

3. The HSC meets once a year and adopts decisions and guidelines on all important matters of the organisation.

Which of the above statements is/are correct?

A. Only 1
B. Only 1 & 2

C. Only 2 & 3

D. All of the above

15. Recently there was a proposal to translocate some of the lions from their natural habitat in Gujarat to which one of the following sites? (UPSC-2017)

A. Corbett National Park

B. Kuno Palpur Wildlife Sanctuary

C. Mudumalai Wildlife Sanctuary

D. Sariska National Park

16. Consider the following statements:

1. Sedition law was inserted in the Indian Penal Code (IPC) in 1870 in response to the Wahabi movement.

2. Sedition is one of the 8 reasonable restrictions on citizens' right to freedom of speech and expression under the Indian Constitution.

Which of the above statements is/are correct?

A. Only 1

B. Only 2

C. Both

D. None

17. Consider the following statements regarding SDG India Index:

1. The Index is intended to provide a holistic view on the social, economic and environmental status of the country and its States and UTs.

2. Goals 12, 13, 14 and 17 are excluded from the SDG India Index.

3. Centre and the States/UTs have the mandate to oversee the adoption and monitoring of the SDGs in the country.

4. The Index was launched in 2018.

Which of the above statements is/are correct?

A. 1 & 4 only

B. 1 & 2 only

C. 1, 2 & 3 only

D. All of the above

18. Consider the following statements regarding Black Carbon (BC) deposits:

1. They are short-lived pollutants considered the second-largest contributor to warming the planet.

2. Accelerating the use of liquefied petroleum gas for cooking can cut BC emissions.

3. BC deposits increase the surface reflectance of sunlight.

4. BC deposits raise the air temperature.

Which of the above statements is/are correct?

A. 1, 2 & 3 only

B. 1, 2 & 4 only

C. 1 & 2 only

D. 1, 3 & 4 only

19. Which of the following statements is/are correct?

1. India's overall import dependence on edible oils has ended in 2021.

2. In 2020-21, the production of food grains has decreased when compared to the figures of 2019-20.

3. India's agricultural exports have shrunk by nearly 18 per cent in 2020-21 to meet the domestic food needs.

Which of the above statements is/are correct?

A. Only 1

B. 1 & 2 only

C. 1 & 3 only

D. None of the above

20. 'Pradhan Mantri Jan-Dhan Yojna' has been launched for (UPSC 2015)

A. providing housing loan to poor people at cheaper interest rates

B. promoting women's Self-Help Groups in backward areas

C. promoting financial inclusion in the country

D. providing financial help to the marginalized communities

21. Recently, WHO came up with a naming system for virus variants based on

A. Country of origin

B. Greek alphabets

C. Mythological figures

D. Roman numerals

22. Project 75-I, recently seen in news, is related to -

A. Construction of nuclear-powered submarines for the Indian Navy

B. Procurement of Rafale fighter jets from France

C. Export of Brahmos cruise missiles to Vietnam

D. None of the above

23. Which of the following statements is/are correct?

1. Hydrographic survey is the science of measurement and description of marine topographic features which affect maritime navigation and other sea-based activities.

2. India lacks this technology and relies upon the USA for hydrographic surveys in the Indian Ocean region.

Options:

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

24. Which of the following statements is/are correct?

1. Cancer immunotherapy is a new approach that exploits the body's immune system to put up a fight against cancer.

2. India's first indigenous tumour antigen SPAG9 was discovered in 1998.

3. This antigen has received the trademark 'ASPAGNII' and is being used in dendritic cell (DC) based immunotherapy in treating cervical, ovarian cancer and breast cancer.

Options:

A. 1 only

B. 1 and 2 only

C. 3 only

D. 1, 2 and 3

25. Consider the following statements: (UPSC 2018)

1. Most of the world's coral reefs are in tropical waters.

2. More than one-third of the world's coral reefs are located in the territories of Australia, Indonesia and the Philippines.

3. Coral reefs host far more number of animal phyla than those hosted by tropical rainforests.

Which of the statements given above is/are correct?

A. 1 and 2 only

B. 3 only

C. 1 and 3 only

D. 1, 2 and 3

26. Consider the following statements:

1. India has five Tiger landscapes

2. TraMCA is a software-based monitoring system launched by National Tiger Conservation Authority (NTCA)

3. Tadoba-Andhari Tiger reserve is in the State of Maharashtra

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

27. Which one among the following statements is incorrect about Burkina Faso?

A. It is a landlocked country in West Africa

B. It is part of Africa's semi-arid Sahel region

C. Equator passes through Burkino Faso

D. The major ethno linguistic group of Burkina Faso is the Mossi

28. Biomedical wastes are divided into four color categories, which of the following is/are correctly matched?

1. Yellow- Human anatomical waste, animal anatomical waste

2. Orange- Contaminated plastic bag, bottles

3. White- Scalpels, blades, needles

4. Blue- Broken Glassware or metallic body implant

Options:

A. 1, 2 and 3 only–

B. 1, 3 and 4 only

C. 2, 3 and 4 only

D. 1, 2, 3 and 4

29. Which of the following statements is/are correct?

1. H10N3 is a rare strain of a virus that normally infects poultry.

2. H5N1 is the most common virus causing bird flu, or avian influenza. Though largely restricted to birds, it can cross over to other animals, but not humans.

Options:

A. 1 only

B. 2 only

C. Both

D. None

30. Which of the following can be said to be essentially the parts of 'Inclusive Governance'? (UPSC 2012)

1. Permitting the Non-Banking Financial Companies to do banking

2. Establishing effective District Planning Committees in all the districts

3. Increasing the government spending on public health

4. Strengthening the Mid-day Meal Scheme

Select the correct answer using the codes given below:

A. 1 and 2 only

B. 3 and 4 only

C. 2, 3 and 4 only

D. 1, 2, 3 and 4

31. With reference to Mango showers, which of the following statements is/are correct?

1. These rains are usually seen at the end of the spring season.

2. They are common in the states of Karnataka and Kerala.

Options:

A. 1 only

B. 2 only

C. Both

D. None

32. Which of the following statements is/are correct?

1. The Arabian Sea branch of the monsoon is quite stronger than the Bay of Bengal branch.

2. All the South Indian States receive heavy rainfall during Southwest Monsoons.

Options:

A. 1 only

B. 2 only

C. Both

D. None

33. Consider the following statements about the Performance Grading Index:

1. It is an index released annually which examines governance performance in the states through a data-based framework, ranking them on social and economic development.

2. It is released by the think tank Public Affairs Centre (PAC) in Bengaluru.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both

D. None

34. India is a signatory to which of the following Conventions and Treaties?

1. Biological Weapons Convention (BWC)

2. Chemical Weapons Convention (CWC)

3. Australia Group

4. Wassenaar Arrangement

5. Convention on Cluster Munitions

Options:

A. 1, 2, 3 and 4 only

B. 2, 3, 4 and 5 only

C. 1, 3, 4 and 5 only

D. 1, 2, 3, 4 and 5

35. Consider the following statements: (UPSC 2015)

1. The Executive Power of the Union of India is vested in the Prime Minister.

2. The Prime Minister is the ex officio Chairman of the Civil Services Board.

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

36. With reference to Aravalli Range, which of the following statements is/are correct?

1. The Aravalli Mountain range passes through three states.

2. The highest peak is Guru Shikhar.

3. It is the oldest range of Fold Mountains in India.

Options:

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

37. Consider the following statements:

1. According to the Juvenile Justice Act 2015, juveniles charged with heinous crimes and who are between the ages of 15-18 years would be tried as adults and processed through the adult justice system.

2. "Heinous Offences" include the offences for which the minimum punishment under the Indian Penal Code or any other law for the time being in force is imprisonment for five years or more

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both

D. None

38. In the Lancang-Mekong Cooperation (LMC), an initiative of six countries, which of the following is/are not a participant/participants?

1. Bangladesh

2. Cambodia

3. China

4. Myanmar

5. Thailand

6. India

Options:

A. 2, 3, 4 and 5 only

B. 1 and 6 only

C. 3, 4 and 5 only

D. 1, 2 and 5 only

39. Which of the following countries border Peru?

1. Venezuela

2. Colombia

3. Paraguay

4. Chile

5. Bolivia

Options:

A. 1, 2, 3 and 4 only

B. 2, 4 and 5 only

C. 1, 3 and 4 only

D. 1, 2, 3, 4 and 5

40. Regarding 'carbon credits', which one of the following statements is not correct? (UPSC 2011)

A. The carbon credit system was ratified in conjunction with the Kyoto Protocol.

B. Carbon credits are awarded to countries or groups that have reduced greenhouse gases below their emission quota.

C. The goal of the carbon credit system is to limit the increase of carbon dioxide emission.

D. Carbon credits are traded at a price fixed from time to time by the United Nations Environment Programme.

41. Consider the following statements:

1. An Election Commissioner is appointed by the President on the recommendation of the Chief Election Commissioner.

2. An Election Commissioner is removed in the like manner and on the like grounds as the judge of the Supreme Court.

3. An Election Commissioner, after his/her term is over, is ineligible to become a member of the Rajya Sabha.

Which of the above statements is/are incorrect?

A. 1 & 2

B. 1 & 3

C. 2 & 3

D. All of the Above

42. Consider the following statements:

1. Fifty-two countries and territories are presently classified as Small Island Developing States (SIDS) by the United Nations OHRLLS.

2. SIDS were recognized by the UN as a special case for their security issues.

3. Trinidad and Tobago, Maldives, Singapore and Bahrain are some of the members of the SIDS.

Which of the above statements is/are correct?

A. 1 & 2

B. 1 & 3

C. 2 & 3

D. All of the Above

43. Operation Pangea XIV, recently seen in the news, is a:

A. global crackdown on illegal medical trade

B. research study to evaluate continental drift theory

C. oil and gas exploration initiative in the Arctic area

D. none of the above

44. Which of the following is/are correctly matched?

Error   Description

1. 403   A – server is unable to handle the information request

2. 404   B – requested page is not available

3. 503   C – resource is forbidden

Select the correct option from below:

A. 1-C, 2-B, 3-A

B. 1-A, 2-B, 3-C

C. 1-B, 2-A, 3-C

D. 1-B, 2-C, 3-A

45. Consider the following statements: Attorney General of India can

1. take part in the proceedings of the Lok Sabha

2. be a member of a committee of the Lok Sabha

3. speak in the Lok Sabha

4. vote in the Lok Sabha

Which of the statements given above is/are correct? [UPSC 2013]

A. 1 only

B. 2 and 4 only

C. 1, 2 and 3

D. 1 and 3 only

46. With reference to Minimum Support Prices (MSP), which of the following statements is/are incorrect?

1. They are announced by the Government of India at the end of the sowing season.

2. MSP is fixed twice a year on the recommendations of the Commission for Agricultural Costs and Prices (CACP) and its recommendation is binding.

3. MSP also covers commercial crops.

Options:

A. 1 and 2 only

B. 2 and 3 only

C. 3 only

D. 1, 2 and 3

47. Consider the following pairs:

Name of the Paper/Journal   Name of the Founder/Editor

1. Young India   Mohandas Karamchand Gandhi

2. Navjivan   Sachindranath Sanyal

3. Jugantar   Barindra Kumar Ghosh and Bhupendranath Dutt

Which of the above pairs is/are correctly matched?

A. 1 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

48. Which of the following National Parks are in the state of Assam?

1. Kaziranga National Park

2. Dibru Saikhowa National Park

3. Nameri National Park

4. Orang National Park

5. Dihing Patkai National Park

6. Raimona National Park

Options:

A. 1, 2, 3 and 6 only

B. 2, 3, 4, 5 and 6 only

C. 1, 2, 3, 4 and 5 only

D. 1, 2, 3, 4, 5 and 6

49. Consider the following statements:

1. Reserve Bank of India (RBI) is a member of the Alliance for Financial Inclusion (AFI).

2. RBI has four deputy governors, two are from the outside and two from within the central bank.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both

D. None

50. Which of the following is/are the principal feature(s) of the Government of India Act, 1919? (UPSC 2012)

1. Introduction of dyarchy in the executive government of the provinces

2. Introduction of separate communal electorates for Muslims

3. Devolution of legislative authority by the centre to the provinces

Select the correct answer using the codes given below:

A. 1 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

51. Which of the following is/are correctly matched?

1. Lily Thomas case: Issue of criminalization of politics

2. I R Coelho case: ninth schedule items were open to judicial scrutiny

3. Kihoto Hollohan case: disqualification of MPs and MLAs under Anti-Defection Law

Options:

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

52. With reference to Narcotic Drugs and Psychotropic Substances Act, which of the following statements is/are correct?

1. It is based on the Directive Principles, contained in Article 47 of the Indian Constitution.

2. The central government can add or omit from the list of psychotropic substances and not the State Government.

Options:

A. 1 only

B. 2 only

C. Both

D. None

53. Which one of the following statements best describes the Atlantic Charter?

A. It was a set of economic policy recommendations for developing countries supported by prominent economists and international organisations

B. It was a joint declaration issued during World War II by the United States and Great Britain that set out a vision for the post-war world

C. It is a treaty between the United States and the Soviet Union on the limitation of the Anti-Ballistic Missile (ABM) systems

D. It was a set of guidelines that led to the establishment of an economic and political bloc comprising, Brazil, Paraguay, Uruguay and Argentina

54. Consider the following statements about CHIME:

1. It is a network of radio antennas in the Netherlands, Germany, the UK, France, Sweden, Poland, Ireland and Italy, all connected by high-speed fiber optic cables.

2. It is a superior instrument for observing the phenomenon of Fast Radio Bursts (FRBs).

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both

D. None

55. With reference to 'Indian Ocean Rim Association for Regional Cooperation (IOR-ARC)', consider the following statements: (UPSC-2015)

1. It was established very recently in response to incidents of piracy and accidents of oil spills.

2. It is an alliance meant for maritime security only.

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

56. With reference to Ram Prasad Bismil, which of the following statements is/are correct?

1. He was associated with the Arya Samaj from an early age.

2. In the initial phase of his life, he believed independence can be achieved by means of non-violence.

3. He had participated in Mainpuri Conspiracy and Lahore Conspiracy.

Options:

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 3 only

57. Consider the following statements with respect to National Green Tribunal (NGT):

1. It is a specialized body equipped with the necessary expertise solely for the purpose of adjudicating environmental cases in the country.

2. It not only helps in the speedy disposal of cases relating to environmental protection and conservation of forests but also provides compensation for damages to persons and property for matters connected to the environment.

3. NGT will be bound by the procedure laid down under the Code of Civil Procedure.

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

58. EnVision recently seen in news is a/an

A. European Space Agency's mission to Venus

B. Air Quality and Weather Forecast System

C. High-Performance Computing-Artificial Intelligence (HPC-AI) supercomputer project

D. Gene silencing technology

59. Which of the following are sources of Atmospheric Aerosols?

1. Automobiles

2. Power Plants

3. Cigarettes

4. Volcanic Eruptions

5. Desert Storms

Options:

A. 1, 2, 4 and 5 only

B. 1, 2 and 4 only

C. 1, 2, and 3 only

D. 1, 2, 3, 4 and 5

60. Regarding the Indus Valley Civilization, consider the following statements: (UPSC-2011)

1. It was predominantly a secular civilization and the religious element, though present, did not dominate the scene.

2. During this period, cotton was used for manufacturing textiles in India.

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

61. Which of the following is/are correctly matched?

1. Operation Blue Star: eliminate armed militants who were holed up in the Golden Temple.

2. Operation Pawan: Indian Peace Keeping Force (IPKF's) operation to wrest control of Jaffna from the Liberation Tigers of Tamil Eelam (LTTE)

3. Operation Vijay: Indian operation to push back the infiltrators from the Kargil Sector

4. Operation Olivia: Indian armed forces ended the rule of the Nizam of Hyderabad

Options:

A. 1, 2 and 3 only

B. 2, 3 and 4 only

C. 1, 3 and 4 only

D. 1, 2, 3 and 4

62. Consider the following statements with respect to Olive Ridleys:

1. Olive Ridleys are found in Atlantic, Pacific, Arctic and Indian Ocean.

2. The Olive Ridley is listed as vulnerable under the International Union for Conservation of Nature's Red list.

3. Coast of Odisha is the largest mass nesting site for them

Which of the above statements is/are correct?

A. 1 only

B. 2 and 3 only

C. 2 only

D. 1, 2 and 3

63. Consider the following statements:

1. Coral reefs occur in Shallow waters of the tropics

2. Only hard corals build reefs

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both

D. None

64. Recently, Bharitalasuchus tapani was in the news. What is it?

A. A new species of wasp from the genus Kudakrumia identified by scientists in Goa

B. A carnivorous reptile that lived 240 million years ago

C. A Zingiber from the Andaman and Nicobar Islands

D. A newly discovered fish fossil from Assam

65. Consider the following statements:

1. The Chief Secretary in a State is appointed by the Governor of that State.

2. The Chief Secretary in a State has a fixed tenure.

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

66. With reference to Bhitarkanika National Park, which of the following statements is/are correct?

1. It is a national park in the State of Odisha.

2. It is a Ramsar site.

Options:

A. 1 only

B. 2 only

C. Both

D. None

67. Consider the following statements with respect to Pyrostria laljii:

1. It is the first record of the genus Pyrostria in India.

2. It belongs to the genus of the coffee family discovered from the Andaman Islands.

3. Its IUCN status is endangered.

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

68. Which of the following statements is/are correct with respect to Kawasaki disease?

1. It is a rare viral zoonotic disease that occurs primarily in remote parts of central and west Africa, near tropical rainforests.

2. It is mostly transmitted to people from various wild animals such as rodents and primates.

Options:

A. 1 only

B. 2 only

C. Both

D. None

69. Which of the following is/are Rare earth minerals?

1. Neodymium

2. Selenium

3. Praseodymium

4. Dysprosium

5. Uranium

6. Thorium

Options:

A. 1, 2, 3, 4 and 5 only

B. 2, 4, 5 and 6 only

C. 1, 3 and 4 only

D. 1, 2, 3, 4, 5 and 6

70. The "New START" treaty was in the news. What is this treaty? (UPSC 2011)

A. It is a bilateral strategic nuclear arms reduction treaty between the USA and the Russian Federation.

B. It is a multilateral energy security cooperation treaty among the members of the East Asia Summit.

C. It is a treaty between the Russian Federation and the European Union for energy security cooperation.

D. It is a multilateral cooperation treaty among the BRICS countries for the promotion of trade

71. Tilak Swaraj Fund was started to fund which of the following movements?

A. Civil Disobedience Movement

B. Swadeshi Movement

C. Non-Cooperation Movement

D. Quit India Movement

72. Which of the following statements is/are correct?

1. The National Commission for Protection of Child Rights (NCPCR) is a constitutional body.

2. It is mandated to ensure that all laws, policies, programmes, and administrative mechanisms are in consonance with the Child Rights perspective as enshrined in the Constitution of India and the UN Convention on the Rights of the Child.

3. It has the powers to take suo-moto cognisance of serious cases of violation of child rights.

Options:-

A. 1 only

B. 1 and 2 only

C. 1 and 3 only

D. 2 and 3 only

73. Which of the following statements is/are correct?

1. Floating raft agriculture is a way of utilising areas that are waterlogged for long periods of time in the production of food.

2. The approach employs a floating raft set up on bamboo frames and held together by coir geotextile with a bed of degraded water hyacinth or beds of rotting vegetation, which act as compost for crop growth.

3. Floating raft farming is taken up as a measure of improving adaptability and resilience in the background of climate change.

Options:-

A. 1 and 2 only

B. 2 only

C. 1 and 3 only

D. 1, 2 and 3

74. What is the best description of the 'Karman Line'?

A. Marks the boundary between EEZ and international waters.

B. Defines a boundary between Earth's atmosphere and outer space.

C. It is a reference line along the equator for navigation.

D. None of the above

75. Right to Privacy is protected as an intrinsic part of Right to Life and Personal Liberty. Which of the following in the Constitution of India correctly and appropriately imply the above statement? (UPSC 2018)

A. Article 14 and the provisions under the 42nd Amendment to the Constitution.

B. Article 17 and the Directive Principles of State Policy in Part IV.

C. Article 21 and freedom guaranteed in Part III.

D. Article 24 and provisions under the 44thAmendment to the Constitution.

76. Which of the following cities are located in the Brahmaputra Valley?

1. Guwahati

2. Dibrugarh

3. Aizwal

4. Tezpur

Options:-

A. 1 and 2 only

B. 1, 2 and 3 only

C. 2, 3 and 4 only

D. 1, 2 and 4 only

77. Which of the following statements is/are correct w.r.t Humayun's tomb?

1. The construction of Humayun's tomb was commissioned by Humayun's son Akbar.

2. The tomb has been declared a UNESCO World Heritage Site.

3. The last Mughal Emperor, Bahadur Shah Zafar took refuge here, during the Mutiny of 1857, before being exiled to Rangoon.

Options:-

A. 1 only

B. 1 and 2 only

C. 1 and 3 only

D. 2 and 3 only

78. 'Christchurch Call to Action Summit' is related to -

A. Tackling GHG emissions linked to cryptocurrency mining

B. Curbing online dissemination of extremist content

C. Preventing oil spills and marine disasters

D. Promoting climate-resilient agricultural practices

79. **Mayun island/Perim island, recently seen in news, is located near which crucial maritime chokepoint?**

A. Strait of Malacca

B. Suez Canal

C. Bab-el-Mandeb Strait

D. Strait of Hormuz

80. **Consider the following in respect of Indian Ocean Naval Symposium (IONS): (UPSC 2017)**

1. Inaugural IONS was held in India in 2015 under the chairmanship of the Indian Navy.

2. IONS is a voluntary initiative that seeks to increase maritime cooperation among navies of the littoral states of the Indian Ocean Region.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

81. **Which of the following statements is/are INCORRECT?**

1. India will soon be launching a deep ocean mission with the Indian Navy as the nodal agency.

2. One of the objectives of the mission would be to explore the mining potential of polymetallic nodules at the depths of the Central Indian Ocean.

3. All mineral-related activities in the international seabed area beyond the limits of national jurisdiction are regulated by the International Seabed Authority, a United Nations organisation.

4. India has been allotted a site of 75,000 square kilometres in the Central Indian Ocean Basin (CIOB) by the UN International Sea Bed Authority for the exploitation of polymetallic nodules.

Options:-

A. 1 only

B. 1 and 2 only

C. 3 and 4 only

D. 2, 3 and 4 only

82. **Which of the following connects the South China Sea with the Pacific Ocean?**

A. Strait of Malacca

B. Sunda Strait

C. Luzon Strait

D. Gulf of Thailand

83. **Which of the following statements is/are correct?**

1. India recently extended a $100 million loan to Sri Lanka to support its efforts to expand solar power coverage.

2. Sri Lanka is not a party to the International Solar Alliance launched by India.

3. Sri Lanka owes roughly around $1 billion in debt repayment to India.

Options:-

A. 1 only

B. 2 only

C. 1 and 3 only

D. 1, 2 and 3 only

84. **'Vivad Se Vishwas' scheme is related to**

A. Environmental cess on polluters

B. Direct tax dispute resolution

C. Settling medical insurance claims

D. Resolving GST related disputes

85. **Recently, which of the following States has explored the possibility of constructing an artificial inland port to be connected to sea by a long navigational channel? (2016)**

A. Andhra Pradesh

B. Chhattisgarh

C. Karnataka

D. Rajasthan

86. **Which one of the following statements best describes Bonn Challenge?**

A. It is a global goal to bring 150 million hectares of degraded and deforested landscapes into restoration by 2020 and 350 million hectares by 2030.

B. The objective is to protect human health and the environment against the adverse effects of hazardous wastes.

C. It is a global treaty to protect human health and the environment from Persistent Organic Pollutants (POPs).

D. It aims to combat illicit wildlife trafficking by stimulating political will, improving law enforcement, and reducing consumer demand.

87. **Which of the following is/are related to the development of education in India?**

   1. Fowler Committee
   2. Hartog Committee
   3. MacDonnell Commission
   4. Sadler Commission
   5. Wood's Despatch

   Options:

   A. 1, 2 and 3 only
   B. 2, 3, 4 and 5 only
   C. 1, 2, 3, 4 and 5
   D. 2, 4 and 5 only

88. **A wetland can be considered internationally important if it meets which of the following criterion/critera?**

   1. Contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.

   2. If it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

   3. If it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions

   4. If it regularly supports 20,000 or more waterbirds

   Options:

   A. 1, 2 and 3 only
   B. 2, 3 and 4 only
   C. 1, 3 and 4 only
   D. 1, 2, 3 and 4

89. **Consider the following statements about Miyazaki mangoes:**

   1. They are grown primarily in South Korea.

   2. These mangoes are rich in antioxidant and contain beta-carotene and folic acid, which is great for people that need help with tired eyes.

Which of the above statements is/are correct?

A. 1 only
B. 2 only
C. Both
D. None

90. **Which of the following is geographically closest to Great Nicobar? (UPSC 2017)**

   A. Sumatra
   B. Borneo
   C. Java
   D. Sri Lanka

91. **With reference to Committee of Privileges, which of the following statements is/are incorrect?**

   1. The functions of the committee are semi-judicial in nature.

   2. In Lok Sabha it has 15 members, in Rajya Sabha, it has 10.

   Options:

   A. 1 only
   B. 2 only
   C. Both
   D. None

92. **Consider the following statements:**

   1. Jamdani weaving tradition is of Bengali origin.

   2. Uppada Jamdani Silk Saree from Telangana has been accorded the GI tag.

   Which of the above statements is/are correct?

   A. 1 only
   B. 2 only
   C. Both
   D. None

93. **Consider the following Pairs:**

Virus	Illness
1. Coronaviruses	SARS
2. Togaviruses	Nipah
3. Paramyxoviruses	Chikungunya
4. Filoviruses	Ebola

   Which of the above pairs is/are correctly matched?

   A. 1 and 4 only
   B. 1, 2 and 3 only

C. 2 and 3 only

D. 2, 3 and 4 only

94. Dudhwa Tiger Reserve is in the state of

A. Maharashtra

B. Rajasthan

C. Uttar Pradesh

D. Madhya Pradesh

95. Why is the offering of "teaser loans" by commercial banks a cause of economic concern? (UPSC 2011)

1. The teaser loans are considered to be an aspect of sub-prime lending and banks may be exposed to the risk of defaulters in future.

2. In India, the teaser loans are mostly given to inexperienced entrepreneurs to set up manufacturing or export units

Which of the statements given above is/are correct?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

96. Total Fertility Rate is:

A. the total number of children born in a country in a given year divided by its population in that year.

B. the average number of children expected to be born per woman during her entire span of reproductive period.

C. the average number of children each woman needs to have to maintain current population levels.

D. the number of live births per 1000 persons in a population in a given year.

97. Black money is generated in which of the following ways?

1. Tax evasion

2. Tax avoidance

3. Smuggling

4. Hawala

5. Tax planning

Choose the correct option:

A. 1, 3, 4 and 5 only

B. 1, 3 and 4 only

D. 3 and 4 only

D. 1, 2, 3 and 4 only

98. Which of the statement/s with respect to the Convention on Mutual Administrative Assistance in Tax Matters is/are correct?

1. It was developed jointly by the Organisation for Economic Co-operation and Development (OECD) and the Council of Europe.

2. This Convention deals with issues such as exchange of information, assistance in the collection of taxes and tax dispute resolution.

3. All the BRICS countries are signatories to the convention.

Options:

A. 1 only

B. 2 only

C. 1, 2 and 3

D. 2 and 3 only

99. Consider the following statements:

1. Article 370 was a part of the Constitution at the time of its commencement on January 26, 1950.

2. The Gupkar Alliance is a grouping comprising various political parties and civil society organizations.

3. The first Gupkar declaration was signed before the abrogation of Article 370.

Which of the given statement/s is/are correct?

A. 1 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

100. The term "sixth mass extinction/sixth extinction" is often mentioned in the news in the context of the discussion of:

A. Widespread monoculture practices in agriculture and large-scale commercial farming with indiscriminate use of chemicals in many parts of the world that may result in the loss of good native ecosystems.

B. Fears of a possible collision of a meteorite with the Earth in the near future in the manner it happened 65 million years ago that caused the mass extinction of many species including those of dinosaurs. .

C. Large scale cultivation of genetically modified crops in many parts of the world and promoting their cultivation in other parts of the world which may cause the disappearance of good native crop plants and the loss of food biodiversity.

D. Mankind's over-exploitation/misuse of natural resources, fragmentation/loss of natural habitats, destruction of ecosystems, pollution and global climate change.

101. With reference to the Protection of Women from Domestic Violence Act, which of the following statements is/are correct?

1. It applies to the conduct or commission of an act that harms or injures or has the potential to harm or injure an individual. It does not include omission.

2. Domestic violence includes physical, financial, sexual violence and not emotional abuse which is the major drawback of this act.

3. The law also covers children.

Options:

A. 1 and 2 only

B. 2 and 3 only

C. 3 only

D. 1, 2 and 3

102. Consider the following statements with respect to Green Hydrogen:

1. This is produced from fossil fuels with carbon capture and storage technologies and is less polluting.

2. Green hydrogen can be used in industry and can be stored in existing gas pipelines to power household appliances.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both

D. None

103. Arrange the types of coal on the basis of carbon content from the highest to the lowest rank:

1. Peat

2. Bituminous

3. Anthracite

4. Lignite

Options:

A. 1-2-3-4

B. 2-3-1-4

C. 3-2-4-1

D. 4-3-2-1

104. NISHTHA recently seen in the news is a

A. Campaign launched by the Department of Pharmaceuticals to provide quality medicines at affordable prices

B. Program aimed at improving learning outcomes at the elementary level through an Integrated Teacher Training Programme

C. Web portal for citizens to report children sighted as abandoned, lost or with a suspicious person

D. Scheme under which cash benefits are provided to pregnant women in their bank account directly

105. What is/are common to the two historical places known as Ajanta and Mahabalipuram? (UPSC 2016)

1. Both were built in the same period.

2. Both belong to the same religious denomination.

3. Both have rock-cut monuments.

Select the correct answer using the code given below.

A. 1 and 2 only

B. 3 only

C. 1 and 3 only

D. None of the statements given above is correct

106. Consider the following statements:

1. The orders of the delimitation commission set up by the Government of India cannot be challenged in any court.

2. Delimitation of Jammu and Kashmir's Lok Sabha seats is governed by the Indian Constitution, but the delimitation of Assembly seats is governed by the Jammu and Kashmir Representation of the People Act, 1957.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both

D. None

107. Which of the following statements is/are correct?

1. Genetic Engineering Appraisal Committee (GEAC) which functions under the Ministry of Science and Technology examines the scientific merits of releasing genetically modified seeds into the environment.

2. Bt cotton is the only GM crop that has been approved for commercial cultivation.

Options:

A. 1 only

B. 2 only

C. Both

D. None

108. Which of the following differences between Consumer Protection Act, 1986 and Consumer Protection Act, 2019 is/are correct?

1. Under the 1986 Act the complaint could be filed in a consumer court where the seller's office was located. Under the 2019 Act complaint can be filed in a consumer court where the complainant resides.

2. There were no mediation cells under the 1986 Act. Under the 2019 Act court can refer settlement through mediation.

Options:

A. 1 only

B. 2 only

C. Both

D. None

109. Which of the following statements is/are correct?

1. The Chairman of Legislative Council is nominated by the Governor.

2. To become a member of a State Legislative Council (MLC), a person must be at least 25 years old.

3. The tenure of a Member of the Legislative Council (MLC) is six years.

Options:

A. 1 only

B. 2 and 3 only

C. 3 only

D. 1, 2 and 3

110. Which one of the following is the best description of 'INS Astradharini', that was in the news recently? (UPSC-2016)

A. Amphibious warfare ship

B. Nuclear-powered submarine

C. Torpedo launch and recovery vessel

D. Nuclear-powered aircraft carrier

111. Which of the given statements is/are correct?

1. Kerala is the largest producer of rubber in India.

2. The world's first GM Rubber was planted in Karnataka.

3. Rubber planting is eligible for carbon credits that can be obtained and sold in the Clean Development Mechanism market.

Options:

A. 1 only

B. 2 and 3 only

C. 1 and 3 only

D. 2 only

112. Which of the given statements with respect to Carnatic Music is/are correct?

1. Dhrupad, Tarana and Dadra are its main vocal forms.

2. The first references to Carnatic music were found in Haripala's "Sangeeta Sudhakara".

3. Purandharadasa, Tyagaraja and Muthuswami Dikshitar are referred to as the Carnatic Musical Trinity.

Options:

A. 1 only

B. 2 and 3 only

C. 2 only

D. 1, 2 and 3

113. The term 'Hidden hunger' seen in news best describes:

A. Deficiency of micronutrients, such as vitamins, iron, iodine and other trace elements.

B. Body's inability to absorb nutrients due to an infection or disease.

C. Protein energy malnutrition due to acute deficiency of food.

D. Deficiency of macronutrients affecting the metabolic system, growth, and development of the body.

114. Manas National Park has which of the following designations?

1. Important Bird Area
2. World Heritage Site
3. Tiger Reserve
4. Elephant Reserve
5. Biosphere Reserve

Options:

A. 2, 3 and 5 only
B. 1, 2 and 3 only
C. 3, 4 and 5 only
D. 1, 2, 3, 4 and 5

115. With reference to agricultural soils, consider the following statements: (UPSC 2018)

1. A high content of organic matter in soil drastically reduces its water holding capacity.
2. Soil does not play any role in the Sulphur cycle.
3. Irrigation over a period of time can contribute to the salinization of some agricultural lands.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 3 only
C. 1 and 3 only
D. 1, 2 and 3

116. With reference to anti-defection law, which of the following statements is/are incorrect?

1. An independent member of a House becomes disqualified to remain a member of the House if he joins any political party after such election.
2. A nominated member of a House becomes disqualified for being a member of the House if he joins any political party after the expiry of six months from the date on which he takes his seat in the House.

Options:

A. 1 only
B. 2 only
C. Both
D. None

117. Electoral Trust can receive contributions from which of the following individuals/ companies?

1. Indian citizens
2. Domestic companies which are registered in India
3. Foreign Entity
4. Firm or Hindu Undivided Family
5. Any other electoral trust

Options:

A. 1, 2 and 3 only
B. 1, 2 and 4 only
C. 1, 2, 4 and 5 only
D. 1, 2, 3, 4 and 5

118. Which of the following authorities hold the office during the pleasure of the President?

1. Advocate General
2. Attorney General of India
3. Chief Election Commissioner
4. Civil Services of the centre
5. Governor

Options:

A. 1, 2, 3 and 4 only
B. 2, 4 and 5 only
C. 1, 2 only 4 only
D. 2, 3, 4 and 5 only

119. Consider following statements about the Thanjavur Maratha kingdom:

1. Venkoji was the founder of the dynasty.
2. The Thanjavur Maratha Rajas were more in favour of Tamil as it was the language of the land.

Which of the above statements is/are correct?

A. 1 only
B. 2 only
C. Both
D. None

120. Consider the following pairs:

Region often in news	Country
1. Chechnya:	Russian Federation
2. Darfur:	Mali
3. Swat Valley:	Iraq

Which of the above pairs is/are correctly matched? [UPSC 2016]

A. 1 only
B. 2 and 3 only
C. 1 and 3 only
D. 1, 2 and 3

121.   Which of the following statements is/are correct about Mediterranean Climate?

1.   They are confined to the western portion of continental masses, between 30 to 45 degree north and south of the equator.

2.   The basic cause of this type of climate is the shifting of winds belts.

3.   The Mediterranean lands receive most of their precipitation in Summer.

Options:

A.   1 and 2 only

B.   2 and 3 only

C.   1 and 3 only

D.   1, 2 and 3

122.   Which of the following countries border Black Sea?

1.   Bulgaria

2.   Ukraine

3.   Russia

4.   Kazakhstan

5.   Turkmenistan

Options:

A.   1, 2 and 3 only

B.   1, 2, 3 and 4 only

C.   2, 3, 4 and 5 only

D.   1, 2, 3, 4 and 5

123.   Consider the following pairs:

Region in News	Country
1. Tokara Islands	Philippines
2. Tigray region	Nigeria
3. Dzukou Valley	Afghanistan

Which of the above pairs is/are correct?

A.   1 and 2 only

B.   2 only

C.   2 and 3 only

D.   None

124.   Consider the following statements about Kabir:

1.   Kabir was the most famous disciple of Ramananda.

2.   He was brought up by a Muslim couple who were weavers by profession.

3.   He criticized all forms of worship of idols.

Which of the above statements is/are correct?

A.   1 only

B.   1 and 2 only

C.   3 only

D.   1, 2 and 3

125.   With reference to the 'Gram Nyayalaya Act', which of the following statements is/are correct?

1.   As per the Act, Gram Nyayalayas can hear only civil cases and not criminal cases.

2.   The Act allows local social activists as mediators/reconciliators.

Select the correct answer using the code given below.

A.   1 only

B.   2 only

C.   Both 1 and 2

D.   Neither 1 nor 2

126.   Which of the following countries are in the Financial Action Task Force (FATF) blacklist?

1.   Iran

2.   North Korea

3.   Somalia

4.   Syria

5.   Yemen

Options:

A.   1 and 2 only

B.   1, 2, 3 and 4 only

C.   2, 3 and 5 only

D.   2, 3, 4 and 5 only

127.   Consider the following statements about Additional Judges:

1.   The Governor can appoint duly qualified persons as additional Judges of a high court for a period not exceeding two years.

2.   The additional Judge cannot hold office after attaining the age of 65 years.

Which of the above statements is/are correct?

A.   1 only

B.   2 only

C.   Both

D.   None of the above

128.   Consider the following statements with respect to Compensatory Afforestation Fund (CAF):

1.   National Compensatory Afforestation Fund is established under the Public Account of India.

2.   As per the rules, 90% of the CAF money is to be given to the states while 10% is to be retained by the Centre.

Which of the above statements is/are correct?

A.   1 only

B.   2 only

C.   Both

D.   None

129.   Pinaka recently seen in news is a/an

A.   Airborne early warning and control system for the Indian Air Force

B.   Unmanned tank developed by the DRDO

C.   New explosive detection device, developed by DRDO & IISc Bangalore

D.   Rocket System that can destroy targets at distances up to 45 kilometres

130.   The Multi-dimensional Poverty Index developed by Oxford Poverty and Human Development Initiative with UNDP support covers which of the following? (2012)

1.   Deprivation of education, health, assets and services at household level

2.   Purchasing power parity at national level

3.   Extent of budget deficit and GDP growth rate at national level

Select the correct answer using the codes given below:

A.   1 only

B.   2 and 3 only

C.   1 and 3 only

D.   1, 2 and 3

131.   Which of the following statements with respect to Ethanol Blending of Petrol is/are correct?

1.   It ensures thorough combustion of fuel as Ethanol is high in oxygen content.

2.   It will solve the problem of agricultural waste.

3.   India has set a target of 20 per cent ethanol blending in petrol by 2030.

Options:

A.   1 and 2 only

B.   2 and 3 only

C.   1, 2 and 3 only

D.   1 only

132.   Which of the given statement/s with respect to Integrated Child Development Services (ICDS) is/are correct?

1.   The beneficiaries of the programme are Children in the age group of 0-14 years, pregnant women and lactating mothers.

2.   It is a central sector scheme under the ministry of Women and Child Development.

3.   It aims to provide pre-school non-formal education to children.

Options:

A.   1, 2 and 3

B.   2 only

C.   3 only

D.   None of the above

133.   Which of the given statements with respect to Green Sea Turtles is/are correct?

1.   Global warming contributes to the feminization of green sea turtles.

2.   They are found in tropical and subtropical seas around the world except for the Indian Ocean.

3.   Their presence in seas helps in providing a nursery for numerous species of fish, shellfish and crustaceans.

Options:

A.   1 and 2 only

B.   1 and 3 only

C.   2 only

D.   None of the above

134.   Which of these UNESCO World Heritage Sites in India have been on the "List of World Heritage in Danger"?

1.   Group of Monuments at Hampi

2.   Group of Monuments at Mahabalipuram

3.   Manas Wildlife Sanctuary

4.   Ellora Caves

5.   Sundarbans National Park

Options:

A.   2, 3 and 5 only

B.   1 and 5 only

C.   2 and 4 only

D.   1 and 3 only

135. **The term 'Domestic Content Requirement' is sometimes seen in the news with reference to**

A. Developing solar power production in our country

B. Granting licenses to foreign T.V. channels in our country

C. Exporting our food products to other countries

D. Permitting foreign educational institutions to set up their campuses in our country

136. **Consider the following statements:**

1. He is known as Sahitya Samrat.

2. He published his novel Anandamath depicting a Sanyasi army fighting the British soldiers.

The above statements best describe:

A. Rabindranath Tagore

B. Bankim Chandra Chattopadhyay

C. Rash Behari Bose

D. Chittaranjan Das

137. **Arrange the following sectors in the decreasing order in the total share of power generated:**

1. Thermal

2. Hydro

3. Nuclear

4. Renewable energy sources

Options:

A. 1-2-3-4

B. 2-1-4-3

C. 1-4-2-3

D. 4-1-2-3

138. **Consider the following statements:**

1. The Chief Minister shall be appointed by the Governor and the other Ministers shall be appointed by the Chief Minister.

2. The total number of ministers, including the Chief Minister in the council of ministers shall not exceed 15 percent of the total number of members of the legislative assembly of that State.

3. A person who is not a member of either house of the state legislature can also be appointed as a minister.

Which of the above statements is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 1, 2 and 3

139. **Marib, recently in the news, is in which country?**

A. Syria

B. Iran

C. Afghanistan

D. Yemen

140. **The jet aircrafts fly very easily and smoothly in the lower stratosphere. What could be the appropriate explanation? (2011)**

1. There are no clouds or water vapour in the lower stratosphere.

2. There are no vertical winds in the lower stratosphere.

Which of the statements given above is/are correct in this context?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

141. **With reference to Attorney General (AG) of India, which of the following statements is/are correct?**

1. The term of AG is not fixed by the Constitution.

2. AG is barred from private legal practice.

Options:

A. 1 only

B. 2 only

C. Both

D. None

142. **Which of the following statements about Exercise Sea Breeze is/are correct?**

1. It brings South China Sea nations and US Allies together to train and operate in the pursuit of building increased capability.

2. It will be an annual exercise beginning from 2021 as it marks the centenary celebration of the Communist Party of China.

Options:

A. 1 only

B. 2 only

C. Both

D. None

143. Consider the following statements:

1. Baihetan Dam is the world's second-biggest hydroelectric dam on the Jinsha River, a tributary of the Yangtze.

2. Yangtze is the longest river in Asia, the third-longest in the world and the longest in the world to flow entirely within one country, and drains into the South China Sea.

Which of the above statements is/are correct?

A. 1 only

B. 2 only

C. Both

D. None

144. Which of the following statements is/are correct?

1. Persons with Disabilities (PwD) have the right to reservation in promotions.

2. Reservation to promotion can be given to a PwD even if the person was not originally appointed in the PwD quota.

Options:

A. 1 only

B. 2 only

C. Both

D. None

145. Consider the following statements: (UPSC 2013)

1. Natural gas occurs in the Gondwana beds.

2. Mica occurs in abundance in Kodarma.

3. Dharwars are famous for petroleum.

Which of the statements given above is/are correct?

A. 1 and 2

B. 2 only

C. 2 and 3

D. None

146. Consider the following statements:

1. The One Nation One Ration Card (ONORC) scheme is aimed at enabling migrant workers and their family members to buy subsidised ration from any fair price shop anywhere in the country under the National Food Security Act, 2013.

2. Implementation of ONORC is a precondition for additional borrowing by states.

3. Non-NFSA ration cardholders are also covered under the ONORC.

Which of the above statements is/are INCORRECT?

A. 1 & 2 only

B. 2 & 3 only

C. Only 3

D. All of the above

147. Consider the following statements regarding the distribution of subsidised ration:

1. Annavitaran portal maintains a record of inter-state transactions.

2. Integrated Management of Public Distribution System (IM-PDS) portal records the intra-state transactions.

Which of the above statements is/are INCORRECT?

A. Only 1

B. Only 2

C. Both

D. None

148. Consider the following statements:

1. The Constitution of India provides for three sessions of Parliament in a year.

2. It is mandatory to convene the Parliament at least twice every year.

3. Cabinet Committee on Parliamentary Affairs has no role in convening the sessions of the Indian Parliament.

Which of the above statements is/are INCORRECT?

A. 1 & 2 only

B. 1 & 3 only

C. 2 & 3 only

D. All of the above

149. Consider the following statements:

1. India is yet to ratify the 1987 UN Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (UNCAT).

2. The Méndez Principles aim to provide a cohesive blueprint of practical measures to replace torture and coercive interrogation.

Which of the above statements is/are correct?

A. Only 1

B. Only 2

C. Both

D. None

150. **In the Parliament of India, the purpose of an adjournment motion is (2012)**

A. to allow a discussion on a definite matter of urgent public importance

B. to let opposition members collect information from the ministers

C. to allow a reduction of specific amount in demand for grant

D. to postpone the proceedings to check the inappropriate or violent behaviour on the part of some members

151. **Consider the following statements with respect to Rashtriya Ucchatar Shiksha Abhiyan (RUSA):**

1. It is a central sector scheme.

2. It aims to provide strategic funding to eligible state higher educational institutions.

Which of the given statement/s is/are correct?

A   1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

ANSWER KEYS

1	A		21	B
2	D		22	D
3	A		23	A
4	D		24	D
5	D		25	D
6	B		26	C
7	A		27	C
8	A		28	D
9	D		29	A
10	D		30	C
11	D		31	B
12	C		32	A
13	D		33	D
14	D		34	A
15	B		35	D
16	A		36	D
17	A		37	D
18	B		38	B
19	D		39	B
20	C		40	D

CLICK HERE TO READ EXPLANATION

41	D		61	A
42	B		62	B
43	A		63	C
44	A		64	B
45	C		65	D
46	A		66	C
47	C		67	A
48	D		68	D
49	C		69	C
50	C		70	A
51	D		71	C
52	C		72	D
53	B		73	D
54	B		74	B
55	D		75	C
56	A		76	D
57	A		77	D
58	A		78	B
59	D		79	C
60	C		80	B

CLICK HERE TO READ EXPLANATION

81	A
82	C
83	C
84	B
85	D
86	A
87	D
88	D
89	B
90	A
91	D
92	A
93	A
94	C
95	A
96	B
97	D
98	C
99	C
100	D

101	C
102	B
103	C
104	B
105	B
106	A
107	B
108	C
109	C
110	C
111	C
112	C
113	A
114	D
115	B
116	D
117	B
118	B
119	A
120	A

CLICK HERE TO READ EXPLANATION

121	A
122	A
123	D
124	D
125	B
126	A
127	D
128	C
129	D
130	A
131	A
132	C
133	B
134	D
135	A
136	B
137	C
138	B
139	D
140	C

141	A
142	D
143	A
144	C
145	B
146	C
147	C
148	B
149	C
150	A
151	B

CLICK HERE TO READ EXPLANATION

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MAINS PRACTICE QUESTIONS

GS Paper 1

History

1.   Write a note on Dr. B. R. Ambedkar's embrace of Buddhism. (15 marks,250 words)

Geography

1.   What do you understand by the Indian Ocean Dipole (IOD)? Discuss its impact on the Indian Monsoons. (10 Marks, 150 Words)

Indian Society and Social Issues

1.   Caste-based violence against women needs to be recognised in India. In the light of this statement, evaluate how effective is the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989. (250 words; 15 marks)

2.   Examine the demand for the decriminalization of sex work along with a guaranteed set of basic labour rights for sex workers. (250 words; 15 marks)

3.   It is imperative for India to recognise marriage rights for same-sex couples. Analyse the statement. (250 words; 15 marks)

GS Paper 2

Polity

1.   Sedition, a colonial-era law, often used to implicate citizens who are exercising democratic rights of dissent, should have no space in India's Legal System. Do you agree? Justify. (15 Marks, 250 Words)

2.   Critically evaluate the development plans that have been proposed for the Lakshadweep islands. (15 marks, 250 words)

3.   Examine a few latest political issues involving Centre-State relations. (15 marks, 250 words)

4.   The Unlawful Activities (Prevention) Act of 1967 is India's primary legal weapon against terrorism. But its application has run into controversies on the grounds of violation of fundamental rights. Critically discuss. (15 marks, 250 words)

5.   The right to be forgotten must be balanced with the right of the public to access courts of record. Discuss. (15 Marks, 250 Words)

6.   Evaluate the Centre's latest move to engage with the political leadership in Kashmir. (15 marks, 250 words)

7.   Should suicide be decriminalized? Critically evaluate. (15 marks, 250 words)

8.   The Tamil Nadu government's decision to shun the usage of the term 'Central government' in its official communications and replace it with 'Union government' is a major step towards regaining the consciousness of our Constitution. Critically analyse. (15 marks, 250 words)

9.   Restoration of Statehood should be at the start of the revival of the democratic process in J&K. critically examine the statement. (15 marks, 250 words)

10. Anti-terror laws in the country have led to an era of over-criminalisation. Do you agree? Justify. (15 marks, 250 words)

11. Evaluate India's progress in eradicating torture from its criminal system. (15 marks, 250 words)

12. Write a note on measures taken by the Government for the orphaned children due to COVID-19 and discuss the problems faced in their identification. (10 Marks, 150 Words)

Governance

1. With the pandemic in mind, discuss the challenge of dealing with child labour in India. (15 marks, 250 words)

2. Information and Communication Technologies (ICT) enablement of the Indian judicial system gives us a rare opportunity to transform the legal system. Comment. Also, highlight some of the challenges with the implementation of the 'Ecosystem' Approach. (15 Marks, 250 Words)

3. Does our fight against chronic epidemics such as HIV/AIDS offer any lessons to curb the COVID¬-19 pandemic? Discuss. (15 marks, 250 words)

Health

1. What is indemnity for vaccine makers? Discuss how its waiver will impact the COVID-19 vaccine process in India. (10 marks, 150 words)

2. As the curve of coronavirus infection spikes, depression and despair are also likely to increase. Explain what measures have to be taken to overcome the silent pandemic of anxiety and mental ailments. (10 Marks, 150 Words)

3. Technology can play a critical role in transforming healthcare in India. Illustrate with examples. (10 Marks, 150 Words)

Education

1. Evaluate the 'Blended Learning' model, involving a mix of online and offline courses, that has been recently proposed by the UGC for higher educational institutions. (15 marks, 250 words)

International Relations

1. The G7 countries seek to overcome internal differences and strengthen their economic and geopolitical bond to face multiple challenges from fighting COVID-19 to tackling the rise of China. Discuss in the context of its latest summit. (15 marks, 250 words)

2. Israel and Palestine will have to seek a solution through non-violence and could take a leaf out of India's book. Examine the statement. (15 marks, 250 words)

3. Words and actions of political figures on the domestic front may damage the cordial bilateral ties between countries. Explain the statement with the help of relevant examples. (10 Marks, 150 Words)

4. The passing of the Colombo Port City Economic Commission Bill may assist China in encirclement strategy that India must counter. Examine. (10 marks, 150 words)

5. India and Maldives have an opportunity to work together for changing power structures at the UN. Examine. (15 marks, 250 words)

6. Hundreds of Pakistani minorities who have migrated to India in search of security and citizenship are caught in a maze of rules and regulations that have left them stateless for years. Discuss. (15 marks, 250 words)

7. G7, an exclusive club comprising the world's advanced economies slowly eclipsed by emerging markets, is an outdated grouping. Do you agree? Justify. (15 Marks, 250 Words)

8. Galwan is a reminder that India cannot let its guard down on its northern borders. Analyse. (10 Marks, 150 Words)

9. The U.S. misread the situation in Afghanistan with the long war, now leaving the Taliban at the height of their influence. Examine. (15 marks, 250 words)

10. U.S and Russia must reset their relationship to pragmatic levels and reduce tensions. Discuss in the context of the Geneva summit held recently between the two Presidents. (15 marks, 250 words)

11. Throwing light on the origins of the North Atlantic Treaty Organization (NATO), examine if NATO should reinvent itself in the 21st century to meet the new age challenges. (15 Marks, 250 Words)

12. India's Africa policy needs to be re-energized. Discuss. (15 marks, 250 words)

13. Pakistan has run into problems at the FATF due to its failure to act against money laundering and terror financing. Discuss the background along with recent outcomes and implications. (15 marks, 250 words)

14. Russia's uncritical advocacy of China's global vision is what seems to be leaving India quite confounded. Discuss keeping Indian interests in mind. (15 marks, 250 words)

GS Paper 3

Economy

1. China's demographic interventions have had unintended social and economic consequences. This should serve as a warning for India. Examine the statement. (15 marks, 250 words)

2. Bitcoin has seen greater formalization and mainstreaming in the last one year. In this context, explain how cryptocurrencies like Bitcoin work? Why are governments and central banks wary of them? (15 marks, 250 words)

3. Critically evaluate the recently proposed amendments to the Consumer Protection (E-Commerce) Rules, 2020. (15 marks, 250 words)

4. Highlight the major drawbacks surrounding India's nationalized banks and discuss measures to improve efficiency and accountability. (10 marks, 150 words)

5. Antitrust Bills initiated in the US House of Representatives will hold the Big Tech companies accountable for anti-competitive conduct and set a global precedent. Do you agree? Substantiate. (10 marks, 150 words)

6. Critically examine India's policy of aggressive privatisation of public enterprises. (15 marks, 250 words)

7. Examine the contribution of the rural sector to the Indian economy. In the midst of the pandemic, how can the rural economy jump-start an overall revival in the economy? (15 marks, 250 words)

8. If the economy is to be repaired, the number of poor has to be meticulously counted. In the light of this statement, discuss poverty measurement in India. (15 marks, 250 words)

Science and Technology

1. Despite 5G enabling a new kind of wireless network which has the potential to connect everyone and everything, it is beset with various challenges. Examine. (10 Marks, 150 Words)

2. What do you understand by gain-of-function research? Discuss the potential benefits and risks associated with such research. (10 Marks, 150 Words)

Environment and Ecology

1. The National Biodiversity Mission can help mend the dysfunctional relationship between humanity and nature. Examine the statement. (15 marks, 250 words)

2. The time to limit global warming is melting away. So what can nations do at the upcoming COP26 to address the enormous threat of climate change? (15 marks, 250 words)

3. Soaring AC demand will accelerate global warming unless we begin making major changes. Suggest reliable solutions to mitigate the impact. (15 Marks, 150 Words)

Defence and Security

1. The rise of phishing attacks poses a significant threat to individuals, organizations and security apparatus. Discuss. (10 Marks, 150 Words)

2. Discuss whether retired officials should be barred from disclosing classified information. (15 marks, 250 words)

3. ISIS returnees could pose a problem to India. Examine India's policy in this regard. (15 marks, 250 words)

4. Defending civilian targets and critical infrastructure against rising cyberattacks will stretch the capability of governments. Elaborate. (15 marks, 250 words)

5. COVID-19 has further highlighted the biosecurity concerns of synthetic biology. Discuss. (15 marks, 250 words)

6. Discuss the impact of misinformation spread by vested interests. (15 marks, 250 words)

7. Evaluate the role of the Greyhounds in tackling Naxal violence in Andhra Pradesh and Telangana. Can this be a model for countering insurgencies in other parts of the country? (15 marks, 250 words)

8. Drones present a uniquely challenging security threat when it comes to terrorism and asymmetric/hybrid warfare. Examine. (15 marks, 250 words)

9. As India confronts the problem of ISIS returnees, should India accept them? Critically examine. (10 Marks, 150 Words)

INTERVIEW TRANSCRIPT

Candidate Details:

- Name: Keerthi Vasan V

- AIR: 29 (CSE-2017)

- Chairman of the Interview Board: Air Marshal A. S. Bhonsle (Retd.)

Personal Details:

- Education: B.Tech (Civil Engineering), National Institute of Technology, Tiruchirappalli.

- Home town: Dharmapuri, Tamil Nadu

- Hobbies: Digital Poster designing, Watching English web series

Questions asked by the interview board:

Economy based

- What are the major functions of the RBI?

- Is the Monetary Policy Committee's (MPC) mandate implementable in the longer run?

- Don't you think government appointees to MPC affect its independence?

- Is the RBI really independent today?

IR based

- How has India-Nepal relations evolved in the recent past?

- Do you think China has overshadowed India in an economic cooperation between India, Nepal and China?

- Is the current Nepal PM pro-China or pro-India?

- Do you think morality is relevant in domestic as well as international administration?

- Why do you think the Indian government had to interfere in the domestic issue of Sri Lanka during the civil war?

- Was there any pressure from the state government?

State based Questions

- Most of the states perform well at the level of policy formulation, but fail at policy implementation. But in TN, we are able to see good performance at both levels. What could be the reasons behind this?

- Can you name a few schemes whose implementation has been good?

- The TN farmers' protest in Delhi was unique in its own way. What made it unique?

- Why do you think they approached the central government?

Hobbies Based Questions

- What is this 'web series'?

- What is your favorite genre?

- Which one is your favorite series?

Questions based on Academics

- You studied in Maharishi International School. What is 'International' about this school?

- What was the proportion of foreign students in your class?

- I have seen pictures of 10 pointers (Class X CGPA) only in flex boards of various institutes. This is the first time I am meeting one in person. Does any institute have your photograph printed on a flex board?

- I feel people who are good in academics are generally 'dull' when it comes to social or administrative responsibilities. What about you?

General Questions

- The training process would make you a good administrator. But, what qualities of a good administrator do you think you already have?

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