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Supreme Court Judgment on Right to Protest

Is the right to protest conditional?

UPSC MONTHLY CURRENT AFFAIRS
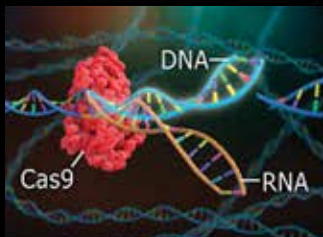
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Urban flooding - Lessons to learn

Nagorno- Karabakh Conflict

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Taking on Big Tech

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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April, 2020	Polity						
May, 2020	Economics	Economics					
June, 2020	Modern History	Modern History	Modern History				
July, 2020	Geography	Geography	Geography	Geography			
August, 2020	Ethics, Essay, Governance	Polity	Polity	Polity	Polity		
September, 2020	Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Economics	Economics	Economics	Economics	
October, 2020	World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	Modern History	Modern History	Modern History	Modern History
November, 2020	Environment + S&T + CSAT	Environment + S&T + CSAT	Environment + S&T + CSAT	Environment + S&T + CSAT	Geography	Geography	Geography
December, 2020		Ethics, Essay, Governance	Ethics, Essay, Governance	Ethics, Essay, Governance	Ethics, Essay, Governance	Polity	Polity
January, 2021			Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Economics
February, 2021				World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	Internal Security, AH, MH, Art & Culture, IR
March, 2020					Environment + S&T + CSAT	Environment + S&T + CSAT	Environment + S&T + CSAT
June, 2021						Ethics, Essay, Governance	Ethics, Essay, Governance
July, 2021							World History, PI, DM, Society & Social Justice

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(Evening Batch)
5:30 to 8:00 PM - Monday to Friday

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April, 2020	Geography						
May, 2020	Modern History	Modern History					
June, 2020	Economics	Economics	Economics				
July, 2020	Polity	Polity	Polity	Polity			
August, 2020	Internal Security, AH, MH, Art & Culture, IR	Geography	Geography	Geography	Geography		
September, 2020	Ethics, Essay, Governance	Ethics, Essay, Governance	Modern History	Modern History	Modern History	Modern History	
October, 2020	Environment + S&T + CSAT	Environment + S&T + CSAT	Environment + S&T + CSAT	Economics	Economics	Economics	Economics
November, 2020	World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	Polity	Polity	Polity
December, 2020		Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Geography	Geography
January, 2021			Ethics, Essay, Governance	Ethics, Essay, Governance	Ethics, Essay, Governance	Ethics, Essay, Governance	Modern History
February, 2021				Environment + S&T + CSAT	Environment + S&T + CSAT	Environment + S&T + CSAT	Environment + S&T + CSAT
March, 2020					World History, PI, DM, Society & Social Justice	Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR
June, 2021						World History, PI, DM, Society & Social Justice	Ethics, Essay, Governance
July, 2021							World History, PI, DM, Society & Social Justice

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June, 2020	Polity	Polity	Polity				
July, 2020	Economics	Economics	Economics	Economics			
August, 2020	Internal Security, AH, MH, Art & Culture, IR	Modern History	Modern History	Modern History	Modern History		
September, 2020	Ethics, Essay, Governance	Ethics, Essay, Governance	Geography	Geography	Geography	Geography	
October, 2020	Environment + S&T + CSAT	Environment + S&T + CSAT	Environment + S&T + CSAT	Polity	Polity	Polity	Polity
November, 2020	World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	Economics	Economics	Economics
December, 2020		Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Internal Security, AH, MH, Art & Culture, IR	Modern History	Modern History
January, 2021			Ethics, Essay, Governance	Ethics, Essay, Governance	Ethics, Essay, Governance	Internal Security, AH, MH, Art & Culture, IR	Geography
February, 2021				Environment + S&T + CSAT	Environment + S&T + CSAT	Environment + S&T + CSAT	Internal Security, AH, MH, Art & Culture, IR
March, 2020					World History, PI, DM, Society & Social Justice	World History, PI, DM, Society & Social Justice	Environment + S&T + CSAT
June, 2021						Ethics, Essay, Governancea	Ethics, Essay, Governance
July, 2021							World History, PI, DM, Society & Social Justice

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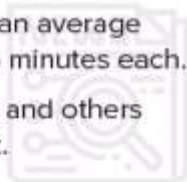
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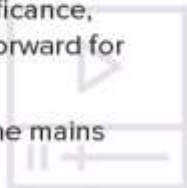
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POLITY

Judiciary

1. **Mirror Order**

» Mains: Judicial innovation.

What's in News?

- The Supreme Court has applied the principle of mirror order in a child custody case where one of the estranged parents is living abroad, in Kenya.

Mirror Order:

- Mirror orders are passed to safeguard the interest of the child who is in transit from one jurisdiction to another. The primary jurisdiction is exercised by the court where the child has been ordinarily residing for a substantial period of time and has conducted an elaborate enquiry on the issue of custody.

- The mirror order is passed to ensure that the courts of the country where the child is being shifted are aware of the arrangements which were made in the country where he had ordinarily been residing.

- Such an order would also safeguard the interest of the parent who is losing custody so that the rights of visitation and temporary custody are not impaired

- In international family law, it is necessary that jurisdiction is exercised by only one court at a time. These orders are passed keeping in mind the principle of comity of courts and public policy.

Significance

- This mechanism ensures that contradictory judicial orders are not passed and is considered a remedy against transnational parental abduction of children in inter-country marriages.

- The object of a mirror order is to safeguard the interest of the minor child in transit from one jurisdiction to another, and to ensure that both parents are equally bound in each State.

Judiciary

2. **Supreme Court judgment on right to protest**

» Mains: Rule of law, Fundamental rights, public order.

Context:

- The Supreme Court (SC) found the indefinite occupation of a public road by the Shaheen Bagh protesters (against the Citizenship Amendment Act) unacceptable.

Supreme Court Judgement:

- The SC upheld the right to peaceful protest against a

law but made it unequivocally clear that public ways and public spaces cannot be occupied, and that too indefinitely.

- Democracy and dissent go hand in hand, but then the demonstrations expressing dissent have to be in designated places alone.

  * In a democracy, the rights of free speech and peaceful protest were indeed "treasured". They were to be encouraged and respected

  * But these rights were also subject to reasonable restrictions imposed in the interest of sovereignty, integrity and public order. Police regulations also weighed in.

- Blockage of a public way would cause grave inconvenience to commuters

  * Fundamental rights do not live in isolation. The right of the protester has to be balanced with the right of the commuter. They have to co-exist in mutual respect

Administration

- The apex court observed it is the duty of the administration to remove such road blockades.

Previous Supreme Court Precedents

- In the case of Ramlila Maidan Incident v. Home Secretary, Union Of India & Ors., the Supreme Court had stated, "Citizens have a fundamental right to assembly and peaceful protest which cannot be taken away by an arbitrary executive or legislative action."

Constitution on Right to Protest:

- The right to protest peacefully is enshrined in the Indian Constitution—Article 19(1) (a) guarantees the freedom of speech and expression; Article 19(1) (b) assures citizens the right to assemble peaceably and without arms.

Reasonable restrictions

- If the security of the state is in jeopardy;

- If the friendly relationship we share with a neighbouring country is at stake;

- If public order is disturbed;

- If there is contempt of court;

- If the sovereignty and integrity of India are threatened.

Why do we have the right to protest?

- Right to Protest is crucial in a democracy which rests on participation of an informed citizenry in governance.

- This right is also crucial since it strengthens representative democracy by enabling direct participation in public affairs where individuals and groups are able to express dissent and grievances, expose the flaws in governance and demand accountability from State authorities as well a powerful entities.

- This right is crucial in a vibrant democracy like India but more so in the Indian context to aid in the assertion of the rights of the marginalised and poorly represented minorities.

Are such restrictions constitutional?

- It is not entirely clear. The court has laid a blanket ban on protests in public places, particularly roads unless they are the designated areas for protest

- But such a blanket restriction is not really possible.

Was the Shaheen Bagh protest a threat to public order?

- Firstly, a peaceful protest in a public space, even one on a public road, doesn't necessarily amount to a threat to public order.

- Secondly, there is no evidence to support that the Shaheen bagh protest violated public order.

A deeper introspection on the idea of protests

- The question raised here is whether the manner and content of a protest should always conform to forms deemed acceptable by the law.

  * Protests, by their very nature, are not always rooted in legality.

  * They derive legitimacy from the rightness of the underlying cause and the extent of public support.

  * In many cases, they are against laws and regulations perceived as unjust.

  * A flash strike, a spontaneous roadblock, a call for a complete shutdown, or a campaign to fill up jails by defying prohibitory orders — are not, in a strict sense, legal; but, are a part of the culture of protest in a democracy.

- Another aspect of the present ruling is the assertion that protests should be confined to designated places.

  * Such judicial certitude may lessen the effectiveness of the larger democratic need for public expression of dissent in a manner and place that would be most effective.

International Law on the Right to Protest:

- A UN Special Rapporteurs' report on the right to freedom of peaceful assembly notes that while restrictions to the right of peaceful assembly can be made in the interest of national security or public order, these must be lawful, necessary and proportionate to the aim pursued.

- It also notes that these restrictions are to be the exception, not the norm, and, very importantly, that they "must not impair the essence of the right."

- Under international law, there is even a duty on States to facilitate the right of peaceful assembly, including providing traffic management and protect the safety of those who participate in peaceful protests.

Way forward:

- While notified demonstrations are subject to regulations regarding time and space, it may not be possible to extend the same to spontaneous, organic and leaderless protests driven by a cause.

- The ruling should not become the basis for suppression of protests by the force of the state.

Conclusion:

- While the need for balance between the right to protest and the right to free movement, and the rule that protests should take place at designated spots are beneficial from an administrative point of view, they must not become unquestionable principles to the point that render all protests that cause inconvenience to others, the target of the strong arm of the state.

Judiciary

3. **Good conduct is key to early release: SC**

   » Prelims: Pardon, commutation, remission, reprieve.

   » Mains: President's pardoning power.

Supreme Court Judgement:

- The Supreme Court (SC) has recently said that, the length of a prison sentence or the gravity of the crime cannot be the sole basis for denying a convict premature release from jail.

Details:

- A three-judge Bench said that an assessment of the tendency to commit a crime upon release must be based on antecedents as well as the conduct of the prisoner while in jail, and not merely on his age or apprehensions of the victims and witnesses.

  * "Society has a right to lead a peaceful and fearless life, without free-roaming criminals creating havoc in the lives of ordinary peace-loving citizens. But equally strong is the foundation of reformative theory, which propounds that a civilised society cannot be achieved only through punitive attitudes and vindictiveness."

- First-time offenders should especially be given a second chance at life, the court observed.

- The punishment must lay greater stress on reformation, correction and rehabilitation of criminals.

- The court said reformative justice should not

merely focus on public harmony but should foster brotherhood and mutual acceptability.

Theories of Punishment:

Deterrent Theory

- The very purpose of selection of this type of punishment on offenders is to deter them from committing crime.

- The deterrent theory also seeks to create some kind of fear in the mind of others by providing adequate penalty and exemplary punishment to offenders which keeps them away from criminality

- According to this theory, the object of punishment is not only to prevent the wrongdoer from indulging in it for the second time, but also to set an example to other persons who have similar criminal tendencies.

  * Individual deterrence refers to the effect of punishment in preventing a particular individual from committing additional crime.

  * General Deterrence is based on the assumption that punishing individuals who are convicted of crimes will set an example to potential violators who, being 'rational' beings, would wishing to avoid such pain, will not violate the law

Retributive Theory

- Retribution is a probably the oldest and most ancient justification for punishment, "you hurt me, I will hurt you" is its literal meaning.

- Retribution suggests that the severity of punishment should be proportionate to the gravity of the offence

- It aims at restoring the social balance disturbed by the offender. The offender should receive as much pain and suffering as inflicted by him on his victim

Preventive Theory

- Preventive philosophy of punishment is based on the proposition 'not to avenge crime but to prevent it, pull out all the stops i.e. remove from somewhere i.e. from society.

- It is believed that the danger to the society is removed by placing the offender under imprisonment.

- By jailing a criminal, he is prevented from committing another crime.

Reformative Theory

- According to reformationists, a criminal is to be studied like a patient in his entire socio-economic milieu, and not in isolation to understand causative factors leading to criminality and the attempt to be made to reform or treat and rehabilitate the offender.

- Therefore, the object of punishment should be to bring about moral reform in the offender

Law and order

4. **Caste, crime, and a cremation**

   » Mains: Due process of law, gender violence.

Context

- A 19-year-old woman in the Hathras district of western Uttar Pradesh was Gang Raped.

Violation of law

1. If the survivor of the rape should pass away, then the body must be handed over to her family, after post-mortem analysis.

- The authorities did not take their permission before cremating their daughter

- District officials denied the charge and said the last rites had been performed after the consent of the father had been obtained, and that some close members of the girl's family participated in the funeral.

  * Which legislation gives the explicit right/power to the State to bury/cremate/burn a dead body of a victim of a heinous crime without the will and consent of her family?

  * Does it not amount to destruction of evidence?

  * Does it not amount to an atrocity under the Scheduled Caste/Scheduled Tribes (Prevention of Atrocities) Act, 1989 (as amended) (hereinafter "POA Act") for intentionally insulting a victim who is a member of Scheduled Caste?

2. The Uttar Pradesh Police has claimed that no rape happened with the 19-year old Dalit woman of Hathras.

- A senior UP Police official told the press that the Forensic Science Laboratory result did not show the presence of semen samples in the body of the deceased woman.

  * With such statements, the police attempted to contradict the dying declaration given by the woman that she was raped by four men.

  * In this connection, it is pertinent to note that to prove the offence of rape it is not necessary to establish the presence of sperm samples in the body of the woman.

- In the Parminder alias Ladka Pola vs State of Delhi, the Supreme Court held that presence of semen was not necessary to prove rape.

Public Servants guilty of misconduct

- 166A IPC- Whoever, being a public servant fails to record any information given to him under sub-section (1) of section 154 of the Code of Criminal Procedure, 1973 in relation to cognizable offence punishable which includes rape shall be punished with rigorous imprisonment for a term which shall not be less than six months but which may extend to two years, and shall also be liable to fine.

- The Supreme Court of India in Armugam Servai V. State of Tamil Nadu (2011) noted that "the caste system is a curse on the nation and the sooner it is destroyed the better." Dealing with offences against Scheduled Castes under the POA Act, the court also touched upon 'Honour killings' and stated "we direct the administrative and police officials to take

strong measures to prevent such atrocious acts. If any such incidents happen, apart from instituting criminal proceedings against those responsible for such atrocities, the State Government is directed to immediately suspend the District Magistrate/Collector and SSP/SPs of the district as well as other officials concerned and charge sheet them and proceed against them departmentally if they do not

* (1) prevent the incident if it has not already occurred but they have knowledge of it in advance,

* (2) if it has occurred, they do not promptly apprehend the culprits and others involved and institute criminal proceedings against them, as in our opinion they will be deemed to be directly or indirectly accountable in this connection."

- The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989 section 4 Whoever, being a public servant but not being a member of a Scheduled Caste or a Scheduled Tribe, wilfully neglects his duties required to be performed by him under this Act, shall be punishable with imprisonment for a term which shall not be less than six months but which may extend to one year.

Allahabad High Court

- The Allahabad High Court, shaken by the course of events, has directed the Senior Registrar of the Court at Lucknow to register a suo motu Public Interest Litigation with the title In "In Re: Right to decent and dignified last rites/cremation"

- The judges point to case law that mandates that the right to dignity and fair treatment is available to all in life and death.

- It would be a case of gross violation of basic human and fundamental rights enshrined under Article 21 and Article 25 of the Constitution of India in a most blatant and uncalled for manner something which is absolutely unacceptable in our country governed by Rule of Law and the Constitution

  * Article 25 of the Constitution would also be relevant in this case since family was prevented from performing the final religious rites for the victim before her cremation.

- Supreme Court is clear when it stated that right to dignity prevails even after death.

  * The Court has also observed that the "right to dignity and fair treatment under Article 21 of the Constitution of India is not only available to a living man but also to his body after his death." (Pt. Parmanand Katara V. UoI)

Functions and responsibilities of the Union and the States, issues and challenges pertaining to the federal structure

5. 'Follow SOP in crimes against women'

» Mains: rule of law, gender violence.

Context

- The Ministry of Home Affairs (MHA) has issued an advisory to all States regarding "mandatory action by police in crime against women".

Background

- Recently, the role of Uttar Pradesh police had come under scanner after the Hathras gang rape incident when a 19-year-old woman had given a statement from hospital bed that she was sexually assaulted by four men from her village.

- Police claimed that the forensic examination had established that the victim was not raped

Steps to be followed

1. Dying Declaration

- A dying declaration is considered credible and trustworthy evidence based upon the general belief that most people who know that they are about to die do not lie.

  * A person who makes a dying declaration must, however, be competent at the time he or she makes a statement, otherwise, it is inadmissible.

  * Here the person (victim) is the only eye-witness to the crime, and exclusion of his statement would tend to defeat the end of justice.

- Section 32 (1) of the Indian Evidence Act, 1872, provides that the statement, written or verbal, by a person who is dead shall be treated as relevant fact in the investigation when the statement is made by a person as to the cause of his death, or as to any of the circumstances of the transaction which resulted in his death.

- Hon'ble Supreme Court in its order of Purshottam Chopra & Anr. v. State (Govt. of NCT Delhi), directed that a particular statement, when being offered as dying declaration and satisfies all the requirements of judicial scrutiny, cannot be discarded merely because it has not been recorded by a Magistrate or that the police officer did not obtain attestation by any person present at the time of making of the statement

  * The Supreme Court has also reiterated that where a dying declaration is true, voluntary and correct, it should not be rejected on the grounds that the person who recorded it could not affix his signature or thumb impression.

- The Ministry reiterated that the Indian Evidence Act, 1872, provides that the statement, written or verbal, by a person who is dead shall be treated as relevant fact in the investigation.

2. Section 173 of Code of Criminal Procedure

- The MHA also said Section 173 of Code of Criminal Procedure provides for completion of investigation in rape cases within two months (Criminal Law (Amendment) Act, 2018).

* In order to facilitate the State police to monitor compliance, in this regard MHA has provided an online portal called Investigation Tracking System for Sexual Offences (ITSSO) for monitoring the same.

* It is an online module available to law enforcement agencies at all levels- National, State, District and Police Station that allows State to undertake real-time monitoring and management for completion of investigation in rape cases in 2 months.

* ITSSO is one of the measures developed by MHA towards Smart Policing.

* This is available exclusively to law enforcement officers

* It is part of the Crime and Criminal Tracking Network and System (CCTNS)

3. Zero FIR

* Following the gruesome Nirbhaya incident in Delhi in 2012, the then government set up Justice Verma Committee to recommend amendments to the Criminal Law. Based on the committee's report, the Home Ministry issued an advisory to all states and union territories asking the police to register Zero FIR if an informant comes with the details of a cognizable crime irrespective of the jurisdiction.

* The law also enables the police to register FIR or a 'Zero FIR'

    * Zero FIR is a FIR lodged in any police station irrespective of the location of incidence or jurisdiction.

    * The FIR is later transferred to the jurisdictional police station.

* The MHA said section 164-A of CrPC provides that in rape/sexual assault investigation, the victim shall be examined by a registered medical practitioner under consent within 24 hours from the time of receiving the information relating to the commission of such offence.

* MHA also asked States to adhere to the guidelines issued by Directorate of Forensic Science Services (DFSS) for collection, preservation and transportation of forensic evidence in sexual assault cases.

    * "In order to facilitate the State Police, Bureau of Police Research and Development (BPR&D) has issued Sexual Assault Evidence Collection (SAEC) Kits to every State/UT. It is necessary to use these SAEC kits in every case of sexual assault reported,"

Conclusion

* However, even with stringent provisions in law and several capacity building measures undertaken, any failure of police to adhere to these mandatory requirements may not augur well for the delivery of criminal justice in the country, especially in context of women safety.

* Such lapses, if noticed, need to be investigated into and stringent action taken immediately against the concerned officers responsible for the same

Structure, organization and functioning of the Executive and the Judiciary

6. Jagan vs. judges

Context:

» Prelims: Appointment of judges

» Mains: Judiciary-executive conflict, contempt of court.

• Andhra Pradesh Chief Minister (CM) Y.S. Jagan Mohan Reddy's letter to the Chief Justice of India complaining about the functioning of a few judges.

Background:

The allegations:

• The complaint is with respect to Supreme Court Justice N.V. Ramana's alleged influencing of posting of cases in the State High Court.

• The complaint also alleges the hostile attitude of some High Court judges towards the current state government of Andhra Pradesh and their deliberate and unsubstantiated striking down of the state government's decisions and orders.

• This amounts to an accusation of misconduct, corruption and the political bias among the judges.

Unprecedented situation:

• Though there have been previous instances of such allegations against certain judges, the current situation is unprecedented given that the current allegations have been made by a constitutional body, the Chief Minister of a state.

Constitutional Angle

• Independence of Judiciary is an essential attribute of Rule of Law which is the basic feature of Constitution of India. Judiciary must be free from executive pressure

• Article 121 and Article 211 of the Indian Constitution expressly bars Parliament and the state legislatures to discuss the conduct of any judge.

How are allegations of misconduct against judges dealt with?

• There are two broad alternatives when it comes to complaints against sitting judges, removal and in-house procedure.

1. Removal

• a. A judge of the Supreme Court and High Court can be removed from his Office by an order of the president.

• b. The President can issue the removal order only after an address by Parliament has been presented to him in the same session for such removal.

• c. The address must be supported by a special

majority of each House of Parliament (ie, a majority of the total membership of that House and a majority of not less than two-thirds of the members of that House present and voting).

- d. The grounds of removal are two–
  - * proved misbehaviour
  - * incapacity.
- e. The Judges Enquiry Act (1968) regulates the procedure relating to the removal of a judge of the Supreme Court by the process of impeachment:
- f. Procedure
  - * i. A removal motion signed by 100 members (in the case of Lok Sabha) or 50 members (in the case of Rajya Sabha) is to be given to the Speaker/ Chairman.
  - * ii. The Speaker/Chairman may admit the motion or refuse to admit it.
  - * iii. If it is admitted, then the Speaker/ Chairman is to constitute a three-member committee to investigate into the charges.
  - * iv. The committee should consist of (a) the chief justice or a judge of the Supreme Court, (b) a chief justice of a high court, and (c) a distinguished jurist.
  - * v. If the committee finds the judge to be guilty of misbehaviour or incapacity, the House can take up the consideration of the motion.
  - * vi. After the motion is passed by each House of Parliament by special majority, an address is presented to the president for removal of the judge.
  - * vii. Finally, the president passes an order removing the judge. It is interesting to know that no judge of the Supreme Court has been impeached so far.

2. In-house procedure:

- Not all forms of misconduct or impropriety would warrant removal.
- Since 1997, the judiciary has adopted an 'in-house procedure' for inquiring into complaints received against sitting judges.

History:

- After Justice J.S. Verma took over as Chief Justice of India (CJI) in 1997, he circulated among judges a document called 'Restatement of Values of Judicial life', which contained a set of principles that underline the essential elements of ideal behaviour for judges.
- This was followed by a resolution that an 'in-house procedure' would be adopted for action against judges for acts of commission or omission that go against these values.
  - * The in-house procedure was expected to maintain the primacy of the judiciary in its

functioning and avoid the need for interference by the other organs of the state like the legislature or executive.

Procedure:

- When a complaint is received against a High Court judge, the CJI should decide on the authenticity of the complaint and decide whether it is frivolous or it involves serious misconduct and impropriety.
- The CJI would ask for the concerned judge's response if he feels the complaint is serious, The CJI may close the matter if he is satisfied with the response.

Three-member committee:

- If the CJI feels the need for a deeper probe, then the CJI forms a three-member committee consisting of only the judiciary members.
  - * The composition of this three-member committee depends on the position of the judge against whom the complaint has been filed.
- The inquiry it holds is of the nature of a fact-finding mission and is not a formal judicial inquiry involving examination of witnesses.
- The committee can give two kinds of recommendations, one where it deems the misconduct as serious enough to require removal from office, or that it is not serious enough to warrant removal.

Actions taken on the recommendations of the committee:

- If the committee deems the charges against the judge as genuine, the concerned judge will be urged to resign or seek voluntary retirement.
  - * If the judge is unwilling to quit, the Chief Justice of the High Court concerned would be asked to withdraw judicial work from him. The executive i.e. the President and the Prime Minister are informed of the situation and are expected to begin the process of removal.
- If the misconduct does not warrant removal, the judge would be advised accordingly.

Concerns expressed:

- Former Supreme Court (SC) judge V. Gopala Gowda has described the letter written by Andhra Pradesh Chief Minister Y.S. Jagan Mohan Reddy to the Chief Justice of India (CJI) as an "affront to a vibrant judiciary
- The former SC judge points out that the manner of the release of the letter at a press conference could compromise the dignity, independence and majesty of the top court and the A.P. High Court.
- He says that the incident could amount to scandalising the judiciary in the eyes of the people by sensationalising the issue and could also be deemed an interference with the administration of justice instead the CM should have taken up the matter confidentially with the CJI as declared by the SC in the Ravichandran Iyer v. Justice A.M. Bhattacharjee (1995) case .
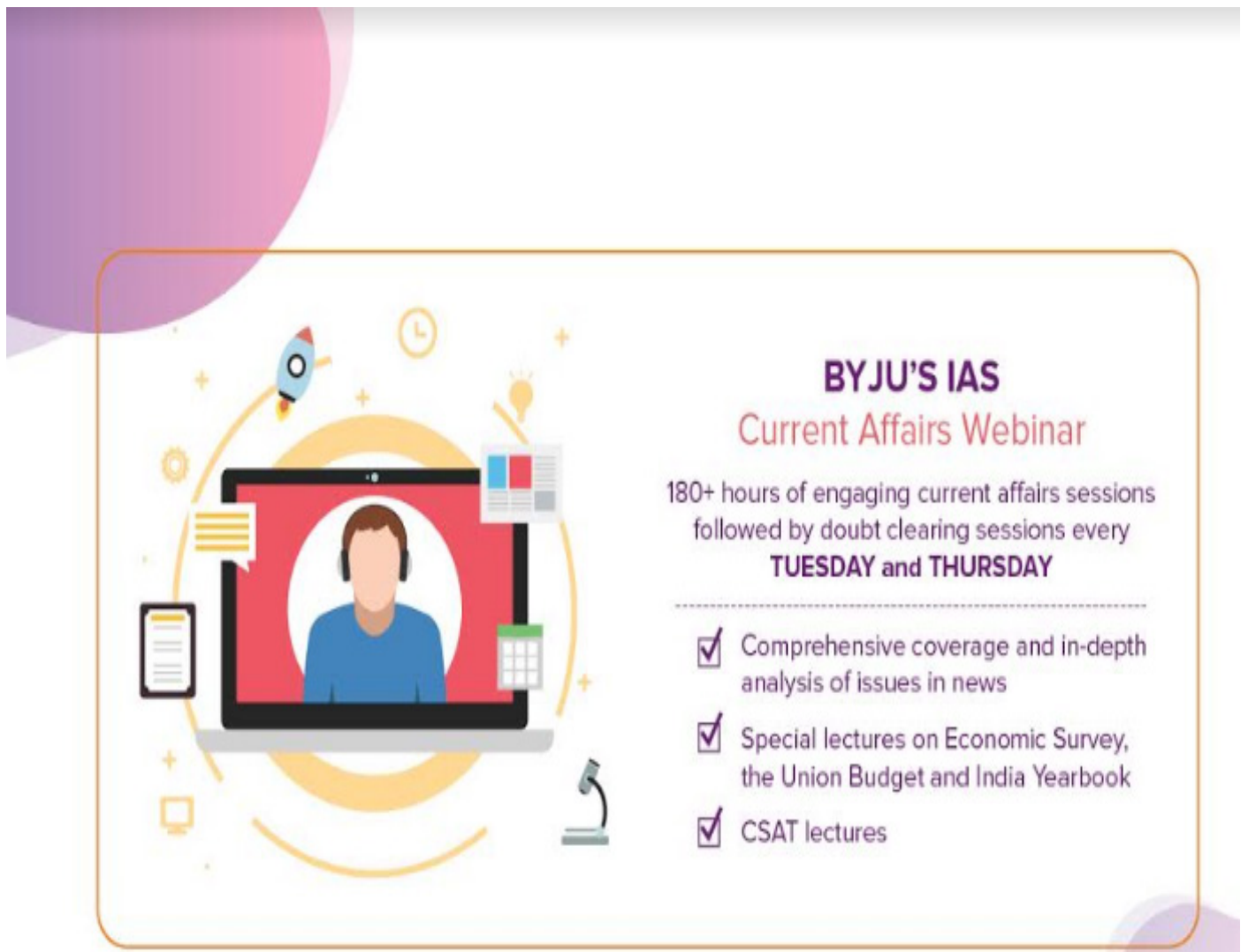
- Aspersions and allegations against sitting judges ought not to be made without substantive and positive evidence as in such cases the faith of the people in the judiciary and the rule of law are at stake.

Counter-arguments:

- People who have backed the nature of public disclosure are of the view that confidentiality of complaints may lead to complaints being shelved as the judiciary tends to try and brush aside complaints of corruption against judges and building public pressure may compel the CJI to order an inquiry.

Way forward:

- The code of conduct requires an inquiry by three sitting judges of the Supreme Court. But in a complaint involving the senior-most judge, it is unlikely that junior judges will conduct a robust and credible inquiry.

- Only retired judges of high credibility would be able to conduct a robust inquiry into the current complaint. The Chief Justice should set up a credible inquiry committee. This will enhance the reputation of the judiciary, dispel mistruths, and redeem the image of the judge concerned.

ECONOMY

Indian Economy

1. Agriculture Export Policy, 2018

» Prelims: Leading Indian agricultural export items.

» Mains: Doubling farmer income.

- The Government has come out with a policy to double farmers' income by 2022. Exports of agricultural products would play a pivotal role in achieving this goal.

- In order to provide an impetus to agricultural exports, the Government has come out with a comprehensive "Agriculture Export Policy" aimed at doubling the agricultural exports and integrating Indian farmers and agricultural products with the global value chains

Objectives of the Agriculture Export Policy are:

- To double agricultural exports from present ~US$ 30+ Billion to ~US$ 60+ Billion by 2022 and reach US$ 100 Billion in the next few years thereafter, with a stable trade policy regime.

- To diversify our export basket, destinations and boost high value and value added agricultural exports including focus on perishables.

- To promote novel, indigenous, organic, ethnic, traditional and non-traditional Agri products exports.

- To provide an institutional mechanism for pursuing market access, tackling barriers and deal with sanitary and phyto-sanitary issues.

- To strive to double India's share in world agri exports by integrating with global value chain at the earliest.

- Enable farmers to get benefit of export opportunities in overseas market.

Recommendations in the Agriculture Export Policy have been organised in two categories – Strategic and Operational

- Strategic:

  * Policy measures

  * Infrastructure and logistics support

  * Holistic approach to boost exports

  * Greater involvement of State Governments in Agri exports

- Operational

  * Focus on Clusters

  * Promoting value-added exports

  * Marketing and promotion of "Brand India

  * Attract private investments into production and processing

  * Establishment of strong quality regimen

  * Research & Development

Context

- The consistent and concerted efforts of the Government to boost agricultural exports are bearing fruit despite the on-going Covid-19 crisis

- In order to boost agro exports, the Government had announced Agriculture Export Policy, 2018

Infrastructure

2. Atal Tunnel

» Prelims: Passes in the region

- The Atal Tunnel at Rohtang is at an altitude of above 3,000 metres in Himachal Pradesh.

- The 9.02 km-long-tunnel, built by the Border Roads Organisation (BRO), is the world's longest highway tunnel and connects Manali to Lahaul-Spiti valley.

- In 2019, the Union Cabinet decided to name the tunnel as 'Atal Tunnel' to honor former Prime Minister Atal Bihari Vajpayee for his contributions. The foundation stone for the tunnel had been laid by Vajpayee in 2002.

Significance

- It provides all-weather connectivity to the landlocked valley of Lahaul-Spiti, which remains cut-off for nearly six months in a year as the Rohtang Pass is usually snow-bound between November and April.

  * Before the tunnel construction, the Lahaul Valley used to remain closed for vehicular movement due to bad weather conditions.

  * But now, the people of the Valley will have all-year-round connectivity.

- The tunnel reduces the distance by 46 km between Manali and Leh and the travel time by about 4 to 5 hours.

- It is expected to boost tourism and winter sports in the region.

- The tunnel, also significant from the military logistics viewpoint, will provide better connectivity to the armed forces in reaching Ladakh.

Indian Economy - Agriculture

3. 'Calcium Nitrate' & 'Boronated Calcium Nitrate'

» Prelims: Nutrient based subsidy scheme.

» Mains: Fertilizer policy, eutrophication.

Context:

- Union Minister of State for Chemicals & Fertilizers launches an indigenous variety of Calcium Nitrate & Boronated Calcium Nitrate manufactured by Gujrat State Fertilizers and Chemicals (GSFC India Ltd).

Details:

- Calcium Nitrate & Boronated Calcium Nitrate is being manufactured for the first time in India.
- Till now, it was imported from other countries.
  - In 2019, around 1.25 lakh metric tons (1,23,000 tons) of Calcium Nitrate was imported into the country.
  - Of this, 76% was imported from China and the rest from other countries like Norway and Israel.
  - The total import value of this 1.25 Lakh Tons is Rs. 225 crores.

Calcium Nitrate Applications:

- Calcium nitrate is used as a water-soluble fertilizer in agriculture.
  - It is used to control certain plant diseases.
    - For example, dilute calcium nitrate (and calcium chloride) sprays are used to control bitter pit and cork spot in apple trees
- In addition, this product is also used in wastewater treatment and to increase the strength of cement concrete.
- Calcium nitrate is used in waste water pre-conditioning for odour emission prevention.

Significance

- The indigenous variety of calcium nitrate and boronated calcium nitrate will provide a quality product at a cheaper rate to the farmer community in the country than the imported ones.

Indian Economy

4. CPI-IW base year revised to 2016

- » Prelims: Base year, components of CPI, different inflation indices.
- » Mains: Inflation targeting, Inflation-growth dynamics.

What's in News?

The Labour and Employment Ministry has revised the base year of the Consumer Price Index for Industrial Workers (CPI-IW).

- The base year has been revised from 2001 to 2016.
- The revision has been made to reflect the changing consumption pattern, giving more weightage to spending on health, education, recreation and other miscellaneous expenses, while reducing the weight of food and beverages.

- The reduction in weight to spending on food and beverages indicated an increase in disposable income.
- The change in the base year of CPI-IW may give a much real inflation index and thus influence the connected pay matrices.

Consumer Price Index for Industrial Workers (CPI-IW):

- The CPI-IW is used to measure inflation in retail prices.
- It is used to regulate the dearness allowance (DA) of government staff and industrial workers.
- It is also used to revise minimum wages in scheduled employments.

Infrastructure - Ports

5. 'Direct Port Entry (DPE) Facility' at V.O. Chidambaranar port

- » Prelims: Major ports, Minor ports
- » Mains: PPP in ports.

Context

- Union Minister of State for Shipping (I/C), inaugurated the 'Direct Port Entry (DPE) facility' of V.O. Chidambaranar Port Trust by unveiling the e-plaque.

Details

- The state-of-the-art Direct Port Entry (DPE) facility would enable direct movement of containers from factories, without intermediate handling at any Container Freight Stations (CFS), thus facilitating the shippers to Gate-In their factory stuffed exports directly to the Container Terminal on 24x7 basis.

Significance

- It is the noteworthy step towards reducing the logistics cost
- DPE will help in increasing Ease of Doing Business for the exporters, as the facility will bring efficiency and reduce dwell time, lower tariff cost and improve the competitiveness of shipper in the international trade.
- The IT enabled infrastructure at the ports will definitely make our ports, world class ports aligning the 'Maritime Vision 2030' of Ministry of Shipping.

V.O. Chidambaranar Port Trust

- The V. O. Chidambaranar Port Trust is an artificial deep-sea harbour formed with rubble mound type parallel breakwaters projecting into the sea up to 4 km.
- Located in Thoothukudi (Tuticorin), the port is strategically situated in the Gulf of Mannar, with Sri Lanka on its southeast and the large Indian landmass on the west.
- It is also close to the east-west international sea route on the Coromandel Coast.
- Chidambaranar Port Trust is the only port in South India to provide a direct weekly container service to the United States.

6. 'Electricity Access in India and Benchmarking Distribution Utilities' report

» Prelims: Government schemes.

Context:

- NITI Aayog, Ministry of Power, Rockefeller Foundation and Smart Power India launched the 'Electricity Access in India and Benchmarking Distribution Utilities' report

Details

- It is aimed at capturing insights from both the demand (electricity customers) as well as supply-side (electricity distribution utilities)

- The report is based on a primary survey conducted across ten states, representing about 65 per cent of the total rural population of India and with a sample size of more than 25 thousand, including households, commercial enterprises and institutions.

- The hours of supply have improved significantly across the customer categories to nearly 17 hours per day.

Stats

- According to the report, 92 per cent of customers reported the overall availability of electricity infrastructure within 50 metres of their premises.

- 87 per cent of the surveyed customers have access to grid-based electricity. The remaining 13 per cent either use non-grid sources or do not use any electricity at all.

7. India PV EDGE 2020

» Prelims: National Determined Contributions.

» Mains: Green energy, indigenous solar manufacturing.

Context:

- The NITI Aayog, the Ministry of New and Renewable Energy, and Invest India, had organised a global symposium virtually, 'India PV EDGE 2020' to catalyze cutting-edge PV (photovoltaic) manufacturing in India.

Background

- Solar deployment has been the flagship green growth story of the last decade and this would be instrumental to stimulate growth and build a climate-resilient world.

- India has the third-largest solar capacity in the world and has set an ambitious target of 450 GW of renewable capacity by 2030, comprising 300 GW of solar capacity.

- The major factor behind the rise of solar deployment is giga-scale solar manufacturing and the continuous adoption of innovations to reduce prices.

- Hence, solar PV manufacturing is one of the strategic sectors announced by the Indian Government as part of the post-COVID Atmanirbhar Bharat recovery initiative.

Cutting-edge giga-scale solar manufacturing stands on three pillars:

- Disruptive PV chemistries,

- Manufacturing by custom-engineered advanced production equipment, and

- Utilisation of innovative BOM components like special glasses and coatings.

8. International Financial Services Centres Authority (IFSCA)

» Prelims: IFSC, Regulatory sandbox.

Context:

- IFSCA introduces a framework for regulatory Sandbox to tap into innovative FinTech solutions.

Details:

- IFSCA has introduced a framework for "Regulatory Sandbox".

- Under this Sandbox framework, entities operating in the capital market, banking, insurance and financial services space shall be granted certain facilities and flexibilities to experiment with innovative FinTech solutions in a live environment with a limited set of real customers for a limited time frame.

- These features shall be fortified with necessary safeguards for investor protection and risk mitigation.

- The Regulatory Sandbox shall operate within the IFSC located at GIFT City (Gandhinagar, Gujarat).

- IFSCA shall assess the applications and extend suitable regulatory relaxations to commence limited purpose testing in the Sandbox.

What is Regulatory Sandbox?

- A regulatory sandbox is a framework set up by a financial sector regulator to allow small scale, live testing of innovations by private firms in a controlled environment (operating under a special exemption, allowance, or other limited, time-bound exception) under the regulator's supervision.

International Financial Services Centres Authority:

- It is a statutory unified regulatory body under the Department of Economic Affairs, Ministry of

Finance, Government of India established by an Act of Parliament to develop and regulate the financial products, financial services and financial institutions located/performed in the International Financial Services Centres in India.

- The Authority is empowered to exercise the powers of RBI, SEBI, IRDAI and PFRDA in respect of financial services, financial products and financial institutions performed/located in the international financial services centres in the country.

- The IFSCA is headquartered in Gandhinagar, Gujarat.

- The members of the Authority are appointed by the Central Government.

    * The members include a Chairperson of the Authority, a member each from the RBI, SEBI, the Insurance Regulatory and Development Authority of India (IRDAI), and the Pension Fund Regulatory and Development Authority (PFRDA); and two members from the Ministry of Finance. In addition, two other members will be appointed on the recommendation of a Selection Committee.

- They will have a three-year term subject to reappointment.

What is an International Financial Services Centre (IFSC)?

- An IFSC caters to customers outside the jurisdiction of the domestic economy.

- Such centres deal with flows of finance, financial products and services across borders.

- London, New York and Singapore can be counted as global financial centres. Many emerging IFSCs around the world, such as Shanghai and Dubai, are aspiring to play a global role in the years to come.

- An expert panel headed by former World Bank economist Percy Mistry submitted a report on making Mumbai an international financial centre in 2007.

- However, the global financial crisis that unfolded in 2008 made countries including India cautious about rapidly opening up their financial sectors.

- Gujarat International Finance Tec-City Co. Ltd (GIFT City) is developed as the country's first international financial services centre (IFSC).

9. India Post and United States Postal Service (USPS) Agreement

Context:

- India Post and United States Postal Service (USPS) signs Agreement for Electronic Exchange of Customs Data related to postal shipments exchanged between the two countries.

Details:

- The agreement will make it possible to transmit and receive electronic data of international postal items prior to their physical arrival at the destination and would enable customs clearance of postal items in advance in line with the evolving global postal framework.

- This will also improve the performance of postal services in terms of reliability, visibility and security.

- The primary objective that will be served by this agreement is to facilitate 'ease of exports' for small and large exporters through postal channels from different parts of the country and will contribute towards making India an Export Hub for the world.

- Exchange of Electronic Advance Data (EAD) as per the Agreement will be a key driver towards promoting mutual trade with emphasis on the exports from different parts of India to the USA through postal channel considering that USA is a major destination of MSME products, gems & jewellery, pharmaceuticals and other local products from India.

- This will fulfil a major demand of the export industry to expedite customs clearances of export items.

- The USA is the top export destination for India (~17%) which is also reflected in the exchange of goods through the postal channel.

Infrastructure: Energy

10. Kisan Suryodaya Yojana

» Prelims: Deen Dayal Upadhyaya Gram Jyoti Yojana

» Mains: Agriculture power requirements.

Context:

- PM inaugurated Kisan Suryodaya Yojana in Gujarat.

Details:

- The scheme is aimed at providing day-time electricity to the farmers in Gujarat for irrigation and farming purposes.

- It will provide 16 hours of power supply to farmers.

- Earlier, most of the farmers got power for irrigation in the night only and had to wake up all night.

    * In Girnar and Junagadh, the farmers also face the problem of wild animals.

- Under the Kisan Suryodaya Yojana, farmers will get 3 phase power supply from 5 AM to 9 PM.

- The state government has allocated a budget of Rs.3500 crore for installing transmission infrastructure under this scheme by 2023.

Infrastructure: Roads

11. National Program and Project Management Policy Framework (NPMPF)

» Mains: Infrastructure projects.

Context:

• NITI Aayog and Quality Council of India (QCI) launched the 'National Program and Project Management Policy Framework' (NPMPF), envisaged to bring radical reforms in the way infrastructure projects are executed in India.

Details:

• This framework aims to formulate radical reforms in the way large and mega infrastructure projects are managed in India, with an action plan to:

  * Adopt a program and project management approach to infra development.

  * Institutionalize and promote the profession of program and project management and build a workforce of such professionals.

  * Enhance institutional capacity and capability of professionals.

• Union Minister for Road Transport and Highways also unveiled the Indian Infrastructure Body of Knowledge (InBoK).

  * InBok is a book on the practice of program and project management in India.

  * In the future, InBoK is envisioned to have extensions, which will be specific to each domain or industry for infrastructure, for example, a dedicated extension for roadways that captures issues and best practices specific to that sector.

Awareness in the fields of IT,

12. Paytm to open 'mini app' store for Indian developers

» Prelims: Fintech technologies.

» Mains: Start-up policy of India.

What's in News?

• Online payments company Paytm recently announced that it was building a 'Mini App Store' to reduce Indian app developers' reliance on tech giants like Google. Paytm believes that this move would help empower Indian developers.

What is mini app?

• The mini apps are custom-built mobile websites that give the users, app-like experience without having to download them.

• They are little downloadable apps that run inside another larger app.

Details:

• The mini app store aims to support Indian developers in taking their products to the masses.

• More than 300 app-based service providers have joined its new programme that comes with a developer dashboard for analytics and payments collection along with various marketing tools to engage with the users.

Dominance of the tech giants:

• The Play Store is the key app store for Google's Android operating system, which runs over 90% of smartphones in India.

• Google has a near 100% dominance in the app marketplace in India.

Concerns:

• There could be some serious implications of tech giants having inordinate dominance in the Indian market.

Arbitrary policies:

• Paytm and several other Indian Internet start-ups allege that Google is using its market dominance to arbitrarily enforce policies on the local players and target competitors.

• Google has announced that it would consider enforcing a 30% commission on all payments made for digital services in apps from its Play Store. Though the implementation of this plan has been postponed, it has caused much resentment in the Indian start-up environment.

• Domestic players would be required to pay up to access their own users by giving a 30% cut to Google when you are selling a service or a product through an app on the Google App Store. These companies also have to advertise via Google to reach their customer base. In effect, a large chunk of all the money that these companies make goes to Google and Facebook.

Misuse of dominant position:

• There is also discontent against tech giants in their home country as well, with game developers in the U.S alleging unfair treatment from Apple. The U.S. government is believed to be readying an anti-trust lawsuit against Google.

Modus operandi:

• Unlike the startup companies which create value by being innovative, the modus operandi of bigger companies like Google and Facebook is different.

• These tech giants utilize their vast resources and reach to build barriers for other players. One of the tools they use is to buy all competition to ensure that they stay in the market and create shareholder value.

Long term harm v/s short term benefits:

• One argument against dominance by the tech giants has been on the basis of consumer benefit.

• While in the short term, the consumers will benefit because as the bigger companies assimilate innovations, these innovations become stronger and the bigger companies can use their infrastructure to make them available to a larger number of people. However, in the long term, as the consumers get used to the availing of services, it is possible that the price of these services starts rising and consumers

end up paying more because there is not enough competition in the market

Are Indian firms capable of competing with the tech giants?

No:

Lack of infrastructure:

* Most of the Indian start-ups are dependent for crucial infrastructure on these tech giants. Neither does India have the infrastructure that is required to build and scale start-ups nor are there large infrastructure players who can work towards building such infrastructure in limited time frames.
  * A lot of start-ups are launched on Amazon Web Services, or Google Cloud, or on Microsoft Azure.
  * India has limited strength in the hardware sector, with practically no real manufacturing or chipmaking.

Limited investment:

* Despite the impressive growth in the inflow of venture capital in India, the figures are very less compared to what is witnessed in countries like the US and China.

Challenges:

* A major challenge is that India as a market itself is poor, in the sense that it doesn't have enough spending capacity.
* For digital services to take off and be profitable and viable, one of the thumb rules that several companies talk about is that the GDP per capita should be above $4,000. India's per capita GDP is still at about $2,000 to $2,500. So, the potential to monetise such users is very low.

Yes:

* The Indian start-up environment has witnessed considerable growth over the years. The market has grown exponentially with the growth of smartphone users. There is an active ecosystem with a large number of consumers and service providers.
* India has been slowly but surely building expertise in infrastructure in some sectors like the payment gateways.

Way forward:

* In order to enable the Indian firms to compete effectively with the likes of Google and Facebook, the following measures may be necessary.

Building a base:

* India should work towards building domestic capacity first before it can challenge the might of tech giants. This could also involve cooperation with the tech giants.
* India should compete only when it makes sense, on a level playing field. A too confrontational approach would harm India's interest in the current context.

Government support:

* There has to be a conscious strategy to help the growth of domestic firms.
* China offers a successful model that can be considered for implementation in India. Specific technologies and companies with potential can be chosen and there must be unwavering support from the government to such entities such as giving such domestic start-ups favourable access to the market, giving them an opportunity to grow and to stabilise their offerings.
* There should be a conscious strategy to develop a giant that can compete with global leaders.

Balanced regulation:

* Institutions like the Competition Commission of India and others must ensure that the monopoly position is not abused by companies through measures that can ensure that the companies don't overcharge or policies that mandate that the companies are split into different smaller entities.
* Regulation must be a fine balancing act to ensure that such measures and policies would aid both competition as well as the consumers' benefit.
  * India cannot afford too much of reactive policymaking against the tech giants as it doesn't signal well for attracting foreign investors. A very strict policy environment that encourages only local Indian innovation and tries to bar foreign competition might not be the best possible approach from the consumer's aspect.
  * The policy must both be able to attract foreign investments from these larger companies and also encourage Indian companies.
* If there are any antitrust actions globally on the tech giants, India must join such efforts or provide overt support to ensure that dominant positions are not misused.

Awareness in the fields of IT,

13. SCALE India Android App

» Prelims: Leather sector skill council composition, functions.

Context:

* Leather Sector Skill Council launches SCALE India Android App for Enhanced Quality Assurance under Skill India Mission.

About the SCALE India Android App:

* The Skill Certification Assessment for Leather Employees (SCALE) India android app will cater to the needs of all the stakeholders of the skilling and employment ecosystem namely – candidate/trainee, employer, employee, assessor and trainer – all at one place.
* The services are accessible through the web and

android application that virtually works on any smart handheld device, desktop/laptop, smartphones, tablets or phablets.

- Apart from providing end to end quality assurance across training, assessment, and certification services, the app will also help employers engage with other stakeholders seamlessly and provide a marketplace for human capital for the leather industry.

- SCALE will help candidates in the skilling ecosystem to get assessed and certified on their knowledge, skills and behaviour on a specific qualification pack.

- It also enables access to micro-learning modules for bridging the skill gaps that are identified and can be re-assessed and certified at the end of the learning on the specific qualification pack.

Leather Sector Skill Council (LSSC):

- The LSSC is a non-profit organisation dedicated to meet the demand for a skilled workforce in the leather industry in India.

- LSSC was set up in 2012 as one of the key sector skill councils approved by the National Skill Development Corporation (NSDC).

- It caters to the training and employment needs of various sub-sectors in the leather industry such as finished leather, footwear, garments, leather goods, accessories, saddlery and harness sectors.

Indian Economy.

14. Transforming business and the insolvency system

» Prelims: Provisions of IBC, NCLAT.

Context:

- The article discusses the significance of the Insolvency and Bankruptcy Code (IBC 2016) and suggests further measures to improve its implementation effectiveness.

Significance of the IBC:

A key structural reform:

- The IBC, being a structural reform, has transformed insolvency resolution in India.

- It has replaced a rather inefficient bankruptcy law regime and thus helped instill confidence in the corporate resolution methodology by streamlining the insolvency process in a sustainable, efficient, and value retaining manner.

- The IBC through the Insolvency and Bankruptcy Board of India (IBBI) has established an organisation that both regulates and develops insolvency policy and assesses market realities.

Ease of doing business:

- The IBC has played an important role in aiding India's rapid rise in the Ease of Doing Business rankings.

  * India's Resolving Insolvency Index under the

Ease of Doing Business Index has improved to 52 in 2019 from 108 in 2018, a leap of 56 places.

Enhanced investor confidence:

- The IBC may have also contributed to increasing investor confidence in India.

  * There has been a surge in Foreign Direct Investment into India in 2019-2020, to the tune of nearly $74.5 billion, or a significant increase of 20 per cent from the previous year.

  * The IBC has also helped encourage domestic entrepreneurship.

Emphasis on resolution:

- Under the IBC, there has been a focus on prioritizing resolution rather than liquidation.

- This has allowed the creditors to recoup some of their investments in firms being liquidated or going in for resolution.

Time bound process:

- An important aspect of the IBC code has been the emphasis on a relatively short time-bound resolution process.

  * As per the data available, the overall time taken in recovery has improved nearly three times, coming down from 4.3 years in 2018 to 1.6 years in 2019.

- The cutting down of the time for the resolution process is of critical importance in the working of the bankruptcy code.

  * The longer the delay, the more likely that the entity in question would move towards liquidation rather than resolution.

  * Also, the delays result in low-value liquidation due to a high economic rate of depreciation.

  * As per the data provided by the Ministry of Corporate Affairs, the recovery rate has improved nearly threefold from 26.5% in 2018 to 71.6% in 2019.

Economic growth:

- The IBC's core implication has been to allow credit to flow more freely to and within India while promoting investor and investee confidence.

- The Insolvency and Bankruptcy Code (IBC 2016) would help aid India's path to self-reliance on a high growth trajectory enabling India to emerge as a 'Make for World' platform as envisaged by the government.

Other notable reforms:

Liberalizing the existing laws:

- Given that criminal penalties for minor offences act as major deterrents for investors, the Government is working towards decriminalization of minor offences, which will significantly help reduce the risk of imprisonment for actions or omissions that are

not necessarily fraudulent or an outcome of malafide intent.

- The government's intent is to help differentiate between good faith mistakes and intentional bad faith actions, so as to penalise the former and criminalise the latter.

Commercial courts:

- The rolling out of the commercial courts, commercial divisions and the Commercial Appellate Divisions Act, 2015, to allow district court-level commercial courts, and the removing of over 1,500 obsolete and archaic laws will help improve the investment climate and also aid in enhancing enforceability of contracts in India.

  * The enforceability of contracts has been a challenge in India. On average, it takes as many as 1,445 days for a contract to be enforced, and costs nearly 31% of the claim value.

Steps to be taken:

- Further streamlining of the IBC process is possible and needs to be considered.

Pre-packed resolutions:

- There is the need to look at institutionalizing the process of a pre-packed insolvency resolution.

  * A pre-packaged resolution is one where a company prepares a restructuring plan in cooperation with its creditors before initiating insolvency proceedings.

- This will help resolve matters expeditiously, outside of the formal court system, and allow resolution even during the disruptions caused by the COVID-19 pandemic.

- This also helps reduce the time and costs involved in the process.

Helping MSMEs:

- There is a need to put in place a Micro, Small and Medium Enterprises (MSME) and non-MSME frameworks to help expedite and also streamline the resolution process in these sectors, given the disastrous impact that the pandemic and the associated lockdown has had on this sector.

Going digital:

- Given the need for social distancing and the suspension or limitation of physical hearings, a concerted effort should be made to enhance the role of digitally conducting all processes and hearings relating to the resolution processes.

- This would also help ease access to justice and greatly help ease of doing business.

Major crops cropping patterns in various parts of the country

15. World Cotton Day

» Prelims: Favourable conditions of growth and cotton growing states.

Context:

- The second World Cotton Day was observed on 7th October 2020.

- 7th October is observed as World Cotton Day.

Kasturi Cotton:

- On the occasion of the second World Cotton Day, the Union Textiles Minister launched the first-ever brand and logo for Indian cotton.

- Now India's premium cotton would be known as 'Kasturi Cotton' in the world cotton trade.

- The Kasturi Cotton brand will represent Whiteness, Brightness, Softness, Purity, Lustre, Uniqueness and Indianness.

Stats

- Cotton is one of the principal commercial crops of India and it provides livelihood to about 6 million cotton farmers.

- India is the 2nd largest cotton producer and the largest consumer of cotton in the world.

- India produces about 6 million tons of cotton every year which is about 23% of the world cotton.

- India accounts for about 51% of the total organic cotton production of the world, which demonstrates India's effort towards sustainability.

Mobilization of Resources

16. Govt. moves to spur demand

» Prelims: GDP definition

Context:

- In order to spur fresh demand of about ₹1 lakh crore in the second half of 2020-21, the Union Finance Minister unveiled a mini-stimulus of sorts.

- It can be broadly classified into two different compartments — consumer spending and capital expenditure.

Consumer Spending

LTC (Leave Travel Concession) cash voucher scheme

Leave Travel Concession

- Central government employees get leave travel concession in a block of four years (2018-21)--one each to a

  * destination of choice and home town or

  * Two for home town.

    * The expenses include only travelling

expenses and no other expense such as food, shopping, lodging etc.

- Under this, the air or rail fare is reimbursed as per pay scale/entitlement.

- The employee is not entitled to this benefit in every year. LTA exemption is available for 2 journeys in a block of 4 years.

- The block applicable for the current period is calendar years 2018-21.

- However, employees will not be able to avail the LTC in the 2018-21 year block due to the ongoing Covid-19 pandemic. This is where the LTC will benefit government employees.

How to spend?

- An employee opting for this scheme will have to buy goods and services worth three times the fare and one time leave encashment, and do so before March 31, 2021.

- This must be spent on items that have 12% GST or more; for instance, one cannot use it to buy food that has 5% GST slab.

- It can only be spent in digital mode, no cash payments

- They can be bought only from GST-registered sellers so a GST invoice would be required on the basis of which they will be reimbursed. This spending has to be completed by March 31, 2021

Special Festival Advance Scheme

- Till the Sixth Pay Commission, there was a festival advance scheme

- The government has restored festival advance (which was abolished in line with recommendations of the 7th Pay Commission) for one time till March 31, 2021.

- Under this scheme, interest-free advance of Rs 10,000 will be available to all central government employees, irrespective of their rank (earlier only non-gazetted officers), instead of ₹4,500 that was available in the Sixth Pay Commission.

- A prepaid Rupay card will be given to the availees as an interest-free advance for use in any festival. This will not be limited to any one festival or GST-only shops. One can spend it anywhere. But they cannot withdraw it as cash.

- This will be repaid in ten instalments and will be available upto March 31, 2021

Significance

- The consumer durables sector has welcomed it along with the festival advance scheme

- The special festival advance schemes will provide more liquidity to the customers for discretionary spends.

Capital Expenditure

Capital expenditure on infrastructure building and anything that goes into asset building, has a greater multiplier effect on the economy. It raises present GDP but also impacts future GDP. 50-year interest free loan is being offered to States worth Rs 12,000 crore

States have been categorised among three groups:

- Group 1 having north-eastern states (Rs 1,600 crore) and Uttarakhand and Himachal Pradesh (Rs 900 crore),

- Group 2 having other states which will get Rs 7,500 crore in proportion of their share as per Finance Commission devolution

- Group 3 having states which will get total Rs 2,000 crore if they meet three out of four reforms including One Nation One Ration, outlined in the government's Atma Nirbhar package announced earlier in May 2020

  * This can be used for new or ongoing projects and even to pay existing dues.

  * No payment is required from the States till after 50 years

Concerns

- The tourism sector has termed Finance Minister's cash-for-LTC announcement a 'major blow' to the sector

  * Government announcement will discourage travel

- Experts warn that this 'boost' is likely to be temporary and the measures may be inadequate to sustain demand.

- Requiring employees to spend three times their return ticket fares under LTC on goods and services attracting at least 12% GST from GST-registered vendors, may be too prescriptive and overlooks the reluctance towards discretionary spending due to low visibility on the economy's prospects.

  * Eligible employees may find the scheme complex and too expensive to avail.

- States have been allowed to use these loans to pay off existing contractors' dues, the amounts on offer are unlikely to have an impact; ₹2,000 crore has been set aside for States that manage to complete three of four reforms mandated in the earlier Atmanirbhar Bharat package, in order to get additional borrowing leeway.

  * Only some States may qualify for this.

  * Too many conditions also pervade the consumption push

Conclusion

- Waiting too long for the pandemic to ease before loosening the purse strings further could extend the pain.

  * Even the IMF has been urging countries to spend now to diminish the damage.

  * Avoiding spending now to maintain fiscal discipline and prevent a rating downgrade seems sensible, but if the underlying edifices of the country's growth story crumble in the process, a future downgrade will become inevitable.

17. India's DisCom stress is more than the sum of its past

> » Prelims: UDAY scheme, PRAAPTI.

Context:

- The article analyzes the reasons for the poor performance of the DisComs in India and suggests measures to overcome these shortcomings.

Details:

- Distribution Companies (DisComs) play a critical role in the electricity supply chain. These utilities typically buy power from generators and retail these to consumers.

- India has done well in ensuring the adequate production of electricity in the country. However, the DisComs continue to perform badly.

Financial position of DisComs:

- The financial position of DisComs is very grave in that they owe large sums to generators and also have high short-term dues apart from the long term debt owed by them.

  * While the government's PRAAPTI (or Payment Ratification And Analysis in Power procurement for bringing Transparency in Invoicing of generators) portal shows a figure of one lakh crore as DisCom dues to generators, the Power Finance Corporation (PFC)'s Report on Utility Workings for 2018-19 showed dues to generators were ₹2,27,000 crore, even before COVID-19.

- The stimulus package earmarked for DisComs (initially Rs. 90,000 crore and later upgraded to Rs. 1,25,000 crore), though comes as a welcome relief, is grossly insufficient given the financial position of the DisComs. Also, the stimulus is really a loan that has to be repaid by the DisComs.

Challenges:

Inefficiency:

- The DisComs are blamed for inefficiency, including high losses, called Aggregate Technical and Commercial (AT&C) losses.

  * Aggregate Technical and Commercial (AT&C) losses include everything from theft to lack of collection from consumers.

Lack of cost-reflective tariff structure:

- The regulators have failed to fix cost-reflective tariffs. This has resulted in high debts for the DisComs.

  * Despite the acceptance of inefficiency in the name of the poor, yet still, they too do not get quality supply. The political dole out of free electricity even for those who may not deserve such support is a drain on the scant resources of the state.

- There are also extensive cross-subsidies between consumer categories which is not exactly the optimal way forward.

Default of payments to DisComs:

- DisComs face severe challenges of payables.

  * Consumers owed DisComs over Rs. 1.8 lakh crore in FY 2018-19.

  * State governments are the biggest defaulters, responsible for an estimated a third of trade receivables, besides not paying subsidies in full or on time.

    * About a seventh of DisCom cost structures is meant to be covered through explicit subsidies by State governments.

Renewable energy factor:

- The rise of renewable energy means that premium customers will leave the system partly first by reducing their daytime usage. And as battery technologies mature, their dependence on DisComs may wane entirely.

- This would not augur well for the DisComs which are banking on sustained demand growth.

Increasing competition:

- The growing easing of regulations in the sector allowing for third party suppliers under competitive models would result in increased competition in the business of electricity supply.

- The DisComs due to their inefficient functioning and large financial debt are ill-equipped to take on the competition offered by the new entrants.

Disruption caused by pandemic:

- COVID-19 has completely shattered incoming cash flows to utilities due to the multi-month dip in demand.

- The reduced demand for electricity did not save as much costs for the DisComs because a large fraction of DisCom cost structures is locked in through Power Purchase Agreements (PPAs) that obligate capital cost payments, leaving only fuel savings with lower offtake.

Way forward:

Short term:

- There is a need for a much larger liquidity infusion than has been announced thus far.

- The growing debt has to be paid down to manageable levels. This calls for a haircut in DisComs' debt obligations.

Long term:

- In the long term, all the risk and future obligations should not be placed on DisComs alone. Generators, transmission companies, and lending institutions must all chip in.

- Need to reduce AT&C losses through appropriate technical and regulatory practices.

- Need a complete overhaul of the regulation of

electricity companies and their deliverables. The regulators must allow cost-covering tariffs. The regulation should meet the national needs of quality, affordable, and sustainable power.

Indian Economy

18. Phased manufacturing policy that is hardly smart

» Prelims: Production Linked Incentives.

» Mains: WTO Appellate mechanism, National manufacturing policy.

Context:

- Initiatives taken by the Ministry of Electronics and Information Technology (MeitY) to provide impetus to domestic manufacturing in India.

Background:

Mobile industry in India:

- India produced around 29 crore units of mobile phones for the year 2018-19; 94% of these were sold in the domestic market, with the remaining being exported.

- The mobile production has increased from $13.4 billion in 2016-17 to $31.7 billion in 2019-20.

- Over the years, firms such as Apple, Xiaomi, Oppo, and OnePlus have invested in India, but mostly through their contract manufacturers.

Production Linked Incentive (PLI) scheme:

- The Ministry of Electronics and Information Technology (MeitY) had approved 16 firms in the mobile manufacturing sector for the Production Linked Incentive (PLI) scheme (for large-scale electronics manufacturing).

- The scheme is aimed at transforming India into a major mobile manufacturing hub.

Phased Manufacturing Programme (PMP):

- The PMP began in 2016-17 and was supposed to culminate in 2019-20.

- The PMP incentivized the manufacture of low-value accessories initially, and then moved on to the manufacture of higher value components. This was done by increasing the basic customs duty on the imports of these accessories or components.

- The PMP was implemented with an aim to improve value addition in the country.

Concerns:

- Though the schemes like the PMP and PLI are well intended there are doubts over the benefits that can accrue from these.

Low value addition:

- The value addition in India remains very low, with most of the firms recording below 10%.

Continued reliance on imports:

- A large percentage of the inputs going into electronic manufacturing in India are being imported. This is as high as 85%.

India continues to be a net importer:

- Compared to economies such as Vietnam, Korea and Singapore which export more mobile phone parts than imports, India, on the other hand, imported more than it exported.

  * In 2019 Indian imports of mobile phone parts were 25 times the exports.

- This indicates the lack of facilities that add value to the imported parts before exporting them. Therefore, while the PMP policy increased the value of domestic production, improvement in local value addition remains a work-in-progress.

Challenge to PMP at the WTO:

- In 2019, Chinese Taipei contested the raise in tariffs implemented by India under the PMP.

- If the PMP is found to be non-compliant with World Trade Organization (WTO) rules and agreements leading to the striking down of India's PMP, this could lead to a situation where the Indian markets would be flooded with imports of mobile phones which might make the local assembly of mobile phones unattractive. This will affect the operations of the mobile investments already done under the PMP.

Continued focus on value of production:

- The new PLI policy by offering an incentive for incremental investment and sales of manufactured goods seems to be focusing on only increasing value of domestic production, without paying attention to increasing local value addition.

Shift from China is unlikely:

- Despite the current incentives provided by the government in the form of the schemes like PLI, the effective cost (with subsidies and other benefits) of manufacturing mobile phone in China continues to be much lower than in India.

- This indicates that the PLI policy may not turn out to be a game-changing move, and it may be wrong to expect a major chunk of mobile manufacturing to shift from China to India.

Neglecting India's strengths:

- Available figures indicate that India's export competitiveness seems to be in mobiles with a lower selling price.

- This aspect seems to be overlooked in the current PLI policy as the incentive for foreign firms chosen under the PLI policy will be computed on the basis of the invoice value of phones priced above a certain threshold.

- The PLI policy in its current form does not strengthen India's current export competitiveness of low-value mobile phones.

Challenges for domestic firms:

- Domestic firms currently have very little share in the Indian market. Their ability to take advantage of the PLI policy and grab a sizeable domestic market share seems difficult.

- Thus, how well they respond to the opportunity that the PLI policy provides is an open question.

Doubtful supply chain collocation:

- The six component firms that have been given approval under the 'specified electronic components segment' may not be able to complete the mobile manufacturing ecosystem in India.

- Prior international experience has shown that investments from major mobile manufacturers in a country should be followed by the co-location of related industries.

- However, this seems to be not happening in India. Though Samsung has invested hugely in India, it has not co-located its supply chain in the country.

Conclusion:

- The PMP policy and the new PLI may be helpful in only increasing domestic production, and not value addition which would bring in much more benefits to India.

- The government must encourage foreign firms chosen under the PLI policy to colocate their supply ecosystems in the country.

Indian Economy

19. New wage code bars bonus for those facing sex abuse charges

 » Prelims: Labour codes.

Context:

- Owing to a provision in the Code on Wages, those indulging in sexual harassment of any form could run the risk of losing out on bonus dues from their employers.

Details:

- The Code on Wages lays down norms for annual bonus dues that accrue to employees, replacing the Payment of Bonus Act, 1965.

- As per the extant law, bonus dues are barred only in case of employees dismissed for fraud, violent conduct and theft or sabotage.

- The new Code includes 'conviction for sexual harassment' as a ground for denying bonus payouts to employees.

Significance:

- This a step forward towards creating seriousness towards instances of sexual harassment. The prospect of losing one's benefits may make employees more careful of their conduct.

- This is believed to be a great nudge to get people to be on their best behaviour in the workplace.

- This would serve as an additional deterrent apart from the Prevention of Sexual Harassment (PoSH) law of 2013.

Prevention of Sexual Harassment (PoSH) law

- As per the PoSH law guidelines, firms are required to form an Internal Complaints Committee (ICC) to inquire into complaints.

- The Committee is required to make recommendations to employers on the action required pursuant to its inquiry in such complaints.

- If the ICC upholds a complaint, it could be taken as a conviction.

- Though not all sexual harassment cases translate into a police case, ICC has the power to decide if someone is guilty and report it further to the police.

Way forward:

- The rules should clarify whether the conviction would cover cases of outcomes of the investigation by the ICC arriving at a conclusion to pay compensation to the victim or not.

- It is not clear if sexual harassment incidents or related crimes against women outside the workplace could lead to dismissal of employees with loss of bonus payments. Harassing a co-worker irrespective of where it is done, should come under this provision's purview.

Indian Economy

20. Signalling optimism

 » Prelims: Monetary Policy Committee composition.

 » Mains: Inflation targeting, measures to revive growth.

Context:

- Latest Monetary policy review, after the reconstitution of the Monetary Policy Committee (MPC).

Details:

- The Monetary Policy Committee (MPC) has voted to keep policy interest rates unchanged and has stated that it would continue with the accommodative stance at least through the end of the current financial year.

  * An accommodative stance means that the central bank will cut rates to inject money into the financial system whenever needed. This is often employed to expand the overall money supply to boost the economy when growth is slowing.

- This move seems to be indicative of the MPC's priority to revive economic growth on a durable basis and mitigate the impact of COVID-19 on the economy.

  * This is a welcome move given that the economy needs all the support it can get to recover from its 23.9% estimated contraction of the first quarter.

- This move would help maintain liquidity and stability in the financial markets, at a time when the resources-strapped governments are expected to resort to substantially higher levels of borrowing to meet their spending needs.

Concerns:

Sidelining inflation concerns:

- The latest monetary policy review seems to be indicative of the sidelining of inflation concerns. The MPC seems to have tilted away from its inflation-targeting mandate.

  * The MPC considers that the reason for the current inflation being above the tolerance band is mainly due to supply shocks and it expects these shocks to dissipate as the economy unlocks and supply chains are restored.

  * Even the RBI Governor has repeatedly stated that the current 'inflation hump' is a transient phenomenon.

Doubts over inflation estimates:

- The inflation assumptions seem inaccurate given that it estimates the CPI inflation to sharply ease from 6.8% in Q2 to 5.4% in Q3 and 4.5% in Q4, given the persistence of supply bottlenecks, cost-push pressures from higher taxes on transport fuels and the possibility of food-price inflation.

- Economists have suggested that through this move the MPC has sought to talk up confidence ignoring the risks of inflation.

Risk of forward looking guidance:

- The MPC has projected that it would stick with the accommodative stance "at least during the current financial year and into the next financial year". This forward-looking guidance would leave the MPC with little near-term leeway to tame price pressures.

- This could hamper the MPC's ability to take measures to support the 'emerging impulses' and help the economic revival.

Infrastructure: Energy

21. Natural Gas Marketing Reforms

  » Mains: Energy pricing, Hydrocarbon Exploration and Licensing Policy (HELP)

Context:

- Cabinet approves 'Natural Gas Marketing Reforms'.

Objective of the reforms:

- The objective of the policy is to prescribe the standard procedure to discover the market price of gas to be sold in the market by gas producers, through a transparent and competitive process, permit affiliates to participate in the bidding process for the sale of gas and allow marketing freedom to certain Field Development Plans (FDPs) where Production Sharing Contracts already provide pricing freedom.

- The policy aims to provide a standard procedure for the sale of natural gas in a transparent and competitive manner to discover market price by issuing guidelines for sale by contractor through e-bidding.

- This will bring uniformity in the bidding process across the various contractual regimes and policies to avoid ambiguity and contribute towards ease of doing business.

Details of the policy:

- The policy has also permitted affiliate companies to participate in the bidding process – open, transparent and electronic bidding. This will facilitate and promote more competition in the marketing of gas.

- However, rebidding will have to be done in case only affiliates participate, and there are no other bidders.

- The policy will also grant marketing freedom to the Field Development Plans (FDPs) of those Blocks in which Production Sharing Contracts already provide pricing freedom.

Benefits of the reforms:

- The domestic gas production has complete marketing and pricing freedom. All discoveries and field development plans approved after February 2019 have a complete market and pricing freedom.

- The whole ecosystem of policies relating to production, infrastructure and marketing of natural gas has been made more transparent with a focus on ease of doing business.

- These reforms will prove very significant for Atmanirbhar Bharat by encouraging investments in the domestic production of natural gas and reducing import dependence.

- These reforms will prove to be another milestone in moving towards a gas-based economy by encouraging investments.

- The increased gas production and consumption will help in the improvement of the environment.

- These reforms will also help in creating employment opportunities in the gas-consuming sectors including MSMEs.

- The domestic production will further help in increasing investment in the downstream industries such as city gas distribution and related industries.

Infrastructure: Ports

22. Indigenous software solution for vessel traffic services

» Mains: Safety measures.

Context:

- Minister of State for Shipping launches indigenous software solutions Vessel Traffic Services (VTS) and Vessels Traffic Monitoring Systems (VTMS).

About the solutions:

- VTS and VTMS is a software which determines vessel positions, position of other traffic or meteorological hazard warnings and extensive management of traffic within a port or waterway.

- Vessel Traffic Services (VTS) contribute to the safety of life at sea, safety and efficiency of navigation and protection of the marine environment, adjacent shore areas, worksites and offshore installations from possible adverse effects of maritime traffic.

- Vessels Traffic Management Systems are installed in some of the busiest waters in the world, and are making a valuable contribution to safer navigation, more efficient traffic flow, and protection of the environment.

    * Traffic flow in busy approach routes, access channels, and harbours can be coordinated safely, in the best interest of port and its users.

    * Incidents and emergency situations can be dealt with quickly.

    * Data from traffic movements can be stored and used as reference information for port administration, port authorities, coastguards and search and rescue services.

- VTMS is mandatory under the IMO Convention SOLAS (Safety of Life at Sea).

- The VTMS traffic image is compiled and collected by means of advanced sensors such as radar, AIS, direction finding, CCTV and VHF or other co-operative systems and services.

- A modern VTMS integrates all of the information into a single operator working environment for ease of use and in order to allow for effective traffic organization and communication.

- Presently, India has approximately 15 VTS systems operational along the Indian Coast and there is no uniformity of VTS software as each system has its own VTS software.

- Development of the indigenous VTS software will reduce the expenditure of foreign exchange on this issue and also minimize the dependence on foreign

support for VTS software. Accordingly, indigenous development of VTS software will benefit with respect to:

    * Saving of foreign exchange for various VTSs in India.

    * VTS Software can be provided to Indian trade-friendly nations viz. Maldives, Mauritius, Myanmar, Sri Lanka, Mauritius, Bangladesh and Gulf countries.

    * Will also minimize the cost for future upgradations of software.

    * Shall be easier to interconnect with MIS/ERP software of ports.

    * The availability of Indian VTS software shall make Indian companies competitive commercially in global bids.

Economy

23. Nobel Prize in Economics

» Mains: Auction theory.

Context:

- The Nobel Prize 2020 in Economic Sciences was awarded to Paul R. Milgrom and Robert B. Wilson "for improvements to auction theory and inventions of new auction formats."

Background:

- All economies have to figure out the allocation of the limited supply of resources to satisfy the unlimited human needs.

- Auctions are important because they are the most widely used and also the most efficient mechanism to allocate scarce resources in an economy, in simpler terms, who gets what and how much.

    * Auctions help ensure that scarce resources are allocated to people who value it the most.

    * From the seller's point of view, selling goods to the highest bidder helps the seller maximize his or her revenues.

- Auctions happen almost everywhere in the modern world, some explicit like the auction of mining and spectrum licences and some implicit like the sale of goods and services.

- Auction theory is a branch of economics that deals with auctions. Auction theory aims to improve seller revenues, increase benefits to consumers, or even achieve both these goals at the same time.

Criticisms of auctions:

- The most common criticism of auctions is that it can lead buyers to overpay for resources whose value is uncertain to them. This is popularly known as the 'winner's curse'.

- However, Dr. Wilson found that rational bidders may

decide to underpay for resources in order to evade the 'winner's curse', and pointed that sellers can get better bids for their goods if they share more information about it with potential buyers.

'Auction theory'

The outcome of an auction (or procurement) depends on three factors –

- The first is the auction's rules, or format. Are the bids open or closed? How many times can participants bid in the auction? What price does the winner pay – their own bid or the second-highest bid?

- The second factor relates to the auctioned object. Does it have a different value for each bidder, or do they value the object in the same way?

- The third factor concerns uncertainty. What information do different bidders have about the object's value?

Using auction theory, it is possible to explain how these three factors govern the bidders' strategic behaviour and thus the auction's outcome.

- The theory can also show how to design an auction to create as much value as possible. Both tasks are particularly difficult when multiple related objects are auctioned off at the same time.

- This year's Laureates in Economic Sciences have made auction theory more applicable in practice through the creation of new, bespoke auction formats.

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INTERNATIONAL RELATIONS

India and its neighborhood - relations

1. Bongosagar

» Prelims: Bilateral exercises with other nations.

» Mains: Maritime security.

Context:

- The second edition of the bilateral naval exercise Bongosagar between India and Bangladesh was held in Northern Bay of Bengal.

  * This edition of Exercise Bongosagar assumes greater significance since it is being conducted during Mujib Barsho, the 100th birth anniversary of Bangabandhu Sheikh Mujibur Rahman.

Details

- Bongosagar is aimed at developing interoperability and joint operational skills through conduct of maritime exercises and operations.

- The first edition of the Exercise Bongosagar, was held in 2019.

- It is in line with the government's vision of SAGAR (Security And Growth for All in the Region).

India and its neighborhood - relations

2. Greater Male Connectivity Project

» Mains: Neighborhood first policy, SAGAR policy.

Context:

- The Exim Bank of India and the Maldives's Ministry of Finance have signed an agreement for $400 million in Male.

Details

- The pact follows India's announcement of a $500 million package to the Maldives.

- The line of credit (LoC) will fund the Greater Male Connectivity Project (GMCP).

- India has also pledged a grant of $ 100 million for the initiative.

- The grant and LoC come in addition to the previous LoC of $800 million, among India's largest loans extended in the region.

Greater Male Connectivity Project:

- The GMCP will consist of a number of bridges and causeways to connect Male to Villingili, Thilafushi and Gulhifahu islands that span 6.7 km.

- It would ease much of the pressure of the main capital island of Male for commercial and residential purposes.

- Once completed, the project will streamline connectivity between four islands, thereby boosting economic activity, generating employment and promoting holistic urban development in the Male region.

Important International institutions, agencies and fora- their structure, mandate.

3. India Australian Circular Economy Hackathon (I-ACE)

» Prelims: Atal Innovation Mission, circular economy.

» Mains: Sustainable use of resources.

- India Australia Circular Economy Hackathon (I-ACE) is jointly being organized by Atal Innovation Mission, NITI Aayog, Government of India and Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia to enable the students and startups/MSMEs of both the nations in fostering innovative solutions for the development of a circular economy across the food system value chain with the aim of increasing the long-term health and resilience of our planet, through innovative technology solutions.

- The idea of I-ACE was conceived during a virtual summit, between the Indian and Australian prime ministers

- I-ACE aims to accelerate the development of young and promising students and startups/MSMEs working towards the creation of a sustainable future.

Themes:

- Innovation in packaging reducing packaging waste

- Innovation in food supply chains avoiding waste

- Creating opportunities for plastics waste reduction

- Recycling critical energy metals and e-waste

International Relations.

4. Kyrgyzstan Elections

» Prelims: Central Asia mapping.

» Mains: Connect Central Asia policy. Energy trade with Central Asia.

Context:

- Street protests have erupted in Kyrgyzstan following the parliamentary election.

Issue:

- The opposition alleges that the vote was rigged.

- Protesters captured several government buildings in the capital Bishkek, forcing the President, Sooronbay

Jeenbekov, to flee the White House, the presidential palace.

Background:

- Kyrgyzstan, often referred to as 'Central Asia's only democracy', had seen violent anti-government protests in the past.

- In 2005 and 2010, sitting presidents were forced out of office in the 'Tulip' and the 'Melon' revolutions.

- The current protests began after early results of the parliamentary election were announced.

- Even before the election, political fault lines were sharpening.

Details:

- Political parties in Kyrgyzstan should win at least 7% of the popular vote to enter Parliament.

    * The results showed that only four parties managed to cross the threshold and of that, three were pro-government parties.

    * The remaining 12 parties received only around one-third of the votes.

- The protesters have captured key government buildings, including the Parliament House and the presidential office.

- President's whereabouts are unknown. Prime Minister resigned amid the upheaval.

Strategic importance:

- This landlocked Central Asian country that shares a long border with China has been key to the strategic plans of both Russia and China.

- Moscow sees the region as its backyard and plays hard politics to retain its influence.

- For China, the country, located at the centre of Eurasia, is a vital link in its Belt and Road Initiative.

- China has built road and rail networks with Kyrgyzstan and Uzbekistan.

- During the early stages of the Afghan war, the U.S. had used Kyrgyzstan for refuelling and other logistical purposes. The U.S. base was shut down in 2014 by Parliament.

Russia's role:

- Moscow's attempts to build stronger political and economic integration with the former Soviet region are suddenly facing critical challenges.

- The crisis poses an immediate foreign policy challenge to Russia's Vladimir Putin.

- Kyrgyzstan is a member of the Russia-led Collective Security Treaty Organisation and hosts a Russian airbase. While Russia has cultivated strong ties with all political factions in Kyrgyzstan, radical political changes could throw up opportunities for its rivals.

- Belarus, another country in Russia's backyard with a pro-Moscow President, is already witnessing political turmoil after August's Presidential election.

- In the South Caucasus, the conflict between Armenia and Azerbaijan, both former Soviet Republics, over Nagorno-Karabakh, risks dragging Russia into a conflict.

Collective Security Treaty Organization (CSTO)

- It is a Russia-led military alliance of former Soviet states

- The CSTO's purpose is to ensure the collective defence of any member that faces external aggression.

- It has been described by political scientists as the Eurasian counterpart of NATO

- Current CSTO members are Armenia, Belarus, Kazakhstan, Kyrgyzstan, the Russian Federation and Tajikistan.

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

5. Laicité/ French secularism

   » Mains: Difference between Indian model of secularism and French model of secularism

- "Laïcité" derives from the French term for laity—non-clergy or lay people.

- It is far more than a state policy. It is a value system that has been passed down through generations as a necessary part of French identity. Roughly it translates as the separation of religious affairs from governmental activities.

- Historically speaking, the concept of Laicité dates back to the days of the French revolution during the late eighteenth century when large scale movements were held against the social and economic dictatorship of the Church in France.

- The revolution led to the deChristianisation of France, by removing the church's presence in most aspects of everyday public affairs.

- In 1905, the war against Catholicism in France was established in the form of the policy of Laïcité by the government of the Third Republic. The law was further elaborated upon by the Fifth and current Republic and states the following: "Laïcité assures the equality of all citizens before the law, without distinction to their origin, race, or religion. It respects all religious beliefs."

Impact

- The visibility of religious symbols in the public sphere, particularly the education system was considered hindering the observance of equality among citizens and the conditioning of nationhood among them.

Migration to France

- By the middle of twentieth century, most of the French colonies had been rendered free. The need for cheap labour in a post-World War II France meant that there was a significant amount of free migration to France, particularly from predominantly Muslim

North African colonies.

- This newfound religious visibility in France of Muslim immigrants, easily distinguishable from their attire led to a conflict between state and individuals that questioned the very basis of French national identity.

- Post the terror attacks of September 11, 2001, the antagonism towards visibility of Islamic symbolisms increased manifold.

Context

- Gruesome murder of a French middle-school teacher

Measures

French officials are stepping up efforts to counter violent extremism.

- One measure involves widening police powers to conduct raids and detain suspected terrorists.

- France is preparing a new legislation that will arm law enforcers with powers of surveillance, to pull children from home-schooling back into school, deport individuals and shut down mosques if they are perceived to be violating the "French way of life".

Why implementing the French secularism is tough in modern times?

- In early 20th-century France—a fairly homogenous, Christian nation—this was a straightforward attempt to protect government from the sway of the Catholic Church. But in modern France—a decidedly more heterogeneous and multi-religious society—this insistence on secularism is thorny.

- Increasing police powers could endanger respect for civil liberties

Way forward

- Toleration, not suppression, of difference is the only policy that's really compatible with a heterogeneous society. As Western societies become more diverse, they also need to become more tolerant of different beliefs and perspectives, not more wary of them.

- In France, this would entail revoking the laws against religious expression in public institutions, educating children about world religions instead of censoring their discussion, and shifting the public conversation about religion to emphasize freedom rather than silence.

International Relations.

6. **New Caledonia- French Pacific outpost decides on independence**

   » Prelims: Mapping

Context:

- The French South Pacific territory of New Caledonia is set to vote in an independence referendum. The voters will choose whether or not to break away from France.

New Caledonia:

- New Caledonia is situated between Australia and Fiji. It is a French South Pacific territory.

- It is called "The Pebble" and was seized by France in 1853.

- The economy largely depends on the production of metals, especially nickel of which New Caledonia is a major global producer.

- It gets tourism and financial support from mainland France
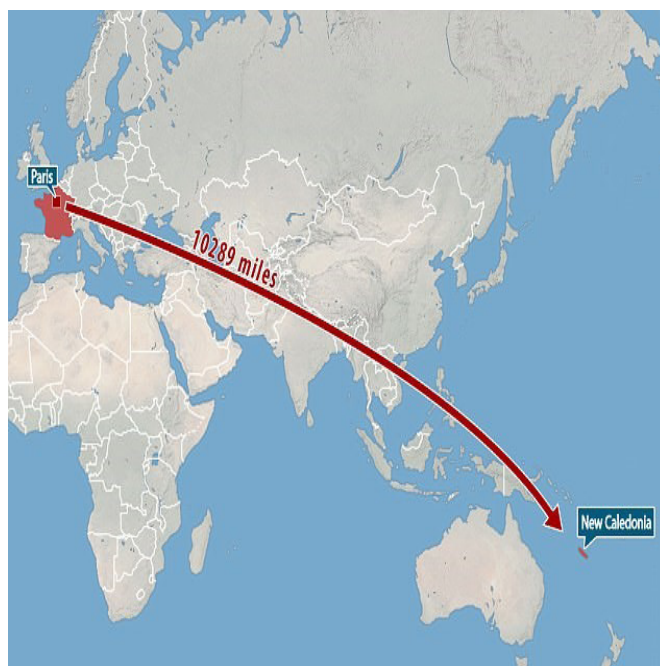
Background:

- The referendum is part of a carefully negotiated de-colonisation plan agreed in 1998, known as the Noumea Accord.

- The agreement ended a deadly conflict between the mostly pro-independence indigenous Kanak population and the descendants of European settlers known as "Caldoches" in the 1980s.

- The 2020 referendum is the second one. The first referendum in 2018 resulted in the maintenance of the status quo with 56.7% of the vote.

- If independence is rejected, there is the option of another referendum by 2022 so long as the poll is requested by at least a third of the local legislature.

What happens if New Caledonia votes for independence?

- France would, after a transition period, hand over control.

- Choosing independence would lead to full devolution of powers to the territory.

- It would also end the generous subsidies from France, which provides $1.5bn in financial support annually.

Note:

- The last former colonies to be given independence by France were Djibouti in 1977 and Vanuatu in 1980.

India and its neighborhood - relations

7. **Operation Gulmarg**

   » Prelims: Name of the operation and the countries involved.

   » Mains: India – Pakistan relations.

   - On 22 October 1947, Pakistan made an attempt to invade Kashmir in the guise of Operation Gulmarg. The attackers infiltrated Poonch, as part of Operation "Gulmarg", as a springboard to capture the Jammu region.

   - Muzaffarabad fell on 22 October and four days later on 26 October, the raiders captured Baramulla.

   - For three days the invaders continued the genocide of the people, looting and burning their houses. It is reported that at least 3000 people were slain and half the town was burnt.

   - At Shalteng—the outskirts of Srinagar – a decisive battle was fought on the night of 7-8 November 1947 in which the Indian troops inflicted a crushing defeat on the invaders who lost nearly 600 men.

   - The defeated troops withdrew and escaped from the valley. Baramulla and Uri were recaptured on the 8th of November by the advancing Sikh Light Infantry.

Important International institutions, agencies and fora-their structure, mandate

8. **Organization for Security and Co-operation in Europe (OSCE)**

   » Prelims: Members of the organisation, headquarters location.

   - It is the world's largest security-oriented intergovernmental organization

   - It addresses a wide range of security-related concerns, including arms control, confidence- and security-building measures, human rights, national minorities, democratization, policing strategies, counter-terrorism and economic and environmental activities.

   - The OSCE is concerned with early warning, conflict prevention, crisis management, and post-conflict rehabilitation.

   - Its 57 participating countries are located in Europe, northern and central Asia, and North America.

   - It was created during the Cold War era as an East–West forum

   - All 57 participating States enjoy equal status, and decisions are taken by consensus on a politically, but not legally binding basis.

- It has its origins in the 1975 Conference on Security and Co-operation in Europe (CSCE) held in Helsinki, Finland.

India and its neighborhood - relations

9. **SLINEX-20**

   » Prelims: Bilateral exercises with other neighboring countries.

   » Mains: SAGAR policy, Maritime security.

   - SLINEX (Sri Lanka India Naval Exercise) is a series of naval exercises between the Indian Navy and the Sri Lanka Navy.

   - The first SLINEX took place in 2005.

   - SLINEX-20 aims to enhance inter-operability, improve mutual understanding and exchange best practices and procedures for multi-faceted maritime operations between both navies.

     * In addition, the exercise will also showcase the capabilities of the indigenously constructed naval ships and aircraft.

   - Surface and anti-air exercises including weapon firing, seamanship evolutions, manoeuvres and cross deck flying operations are planned during the exercise, which will further enhance the high degree of inter-operability already established between the two friendly navies.

   Context:

   - Indian Navy – Sri Lanka Navy Maritime Exercise SLINEX-20 off Trincomalee.

International Relations

10. **Time to shift focus to the maritime sphere**

    » Mains: Maritime security, QUAD.

    - The Article talks about the need for India to shift its focus from continental strategies to the maritime sphere as its continental grand strategy is facing an existential crisis today.

    State of India's continental strategy

    - India is a country that is traditionally obsessed with a continental approach to war and peace.

    - However, India might have reached a dead-end in terms of its grand strategic plans in the continental space.

    China and Pakistan:

    - Given that reconciliation with its key adversaries (China and Pakistan) is unlikely and pursuing its ambitious territorial claims on the ground is almost impossible, India's continental options seem restricted to holding operations to prevent further territorial loss.

    - China has begun to push the boundaries with India.

The peaceful India-China Line of Actual Control in the northeast is now a thing of the past.

- In the northwest, the Pakistan front has also been heating up. Ceasefire violations on the Line of Control (LoC) have spiked since last year as has the infiltration of terrorists across the LoC. The India-Pakistan contestation over Kashmir has become fiercer.

- While the geopolitical collusion between Pakistan and China to contain and pressure India from both sides is not a new phenomenon, the intensity of the China-Pakistan containment strategy against India at the moment is unprecedented.

- The extent and intent behind this collusion will determine the future of the high stakes game in the Himalayas for a long time to come.

Changes in Afghanistan:

- The ongoing withdrawal of the United States from Afghanistan and the consequent reduction of India's influence in Afghanistan, the return of the Taliban, with whom India has very little contact, could turn the geopolitical tide against India.

- Also, the Taliban is no more an outcast, and with the withdrawal of forces of the North Atlantic Treaty Organization from Afghanistan, the geopolitical interests of Pakistan, China and Russia would broadly converge in the region.

- The change of the geopolitical landscape in Afghanistan and the frictions in Iran-India relations will further dampen India's 'Mission Central Asia'.

In sum, this could signal the end of the road for India's north-eastern and north-western geopolitical forays.

Way forward:

India needs to find a way out of this situation. One key part of the solution is to creatively deal with its continental dilemmas.

1) Deal with Pakistan:

- Pressure from the Pakistan front could be eased by addressing the Kashmir question with Islamabad.

- Creating a modicum of normalcy on the LoC by activating existing mechanisms such as the Director-General of Military Operations (DGMO) hotline is another way to deal with the Pakistan front.

2) Maritime Strategy:

- Excessive focus on the continental sphere since Independence has not yielded great returns in terms of secure borders, healthy relations with its neighbours or deterrence stability.

- India must shift its almost exclusive focus from the continental sphere to the maritime sphere.

- While India seems stuck between Pakistan and China from a continental perspective, the country is located right at the centre of the Indo-Pacific geopolitical imagination, in the midst of the oceanic space spanning from the shores of Africa to that of the Americas.

- India has already begun to think in this direction with the Ministry of External Affairs (MEA) establishing a new division to deal with the Indo-Pacific in April 2019.

- There is a need to fast-track the work in this direction to keep pace with the emerging realities and to make use of new opportunities.

Why should India focus on its Maritime Strategy?

- There are several reasons why a maritime grand strategy would work to India's advantage while still struggling with a continental dilemma.

- Unlike in the continental sphere where India seems to be hemmed in by China-Pakistan collusion, the maritime sphere is wide open to India to undertake coalition building, rule setting, and other forms of strategic exploration.

Focus on Indo-Pacific:

- While there is little any country can do to help India in its continental contestations, there is a growing great power interest in the maritime sphere, especially with the arrival of the concept of 'Indo-Pacific'.

  * Great powers remain ever more interested in the maritime sphere.

  * The interest has grown substantially since the term Indo-Pacific was coined.

  * Germany recently released its Indo-Pacific guidelines following the example of France which brought out its Indo-Pacific strategy.

- New Delhi must use its Indo-Pacific engagements to dissuade Beijing from salami-slicing Indian territory in the high Himalayas.

- It would provide India a unique opportunity to enhance its influence and potentially checkmate the Chinese ambitions in the region.

- Also, maritime space is a lot more important to China than engaging in opportunistic land grab attempts, owing to massive Chinese trade that happens via the oceanic routes and the complex geopolitics around the maritime chokepoints which can potentially disrupt that trade.

- A revitalised Indian maritime grand strategy may or may not affect China's activities in the Himalayas but will certainly provide India a lot more space for manoeuvre in the region.

- India must ideate on the current and future maritime challenges, consolidate its military and non-military tools, engage its strategic partners, and publish a comprehensive vision document on the Indo-Pacific.

- India must also consider appointing a special envoy for Indo-Pacific affairs.

Conclusion:

- It is high time New Delhi shifted its almost exclusive focus from the continental space to the maritime space, stitching together a maritime grand strategy.

- The MEA's Indo-Pacific Division is a good beginning.
- India's decision in 2019 to elevate the Quad meetings among India, Japan, the United States and Australia to the ministerial level is also a step in the right direction.

Important International institutions, agencies and fora-their structure, mandate.

11. India's UN journey, from outlier to the high table

» Prelims: UN and its institutions, their composition and functions.

» Mains: Role of India in UN, Non-Permanent membership at the UNSC.

India's Membership and phases:

- India's membership at the UN for 75 years could be viewed in three distinct phases.

Phase-I:

- In the first phase until the end of the Cold War in 1989, India explored and enhanced its diplomatic influence as a moderating force.
- Its role was instrumental in easing armed conflicts in Asia and Africa by disentangling them from the superpower rivalry.
- In parallel, it was learnt that the UN could not be relied upon to impartially resolve vital security disputes such as Jammu and Kashmir.
- India strove to utilise the UN only to focus on common causes such as anti-colonialism, anti-racism, nuclear disarmament, environment conservation and equitable economic development.
- In 1988, India seemed to claim the moral high ground by proposing a three-phase plan to eliminate nuclear weapons from the surface of the earth.
- India resisted attempts by neighbouring countries to raise bilateral problems – which was evident during the Bangladesh liberation war and after.

Phase-II:

- The 1990s spelled the most difficult decade for India in the UN.
- The Cold War had suddenly ended, the Soviet Union had disintegrated resulting in the emergence of the United States as the unrivalled power in world politics.
- Also, the uncertain political climate caused by unstable coalition governments along with the balance of payments crisis constrained India's capability to be active in various bodies, especially in the Security Council (UNSC) and the General Assembly.
- There was a change in India's foreign policy which was reflected in voting patterns at the UN.
- Further, the extent of India's diplomatic difficulties was evident as it suffered a humiliating defeat in the hands of Japan in the 1996 contest for a non-permanent seat in the UNSC.

- However, India stood a firm ground against the indefinite extension of the Non-Proliferation Treaty in 1995.
- It also rejected the backdoor introduction for the adoption of the Comprehensive Test Ban Treaty in 1996.
- Ignoring the likely adverse reaction from the nuclear club, India surprised the world in 1998 with its Pokhran nuclear weapon tests.

Phase-III:

- The 21st century opened new avenues for India to shine at the UN.
- India's impressive economic performance in the first decade, as a result of the 1991 economic reforms helped a great deal in strengthening its profile.
- India emerged as a responsible stakeholder in non-traditional security issue areas such as the spread of small and light weapons, the threat of non-state actors acquiring weapons of mass destruction, and the impact of climate change.
- India also made substantial troop contributions to several peacekeeping operations in African conflict theatres.
    * India has scaled up its contributions to the development and humanitarian agencies.
    * Its share to the UN assessed budget has registered a hike from 0.34% to 0.83%.
- India's growing popularity is evident in the successful electoral contests for various prestigious slots in the UNSC, the Human Rights Council, the World Court, and functional commissions of the Economic and Social Council.

Challenges to India:

- The draft Comprehensive Convention on International Terrorism encountered reservations from among Islamic and other countries on provisions regarding the definition of a terrorist and the convention's application to state armed forces.
- India may face challenges and opportunities in the UNSC, in the midst of the currently volatile situation as characterized by:
    * The Trump administration's disdain towards multilateral institutions.
    * The changing U.S.-China equation.
    * China's growing political isolation on account of the spread of the novel coronavirus.
    * China's aggressive territorial forays in eastern Ladakh and the South China Sea.
- Equally important is the question of equitable expansion of the UNSC to enable India to attain permanent membership.
    * The move has been stuck for more than 25 years because of a lack of unity among the regional

formations.

Way forward:

- With the question of India becoming a permanent member of the UNSC being stuck for a long time with no progress, the only realistic possibility seems to settle for a compromise.

  * A new category of members elected for a longer duration than the present non-permanent members without veto power.

- India's future role will depend on its ability to endure the impact of the multiple crises it faces on account of the economic slowdown and a troubled relationship with China.

- With India soon beginning its two-year term as a non-permanent UNSC member (January 1, 2021), it an opportunity for the country to look at the major trends, patterns and future challenges as far as India is concerned in terms of safeguarding its interests and promoting the common good.

- It is suggested that India needs to uphold the Charter principles in the backdrop of a turbulent world as a non-permanent UNSC member.

- India must prioritise the areas such as upholding of Charter principles, mounting effective punitive measures against those who support, finance and sponsor terrorists, besides striving for securing due say to the troop-contributing countries in the management of peace operations.

Important International institutions, agencies and fora- their structure, mandate.

12. China's rise and fall at the UN

  » Prelims: UN and its institutions.

  » Mains: Relevance of UN.

Context:

- The article analyses various reasons as to why the time is opportune for India to push for institutional changes and reformed multilateralism in the global system.

China's fall at the UN:

- India defeated China in the elections for a seat on the UN's Commission on the Status of Women (CSW). This was the first such victory in a decade.

- China's candidate had lost to a Singaporean in the race for DG World Intellectual Property Organization.

- Subsequently, China also lost against Samoa for a seat on the UN Statistical Commission.

- Also, it just about managed to get elected to the UN High Rights Council, coming fourth out of five contestants for four vacancies.

- Negative reaction to China's threat of a veto to forestall a discussion on the pandemic in the UNSC, point to disenchantment with China in the globe.

- The COVID-19 pandemic has posed hurdles to China

in its march to global hegemony.

China's strengths:

- Taking advantage of its position as a member of the P-5 and as a huge aid giver, China captured the top positions at the Food and Agriculture Organization (FAO), the UN Industrial Development Organization (UNIDO), the International Telecommunication Union (ITU) and the International Civil Aviation Organization (ICAO).

China's Rise at the UN:

- China saw an opportunity in World War I to rid itself of German occupation from some of its territory and allied with the United Kingdom and France.

- The Chinese sent large numbers of labour to support the western war efforts against Germany and won an invite at the Versailles Peace Conference.

- But the West sided with the Japanese and China refused to sign the Versailles Peace Treaty.

- A few years later, the United States helped reach a peace deal between China and Germany.

China – America's forgotten ally:

- World War II saw strong U.S.-China collaboration against the Japanese.

  * These old trans-Pacific linkages of the U.S. and China, including the presence of a very large Chinese community on the west coast of the U.S., are not well known, but China is really "the forgotten ally" of the U.S.

- The U.S. included China in the 'Four Policemen'- a group of the most important countries for ensuring world peace post- WorldWar II, along with the U.S., the USSR and the U.K.

  * The U.S. also thought that China would act as a bulwark against the USSR.

- This later became P-5, with France being added by the UK in 1945 where the UN charter was finalised.

  * The pure multilateralism of the League of Nations was thus infused with multipolarity.

- The Republic of China (RoC) retained the UN seat of China until 1971 when it was expelled from the UN and the People's Republic of China (PRC) admitted as a member.

- U.S. President Richard Nixon visited Beijing in 1972 and the U.S.'s opening to the PRC paved the way for the unprecedented economic growth of China.

Institutional transformations:

- Multilateralism is under unprecedented stress fuelled by the COVID-19 pandemic and a certain disenchantment with globalization.

- At the root, of course, is the rise of China and its challenge to U.S. global hegemony.

- For global action, there is a need for multilateralism backed by strong multipolarity relevant to contemporary realities. This demands institutional

reform and not just engagement with extant issues.

- Most important are institutional reforms in the UN Security Council (UNSC) and at the Bretton Woods Institutions so that their governance leverages the capabilities of the major players among both the developed and developing countries.

Best way forward for India:

- India has been elected as a non-permanent member of the UNSC for a two-year term.

- India will also host the BRICS Summit in 2021 and G-20 Summit in 2022.

- These are openings for India in uniting the world in critical areas that require global cooperation especially climate change, pandemics and counter-terrorism.

- India needs to invest in the UN with increased financial contributions in line with its share of the world economy and by placing its people in key multilateral positions.

- It is an opportune moment for India and a Reformed Multilateralism.

- India, Germany, Japan and Brazil (G-4) have sought to refocus the UN on UNSC reform.

- As proponents of reform, they must remain focused and determined.

International Relations.

13. Contesting neighbours, revised geopolitical playbooks

- » Mains: India's West Asia Policy, Role of US in the region and two state solution

Context:

- The article analyzes the changing approaches to foreign policy by two emerging global powers -India and China especially in the context of the West Asian region..

Background:

- The tectonic geopolitical shifts of 2020, from deteriorating U.S.-China ties, followed by the Ladakh crisis, is forcing a drastic change in the geopolitical strategy of both India and China, and, by association, global security architectures as well.

West Asian region:

- Traditionally three nations Saudi Arabia, Iran and Israel have been the major powers of the region.

- The region has been characterized by its multi-layered conflicts and political fissures with the general tensions between the Gulf states and Iran being the most visible geopolitical factor at play.

- The region has witnessed multiple wars and conflicts.
    - * E.g.: the ongoing Syrian and Yemen war.
- Recently major shifts have taken place in West Asia.
    - * First, there seems to be a growing perception in

the Gulf that the American security safety net is not absolute, and they need to invest more in others.

- * Second, the Gulf economies such as Saudi Arabia and the UAE have been attempting a shift away from their reliance on the petrodollar and reform their economic systems.

- * Israel's recent peace accords with the UAE and Bahrain hold immense potential in ensuring a more stable Gulf region.

Details:

India's Approach:

- India's outreach to West Asia sharpened since 2014 with heightened economic and political preference from the government.

Economic angle:

- India has been looking to attract investments from the oil-rich Gulf nations especially UAE and Saudi Arabia who themselves are looking for investment alternatives away from the West. India with its large and growing economy and large population makes it an attractive investment destination.

- There have been multiple billion-dollar investments on Indian shores by entities from Saudi Arabia and the UAE.

Strategic shift in relations with Israel:

- Unlike previously, wherein India seemed reluctant to deepen its bilateral relationship with Israel, in a welcome departure, India's engagements with Israel have also moved steadily forward.

- India-Israel relations have diversified with cooperation and collaboration in the areas of defence technology, agriculture, water engineering, biotechnology, etc.

Declining India-Iran engagement:

- One area of concern for India in its West Asian outreach has been its relations with Iran.

- The U.S. sanctions on Iran and India's increasing alignment with the U.S. have resulted in a lower degree of India-Iran engagements.

- However, there has been no complete shut off of relations given India's investments in Iran (Chabahar port).

China's approach:

- Given the increasingly isolationist approach being employed by the U.S. and its perceived retreat from the West Asian region, China, being second only to the U.S. in both economic and military terms today has been increasing its presence in the region.

Military outreach:

- China supplied to the United Arab Emirates (UAE), Chinese Wing Loong drones in 2016 – a copy of U.S.'s armed MQ-9 'Reaper' drone that the U.S. had refused to sell.

Economic muscle:

- With China being one of the largest importers of crude, the oil-rich Gulf economies view China as a major market for their produce.

- Taking advantage of U.S. President Donald Trump's abandonment of the Iran nuclear deal, China has been strengthening its relationship with Iran. Iran and China recently signed a 25-year Cooperation Program or Comprehensive Strategic Partnership pegged at around $400 billion.

- China with its Belt and Road Initiative and high investment potential has emerged as a major economic power in the region.

More proactive role:

- Unhappy with its previous passive role, China has been proactive in the region. It along with Iran recently suggested the development of a "new forum" to address the region's tensions — an alternative to the West-led ecosystems that have prevailed for decades.

Comparison of India and China's approach:

Similarities:

- Both India and China have employed similar versions of 'non-alignment' thinking in West Asia without stepping into the entanglements of the region's multi-layered conflicts and political fissures.

Contrasts:

- Unlike India which has adopted a more or less balanced approach with its outreach to the three powers of the region – Saudi Arabia, Israel and Iran, China seems to be backing Iran more aggressively.

Conclusion:

- The theory of interests superseding ideology in foreign policy has been a predominant theme in current times.

- The foreign policy approach to the West Asian region is an apt example of this metamorphosing approach towards the international arena by India and China.

Bilateral Relations

14. India, Japan finalise text of pact for AI, 5G

- » Mains: India-Japan relations

Context:

- India and Japan have finalised a landmark cyber-security agreement providing for enhancing cooperation on 5G technology, artificial intelligence and critical information infrastructure as the two strategic partners vowed to further broad base their joint efforts in ensuring a free and open Indo-Pacific.

Why is it important?

- The firming up of the deal comes in the midst of growing concerns in India over cyber-attacks from China, particularly after India banned over 100 mobile apps with Chinese links following the bitter border standoff between the two countries in eastern Ladakh.

- The cyber-security pact will also provide for sharing strategies and best practices to promote the integrity of the supply chain of information and communication technology (ICT) products.

- The pact will enhance cooperation in the area of cyberspace and emerging technologies and provide for protection of critical infrastructure and sharing of information on cyber security threats and malicious cyber activities as well as on best practices to counter them.

5G

- There is growing reluctance by a significant number of countries globally to allow Chinese telecommunications giant Huawei to roll out 5G services in their territories.

- The US has already banned Huawei over concerns of security, and Washington has been pressuring other countries to restrict the operations of the Chinese telecom major.

Indo-Pacific Oceans Initiative (IPOI)

- The IPOI is an India-backed framework aimed at making meaningful efforts to create a safe and secure maritime domain in the Indo-Pacific

- It is based on seven central pillars conceived around

  * Maritime Security;

  * Maritime Ecology;

  * Maritime Resources;

  * Capacity Building and Resource Sharing;

  * Disaster Risk Reduction and Management;

  * Science, Technology and Academic Cooperation; and

  * Trade Connectivity and Maritime Transport.

International Relations:

15. Nagorno- Karabakh Conflict

- » Prelims: Mapping-surrounding countries.

- » Mains: Reason for conflict, impact on India.

- A mountainous region of about 4,400 sq km (1,700 sq miles)

- Traditionally inhabited by Christian Armenians and Muslim Turks

- In Soviet times, it became an autonomous region within the republic of Azerbaijan

- Internationally recognized as part of Azerbaijan, but majority of population is ethnic Armenian

Context

- Military face-off between Azerbaijan and Armenia over the disputed region of Nagorno-Karabakh

  * The Armenian government says Azerbaijan launched missile strikes against Stepanakert, the capital of Nagorno-Karabakh.

  * Azerbaijan denies it hit civilians and blames Armenia's forces for attacking Azeri cities outside Nagorno-Karabakh, including Ganja.

Why has Nagorno-Karabakh been a point of contention?

- The conflict can be traced back to the pre-Soviet era when the region was at the meeting point of the Ottoman, Russian and Persian empires.

- Once Azerbaijan and Armenia became Soviet Republics in 1921, Moscow gave Nagorno-Karabakh to Azerbaijan but offered autonomy to the contested region.

- In the 1980s, when the Soviet power was receding, separatist currents picked up in Nagorno-Karabakh.

- In 1988, the national assembly voted to dissolve the region's autonomous status and join Armenia. But Baku suppressed such calls, which led to a military conflict.

- When Armenia and Azerbaijan became independent after the collapse of the Soviet Union in 1991, the clashes led to an open war in which tens of thousands were killed.

- The violence ended with a 1994 cease-fire that froze the conflict along a boundary, known as the line of contact, between the two sides. They never signed a peace agreement.

- Armenia says the province is a historic part of its homeland and cites a 1991 referendum—in which the majority ethnic Armenian population of Nagorno-Karabakh decided to break away from Azerbaijan—to justify its support for the region.

- Azerbaijan, which says United Nations resolutions on Nagorno-Karabakh specify that the province is part of its territory, has long threatened to retake the region.

Conflict

- Armenia after 1994 had taken control of Nagorno-Karabakh and handed it to Armenian rebels. The rebels have declared independence, but have not won recognition from any country.

- The region is still treated as a part of Azerbaijan by the international community, and Baku wants to take it back.

Concerns:

- The largely mountainous and forested Nagorno-Karabakh which is at the centre of the conflict is home to some 150,000 people. There is a possibility of displacement of the civilian population if a large scale war were to break out.

  * Roads, electricity and gas and communication networks have also been damaged across the region

- The energy-rich Azerbaijan has built several gas and oil pipelines across the Caucasus (the region between the Black Sea and the Caspian Sea) to Turkey and Europe.

  * It includes the Baku-Tbilisi-Ceyhan oil pipeline, the Western Route Export oil pipeline, the Trans-Anatolian gas pipeline and the South Caucasus gas pipeline.

  * Some of these pipelines pass close to the conflict zone.

  * In an open war between the two countries, the pipelines could be targeted, which would impact energy supplies.

- The standoff pitting Armenia against Azerbaijan raises the question of whether country borders inherited from World War II should be inviolable or evolve when they don't match with ethnic aspirations.

- Military escalation would draw regional powers like Turkey and Russia deeply into the conflict and could destabilize the region.

Turkey's role:

- Turkey has historically supported Azerbaijan and has had a troublesome relationship with Armenia.

- In the 1990s, during the war, Turkey closed its border with Armenia and it has no diplomatic relations with the country.

- On the other end, the Azeris and Turks share strong cultural and historical links.

  * Azerbaijanis are a Turkic ethnic group and their language is from the Turkic family.

- After Azerbaijan became independent, Turkey established strong relations with the country, which has been ruled by a dynastic dictatorship.

- Turkey has also held a joint military exercise with Azerbaijan.

- Recently, the Turkish President has blamed Armenia for the most recent clashes and offered support to Azerbaijan.

- This fits well into Turkey's aggressive foreign policy, which seeks to expand Turkish interests to the former Ottoman territories.

Russia's stand:

- Russia sees the Caucasus and Central Asian region as its backyard. But the current clashes put the Russian President in a difficult spot as Russia enjoys good ties with both Azerbaijan and Armenia and supplies weapons to both.

- However, Armenia is more dependent on Russia than the energy-rich, ambitious Azerbaijan. Russia also has a military base in Armenia.

- Russia is trying to strike a balance between the two.

- Like in the 1990s, its best interest would be in mediating a ceasefire between the warring sides.

Madrid Principles

- The Madrid Principles are one of the proposed peace settlements of Nagorno-Karabakh conflict. In concrete terms, the Madrid Principles envisaged the demilitarisation of Nagorno-Karabakh

- The original version of the principles was presented to the Armenian and Azerbaijani foreign ministers at the Organization for Security and Co-operation in Europe (OSCE) ministerial conference in the Spanish capital Madrid in 2007

- Drawn from the 1975 Helsinki Final Act principles, signed at the Conference on Security and Cooperation in Europe, they provided for a prohibition on the use of force, respect for territorial integrity, and recognition of the equal right to self-determination.

What it means for India?

India's Policy

- India does not have a publicly articulated policy for the South Caucasus — unlike "Neighbourhood First", "Act East" or "Central Asia Connect". The region has remained on the periphery of its foreign policy radar.

- Further, there is visible asymmetry in India's relations with Armenia, Azerbaijan and Georgia.

Armenia

- Armenia is the only country in the region with which it has a friendship and cooperation Treaty (signed in 1995), which, incidentally, would prohibit India from providing military or any other assistance to Azerbaijan in case Azerbaijan's offensive in Nagorno-Karabakh spills over to the territory of Armenia.

  * India has received three heads of states from Armenia, but none from Azerbaijan or Georgia.

  * Armenia extends its unequivocal support to India on Kashmir issue whereas Azerbaijan not only supports but also promotes Pakistan's narrative on this issue.

* The levels of India's trade or investment with Armenia are, however, very low.

Azerbaijan

- In the case of Azerbaijan, ONGC/OVL have made relatively small investments in an oilfield project in Azerbaijan and GAIL is exploring the possibilities of cooperation in LNG.

- Azerbaijan falls on the International North South Transport Corridor route, connecting India with Russia through Central Asia; it can also connect India with Turkey and beyond through Baku-Tbilisi-Kars passenger and freight rail link.

India' response

- For quite some time now, India's emphasis has been on a peaceful resolution of the conflict through diplomatic negotiations.

- India has every reason not to support Azerbaijan's territorial integrity as Azerbaijan has shown scant regard for India's territorial integrity violated by Pakistan in Jammu and Kashmir.

- At the same time it is difficult for India to publicly endorse Nagorno-Karabakh's right for self-determination in view of the possible repercussions it can have repercussions for India as its adversaries may misuse it not only by making erroneous connections with Kashmir but also re-ignite secessionist movement in certain parts of India.

- Under the circumstances, India has adopted a balanced and neutral stance and made a politically correct statement in which it has expressed its concern, called for restraint and immediate cessation of hostilities and resolution of the conflict peacefully through diplomatic negotiations.

  * "India is concerned over this situation which threatens regional peace and security. We reiterate the need for the sides to cease hostilities immediately, keep restraint and take all possible steps to maintain peace at the border,"

Armenia, Azerbaijan agree on peace deal

Context

- Armenia, Azerbaijan and Russia have signed an agreement to end military conflict over the disputed enclave of Nagorno-Karabakh.

- The deal was signed by Russian President Vladimir Putin, Azerbaijani president Ilham Aliyev and Armenian Prime Minister Nikol Pashinyan.

What is the new peace deal?

- As per the new peace deal, both sides will now maintain positions in the areas that they currently hold, which will mean a significant gain for Azerbaijan as it has reclaimed over 15-20 per cent of its lost territory during the recent conflict

- Further, under this agreement, all military operations are suspended, Russian peacekeepers will be deployed along the line of contact in Nagorno-Karabakh and along the Lachin corridor that connects the region to Armenia.

  * Lachin Corridor is a lifeline between mainland Armenia and Stepanakert, the largest city in Nagorno-Karabakh

  * These Russian peacekeepers with a force of roughly 2,000 will be deployed in the area for a period of five years.

- Refugees and internally displaced persons will return to the region and the adjacent territories and the two sides will also exchange prisoners of wars and bodies.

ART AND CULTURE

Indian Culture – Salient aspects of Art Forms.

1. **Kala Sanskriti Vikas Yojana (KSVY)**

   » Prelims: Various performing arts of India

   • It is an umbrella scheme of the Culture Ministry under which cultural organizations are given financial assistance for the promotion of art and culture.

   A few of the schemes under this are:

   • Repertory Grant: Repertory is the performance of ballets, dramas, operas at regular intervals by a company. Under Repertory Grant, training is provided.

   • National Presence: Under National Presence, cultural programmes/festival/seminars, etc. at the national level for the promotion of art & culture may be conducted online.

   • Cultural Function & Production Grant (CFPG): Under the CFPG, seminars, conference, research, workshops, festivals, exhibitions, symposia, production of dance, drama-theatre, music, etc. and small research projects on different aspects of Indian culture may be conducted online.

   • Himalayan Heritage: Under Financial Assistance for the Preservation & Development of Cultural Heritage of the Himalayas, study and research, preservation and documentation, dissemination through audiovisual programmes, training in traditional & fold art may be conducted online.

   • Buddhist/Tibetan: Under Financial Assistance for Development of Buddhist/Tibetan Arts, research project, purchase of books, documentation and cataloguing, award of scholarships to monks, holding of special courses and culture, audio-visual recording/ documentation, IT upgradation training aids for monastic, salary to teachers may be performed online.

   • Scholarship/Fellowship: Under Scheme of Scholarships and Fellowships for Promotion of Art and Culture, advanced training within India in the field of Indian Classical Music, Indian Classical Dance, Theatre, Mime, Visual art, Folk, Traditional and Indigenous Arts and Light Classical Music and research may be performed online and report can also be submitted in soft version

   Context:

   • The Culture Ministry had issued guidelines for holding cultural events/activities in virtual/online mode under various scheme components of the Central Sector Scheme 'Kala Sanskriti Vikas Yojana' (KSVY).

SCIENCE AND TECHNOLOGY

Science and Technology - Developments and their applications

1. BreathPrint

» Prelims: Biomarkers

Context

- Scientists at S. N. Bose National Centre for Basic Sciences find new "BreathPrint" for detecting ulcer-causing gastric pathogen. n

Details

- Scientists have found a method for early diagnosis of bacteria that causes peptic ulcer, with the help of a biomarker called 'BreathPrint' found in the breath.

- The team spotted a new biomarker for the diagnosis of Helicobacter pylori in semi-heavy water (HDO) in human exhaled breath.

  * Helicobacter pylori, a common infection which may turn serious if it is not treated early, is usually diagnosed by the traditional and invasive painful endoscopy and biopsy tests which are not suitable for early diagnosis and follow up.

- The team has used 'study of different water molecular species in human breath, also called 'Breathomics' method to explore different water isotopes in human exhaled breath.

- The team has already developed a patented 'Pyro-Breath' device for diagnosis of various gastric disorders and H. pylori infection, which are under the process of technology transfer.

Awareness in the fields of biotechnology

2. Devitrification

» Mains: Waste disposal.

Context:

- Scientist's demystification of the transformation of glass to crystal can help dispose of liquid nuclear waste safely.

Background:

- Glass is a non-crystalline, often transparent amorphous solid which is mostly formed by the rapid cooling of its molten form.

- However, under certain conditions, during its formation, the molten glass may rebel and transform into a crystal – the more stable state, an avoidable process called devitrification.

  * Devitrification is thus a process by which glassy substances change their structure into that of crystalline solids.

- However, the process of devitrification remains poorly understood as this process can be extremely slow, and this makes it difficult to study it.

Details of the study:

- Using real-time monitoring of the particles with an optical microscope and machine learning methods to determine subtle structural features hidden in the glass, the researchers identified a parameter called 'softness', which determines the extent of devitrification.

- They found that regions in the glass which had particle clusters with large "softness" values were the ones that crystallized and that "softness" was also sensitive to the crystallization route.

- The team suggests that techniques to tune "softness" by introducing impurities may help realize long-lived glass states, which has numerous technological applications.

- The research published in the journal 'Nature Physics' can also help in the vitrification of liquid nuclear waste as a solid in a glass matrix to safely dispose it deep underground and prevent hazardous materials from leaking into the environment.

Significance of the study:

- Scientists have now visualized devitrification in an experiment, thus taking a step closer to understanding it.

- This could help avoid devitrification in processes of pharma industries – a sector in which dodging this is of paramount importance.

- This is because an amorphous drug dissolves faster than after devitrification, and ensuring that it remains amorphous is therefore essential during storage.

Achievement of Indians in science & technology

3. DST-IIEST Solar PV Hub

» Prelims: Photovoltaic technology, Solar renewable energy capacity.

» Mains: Research and development in photovoltaic technology.

Context:

- Union Education Minister virtually inaugurated the DST-IIEST Solar PV Hub.

About the DST-IIEST Solar PV Hub:

- DST-IIEST Solar PV Hub is a joint initiative by the Department of Science & Technology (DST), Government of India and the Centre of Excellence for Green Energy and Sensor Systems (CEGESS), Indian Institute of Engineering Science and Technology

(IIEST), Shibpur to establish a state-of-the-art Solar Photovoltaic Hub in the IIEST campus.

• The DST-IIEST Solar PV Hub aims at establishing a state-of-the-art facility of fabrication and characterization of industry-compatible solar cells and solar photovoltaic systems, initiating cutting edge research in the different fields of solar energy and providing quality postgraduate and doctoral education in Renewable Energy Science and Technology.

• The research and education at CEGESS is closely associated with the industry and several national and international academic institutions of repute with an aim to foster cutting edge research and establish India as a leader in this field.

• Photovoltaic technology has emerged as the most promising and sustainable technology to meet the ever-increasing energy demand of modern civilization and thus world-wide research activities are going on for the development of this technology.

Achievement of Indians in science & technology:

4. <u>India International Science Festival (IISF)</u>

» Mains: SERB schemes and programs

Context:

• The 6th India International Science Festival (IISF) to be held in a virtual format in December 2020.

About IISF:

• IISF is an annual event organised jointly by science & technology-related Ministries and Departments of the Government of India and Vijnana Bharati (Vibha).

• IISF is a festival to celebrate the achievements of India's scientific and technological advancements with students, innovators, craftsmen, farmers, scientists and technocrats from India and abroad.

• The aim is to engage the public with science and celebrate the joy of science and show the ways how science, technology, engineering and mathematics (STEM) provide us with the solutions to improve our lives.

Indigenization of technology and developing new technology:

5. <u>SERB-POWER</u>

» Prelims: SERB and its functions and other Government initiatives to encourage women in STEM.

Context:

• Union Minister for Science & Technology launched a scheme titled "SERB-POWER (Promoting Opportunities for Women in Exploratory Research)", designed exclusively for women scientists.

About SERB-POWER:

• SERB-POWER is an initiative of the Department of

Science & Technology (DST).

• The scheme will have two components:

  * SERB-POWER Fellowship

    * Target: Women researchers in 35-55 years of age. Up to 25 Fellowships per year and not more than 75 at any point in time.

    * Components of support: Fellowship of Rs. 15,000/- per month in addition to regular income; Research grant of Rs. 10 lakh per annum; and Overhead of Rs. 90,000/- per annum.

    * Duration: Three years, without the possibility of extension. Once in a career.

  * SERB-POWER Research Grants

    * Level I (Applicants from IITs, IISERs, IISc, NITs, Central Universities, and National Labs of Central Government Institutions): The scale of funding is up to 60 lakhs for three years.

    * Level II (Applicants from State Universities/ Colleges and Private Academic Institutions): The scale of funding is up to 30 lakhs for three years.

    * POWER Grant will be regulated through terms of reference conforming to SERB-CRG (Science and Engineering Research Board -Core Research Grant) guidelines.

SERB:

• The Science and Engineering Research Board (SERB) is a statutory body established through an Act of Parliament.

• Supporting basic research in emerging areas of Science & Engineering is the primary and distinctive mandate of the Board.

• The SERB Act 2008 is the legislation of Parliament that established the Board.

• It functions under the Department of Science and Technology, GOI.

Science and Technology- developments and their applications and effects in everyday life

6. <u>Room temperature superconductivity, possible but under severe pressure</u>

» Prelims: Superconductivity, Maglev train.

» Mains: Application of superconductivity.

Context:

• Study of superconductivity at room temperatures (high-temperature superconductors).

Background:

Characteristics of a superconductor:

• The electrical resistance offered by the superconductor

decreases to a very small value at temperatures below the critical temperature, Tc.

- A true superconductor, if placed in a magnetic field, try to push out the field from its interior. This is called perfect diamagnetism.

- Sufficiently high magnetic fields can destroy superconductivity in a material.

Details:

- A group of researchers at the University of Rochester, Intel Corporation and the University of Nevada in the U.S. have created a material that is superconducting at 15 degrees Celsius.

- However, this superconductivity was observed only at ultrahigh pressure of about 267 Gigapascals, or 2.6 million atmospheres.

- The materials being tested are basically hydride superconductors.

Significance:

- The observance of superconductivity at room temperature marks a major breakthrough given that traditionally superconductivity was observed at very low temperatures only.

- Superconductivity at room temperature would lead to a large number of applications from power supplies (low-loss power cables) to quantum computers (fast digital circuits) to powerful superconducting electromagnets used in maglev trains, Magnetic Resonance Imaging (MRI) and Nuclear Magnetic Resonance (NMR) machines, magnetic confinement fusion reactors (e.g. tokamaks), and the beam-steering and focusing magnets used in particle accelerators.

Way forward:

- Given the need for the ultra-high pressures, the next challenge in this domain will be to produce these superconducting materials that are stable (or metastable) at ambient pressure via 'compositional tuning' so they will be even more economical to mass-produce.

    * Compositional tuning involves adding or removing certain elements and compounds to a material to induce desirable properties in the material.

Awareness in the fields of Biotechnology

7. New developments in bio-inspired materials for energy & biotechnology sector

- » Prelims: Redox reactions, polymers.

Context:

- Scientists from the Jawaharlal Nehru Centre for Advanced Science and Research (JNCASR), an autonomous institution of the Department of Science and Technology (DST), have developed a synthetic mimic of redox-active biological assemblies,

with precise structure and dynamics that can be manipulated.

Details:

- Scientists have developed a synthetic material that mimics the dynamic capability of living organisms to adapt to new environments by utilizing simple natural design principles to create complex networks.

- The new materials developed opens new avenues for smart materials because of their dynamic and adaptive nature.

- Hence, they would be useful as recyclable polymers for the energy and biotechnology sector.

- The scientists have shown that such bio-inspired structures are formed by assembling transient dormant monomeric molecules (basic units of polymers) by coupling them to a reduction-oxidation reaction network.

- They form a chemical entity called supramolecular polymers with strikingly dynamic properties.

- The properties arise because they are connected by non-covalent bonds, which are reversible bonds that hold their chains together.

- These dynamic properties open up prospects of many new applications of these materials.

Background:

- Reduction–oxidation (redox) processes are central to many biological functions.

- Cellular functions like growth, motility, and navigations depend on the assembling of biopolymers whose dynamic behaviour is linked to a reduction-oxidation (redox) reaction in which enzymes are involved.

- Nature synthesizes these biopolymers controlling their size and dispersity to regulate their functions, without which their sophistication and efficacy are affected.

- Researchers have been trying to mimic such complex structural control based on chemical reaction networks.

Awareness in the field of Space

8. Nobel Prize in Physics

- » Prelims: Blackholes, escape velocity.

- » Mains: Formation of blackholes.

Context:

- 2020 Nobel Prize in physics has been awarded to Roger Penrose, Reinhard Genzel and Andrea M. Ghez for their work on black holes.

Details:

- The term "black hole" refers to a point in space where matter is so compressed as to create a gravity field from which even light cannot escape. Black holes are super dense objects formed when a heavy star

collapses under the weight of its own gravity.

- Mr Penrose was honoured for showing that the general theory of relativity leads to the formation of black holes, while Mr Genzel and Ms Ghez, were jointly awarded for discovering that an invisible and extremely heavy object governs the orbits of stars at the centre of the galaxy.

- Andrea Ghez is only the fourth woman to receive the physics prize since 1901. The first woman to win the prize was Marie Curie in 1903, who also happened to be the first person to receive two Nobel prizes when she won the 1911 chemistry prize.

Important terminologies:

Event Horizon:

- It is defined as a notional boundary around a black hole beyond which no light or other radiation can escape.

Quasars:

- A quasar is an extremely luminous Active Galactic Nucleus (AGN), in which a super massive black hole with very high mass is surrounded by a gaseous accretion disk.

- Quasars are found in the centres of some galaxies and powered by gas spiralling at high velocity into an extremely large black hole.

- Quasars give off enormous amounts of energy.

Sagittarius A*:

- Sagittarius A* is a bright and very compact astronomical radio source at the Galactic Centre of the Milky Way. Sagittarius A* is the location of a super massive black hole, similar to those at the centres of most, if not all, spiral galaxies and elliptical galaxies.

9. CRISPR-Cas9 Nobel Prize in Chemistry

» Prelims: CRISPR-Cas9 technology

» Mains: Gene editing, gene scissors, ethical responsibility.

Context:

- Emmanuelle Charpentier of France and Jennifer Doudna of the U.S. won the Nobel Chemistry Prize for the gene-editing technique known as the CRISPR-Cas9 DNA snipping scissors.

- For the first time, a Nobel science prize has been awarded to a women-only team.

Introduction:

- Genome editing (also called gene editing) is a group of technologies that give scientists the ability to change an organism's DNA.

2020 NOBEL PRIZE IN PHYSICS

Awarded to Roger Penrose for showing that the general theory of relativity leads to black hole formation, and to Reinhard Genzel & Andrea Ghez for discovering a supermassive black hole at the centre of our galaxy.
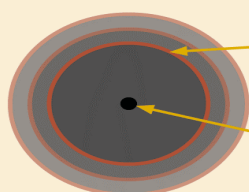
EVENT HORIZON
The point at which gravity is strong enough that even light can't escape.

THE SINGULARITY
Density and gravity become infinite and time stops.

Originally, black holes were considered to be theoretical. Einstein, famed for his general theory of relativity, expressed doubts about their existence. However, in 1965, **Roger Penrose** used new mathematical models to prove that black holes could form as a consequence of Einstein's general theory of relativity. He described them in detail and showed that at their centre is a singularity, at which the laws of physics cease to operate.

Reinhard Genzel and **Andrea Ghez** led research groups which mapped the orbits of some of the brightest stars close to the centre of our galaxy. To do this they had to develop new techniques to compensate for distortions to their observations caused by the Earth's atmosphere.

The results from both groups showed that the stars near our galaxy's centre move rapidly. They showed that this is due to the centre of our galaxy containing a concentrated mass equivalent to 4 million times the mass of our sun: a supermassive black hole.

OUR GALAXY
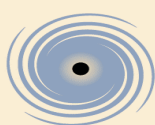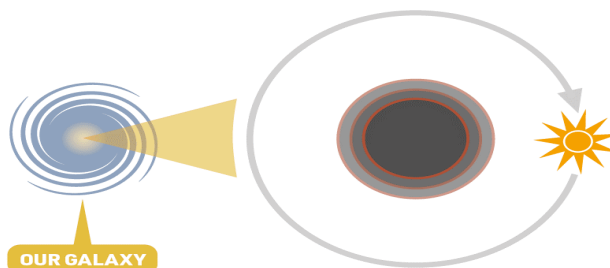
WHY DOES THIS RESEARCH MATTER?

The work of this year's winners has provided evidence for the existence of black holes. It also raises further unanswered questions about black hole structure and how they match theoretical predictions.

- These technologies allow genetic material to be added, removed, or altered at particular locations in the genome.

DNA

- DNA stands for Deoxyribo Nucleic Acid

- DNA is the material that carries all the information about how a living thing will look and function.

- DNA has a complex structure. It is made of chemical substances that are linked together like a chain. Each piece of DNA has two long strands, or chains.

- The bases always pair together in the same way, A with T, C with G.

- Each base pair is joined together by hydrogen bond

- CRISPR is a genome-editing technology to diagnose diseases.

- CRISPRs are specialized stretches of DNA. The protein Cas9 (or "CRISPR-associated") is an enzyme that acts like a pair of molecular scissors, capable of cutting strands of DNA.

- CRISPR technology was adapted from the natural defence mechanisms of bacteria and archaea (the domain of single-celled microorganisms).

- These organisms use CRISPR-derived RNA and various Cas proteins, including Cas9, to foil attacks by viruses and other foreign bodies. They do so primarily by chopping up and destroying the DNA of a foreign invader.

Gene

Genome

- Gene is a segment or a portion of DNA molecule Genome is the total DNA content in a cell

CRISPR

- CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats.

How it works?

- Scientists start with RNA. That's a molecule that can read the genetic information in DNA.

- The RNA finds the spot in the nucleus of a cell where some editing activity should take place

- This guide RNA shepherds Cas9 to the precise spot on DNA where a cut is called for. Cas9 then locks onto the double-stranded DNA and unzips it.

2020 NOBEL PRIZE IN CHEMISTRY

The Nobel Prize in Chemistry 2020 was awarded to Emmanuelle Charpentier and Jennifer A. Doudna for the development of CRISPR-Cas9 genetic scissors, a method for genome editing.

BACTERIUM DNA SECTION

A T T G C A A T C G T A C T A T T G C A A T
T A A C G T T A G C A T G A T A A C G T T A

PALINDROMIC SEQUENCE   SPACER   PALINDROMIC SEQUENCE
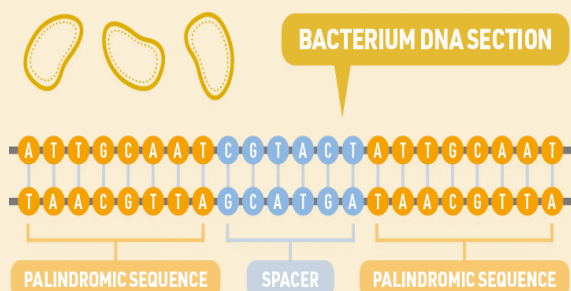
CRISPR stands for clustered regularly interspaced short palindromic repeats. It refers to repeated sequences in bacteria and archaea DNA. These sequences are part of an immune system; if a bacterium survives a viral infection, it adds a section of the virus genetic code to the CRISPR region of its own to serve as a memory in case it's infected again. **Charpentier** and **Doudna** saw that this could be used as a gene editing tool.

1

GUIDE RNA   CAS9

The first step in the CRISPR gene editing process is the creation of a strand of guide RNA. This matches the DNA sequence where we want to make a cut. A scissor protein, Cas9, binds to the guide RNA.

2

CAS9

TARGET DNA CODE

The guide RNA searches for the target section of DNA and transports the scissor protein to it. The scissor protein cuts the DNA at this point.

3

DNA TEMPLATE

EDITED DNA

The cell will try and repair the cut DNA. This process is error-prone, disrupting the gene function. If we add a template, the cell will use this to carry out the repair, allowing us to edit the genetic code.

WHY DOES THIS RESEARCH MATTER?

The ability to edit genomes has already found uses in plant breeding. Therapies which use it to treat some types of cancer are already in clinical trials, and it's hoped it may lead to cures for inherited diseases.

BYJU'S | IAS
The Learning App

Significance:

- It allows researchers to easily alter DNA sequences and modify gene function.

- Its many potential applications include correcting genetic defects, treating and preventing the spread of diseases and improving crops.

- There were ways to edit the genomes of some plants and animals before the CRISPR method was unveiled in 2012 but it took years and cost hundreds of thousands of dollars. CRISPR has made it cheap and easy.

- Using the tool, researchers can change the DNA of animals, plants and microorganisms with extremely high precision.

- The CRISPR-Cas9 tool has already contributed to significant gains in crop resilience, altering their genetic code to better withstand drought and pests.

- The system holds promise for treating complex diseases, such as cancer, heart diseases, mental illnesses, and the human immunodeficiency virus (HIV) infection, inherited diseases.

- A person with sickle cell disease has been cured after his bone marrow stem cells were edited using CRISPR techniques.

To what uses has the CRISPR/Cas9 been deployed so far?

- Patients with beta thalassemia and one with sickle cell disease would no longer require blood transfusions after their bone marrow stem cells were edited using CRISPR techniques

- Researchers already have used it to fix genetic diseases in animals, to combat viruses and to sterilize mosquitoes

Testing:

- There have been cases where CRISPR technology has been employed in the battle against the COVID-19 too, to develop a testing mechanism for detecting infections.

- The CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB) in Delhi developed a COVID-19 testing kit, nicknamed 'Feluda', based on the CRISPR/Cas9 system.

Research benefits:

- The technology allows researchers to find out what genes do, move mutations that are identified and associated with the disease into systems where they can be studied and tested for treatment, or where they can be tested in combinations with other mutations.

Human Genome Editing (HGE) Registry

- The Human Genome Editing (HGE) Registry is a central database that collects information of clinical trials using human genome editing technologies.

Concerns:

Medical ethics and misuse: There are concerns over the possibility of the tool being misused.

- If the babies grow up to have children of their own, any genetic modifications could be passed down through the generations. This could potentially introduce a lasting change to the human race.

- Genetic editing could have introduced other unknown, and unintended, mutations in the genes of the embryos.

- Humans manipulating the genetic code, and those manipulations get passed on generation to generation to generation.

  * We think we know what we're doing, we think we're measuring exactly what changes we're doing to the genes, but there's always the possibility that either we miss something or our technology can't pick up on other changes that have been made that haven't been directed by us.

  * And the fear then is that those changes lead to antibiotic resistance or other mutations that go out into the population and would be very difficult to control.

- •There are also concerns over a host of other unintended mutations that can be triggered in gene editing exercises. The technology has still not reached the level of precision required to be sure that it does not cause unintentional side effects.

  * There are concerns that such mutations could spread to humanity more widely in due course.

The 2018 application of CRISPR/Cas9 by Chinese researcher to create 'gene-edited twins' via in-vitro fertilisation has invited widespread criticism for breaking a number of medical rules and ethics.

He Jiankui episode

- Jiankui is a Chinese scientist who made the first genome-edited human babies in 2018, Jiankui announced that he had made the world's first gene-edited human babies, twin girls with the pseudonyms Lulu and Nana.

- He had started a project to help people with fertility problems, specifically involving HIV-positive fathers

- The subjects were offered standard in vitro fertilisation services and in addition, use of CRISPR gene editing (CRISPR/Cas9), a technology for modifying DNA.

- The embryos were edited of their CCR5 gene in an attempt to confer genetic resistance to HIV

How did the experiment work?

- He was targeting a gene called CCR5. The HIV virus gets inside cells by latching on to a protein encoded by the CCR5 gene.

- The scientist claimed the modifications would make the children immune to HIV by turning a gene called CCR5 into a mutant form that prevents the virus from invading cells.

Situation in India

- In India, several rules, guidelines, and policies backed by the "Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/ Genetically Engineered Organisms or Cells, 1989" notified under the Environment Protection Act, 1986, regulate Genetically Modified Organisms.

  * These Rules are implemented by the Ministry of Environment, Forest and Climate Change, Department of Biotechnology and State Governments

- The National Ethical Guidelines for Biomedical and Health Research involving human participants, 2017 by the Indian Council of Medical Research (ICMR), and the Biomedical and Health Research Regulation Bill implies regulation of the gene-editing process.

- This is especially so in the usage of its language "modification, deletion or removal of parts of heritable material".

- However, there is no explicit mention of the term gene editing. There is yet no clarity on how the emerging technologies will be dealt with in India

Conclusion

- Thus, even though the CRISPR/Cas-9 system allows a democratic usage in labs across the world to tinker with genomes, it still has not reached the level of precision required to be sure that it does not cause unintentional side effects.

- Given the safety, security, and ethical implications of gene editing, there is a growing need to govern gene editing applications.

- It is time that India came up with a specific law to ban germline editing and put out guidelines for conducting gene-editing research giving rise to modified organisms.

- The scientists should be aware of their sense of duty and exercise ethical responsibility when it comes to using their expertise.

SECURITY AND DEFENCE

Security challenges and their management in border areas

1. **Hybrid model of 'smart' fence being tested along the LoC**

   » Mains: Security challenges and their management in border areas

   What's in News?

   • The Army is working on converting the existing border fence into a smart fence integrated with several sensors.

   Details:

   • Instead of converting the entire fence into a smart border with a hi-tech fence, a hybrid model is now being adopted in order to cut down costs.

   • The fence will be integrated with LIDAR (Light Detection and Ranging) sensors, infrared sensors and cameras among others.

   Steps taken to reduce infiltration:

   • The Army has beefed up troops close to the LoC to plug gaps.

     * This measure has been instrumental in decreasing border infiltrations this year.

   • The Army has significantly improved its electronic surveillance along the Line of Control (LoC) to check infiltration.

   • While the multi-tier anti-infiltration grid remains in place, the first tier has been strengthened.

   • Troops have also been given drones, both big and small, to monitor the ground.

Security challenges and their management in border areas

2. **NAG Missile**

   » Prelims: Range of the missile, nature of missile.

   Context:

   • Final user trial of 3rd generation Anti-Tank Guided Missile (ATGM) NAG was carried out from the Pokhran range.

   About ATGM NAG:

   • ATGM NAG has been developed by DRDO to engage highly fortified enemy tanks in day and night conditions.

   • The missile has "Fire & Forget", "Top Attack" capabilities with passive homing guidance to defeat all MBTs equipped with composite and reactive armor.

   • The NAG missile carrier NAMICA is a BMP II based system with amphibious capability.

   • With this final user trial, NAG will enter into the production phase. The missile will be produced by Defence PSU Bharat Dynamics Limited (BDL), whereas Ordnance Factory Medak will produce the NAMICA.

Security challenges and their management in border areas

3. **Rudram Missile**

   » Prelims: Range of the missile, nature of missile.

   • It is a New Generation Anti-Radiation Missile (NGARM)

   • The NGARM is being developed by Defence Research Development Laboratory (DRDL), Hyderabad, as the nodal agency. It is a joint effort involving several DRDO labs, the IAF, the Hindustan Aeronautics Limited (HAL) and several public and private sector enterprises.

   • This is the first indigenous air-to-surface anti-radiation missile of the country.

   What is an anti-radiation missile?

   • Anti-radiation missiles are designed to detect, track and neutralise the adversary's radar, communication assets and other radio frequency sources, which are generally part of their air defence systems.

     * They can play a key role in neutralising any jamming platforms of the enemy or take out radar stations thereby clearing a path for own fighters to carry out an offensive and also prevent own systems from being jammed.

   How does it work?

   • It has INS-GPS navigation with Passive Homing Head for the final attack.

   • The Passive Homing Head can detect, classify and engage targets (radio frequency sources in this case) over a wide band of frequencies as programmed.

   • The Rudram missile locks on the target, it is capable of striking accurately even if the radiation source switches off in between.

   Other important Features

   • The missile can be launched from altitudes of 500 m to 15 km and speeds of 0.6 to 2 mach

   • The missile has an operational range of more than 100 km, based on the launch parameters from the fighter jet.

   Significance

   • Rudram has been developed for the IAF's requirement to enhance its Suppression of Enemy Air Defence (SEAD) capability. As one of the many aspects of SEAD tactics, anti-radiation missiles are used mainly in the initial part of air conflict to strike at the air defence assets of the enemy, and also in later parts, leading to

higher survivability to a country's own aircraft.

- Neutralising or disrupting the operations of the adversary's early warning radars, command and control systems, surveillance systems that use radio frequencies and give inputs for anti-aircraft weaponry, can be very crucial.

Context

- India's first indigenous anti-radiation missile, Rudram, developed for the Indian Air Force, was successfully flight-tested from a Sukhoi-30 MKI jet.

- The Sanskrit name Rudram was given in keeping with tradition, because it includes the letters ARM (the acronym for anti-radiation missile) and the word in Sanskrit describes a "remover of sorrows" (one of its meanings).

Challenges to internal security through communication networks

4. **Secure Application for Internet (SAI)**

   » Mains: Cybersecurity challenges.

Context:

- Army launches Secure Application for Internet (SAI).

Details:

- The Indian Army has developed a simple and secure messaging application named the "Secure Application for Internet (SAI)".

- The application supports an end to end secure voice, text and video calling services for Android platform over the internet.

- The model is similar to commercially available messaging applications like Whatsapp, Telegram, SAMVAD and GIMS and utilises end to end encryption

messaging protocol.

- SAI scores over on security features with local in-house servers and coding which can be tweaked as per requirements.

- The application has been vetted by CERT-in empanelled auditor and Army Cyber Group.

- The process for filing Intellectual Property Rights (IPR), hosting the infrastructure on NIC and working on the iOS platform is currently in progress.

- SAI will be utilised pan Army to facilitate secure messaging within the service.

Security challenges and their management in border areas

5. **Supersonic Missile Assisted Release of Torpedo (SMART)**

   » Mains: Maritime security challenges.

- SMART is a missile-assisted release of lightweight Anti-Submarine Torpedo System for Anti-Submarine Warfare (ASW) operations far beyond torpedo range.

- It takes off like a regular supersonic missile when launched from a warship or a truck-based coastal battery.

- Most of its flight in the air is covered at lower altitudes with two-way data link from the warship or an airborne submarine target detection system.

- It is also provided the exact location of the hostile submarine to correct its flight path midway.

- When it approaches close to a submerged submarine, the missile would eject the torpedo system into the water and the torpedo will start moving towards its

Supersonic Missile Assisted Release of Torpedo (SMART) CONOPS
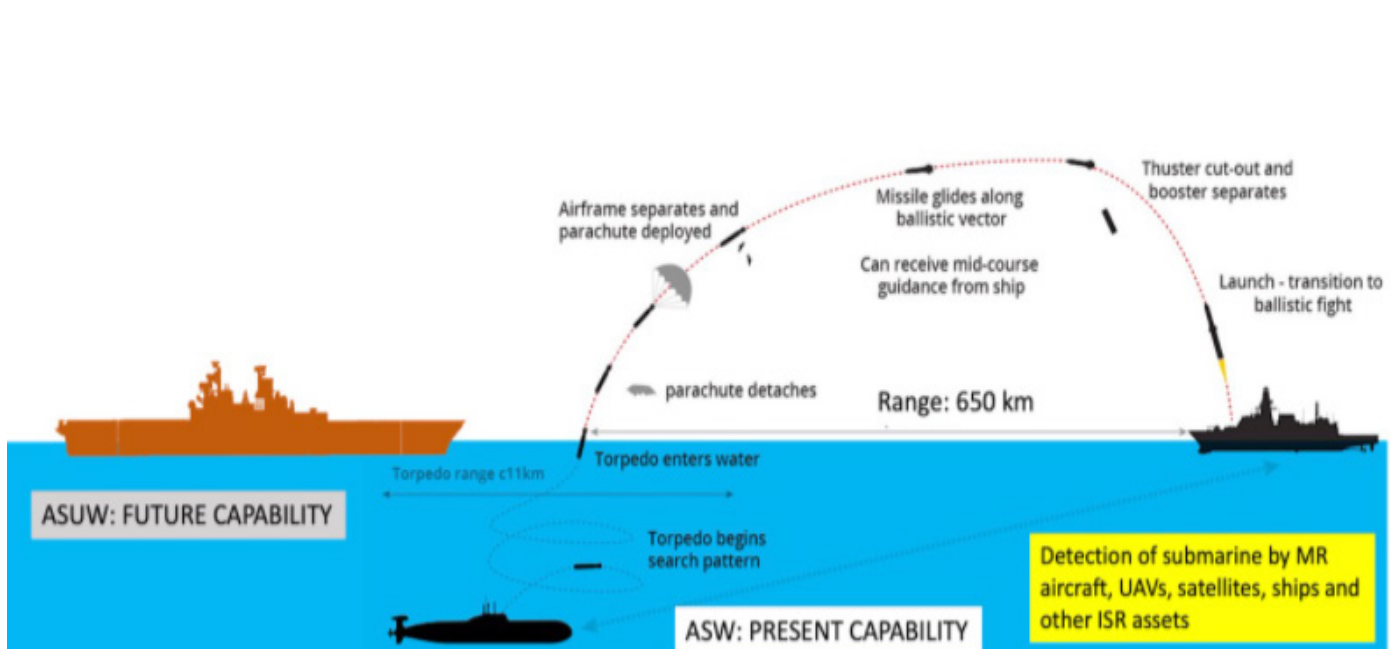
target to hit the submarine.

SMART torpedo system a 'game changer'

- The system will be a significant addition to India's anti-submarine warfare capabilities

- SMART will give Indian warships and shore-based units a crucial standoff tool in the face of growing submarine threat from adversaries like China and Pakistan.

Context

- A successful flight test of the Supersonic Missile Assisted Release of Torpedo (SMART) system was conducted from Wheeler Island, off the coast of Odishan

Role of external state and non-state actors in creating challenges to internal security.

6. **Dormant but waiting to strike**

   » Mains: Strategies to tackle terror outfits and security agencies involved in it.

Context:

- The article authored by R.K. Raghavan, former CBI director analyzes the threat posed by terror outfits to India.

Background:

- During the pandemic, open terror attacks have been reducing, mostly because the terror outfits have been lacking adequate resources and because of temporary loss of support.

Details:

- The author warns that the temporary lull in terrorist activities should not lead to complacency given the resilience exhibited by the terrorist organizations in the past.

- The terror outfits like al-Qaeda, Islamic State, Lashkar-e-Taiba (LeT) and Jaish-e-Mohammed (JeM) continue to pose threats to modern society, especially to India and its neighbourhood.

  * Al-Qaeda and Islamic State have a global reach backed by global ambitions and continue to be the two most organised and motivated groups. The other outfits — JeM, LeT, etc. — are confined to the Afghanistan-Pakistan area.

Concerns:

Continued operation:

- The underground dormant terrorist cells are probably engaged in the quiet process of garnering resources for future lethal assaults against India and other countries in the neighbourhood. Once the pandemic eases, we may see a resurgence of terror.

- There have been reports of outfits like al-Qaeda and the Islamic State reorganising and rebuilding during the pandemic with unabated recruitment.

Impact of the pandemic:

- The aggravation of poverty in developing nations due to COVID-19 could offer a fertile ground for recruitment and intensified religious indoctrination.

Implications of Doha Accord for India:

- The Doha Accord between the Taliban and the U.S. could have some adverse implications for India.

  * Under the accord, the U.S. has agreed to a near-total withdrawal of its troops from Afghanistan in return for the Taliban's promise to preserve peace in Afghanistan, while also keeping the al-Qaeda under check.

- Given that the Taliban and the al-Qaeda need each other in many areas and the fact that both are friendly towards Pakistan, this could pose serious security problems for India in the near future.

Presence in India:

- The terrorist organizations have been successful in alluring misguided youth in India.

- The recent raids by the National Investigation Agency point to an al-Qaeda network in India. In one such raid, nine activists belonging to Kerala and West Bengal were arrested for conspiring to attack various targets, including the National Capital Region.

State-sponsored terrorism:

- Terrorist organizations like the Lashkar-e-Taiba (LeT) and Jaish-e-Mohammed (JeM) continue to receive aid and support from the Pakistani establishment. There have also been reports of these terror outfits receiving training support from the Pakistani Army.

- There is always the threat of al-Qaeda along with other terror outfits in and around Pakistan, escalating the offensive against India.

Use of technology:

- The increasing sophistication of technology has allowed the terror organizations to continue to communicate and also amass financial resources and recruit people remotely.

- The prospect of individuals being indoctrinated by terror ideologies and carrying out lone-wolf terror activities has increased over time.

Steps to be taken:

- To deal with the menace of terrorism there is the need for a comprehensive strategy.

Funding:

- The main sources of funding for these terror outfits constitute donations from supportive countries, earnings from drug and arms trafficking, issuing of fake Indian currency notes and other kinds of organized crime.

- India's move against Pakistan at the FATF would force Pakistan to implement measures to tackle terror financing in and through Pakistan. Preventive measures to tackle organized crime across the border would help cut a major source of funding for terrorist organizations operating within India.

Institutional framework:

- The changes made after 26/11 should be followed up with measures that will further strengthen and make more effective the functioning of institutions like the National Investigation Agency (NIA), NATGRID.

- The Proposed National Counter Terrorism Centre should be established at the earliest.

- There should be uninterrupted intelligence gathering and their dissemination among the institutions dealing with terrorism in India.

- The state police force, which constitutes the first response to any terror attack should be adequately trained and armed to deal with terror attacks.

Legal framework:

- There is the need for a stringent comprehensive special act that deals with all aspects of terrorism. Well-defined laws will allow for swift prosecution.

- There is a need for regular revision and tightening of laws to ensure that the existing loopholes and gaps in legal mechanisms are not exploited to continue with the propagation of radical ideologies.

De-radicalization:

- The government and the security agencies need to adopt a multi-pronged approach towards radicalisation. The state agencies need to work with civil society groups as well as community leaders and have deradicalisation programmes.

  * Example: 'Prevent' programme in the U.K.

- There is a need to focus attention on potential target groups through monitoring and infiltration of social media sites that are the principal source of radical propaganda.

- Big data analytics must be used to discern the level of radicalization of potential recruits, their networks and sources of information, funding and leadership in order to help unravel the roots of radicalization.

International efforts:

- India should continue to pursue its efforts at establishing the Global Terror Convention or Comprehensive Convention on International Terrorism (CCIT).

  * CCIT is a proposed treaty which intends to outlaw all forms of terrorism (international) and restrict terrorists, their financiers the access to all form of supports like funds, arms, and safe havens.

Challenges to internal security through communication networks

7. WhatsApp & leaks

  » Prelims: National Cyber Security Strategy 2020

  » Mains: Growing significance and challenges in the domain of cyber security

Context:

- Television news channels have shared leaked WhatsApp chats of film actors. This has led to concerns whether communication over platforms such as WhatsApp is secure or not. Also, these events have prompted Facebook-owned WhatsApp to come out with a statement on its use of end-to-end encryption to secure user messages.

Does WhatsApp have access to chats?

- Since the year 2016, WhatsApp has installed an end-to-end encryption system.

- It claims that it ensures nobody apart from those communicating with each other over the platform can read what is sent, not even WhatsApp.

- Governments across the world see end-to-end encryption as a huge issue when it comes to law enforcement.

- While WhatsApp says it responds to requests from law enforcement agencies "based on applicable law and policy," it is not clear what kind of data it would have to share.

- News reports have mentioned that these could be in the nature of metadata such as mobile number, IP address, location, and so on.

How is WhatsApp designed to ensure such secure communication?

- WhatsApp uses the encryption protocol developed by Open Whisper Systems (a project known best for its Signal app) which also uses the same open-source framework to ensure privacy.

- Many closed messaging applications now use the Signal protocol.

- Each and every WhatsApp chat has a security code used to verify that calls and the messages that are sent to that chat are end-to-end encrypted.

What is the technology behind this?

- The technology that forms the basis for this is called the 'Diffie-Hellman key exchange'.

- In a 1976 Whitfield Diffie and Martin E. Hellman saw the futility of the old ways of sharing a key securely in the emerging digital world. They proposed a way for secure communication via a method of a shared secret key, and that too when the communication is over a not-so-secure channel.

- It is all about math and is designed in a way that a third party eavesdropping on an exchange finds it computationally infeasible to arrive at the secret key from the information overheard.

Can't those who have access to the server read messages?

- End-to-end encryption removes this vulnerability.

- WhatsApp also says it does not store messages on its servers once they are delivered.

Can leaks still happen?

- End-to-end encryption cannot prevent leaks from

happening if a third party has access to a device which contains these messages.

- Encryption also does not help in cases wherein the sender or the receiver of a message shares it with others, a member of a group shares it with others, or messages are stored in a different format on a different application or platform open to others.

- Through mobile phone cloning technique, data and cellular identity of a device can be copied into a new phone. This can be done with the help of an app and without access to the phone that needs to be cloned. In the process, the transfer of the International Mobile Equipment Identity can also happen.

What are the other vulnerabilities?

- Bugs that lead others to control a user's phone are an example of such vulnerabilities.

- For instance, in 2019, WhatsApp revealed that surveillance technology developed by Israel's NSO Group had been used to spy on about 1,400 people across the world, including civil rights activists and journalists in India.

Security challenges and their management in border areas

8. Defence Acquisition Procedure (DAP), 2020

- » Prelims: Names of various committees involved.

- » Mains: Defence procurement procedure, offset clause.

Context:

- The new Defence Acquisition Procedure (DAP), 2020 has been released.

Background

- The first Defence Procurement Procedure (DPP) was promulgated in the year 2002 and has since been revised periodically to provide impetus to the growing domestic industry and achieve enhanced self-reliance in defence manufacturing.

- The defence minister had approved the constitution of Main Review Committee under Chairmanship of Apurva Chandra in 2019 for preparation of Defence Acquisition Procedure (DAP) 2020.

- DAP 2020 is the renamed iteration of the Defence Procurement Procedure (DPP)

Key Features

- The Defence Ministry has removed the offset clause requirement in Inter-Governmental Agreements (IGA).

  * Under offset clause, foreign companies were required to invest part of their deal value (30-50%) in India to boost domestic defence manufacturing.

    » Since defence contracts are costly, the government wants part of that money either to benefit the Indian industry, or to enable India to gain in terms of technology.

  » It is meant to improve the domestic defence manufacturing.

  * From now on there will be no offset clause in government-to-government, single vendor and IGAs.

  * Offsets, however, will continue to be part of multi-vendor competitive procurement contracts

- It also introduces a new category for leasing of military equipment.

- Other proposed measures include:

  * Making after-sales support a part of the capital acquisition contract

  * Higher indigenous content in acquisitions

  * Incentives for local material and software and emphasis on product export under offsets.

- Leasing has been introduced as a new category for acquisition in addition to the existing 'Buy' and 'Make' categories.

  * This would substitute huge initial capital outlays with periodical rental payments.

- A new procedure has been included as a new chapter in Defence Acquisition Procedure and structured as an enabling provision for Services to procure essential items through Capital Budget under a simplified procedure in a time-bound manner.

- The DAP 2020 enables the notification of a List of Weapons or Platforms that will be banned for import.

- DAP 2020 has adequately included provisions to encourage FDI to establish manufacturing hubs both for import substitution and exports while protecting interests of Indian domestic industry.

Off-Set Clause

- The Comptroller and Auditor General (CAG) defined offsets as a "mechanism generally established with the triple objectives of:

  * Partially compensating for a significant outflow of a buyer country's resources in a large purchase of foreign goods.

  * Facilitating induction of technology.

  * Adding capacities and capabilities of domestic industry.

When was the policy introduced?

- The concept of off-set clause in defence deals was adopted on the recommendations of the Vijay Kelkar Committee in 2005.

- The Sixth Standing Committee on Defence (2005-06) had recommended in its report that modalities for implementation of offset contracts should be worked out.

- The first offset contract was signed in 2007.

- The government stated the "objective for defence offsets" for the first time in 2012.

Successful example of offset policy:

- The experience in India's aerospace industry is a successful example of the offset policy in India.

- India had been a relatively smaller player in the global civilian aircraft manufacturing, despite the presence of big players like the Hindustan Aeronautics Limited.

- The introduction of the offset policy in 2005 had a positive impact on the aerospace industry in India.

  * Aerospace exports rose exponentially. The offset clause enabled India to join the league of the world's top 10 aerospace exporters; the only country without a major domestic aerospace firm.

  * The policy helped promote a vibrant aerospace cluster, mostly micro, small, and medium enterprises (MSMEs) in India.

- The exports, however, plummeted after the offset clause was relaxed when the threshold for the policy was raised from the hitherto Rs. 300 crore to Rs. 2000 crore, in 2016.

Why was the clause removed?

- It has been removed in order to bring down the additional costs in the defence contracts.

- Vendors would load extra cost in the contract to balance the costs, and doing away with the offsets could bring down the costs in such contracts.

- Also, there are administrative costs involved in discharging offset obligations, which the vendors pay.

What are the concerns raised by CAG?

- The CAG has been critical of the entire policy.

- Auditing the offset deals till March 2018, the CAG said that 46 offset contracts were signed for ₹66,427 crore, and till December 2018, ₹19,223 crore worth of offsets should have been discharged.

- However, vendors have claimed discharge of only 59% of the offsets.

- The Ministry has accepted only 48% of these offset claims, while the rest are pending or have been rejected due to various deficiencies.

- The remaining offset commitments of about ₹55,000 crore would be due for completion by 2024, the fulfilment of which remains a major challenge.

- As in the case of Rafale deal, according to CAG, in many cases, it was found that the foreign vendors made various offset commitments to qualify for the main supply contract, but later were not earnest about fulfilling these commitments.

Impact on Indian Defence sector

- Negative impact on domestic capabilities:

  * Given that most defence deals are bilateral or a single supplier deal (given the monopoly over the technology), the proposed changes in defence offset policy would practically amount to giving up the offset clause.

  * This would have a detrimental impact on India's prospects for augmenting domestic capabilities and technological self-reliance and realising the goal of self-reliance in defence manufacturing.

- Unjustified reasoning:

  * The government defending the decision by claiming a cost advantage does not seem reasonable given that price is but one of many factors in such deals.

  * The higher (upfront) cost of the agreement due to the offset clause would pay for itself by reducing costs in the long term by indigenization of production and the potential technology spill-overs for domestic industry.

DRDO Procurement Manual 2020

- To encourage more participation of Indian industry, including Start-ups and MSMEs in Defence Research & Development (R&D) for achieving 'Atmanirbhar Bharat', a newer version of Defence Research and Development Organisation (DRDO) Procurement Manual 2020 (PM-2020) has been released.

- It will facilitate the indigenous Defence Industry by simplifying the processes and ensure their participation in design and development activities.

- The PM-2020 will facilitate faster execution of R&D projects/programmes.

Conclusion

- The Defence Acquisition Procedure 2020 is thus aimed at making India a global hub of defence manufacturing and encouraging domestic defence industry.

ENVIRONMENT AND ECOLOGY

Environmental Pollution and Degradation

1. **ENFUSER (Environmental information Fusion Service)**

   » Mains: Measures taken by government towards abatement of pollution.

   Context:

   • IMD operationalizes advanced high-resolution Air Quality Early Warning System for Delhi and India.

   Details:

   • The new model that has been made operational for Delhi is called ENFUSER (Environmental information Fusion Service).

   • It will identify air pollution hotspots and pollution up to street level.

   • It is a high-resolution city scale model.

   • The specialty of the ENFUSER is the high utilization of measurement data such as air quality observations, a detailed description of the road network, buildings, land-use information, high-resolution satellite images, ground elevation and population data.

   • The ENFUSER natively taps into the operative IMD's regional SILAM access point.

     * System for integrated modelling of Atmospheric composition (SILAM) is another air quality forecast model of the IMD that has been extensively validated against observations over the Indian region.

   • The ENFUSER results are being evaluated with the satellite measurements and observations, and the model is found to capture the hotspots over Delhi very well.

   • SILAM and ENFUSER have been developed in technical collaboration with the Finnish Meteorological Institute (FMI).

Conservation

2. **Himalayan brown bears**

   » Prelims: IUCN status, protected areas and habitat range of Himalayan brown bears.

   » Mains: Impact of climate change on wildlife habitat

   Context:

   • A study carried out by scientists of the Zoological Survey of India (ZSI) in the western Himalayas with respect to the Himalayan brown bears.

   Background:

   • The Himalayan brown bear (Ursus arctos isabellinus), is a subspecies of the brown bear and is known from northern Afghanistan, northern Pakistan, northern India, west China and Nepal. It is mainly found across remote parts of the western Himalayas.

   • The Himalayan brown bear is one of the largest carnivores in the highlands of the Himalayas.

   • These bears hibernate during the winter.

   Concerns:

   Climate change's impact on the habitat:

   • The study predicts a massive decline of 73% of the Himalayan brown bear's habitat by the year 2050 due to climate change.

     * The elevation gradient in which the brown bear is distributed is most vulnerable to global warming as this elevation belt is getting warmer faster than other elevation zones of Himalayas.

   • This predicted loss in habitat will result in loss of habitats from 13 Protected Areas (PAs), with eight of these predicted to become completely uninhabitable by the year 2050.

   • The study notes that apart from suitable habitats even the biological corridors for the species would be impacted which would negatively impact the genetic diversity of the species.

   • Furthermore, the simulation study also predicts a significant qualitative decline in remaining habitats of the species within the protected areas of the landscape.

   Way forward:

   • There is the need for adaptive spatial planning of the protected area network in the western Himalayas for conserving the Himalayan brown bears.

   • This would involve mapping of suitable habitats outside the existing PAs and suitable areas should progressively be brought into the PA network.

   Conclusion:

   • Given the vulnerability of animals to climate change, there need to be adaptive measures for even the vulnerable species.

Conservation

3. **Kumki Elephant**

   » Prelims: IUCN status, elephant range countries, elephant reserves in India.

   » Mains: Wildlife conservation.

   • Kumki is a term used in India for trained captive Asian elephants used in operations to trap wild elephants.

   • They are sometimes used to rescue or to provide medical treatment to an injured or trapped wild elephant.

   • More specifically, the term "Kumki" is applied to trained female elephants used as decoys.

   • Kumkis are used for capturing, calming and herding

- wild elephants or to lead wild elephants away in conflict situations.

- The Kumkis are trained to scare away wild pachyderms into the forest, either by using their trunk or tusks.

Note:

- Karnataka has the largest elephant population in the country.

- In Karnataka, elephants in conflict with humans are captured and confined.

Conservation

4. Lesser Flamingos

 » Prelims: IUCN status, habitat range.

Context

- As part of the World Migratory Bird Day celebrations, experts from Mumbai came together to discuss ways to protect lesser flamingos.

Background:

- The lesser flamingo (Phoeniconaias minor) is a species of flamingo occurring in sub-Saharan Africa and north-western India.

- The lesser flamingo is the smallest species of flamingo, though it is a tall and large bird by most standards.

- The lesser flamingo is the most numerous species of flamingo.

- This species feeds primarily on Spirulina algae which grow only in very alkaline lakes. Although blue-green in colour, the algae contain the photosynthetic pigments that give the birds their pink colour. Their deep bill is specialised for filtering tiny food items.

- The lesser flamingos have been reported extensively

in and around Mumbai given the presence of wetlands in the area.

Concerns:

- Environmentalists and experts estimate that the habitat for flamingos and wetland birds has shrunk to 20% of the previously available area in and around Mumbai.

  * Almost 2,000 hectares of wetlands were lost for the Navi Mumbai International Airport and JNPT expansion work.

- The flamingos have been forced to feed within a tiny piece of land owing to the continuous destruction of wetlands and development activities in the city. This does not augur well for the lesser flamingo population as these birds will have to compete for the limited resources available in the region.

  * The Thane Creek Flamingo Sanctuary is believed to be the last refuge for the around 1.5 lakh birds in Mumbai

Way forward:

- There is the need to bring the issue of protecting biodiversity to the forefront and this would require active citizen participation as well.

Specie in News.

5. Madhuca diplostemon

 » Prelims: Area of presence.

- It is a species of flowering plant from Sapotaceae family

- It has been listed as endangered by the International Union for Conservation of Nature (IUCN)

- This tree is about 4-metre high, its bark fissured and leaves spirally arranged and crowded towards the branch tips.

- The tree's flowering and fruiting happen from January to March

- It is endemic to India.

Context:

- Almost extinct species of this tree has been rediscovered after a gap of 180 years from a sacred grove in Kollam district.

Specie in News.

6. Pipeworts

 » Prelims: Application and endemic region.

- Pipeworts (Eriocaulon) is a plant group which completes its life cycle within a small period during monsoon.

- It exhibits great diversity in the Western Ghats.

- Around 111 species of pipeworts are found in India. Most of these are reported from the Western Ghats and the eastern Himalayas, and around 70 per cent of them are endemic to the country.

Uses

- Eriocaulon cinereum, is well known for its anti-cancerous, analgesic, anti-inflammatory, and astringent properties.

- E. quinquangulare is used against liver diseases.

- E. madayiparense is an anti-bacterial from Kerala

Context:

- Scientists from Agharkar Research Institute, Pune discover two new species of pipeworts from the Western Ghats of Maharashtra & Karnataka.

Details

- The species reported from Sindhudurg district of Maharashtra has been named Eriocaulon parvicephalum (due to its minute inflorescence size), and the other reported from Kumta, Karnataka is called Eriocaulon karaavalense (named after Karaavali, Coastal Karnataka region)

- The medicinal properties of the newly discovered species are yet to be explored

Conservation

7. Project Snow Leopard (PSL)

- » Prelims: IUCN status, range countries and states of India.

- » Mains : Recovery programme of Ministry of Environment Forest & Climate Change and other conservation initiatives.

Context:

- International Snow Leopard Day is observed on 23 October to raise awareness on protection of snow leopards which are endangered.

About Project Snow Leopard:

- Project Snow Leopard (PSL) is a programme under the Ministry of Environment, Forest and Climate Change with the overarching goal to safeguard and conserve India's unique natural heritage of high altitude wildlife populations and their habitats by promoting conservation through participatory policies and actions.

- The location of the project is all biologically important landscapes in the Himalayan high altitudes in the states/UTs of Jammu & Kashmir, Ladakh, Himachal Pradesh, Uttaranchal, Sikkim, and Arunachal Pradesh.

- PSL was launched in 2009.

- It aims to promote a knowledge-based and adaptive conservation framework that fully involves the local communities, who share the snow leopard's range, in conservation efforts.

- The Government of India has identified the snow leopard as a flagship species for the high-altitude Himalayas.

Need for the project:

- Since the harsh climate and topography of the area are relatively less conducive to agriculture and other developmental options such as industry, most of the region is largely dependent on pastoralism.

  * Wild herbivore species are getting out-competed and their populations are declining due to increasing livestock populations in many areas.

  * This is leading to increased dependence of wild predators such as the snow leopard and the wolf on livestock, causing intense human-wildlife conflicts.

- Poaching is a major threat in some areas, along with opening up of areas due to road building, pressures from immigrant labour forces, etc.

- There are increasing reports of conflicts due to crop depredation by wildlife.

- Military and para-military personnel need extensive road networks and are usually settled near important but fragile wetland sites or key mountain passes that are also important for wildlife species such as the Tibetan argali Ovis ammon and waterfowl.

- The high altitudes of India (including the Himalaya and Trans-Himalaya biogeographic zones) support a unique wildlife assemblage of global conservation importance.

- This region has attracted less attention from the point of view of wildlife conservation.

- The region represents a vast rangeland system supporting important traditional pastoral economies and lifestyles.

- The region also provides essential ecosystem services and harbors river systems vital for the nation's food security.

Environmental Pollution and Degradation

8. Sustainable Processing of Municipal Solid Waste: 'Waste to Wealth'

- » Prelims: Different processes of waste to energy, Global conventions involving waste disposal.

- » Mains: Solid Waste Management Rules (SWM) 2016

Context:

- CSIR-CMERI has developed a Municipal Solid Waste (MSW) Processing Facility.

Details:

- This new facility has not only helped in achieving decentralized decimation of solid wastes, but has also helped create value-added end-products from abundantly available redundant stuff such as dry leaves, dry grass, etc.

- The MSW Processing Facility is developed for the disposal of solid waste in a scientific way following the Solid Waste Management Rules (SWM) 2016 prescribed by Union Ministry of Environment, Forests and Climate Change (MoEF&CC), Govt. of India.

- The primary focus of CSIR-CMERI is to unburden the common households from the segregation responsibilities through advanced segregation techniques.

- The mechanized segregation system segregates solid waste into metallic waste (metal body, metal container, etc.), biodegradable waste (foods, vegetables, fruits, grass, etc.), non-biodegradable (plastics, packaging material, pouches, bottles, etc.) & inert (glass, stones, etc.) wastes.

- The bio-degradable component of the waste is decomposed in an anaerobic environment popularly known as bio-gasification.

    * In this process, biogas is liberated through the conversion of organic matter. The biogas can be used as fuel for cooking purpose.

    * The gas can also be utilized in the gas engine for the generation of electricity.

    * The residual slurry from the biogas plant is converted to compost in a natural process known as vermi-composting by introducing earthworms. The vermi-compost is utilized in organic farming.

- Biomass Waste Disposal

    * Biomass waste such as dry leaves, dead branches, dry grass, etc. are disposed of by first shredding it to suitable size followed by mixing with the slurry of the biogas digester.

    * This mixture is feedstock for briquette, which is utilized as fuel for cooking.

    * These briquettes are also being utilized in gasifier for production of syngas which can be utilized in gas engine for the generation of electricity.

    * The ash produced from the burning of briquette is mixed with cement and water in an appropriate proportion for production of bricks which is used for construction work.

- Polymer Waste Disposal

    * The polymer waste consisting of plastics, sanitary waste, etc. is being disposed of through two main processes i.e. pyrolysis and plasma gasification.

    * In the pyrolysis process, the polymer waste is heated to a temperature of 400 – 600°C in an anaerobic environment in the presence of a suitable catalyst.

    * The volatile matter from the polymer waste comes out as a result of heating which on condensation gives pyrolysis oil.

    * The non-condensed syngas and crude pyrolysis oil after purification are reused for heating purposes and it helps in obtaining self-sustainability.

    * The solid residue known as char is mixed with the biogas slurry for production of briquette.

- Sanitary Waste Disposal

    * The sanitary items including masks, sanitary napkins, diapers, etc. are disposed of utilizing high-temperature plasma.

    * The MSW facility is equipped with special disinfection capabilities to help break the COVID Chain through UV-C Lights and Hot-Air Convection methods.

    * The Decentralized Solid Waste Management Plant developed by CSIR-CMERI has all the potentials to scientifically manage the Solid Waste including the COVID and other viruses present in the wastes.

    * The integrated MSW pilot plant is also self-sufficient in terms of energy requirement through the installation of roof-mounted solar panels, which can also feed the surplus energy supply onto a mini-grid.

Conservation, Environmental Impact Assessment.

9. **Tree Transplantation Policy**

    » Mains: Afforestation measures.

Context:

- The Delhi Cabinet has approved the 'Tree Transplantation Policy' for the preservation of trees in the Capital.

Details:

- 'Yuddh, Pradushan Ke Viruddh' (Fight against pollution), a huge movement to curb the rising pollution levels in the capital was started.

- Various measures including EV, tree transplantation, and preventing stubble burning will be taken up under the movement.

- One of the key components of this campaign is the tree transplantation policy.

- Cabinet also gave its nod for the installation of the second smog tower in the world.

    * The first smog tower in the world was set up in China.

    * Two smog towers are being installed in Delhi.

What is the tree transplantation policy?

- A minimum of 80% of trees affected by a development or construction project will be transplanted and as much as 80% of the transplanted trees must survive after transplantation.

- This is in addition to retaining the policy of planting 10 saplings for every one tree that is cut.

- A dedicated Tree Transplantation Cell will also be formed by the Delhi government and local committees, which will include government officials, citizens, RWAs to monitor the transplanted trees and to certify that the task has been done with due diligence.

Conservation

10. Wildlife Week

  » Mains: Awareness about wildlife, man-animal conflict.

Context:

- Wildlife Week is celebrated all over the country in the month of October from 2nd to 8th October every year with the view to preserve India's fauna.

- Wildlife Week 2020 theme: RoaR (Roar and Revive) – Exploring Human-Animal Relationships.

About Wildlife Week:

- First conceptualized in 1952, the idea behind celebrating the Week is to take steps to save the animal species of India from extinction.

- Wildlife Day was observed from 1955 and it was upgraded to Wildlife Week in 1957.

- The celebration involves creating awareness among the people about wildlife conservation and its importance.

Objectives of the Wildlife Week:

- To make people more aware of the conservation and protection of wildlife.

- To focus people's attention on the importance of conservation of wildlife.

- To implement more services to preserve wildlife.

- To discuss all the issues related to the preservation of wildlife.

Environmental Pollution and Degradation

11. China's climate commitment: How significant is it for the planet, and India?

  » Prelims: Paris climate agreement, Nationally Determined Contributions.

  » Mains: Climate change curbing initiatives, UNFCCC Conference of Parties Outcomes.

Context:

- China's President Xi Jinping has promised that the country would be carbon net-zero by 2060, and has advanced the deadline for reaching emissions peak.

What has China announced?

- Xi announced that China would be carbon net-zero by 2060.

- Net-zero is a state in which a country's emissions are compensated by absorptions and removal of greenhouse gases from the atmosphere.

  * Absorption can be increased by creating more carbon sinks such as forests.

  * Removal involves the application of technologies such as carbon capture and storage.

Why is net-zero an important target?

- Scientists say that the only way to achieve the Paris Agreement target of keeping global temperatures from rising beyond 2°C compared to pre-industrial times is achieving global carbon neutrality by 2050.

- For a long time, there have been campaigns and efforts to get countries (especially the big emitters) to commit themselves to achieve climate neutrality by 2050.

  * Sometimes referred to as the state of net-zero emissions, it would require countries to significantly reduce their emissions while increasing land or forest sinks that would absorb the emissions that take place.

  * If the sinks are not adequate, countries can commit themselves to deploying (expensive) technologies that physically remove carbon dioxide and other greenhouse gases from the atmosphere.

How significant is China's commitment?

- China is the world's largest emitter of greenhouse gases.

- It accounts for almost 30% of global emissions, more than the combined emissions in the United States, the European Union and India, the three next biggest emitters.

- The climate actions of China, the US, the European Union and India are crucial to achieving the Paris Agreement targets, who together account for more than half the global emissions, followed by countries such as Russia, Brazil, South Africa, Japan and Australia.

- Getting China to commit itself to a net-zero target is a big breakthrough, since countries have been reluctant to pledge themselves to such long term commitments.

- The United States has walked out of the Paris Agreement.

- The Chinese goal, if realised, would lower global warming projections for 2100 by about 0.2° to 0.3°C, the most impactful single action ever taken by any country.

What are the implications of China's commitment for India?

- India has resisted pressure to make a long-term commitment, citing the fact that developed countries had utterly failed in keeping their past promises.

- India has also been arguing that the climate change actions it has been taking are, in relative terms, far more robust than those of the developed countries.

  * Climate Action Tracker puts India's actions as "2°C compatible", while the US, China and even the European Union's current efforts are classified as "insufficient".

  * Of the pledges that have been made in the Paris Agreement, India is the only G20 country whose actions are on track to meet the 2° goal.

- The Chinese announcement is naturally expected to increase pressure on India to follow suit.

- Another side-effect of the Chinese decision could be an increased divergence in the positions of India and China at the climate negotiations. China would now have fewer grounds to align itself with India as a developing country.

Environmental Pollution

12. Air pollution now biggest health risk in India, says report

» Prelims: Report, National Ambient Air Quality Index.

» Mains: Steps taken to abate air pollution.

Context:

According to the State of Global Air 2020, air pollution is the largest risk factor for death among all health risks in India.

- The report is published by the U.S.-based Health Effects Institute.

- It sources its data from publicly available sources.

Findings of the Report:

- Long-term exposure to outdoor and household air pollution contributed to over 1.67 million annual deaths from stroke, heart attack, diabetes, lung cancer, chronic lung diseases and neonatal diseases in India in 2019.

- Outdoor and household particulate matter pollution also contributed to the deaths of more than 1,16,000 Indian infants in their first month of life in 2019.

  * More than half of these deaths were associated with outdoor PM2.5.

  * Others were linked to the use of solid fuels such as charcoal, wood, animal dung for cooking.

- India faced the highest per capita pollution exposure (83.2 µg/cubic metre) in the world, followed by Nepal and Niger.

  * Countries with the least population exposure are below 8 micrograms (µg) per cubic metre.

Marginal Decline in Pollution Levels:

- The government has claimed that the average pollution levels in India are declining over the past three years. However, the decline is marginal, particularly in the Indo-Gangetic plains which see extremely high particulate matter pollution especially during winter.

- Although there has been a slow and steady reduction in household reliance on poor-quality fuels, the air pollution from these fuels continues to be a key factor in the deaths of these youngest infants.

Pollution and COVID-19:

- After a decline in pollution due to the nationwide lockdown, pollution levels are rising yet again and air quality has dipped to 'very poor' category in several cities.

- Although the full links between air pollution and COVID-19 are not yet known, there is clear evidence linking air pollution and increased heart and lung disease, creating a growing concern that exposures to high levels of air pollution during winter months in South Asian countries and East Asia could worsen the effects of COVID-19.

Environmental Pollution and Degradation.

13. India needs a rainbow recovery plan

» Prelims: Green new deal

» Mains: Green economy, sustainable development pathways, Research and Development in emerging green technologies.

Context:

- The article emphasizes on the need to have a renewed approach to growth and development in the post COVID scenario.

Background:

- There have been calls and arguments being made for a drastic change in approach to human economic growth and development models going forward after the COVID pandemic and the associated lockdown exposed the weaknesses in the current approach.

  * In Europe and the U.S., a 'green new deal' (GND) proposed by some from the political mainstream puts the climate and employment crises at the centre of economic recovery.

Details:

- The article warns that by attempting a 'business as usual' approach could only result in further deteriorating the situation caused by the pandemic. The article calls to take pathways to a more just and sustainable future by adopting a multihued approach to what it refers to as a Rainbow New Deal (RND).

- This approach would require integration of ecological protection and tackling wealth and social inequality and economic vulnerability of the vulnerable sections.

Ensuring sustainable livelihood opportunities:

- There is the need to generate dignified, sustainable livelihoods for the vast majority of the population and workforce that is today living precarious lives, while also ensuring the ecological preservation.

Encouraging sustainable lifestyles:

- There is the need to encourage lifestyles and livelihoods that obtain substantial food, medicines, household items and other needs, from natural ecosystems.

- The policies from the government should encourage sustainable livelihoods. Forest-based livelihoods alone, for instance, can support 100 million people.

Impetus to local industries:

- There is the need to revive and sustain decentralised production of most goods and services, across all villages and towns, with a massive investment in the small and medium sector enterprises. This should also include providing an impetus to India's incredible diversity of crafts.

- Products like soap, footwear, furniture, clothes, energy, and myriad other items of everyday use can be produced by community-run units across the country. 'Made in India' should be 'Handmade in India' by local workers. All such production could be run democratically as producer companies or cooperatives.

- This could gainfully employ 200 million people.

Focus on self-reliance:

- There is the need for greater emphasis on self-reliance of the various sub-regions of the country.

- During the COVID-19 lockdown, community resilience based on such initiatives was amply demonstrated.

- A 'network economy', in which clusters of villages can be self-reliant for most basic needs, and exchange with neighboring clusters what they cannot produce or grow can help dispel some doubts over the viability of such a self-reliance on being able to meet all requirements of the people.

Investments in high impact sectors:

- The RND would entail substantial investments in public health, education, housing, transportation and other basic needs. If these are run in a decentralised way, with appropriate training, they could generate many more millions of jobs.

- All of this would be within ecologically sustainable limits, and specially focused on empowering and benefiting the most marginalised people.

Government aid and support:

- Government-sponsored programmes like Kudumbashree in Kerala and Jharcraft in Jharkhand show how they can be significantly scaled with state support.

Addressing the inequalities:

- There is the need to address the gross inequalities in social and economic domains to make the development process more inclusive as well as sustainable.

Conservation

14. Scientists welcome these winged 'infiltrators'

» Prelims: Species of butterflies and dragonflies and associated wildlife sanctuaries.

Context:

- Two new species, one of butterfly and dragonfly each have been added to the list of indigenous species in India.

Details:

Spialia zebra:

- The butterfly species, Spialia zebra, was found in Dungarpur district of Rajasthan.

- This butterfly is predominantly found in Pakistan-occupied Kashmir, Khyber-Pakhtunkhwa and Punjab province of Pakistan.

- The new finding marks the first-ever recording of this species far south of its known habitat.

Atratothemis Reelsi:

- The dragonfly species Atratothemis Reelsi was recorded in southern Arunachal Pradesh's Namdapha Tiger Reserve.

- The new finding marks the first-ever recording of this species, about 1,170 km west of its previously known nearest locality of Xiaoqikong Park in China's Guizhou Province.

Significance:

- The finding of the Pakistani butterfly and Chinese dragonfly marks the first time in India. These two new species have been included in lists of indigenous species. The species will add to the species richness in India.

* The Spialia zebra butterfly would add to the richness of Rajasthan's Phulwari ki Nal Wildlife Sanctuary and Sita Mata Wildlife Sanctuary.

* Similarly, the newly discovered dragonfly augurs well for the biodiversity of the eastern Himalayan region.

Additional information:

- The Butterfly Research Centre of India is located at Bhimtal in Uttarakhand.

- India has 1,328 recorded species of butterflies.

Phulwari ki Nal Wildlife Sanctuary

- It is located in Udaipur District of Rajasthan, in the southern Aravalli Hills

- The climate in the sanctuary is classified as semi-arid, with an annual rainfall of 730 mm

Sita Mata Wildlife Sanctuary

- It is a wildlife sanctuary situated in Pratapgarh and Chittaurgarh districts of Rajasthan

- The land is undulating because of the confluence of three different formations — Malwa Plateau, the Vindhyachal Hills and Aravali mountain ranges

Conservation, environmental pollution and degradation, environmental impact assessment

15. How global warming might affect food security

» Prelims: Carbon fertilization, CRISPR-Cas9 .

» Mains: Climate change impact on food security. Carbon sequestration

Context:

- The article analyzes the impact of global warming on the plant growth and subsequently on the food security of humans.

Background:

Global warming:

- Between the year 1870 (the first industrial revolution) and 2020, the carbon dioxide (CO_2) levels have increased from 280 ppm to 400 ppm mainly attributable to the increased fossil fuel burning (oil, natural gas, coal). Also, emissions of methane and nitrogen dioxide have also increased.

- Given the greenhouse warming effect of carbon dioxide, methane and nitrogen dioxide, the global temperature has risen by almost 2 degrees Celsius.

Mixed impact on plants:

- The rise in CO_2 levels has both positive and negative effects on the plants.

Positive effect:

- The higher temperature is found to aid in the photosynthesis of plants, making them grow more.

- The higher temperature would help expand agricultural activity to even the sub-polar regions, would help expand the agricultural growing season in some areas.

- The higher concentration of carbon dioxide is also found to lead to an effect known as carbon fertilization.

  * The Carbon fertilization effect is the increased rate of photosynthesis in plants that results from increased levels of carbon dioxide in the atmosphere.

  * However, it has to be noted that the Carbon fertilization varies depending on the plant species, the temperature, and the availability of water and nutrients.

    » The C4 plant varieties have been found to thrive under increased carbon dioxide levels and temperatures. It was found that there was improved heat tolerance, and suppressed heat-induced damages in such varieties. Examples of C4 species are the economically important crops corn or maize, sugarcane, sorghum and millets, as well as the switchgrass which has been utilized as a source of biofuel.

Negative effects:

- Some studies have pointed out that the higher temperatures during the 'growing season' in the tropics and sub-tropic regions will greatly affect plant growth and crop productivity.

- The higher temperature is found to restrict the plant's ability to absorb nitrogen, thus restricting crop growth.

Study by ICRISAT:

- One study by the Hyderabad Centre of the international agency ICRISAT (International Crops Research Institute for the Semi-Arid Tropics) on the impact of different concentration of CO_2 levels on the growth and yield of chickpea found a noted increase in the root and shoot (plant height) lengths with higher CO_2 levels leading to higher growth rates.

- However, the number of nodules in the roots (where nitrogen-fixing bacteria live) decreased at high CO_2 levels.

- The decrease in chlorophyll synthesis hastened leaves turning yellow and plant ageing (senescence).

- Notably, the above impacts were different for different species of the legumes.

Way forward:

- Given the possible impact of CO2 level and its heating effect on food security there is an urgent need for the following steps.

Better understanding of the plant's response:

- There is a need for more laboratory experiments to study the impact of increased temperatures and CO2 levels on plant growth and yields. These studies must concentrate on plant varieties like beans and legumes (plant meat) and food grains (C3 variety plants), which would have a more direct impact on human food security.

    * The difference between the C4 plants and the C3 plants is the way in which photosynthesis is done in the plants. The difference occurs due to different metabolic pathways in the two varieties, mainly involved in sugar/starch metabolism, chlorophyll and secondary metabolite biosynthesis.

Evidence-based planning for climate change risks:

- The understanding of the different metabolic pathways in different plants could lead to a better understanding of the molecules or agents that can promote or inhibit specific pathways.

- These findings can help identify plant varieties that are best suited for the given local conditions.

Use of biotechnology:

- Biotechnology and the recent advances made in this field like CRISPR-Cas9 can allow us to genetically modify the plants in order to ensure adequate growth and yields of the plants even in an increased temperature and CO2 level scenario.

Environmental pollution and degradation

16. Pusa Decomposer

- » Prelims: Gases released during stubble burning, zero tillage.

- » Mains: Measures to curb stubble burning.

- It converts crop stubble into compost.

- This low-cost technology has been developed by the Indian Agricultural Research Institute (IARI)

- It is a set of four tablets made by extracting fungi strains that help the paddy straw to decompose at a much faster rate than usual, giving farmers the option to shred the straw, spray a solution containing the fungal strains, and mix it with the soil for decomposition.

- It involves making a liquid formulation using decomposer capsules and readily available inputs, fermenting it over 8-10 days and then spraying the mixture on fields with crop stubble to ensure speedy bio-decomposition of the stubble.

How does it work?:

- When the farmer sprays the liquid mix on the stubble, the stubble softens and melts down in 20 days. The farmer can then begin sowing again and he does not need to burn the crop stubble.

- The soil loses its richness due to stubble burning and it also destroys the useful bacteria and fungi in the soil, apart from causing harm to the environment.

- This improves the fertility and productivity of the soil as the stubble works as manure and compost for the crops and lesser fertiliser consumption is required in the future

Conservation, Environmental Pollution and Degradation.

17. Blue Flag Certification

- » Prelims: Certifying organizations, beaches in India.

- » Mains: Criteria for getting the tag, Benefits of such recognition.

Context:

- All 8 beaches recommended by the government get International Blue Flag Certification.

Details:

- Eight beaches of India spread across five states and two union territories, have been awarded the "BLUE FLAG" by an International Jury comprising of eminent members of the United Nations Environment Programme (UNEP), the United Nations World Tourism Organisation (UNWTO), Denmark-based NGO Foundation for Environmental Education (FEE) and the International Union for Conservation of Nature (IUCN).

- The following beaches have been awarded the "Blue Flag":

    * Shivrajpur (Dwarka-Gujarat)

    * Ghoghla (Diu)

    * Kasarkod (Karnataka)

    * Padubidri (Karnataka)

    * Kappad (Kerala)

    * Rushikonda (Andhra Pradesh)

    * Golden (Puri-Odisha)

    * Radhanagar (Andaman & Nicobar Islands)

- India has also been awarded the 3rd prize by the International Jury under the "International Best Practices" for pollution control in coastal regions.

- India is also the first country in the "Asia-Pacific" region that has achieved this feat in just about 2 years' time.

- Japan, South Korea and the UAE are the only other Asian nations that have been conferred with a couple of Blue Flag beaches, however, in a time frame of about 5 to 6 years.

- India is now in the league of 50 "BLUE FLAG" countries.

Background:

- It was in 2018 that the first set of pilot beaches were selected for development. In 2020, 8 beaches were presented for the certification.

- SICOM (under the Environment Ministry) in its pursuit of "Sustainable Development" of the coastal regions of India embarked upon its flagship program "BEAMS" (Beach Environment & Aesthetics Management Services) under its ICZM (Integrated Coastal Zone Management)

  * The Environment Ministry launched the ICZM activities in India with a view to protect and conserve the coastal and marine ecosystems and the environment through holistic coastal management.

  * The project promotes the sustainable development & management of coastal zones through its own wing SICOM.

  * The concept of ICZM was introduced in 1992 during the Earth Summit at Rio de Janeiro and most of the coastal countries in the world have been adopting ICZM principles for managing their coastal zones.

- This project was aimed at striving for the coveted International eco-label "Blue flag", accorded by the Foundation of Environment Education, FEE Denmark.

- BEAMS is India's own eco-label:

  * It was launched by SICOM (Society of Integrated Coastal Management).

  * It is one of the several other projects of ICZM that the government is undertaking for the sustainable development of coastal regions striving for the globally recognized and coveted eco-label Blue Flag.

  * The objective of BEAMS is to abate pollution in coastal waters, promote sustainable development of beach facilities, protect & conserve coastal ecosystems & natural resources, and seriously challenge local authorities & stakeholders to strive and maintain high standards of cleanliness, hygiene & safety for beachgoers in accordance with coastal environment & regulations.

  * This program promotes beach recreation in absolute harmony with nature.

Pollution

18. Stockholm Convention

  » Prelims: Details of convention and other associated conventions, leading POPs in news.

Context:

- Cabinet approves the ratification of seven Persistent Organic Pollutants (POPs) listed under the Stockholm Convention.

Details:

- The Union Cabinet has approved the ratification of seven chemicals listed under the Stockholm Convention on Persistent Organic Pollutants (POPs).

- The Cabinet further delegated its powers to ratify chemicals under the Stockholm Convention to the Union Ministers of External Affairs (MEA) and Environment, Forest and Climate Change (MoEFCC) in respect of POPs already regulated under the domestic regulations.

Background:

- The Stockholm Convention is a global treaty to protect human health and the environment from POPs.

- POPs are identified chemical substances that persist in the environment, bio-accumulate in living organisms, adversely affect human health/environment and have the property of Long-Range Environmental Transport (LRET).

- Exposure to POPs can lead to cancer, damage central & peripheral nervous systems, cause diseases of the immune system, lead to reproductive disorders and interfere with normal infant and child development.

- POPs are listed in various Annexes to the Convention after thorough scientific research, deliberations and negotiations among member countries.

India and Stockholm Convention:

- India ratified the Stockholm Convention in 2006 as per Article 25(4).

  * This enabled India to keep itself in a default "opt-out" position such that amendments in various Annexes of the Convention cannot be enforced on it unless an instrument of ratification/acceptance/approval or accession is explicitly deposited with the UN depositary.

Banned chemicals:

- The MoEFCC had notified the 'Regulation of Persistent Organic Pollutants Rules' in 2018 under the provisions of the Environment (Protection) Act, 1986.

- The regulation prohibited the manufacture, trade, use, import and export of seven chemicals namely,

  * Chlordecone

* Hexabromobiphenyl

* Hexabromodiphenyl ether and Heptabromodiphenylether (Commercial octa-BDE)

* Tetrabromodiphenyl ether and Pentabromodiphenyl ether (Commercial penta-BDE)

* Pentachlorobenzene

* Hexabromocyclododecane

* Hexachlorobutadiene

• These chemicals are listed as POPs under the Convention.

HEALTH ISSUES

Issues relating to development and management of social sector/services relating to health

1. Adjuvant

» Prelims: Types of immunity. Pros and cons of adjuvant vaccine

• An Adjuvant is a pharmacological or immunological agent that improves the immune response of a vaccine.

• Adjuvants can be added to a vaccine to boost the immune response to produce more antibodies and longer-lasting immunity, thus minimizing the dose of antigen needed.

• Adjuvants may also be used to enhance the efficacy of a vaccine by helping to modify the immune response to particular types of immune system cells: for example, by activating T cells instead of antibody-secreting B cells depending on the purpose of the vaccine.

• Adjuvants are also used in the production of antibodies from immunized animals.

• Adjuvants also enhance the sustainability of the global vaccine supply on account of their antigen-sparing effect.

Context:

• Bharat Biotech has entered into a licensing agreement with Kansas-based ViroVax for use of adjuvant Alhydroxiquim-II in its COVID-19 vaccine Covaxin.

Issues relating to development and management of social sector/services relating to health

2. Ayush Grid

» Prelims: National Digital Health Mission.

Context:

• The operational integration of Ayush Grid, the emerging IT backbone for AYUSH Sector, with the National Digital Health Mission (NDHM).

Ayush Grid project

• It was initiated by the Ministry in 2018 for creating a comprehensive IT backbone for the entire sector.

• Digitalization of the entire Ayush Sector will lead to its transformation in fields of health care delivery at all levels, including research, education, various health programmes and drug regulations

• Some of the successful projects of the Grid include the AYUSH Health Management Information System (AHMIS), the Sanjeevani Mobile App, and the Yoga Locator Mobile App.

Significance

• Ayush Grid project has succeeded in bridging the digital gap in the Ayush sector and also in implementing various critical healthcare IT projects.

• This will be beneficial for all stakeholders of Ayush including citizens of the country and in turn, will help to achieve various national and global goals in healthcare.

Issues relating to development and management of social sector/services relating to health

3. CAWACH

» Mains: Initiatives undertaken to counter COVID-19.

• The Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH) is an initiative by the National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology (DST), Government of India.

• CAWACH supports innovations in the areas of diagnostics, devices, informatics including bio-informatics & information management systems, any intervention for the control of COVID-19 and/or startup ideas to address/mitigate various challenges faced by country/society due to the severe impact of COVID-19.

• It offers funding to the tune of Rs. 50 lakhs to Rs. 200 lakhs to selected startups.

• The nodal agency for CAWACH is the National Science & Technology Entrepreneurship Development Board (NSTEDB) under the Department of Science and Technology (DST).

Issues relating to development and management of social sector/services relating to health

4. COVIRAP

» Mains: Initiatives undertaken to counter COVID-19.

• The Indian Council of Medical Research (ICMR) has successfully validated 'COVIRAP', the diagnostic machine evolved by IIT Kharagpur researchers, for its efficacy in COVID-19 detection.

• Various commercial units have already approached the Institute for technology licensing to enable a rapid reach of this innovation to the common people.

• After rigorous testing with the patient samples by an

authorized ICMR laboratory, adhering to their strict guidelines, ICMR has now provided a green signal to certification for this COVID-19 Diagnostic Test.

- This test has been designed to be fairly easy to conduct and it is quite affordable as well which may produce results in a custom-developed mobile phone application within an hour.

- The machine can be developed at a cost of less than ₹ 10,000/- with a minimal infrastructural requirement.

- The testing process in this new machine is completed within an hour.

- The cost per test comes to be about Rs.500 which can be further reduced with government intervention.

- This new testing method implements a highly reliable and accurate molecular diagnostic procedure that can be conducted in an ultra-low-cost portable device unit developed by the research team of IIT Kharagpur.

- The test results are rendered via a custom-made mobile application for dissemination without requiring manual interpretation.

Issues relating to development and management of social sector/services relating to health.

5. Thalassemia Bal Sewa Yojna

- » Mains: Stem cell therapy, inherited and rare diseases.

- Launched in 2017, this scheme is a Hematopoietic Stem Cell Transplantation (HSCT) program that aims to provide a one-time cure opportunity for Haemoglobinopathies like Thalassaemia and Sickle Cell Disease for patients who have a matched family donor.

- It is funded by Coal India CSR.

- The CSR initiative was targeted to provide financial assistance to a total of 200 patients by providing a package cost not exceeding Rs. 10 lakhs per HSCT.

Thalassemia

- Thalassemia is the name for a group of inherited conditions that affect haemoglobin in the blood.

- People with thalassemia produce either no or too little haemoglobin, which is used by red blood cells to carry oxygen around the body.

- This can make them very anaemic (tired, short of breath and pale).

- The patient cannot make enough RBCs and needs to be supplemented with RBC transfusions every 2-3 weeks to stay healthy and to survive.

- It mainly affects people of Mediterranean, South Asian, Southeast Asian and Middle Eastern origin.

- There are different types of thalassemia, which can be divided into alpha and beta thalassemia. Beta thalassemia major is the most severe type.

- Other types include beta thalassemia intermedia, alpha thalassemia major and haemoglobin H disease.

Symptoms:

- Anaemia – severe tiredness, weakness, shortness of breath, pounding, fluttering or irregular heartbeats (palpitations) and pale skin caused by the lack of haemoglobin.

- Too much iron in the body – this is caused by the regular blood transfusions used to treat anaemia and can cause problems with the heart, liver and hormone levels if untreated.

- Some people may also have delayed growth, weak and fragile bones (osteoporosis), and reduced fertility.

Treatment

- Thalassemia is caused by faulty genes that affect the production of haemoglobin.

  - * A child can only be born with thalassemia if they inherit these faulty genes from both parents.

- The main treatments for thalassemia are blood transfusions and chelation therapy (treatment with medicine to remove the excess iron from the body).

- The only possible cure for thalassemia is a stem cell or bone marrow transplant, but this is not done very often because of the risks involved.

Thalassemia in India:

- In India, every year 10,000 children are being born with thalassemia which approximately accounts for 10% of the total world incidence of thalassemia-affected children and one in eight of thalassemia carriers live in India.

Context:

- Union Minister for Health and Family Welfare launched the second phase of "Thalassemia Bal Sewa Yojna" for the underprivileged Thalassemic patients.

Issues relating to development and management of social sector/services relating to health.

6. Many gains in fighting HIV

- » Prelims: National AIDS Control Programme.

- » Mains: Government programmes to tackle HIV-AIDS.

Context:

- The recently released 2019 HIV estimates by the National AIDS Control Organization (NACO) of the Ministry of Health and Family Welfare with the technical support of UNAIDS.

Details:

- The 2019 HIV estimates note that there has been a 66.1% reduction in new HIV infections among children and a 65.3% reduction in AIDS-related deaths in India over a nine-year period. This indicates India's progress in reducing the HIV impact on children through the prevention of mother-to-child transmission of HIV.

- Also, the number of pregnant women living with HIV has reduced and treatment coverage has also expanded.

Steps taken:

- The 'Fast-Tracking of EMTCT (elimination of mother-to-child transmission) strategy-cum-action plan' of NACO, aiming to achieve EMTCT, has been instrumental in mobilising all national, State and partners' collective efforts.

- The progress can be mainly attributed to education and communication programmes; increased access to HIV services with innovative delivery mechanisms for HIV testing; counselling and care; and treatment and follow-ups.

  * India made HIV testing for all pregnant women free and HIV treatment is offered the same way nationwide without cost to pregnant mothers living with HIV through the national 'treat all' policy.

Way forward:

- Despite the impressive progress made thus far, there remains a need for increased treatment saturation coverage and for early HIV testing and treatment initiation to become the normal.

- Using data-driven and decision-making approaches can help in this regard.

Additional information:

90-90-90 strategy:

- 90-90-90 marks the treatment target to help end the AIDS epidemic.

- Although many strategies will be needed to halt the AIDS epidemic, it will be impossible to end the epidemic without bringing HIV treatment to all who need it.

  * There are the envisaged goals of ending the AIDS epidemic by 2030.

- The main targets under the 90-90-90 strategy include the following:

  * By 2020, 90% of all people living with HIV will know their HIV status.

  * By 2020, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy.

  * By 2020, 90% of all people receiving antiretroviral therapy will have viral suppression.

Issues relating to development and management of social sector/services relating to health.

7. **Saving lives under the long shadow of the pandemic**

  » Mains: Mental health initiatives.

- The article highlights the fact that, along with fighting the COVID-19 virus, there is a growing need to make mental health and suicide prevention a priority.

Concerns:

- The COVID-19 pandemic has impacted populations around the world in multiple ways.

- Mental health has been affected severely owing to the fear of being infected and anxiety about an uncertain present and future.

- Necessary precautions such as social distancing, limited interactions and mask usage have become the new normal, with huge social, physical, economic and mental consequences.

- Previous studies suggest an elevated risk of suicide during such times.

  * There is some evidence that 'deaths by suicide increased in the United States during the 1918-19 influenza pandemic, and among older people in Hong Kong during the 2003 Severe Acute Respiratory Syndrome (SARS) epidemic'.

- Lockdowns have led to isolation, in turn, heightening anxiety and causing depression in societies, particularly in vulnerable communities.

- Dire socio-economic conditions arising from the pandemic such as mass migration, unemployment and economic distress make at-risk groups even more vulnerable during these times.

- The fear of getting infected, coupled with a lack of knowledge and the economic fallout has created a new level of stress not seen by many before.

- This situation is the worse among vulnerable populations who are susceptible to greater risks of infections, such as health-care workers, infected people, the elderly, migrant workers, those from resource-poor backgrounds, women facing domestic violence, individuals with compromised immunity, and those suffering from physical or psychological problems.

Associated stigma:

- The issue is that there is a stigma attached to mental health. This acts as a hindrance to people suffering from mental health challenges to seek medical help in times of need

Continued neglect:

- Statistics show that less than 1% of the health budget goes towards mental health, while the available data shows that mental health issues constitute 8-10% of the health burden.

- There is also a severe shortage of mental health professionals.

Pre-pandemic situation in India:

- Before the pandemic, India's progress as one of the fastest-growing economies led to large paradigm shifts in the daily lives of its citizens.

- Major lifestyle shifts led to the rise of many lifestyle disorders in the last decade.

- Mental health disorders are one of the disorders of most concern, which have been swept under the carpet of stigma and discrimination.

- Many suicides are related to psychological disorders and distress.

Initiatives:

- India has created a task force to develop a national suicide prevention strategy.

- The plan incorporates the three universal strategies, including a ban or reduction in access to highly hazardous pesticides, reduction in consumption and availability of alcohol, and a non-sensationalised and responsible portrayal of suicide by the media.

- The media would need to follow the Press Council of India's guidelines on reportage of suicide and also create awareness about suicide prevention.

Way Forward:

- There is a growing need to make mental health and suicide prevention a priority.

- At an individual level, any early signs of poor mental health such as a sudden change in behaviour, substance use, anxiety, disturbed sleep and difficulty in communication should not be ignored.

- Being informed and limiting oneself to authentic sources of information and reducing exposure to distressing news is a good mechanism to help a person cope with the situation.

- A system intervention can focus on identifying, supporting and referring suicidal individuals at all levels of the health-care system.

- There is an urgent need for destigmatising suicide as a phenomenon and ensure there is an increase in the number of functional and accessible helplines.

- Suicide prevention requires a mix of a top-down and a bottom-up approach, ensuring that all interventions are rooted in empathy.

World Mental Health Day

- It is observed on 10 October every year, with the overall objective of raising awareness of mental health issues around the world and mobilizing efforts in support of mental health.

- The Day provides an opportunity for all stakeholders working on mental health issues to talk about their work, and what more needs to be done to make mental health care a reality for people worldwide.

World Federation for Mental Health

- The Federation was the initiator of World Mental Health Day.

- It is an international membership organization founded in 1948 to advance, among all peoples and nations, the prevention of mental and emotional disorders, the proper treatment and care of those with such disorders, and the promotion of mental health.

Awareness in the fields of biotechnology

8. **Nobel Prize in Physiology or Medicine**

   » Prelims: Hepatitis C.

   » Mains: National viral hepatitis control programme, Mission Indradhanush.

Context:

- Americans Harvey J. Alter and Charles M. Rice, and British-born scientist Michael Houghton were awarded the Nobel Prize for Medicine or Physiology for the discovery of the hepatitis C virus, a major source of liver disease that affects millions worldwide.

- The trio's work helped explain a major source of blood-borne hepatitis that couldn't be explained by the previously discovered hepatitis A and B viruses.

Stats

- The World Health Organization estimates there are over 70 million cases of hepatitis worldwide and 400,000 deaths each year. The disease is chronic and a major cause of liver inflammation and cancer.

Hepatitis:

- Hepatitis refers to an inflammatory condition of the liver.

- It's commonly caused by a viral infection, but there are other possible causes of hepatitis. These include autoimmune hepatitis and hepatitis that occurs as a secondary result of medications, drugs, toxins, and alcohol. Autoimmune hepatitis is a disease that occurs when your body makes antibodies against your liver tissue.

- There are 5 types of viral hepatitis – A, B, C, D, and E. A different virus is responsible for each type of virally transmitted hepatitis.

  * Hepatitis A is caused by an infection with the Hepatitis A Virus (HAV). This type of hepatitis is most commonly transmitted by consuming food or water contaminated by faeces from a person infected with hepatitis A.

  * Hepatitis B is transmitted through contact with infectious body fluids, such as blood, vaginal secretions, or semen, containing the Hepatitis B Virus (HBV). Injection drug use, having sex with an infected partner or sharing razors with an infected person increase your risk of getting hepatitis B.

  * Hepatitis C comes from the Hepatitis C Virus (HCV). Hepatitis C is transmitted through direct contact with infected body fluids, typically through injection drug use and sexual contact.

* Hepatitis D also called delta hepatitis, is a serious liver disease caused by the Hepatitis D Virus (HDV). HDV is contracted through direct contact with infected blood. Hepatitis D is a rare form of hepatitis that only occurs in conjunction with hepatitis B infection.

* Hepatitis E is a waterborne disease caused by the Hepatitis E Virus (HEV). Hepatitis E is mainly found in areas with poor sanitation and typically results from ingesting faecal matter that contaminates the water supply.

Hepatitis C:

- It is an infection that is caused by the Hepatitis C virus in the liver. It refers to an inflammatory condition of the liver.

- This can be transferred from needles that have been infected, at the time of birth (i.e. transmitted from infected mother to child), through body fluids of an infected person, it can also be transmitted through sexual contact specifically with HIV-infected persons.

- It does not spread through food or water. Presently there is no vaccine available for HCV. However, it can be treated with antiviral medication.

Significance of the findings:

- According to the WHO Global Hepatitis Report, HBV and HCV are major causes for mortality and morbidity, with 1.34 million deaths reported in 2015, a 63% increase from 1990, mainly due to HCV. The number of deaths is also comparable to that caused by TB and higher than that caused by AIDS.

- The discoveries (of HBV and HCV), and the development of effective screening routines, have virtually eliminated the risk of transmission via blood products in much of the world.

- With the development of effective drugs against HCV, it is possible that the threat of this viral infection will reduce, and hopefully, be eliminated soon.

SOCIAL ISSUES

Issues relating to poverty and hunger.

1. Malnourishment

» Prelims: Global Hunger Index, World Food Programme, FAO reports.

» Mains: Food fortification, measures to tackle malnourishment.

• The Global Hunger Index is a peer-reviewed annual report, jointly published by Concern Worldwide and Welthungerhilfe, designed to comprehensively measure and track hunger at the global, regional, and country levels.

Parameters

It is calculated on the basis of four indicators —

• Undernourishment: It is the share of the population with insufficient caloric intake, and uses Food and Agriculture Organization data

• Child Wasting: the share of children under the age of five who are wasted (that is, who have low weight for their height, reflecting acute undernutrition)

• Child Stunting: children under the age of five who have low height for their age, reflecting chronic undernutrition

• Child Mortality: the mortality rate of children under the age of five.

How is the data collected?

• These parameters use information from the World Health Organization (WHO), the World Bank and the United Nations, although all these international organisations draw from national data, which, in India's case, includes the National Family Health Surveys (NFHS).

• There is always a time lag in such data, so the 2020 scores are based on data from 2015-19.

• Based on the values of the four indicators, the GHI determines hunger on a 100-point scale where 0 is the best possible score (no hunger) and 100 is the worst. Each country's GHI score is classified by severity, from low to extremely alarming.

A look at Stats

• The GHI showed that nearly 690 million people in the world are undernourished; 144 million children suffer from stunting, a sign of chronic undernutrition; 47 million children suffer from wasting, also a sign of acute undernutrition.

India's ranking

• India has been ranked 94 on the 2020 Global Hunger Index (GHI), lower than neighbours like Bangladesh and Pakistan.

• In 2020, India falls in the 'serious' category on the Index, with a total score of 27.2. This is a definite improvement from the situation two decades ago, when it scored 38.9 and fell into the 'alarming' category.

Comparison

• India's scores are abysmal when compared to its peers in the BRICS countries.

* China and Brazil both scored under five, and are considered to have very low levels of hunger.

* South Africa is ranked 60 with a score of 13.5, indicating moderate levels of hunger.

• In the serious category, India stands with some of the poorest African nations, as well as its own South Asian neighbors, all of whom have better scores except Afghanistan.

• India is tied at the 94th rank out of 107 countries, sharing the rank with Sudan.

How does India fare on the different parameters in comparison to other countries?

• In terms of overall undernourishment, 14% of India's population does not get enough calories, an improvement from almost 20% in 2005-07.

• The child mortality rate is 3.7%, a significant drop from 9.2% in 2000. Many countries fare worse than India on these two parameters.

• India's poor score comes almost entirely from the child stunting and wasting

* Almost 35% of Indian children are stunted, and

GHI Severity Scale				
≤ 9.9 low	10.0–19.9 moderate	20.0–34.9 serious	35.0–49.9 alarming	≥ 50.0 extremely alarming

although this is much better than the 54.2% rate of 2000, it is still among the world's worst.

* Also, 17.3% of Indian children under five are wasted, which is the highest prevalence of child wasting in the world.

  » There is no change from two decades ago, when it was 17.1%. In fact, the situation improved to 15% in the 2010-14 data period, but worsened again by 2015-19.

However, experts say this decline may also be partially due to vagaries in data collection.

What is the main cause for such high levels of child stunting and wasting in India?

There is an interesting difference observed between child wasting in South Asia and the poorer nations of Africa, according to researchers.

- African babies are usually healthy at birth, but as they grow up into their toddler years, undernourishment starts to kick in.

- South Asian babies, on the other hand, show very high levels of wasting very early in their lives, within the first six months. "

  * This reflects the poor state of maternal health

Mothers are too young, too short, too thin and too undernourished themselves, before they get pregnant, during pregnancy, and then after giving birth, during breast-feeding. It is more than a health issue, there are social factors like early marriage.

- Almost 42% of adolescent girls aged 15 to 19 have a low Body Mass Index (BMI), while 54% have anaemia.

- Almost 27% of girls are married before they reach the legal age of 18 years, and 8% of adolescents have begun childbearing in their teens.

- Nearly 50% of the women have no access to any sort of contraception

- These poor indicators of maternal health have dire consequences for the child's health as well.

- Poor sanitation, leading to diarrhoea, is another major cause of child wasting and stunting.

  * At the time of the last NFHS, almost 40% of households were still practising open defecation.

  * Only 36% of households disposed of children's stools in a safe manner. One in ten children under the age of five suffers from diarrhoea.

How do different Indian States compare?

The Comprehensive National Nutrition Survey shows wide variability across States.

- Almost one in three children in Jharkhand show acute undernutrition, with a 29% rate of wasting.

- Although this is the worst State by far, other large States such as Tamil Nadu, West Bengal, Madhya Pradesh, Chhattisgarh and Karnataka also have one in five children who are wasted.

- Interestingly, other States that usually fare poorly on

development indices, such as Bihar, Rajasthan and Odisha, actually do better than the national average, with 13-14% rates of wasting.

- Uttarakhand and Punjab, along with several north-eastern States, have levels of child wasting below 10%.

In terms of stunting, Bihar performs the worst, with 42% of children too short for their age.

- Other populous States like Madhya Pradesh and Uttar Pradesh also have stunting rates just below 40%, and so does Gujarat.

- At the other end of the scale, Jammu and Kashmir has only 15% stunted children, while Tamil Nadu and Kerala are around the 20% mark.

What needs to be done?

- Food insecurity, poor sanitation, inadequate housing, limited access to healthcare — all result in maternal distress that leads to the kind of slow, chronic wasting seen in Indian children.

- Although India has overall food security with record levels of foodgrain production in recent years, access to healthy food is still difficult for poor households.

- There is no single solution. Every kind of household deprivation that makes life difficult for women needs to be dealt with. The focus needs to be on healthy mother

Welfare schemes for vulnerable sections of the population

2. Tribal Entrepreneurship Development Programme

  » Prelims: Details of the programme, TRIFED.

  » Mains: Tribal welfare programmes, Forest Rights Act.

Context:

- Union Minister for Tribal Affairs e-launches the Tribal Entrepreneurship Development Programme.

Details:

- The programme was launched by the Ministry of Tribal Affairs in partnership with ASSOCHAM (Associated Chambers of Commerce and Industry of India).

- Under this 3-year partnership, ASSOCHAM has set up the 'Centre of Excellence (CoE) for Tribal Entrepreneurship Development'.

- In a bid to promote and support entrepreneurship across Indian tribal communities, efforts are underway in connecting agriculture and forest produce with markets using technology, creation of self-help groups, empowering women, and creating self-sustainable enterprises.

Challenges and bottlenecks

- These include a lack of awareness about tribal heritage and ignorance about the range and diversity of tribal produce across the country.

Way forward

- The ASSOCHAM Centre of Excellence will strive to address these issues, explore avenues of promotion to create a robust tribal brand identity and in the process – build and enhance the entrepreneurial capabilities of the tribal artisans.

- A differentiated value proposition should help position and develop tribal produce as a unique lifestyle choice and in turn, create better livelihood opportunities for tribal artisans.

Role of women and women's organization

3. Witch-hunting

- Witch-hunting involves the branding of victims, especially women as witches, where they are accused of possessing supernatural powers to harm others.

- A combination of superstitious beliefs, religious practices and patriarchal norms results in women being accused of witchcraft.

Context:

- The police in Assam's Karbi Anglong district have arrested nine persons, for killing a man and a woman after branding them as witches and cremating them together.

Details

- Witch-hunting has been an age-old social malaise in Assam.

- It is mostly reported from the western part of the state.

- Data presented in the State Assembly said witch-hunting claimed the lives of 107 people from 2011 to 2019.

Steps taken:

- The Assam police had in 2001 launched Project Prahari to counsel certain communities against practising witch-hunting.

- In order to put an end to the practice, Assam Witch Hunting (Prohibition, Prevention and Protection) Act was passed.

Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections.

4. Crimes against Scheduled Tribes saw 26% rise in 2019: NCRB report

- » Mains: Protection of tribal rights.

Context:

- Annual Crime in India report 2019 has been published by the National Crime Records Bureau (NCRB).

Findings:

Crimes against SCs and STs:

- Crimes against members of the Scheduled Castes (SCs) and the Scheduled Tribes (STs) saw an increase of over 7% and 26% in 2019 compared with the 2018 figures.

- It showed an increase of 1.6% in the registration of cases over 2018.

- Uttar Pradesh recorded the highest number of crimes against the SCs in 2019, followed by Rajasthan and Bihar.

- In the number of cases of rape of women belonging to the SCs, Rajasthan topped the list followed by Uttar Pradesh and Madhya Pradesh.

- Madhya Pradesh recorded the highest number of cases against the STs, followed by Rajasthan and Odisha.

- The highest number of incidents of rape of tribal women was registered in Madhya Pradesh.

Crime against women:

- From 2018, the rate of crime against women has risen by 7.3%.

- India recorded an average of 87 rape cases every day in 2019.

- Assam reported the highest rate of crimes against women.

- Uttar Pradesh also had the highest number of crimes against girl children under the POCSO Act, followed by Maharashtra and Madhya Pradesh.

Murder and kidnapping cases:

- Murder cases across India in 2019 reported a slight dip – 0.3% – from the previous year.

- Kidnapping cases also reported a decline of 0.7% in 2019

Welfare schemes for vulnerable sections of the population by the Centre and States

5. Tribals can now build houses near forest areas

- » Prelims: Schedule 5 and 6 differences.

- » Mains: Forest Rights Act.

In news:

- Maharashtra Governor has issued a notification modifying the Forest Rights Act (FRA), 2006 that will enable tribals and other traditional forest dwelling families to build houses in the neighbourhood forest areas.

Powers used by the Governor:

- The notification has been issued by the Governor using his powers under sub paragraph (1) of paragraph 5 of the Schedule V of the Constitution.

Significance of this move:

- It aims to prevent the migration of forest-dwelling families outside their native villages and provide them

housing areas by extending the village site into forest land in their neighbourhood.

- It can provide a major relief to Scheduled Tribes and other traditional forest-dwelling families residing in the scheduled areas of the State.

How this amendment is considered a landmark one?

- The amendment is a landmark one as it assures the human rights of housing to all tribal population, especially the current generation that has built houses after 2005 as the FRA recognizes rights to habitation and cultivation on forest lands if the land were occupied before December 13, 2005.

Welfare schemes for vulnerable sections of the population by the Centre and States

6. The manacles of caste in sanitation work

» Mains: Manual scavenging, rights of the safai karmacharis.

Context:

- The article analyzes the plight of sanitation workers.

Background:

- Civil society had started a movement in the 1990s to abolish dry latrines. There have been multiple movements demanding the abolition of the dehumanising practice of the manual removal of human excreta and calls for the introduction of mechanisation for handling waste.

- Governments have responded to the demands by introducing different laws to stop manual scavenging and provide incentives to build toilets.

- In 1993, the then government promulgated the Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act, prohibiting the construction of unsanitary dry latrines and employing manual scavengers.

    * The Act defined 'manual scavenger' as a person engaged in or employed for manually carrying human excreta.

- In the early 2000s, the Safai Karamchari Andolan, a social movement that campaigned against manual scavenging, along with other organisations, filed a public interest litigation (PIL) in the Supreme Court. The demand was to direct State governments and Union Territories to strictly enforce the law to stop the practice of manual removal of human excreta.

- Mounting pressure from civil society, coupled with the intervention of the Supreme Court, forced the Central government to conduct a survey of manual scavengers in 2013, which found that dry latrines and manual removal of human excreta still persisted. In 2013, the government introduced the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act.

Concerns:

Persistence of manual scavenging:

- Despite multiple laws and provisions, even in 2020, India continues to grapple with the inhuman nature of manual scavenging.

Safety of sanitation workers:

- Though the construction of dry latrines has drastically reduced, the number of deaths in manholes, sewers and septic tanks continues to remain high.

- The existing laws have failed to address the issue of labour safety.

Stigma:

- The existing laws seem to skirt the issue of the stigma attached to sanitation.

Labour rights:

- Despite laws, workers in the sanitation field in India still are devoid of essential rights.

- There is a lack of permanent job status for sanitation workers. They lack the protection of medical insurance policies and are mostly employed as casual labourers.

- Unlike other labour forces, sanitation workers do not have a separate rule-book that lays down guidelines for their work timings, holidays, a proper place for roll call, removal from duty, etc.

Caste factor:

- Sanitation work is predominantly caste-ridden in India

- This seems to be a forced choice for such people.

Way forward:

- There is the need to completely mechanise the cleaning of sewers and manholes and ensure provisioning of safety equipment to sanitation workers.

- There is an urgent need to dissociate caste from sanitation labour.

- Initiatives like Self-Employment Scheme for Rehabilitation of Manual Scavengers (SRMS) and National Safai Karamcharis Finance & Development Corporation (NSKFDC) should be promoted.

Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections.

7. Section 29 of POCSO Act applicable only after trial begins: HC

» Prelims: Composition of National Commission for Protection of Child Rights.

» Mains: Child rights

Context:

- The Delhi High Court ruling on Section 29 of the POCSO Act.

High Court Ruling:

- The Delhi High Court has ruled that the presumption of guilt embedded in Section 29 of the Protection of Children from Sexual Offences (POCSO) Act gets triggered and applies only once the trial begins, i.e after charges are framed against the accused.

Section 29 of POCSO Act:

- Section 29 of the POCSO Act says that when a person is prosecuted for committing an offence of sexual assault against a minor, the special court trying the case shall presume that the accused is guilty.

- POSCO incorporated this provision wherein there is a reverse burden on the accused to prove his innocence keeping in view the low conviction rate of sexual offences against children.

Details:

- The ruling came in response to the question of whether the presumption of guilt applies only at the stage of trial or does it also apply when a bail plea is being considered.

- It was clarified that if a bail plea is being considered before charges have been framed, Section 29 has no application, as trial commences when charges are framed against an accused and not before that.

Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections

8. No penal provision to protect Transgenders from assault: plea

» Mains: The Transgender Persons (Protection of Rights) Act, 2019.

Context:

- The Supreme Court has asked the government to respond to a plea to provide equal protection in law against sexual abuse for transgender persons.

Issue:

- A petition said there was no penal provision that protected transgender persons from sex crimes.

- The PIL challenged the constitutional validity of certain clauses of Section 354A (outraging the modesty of a woman) of the IPC, to the extent that they are interpreted to exclude victims of sexual harassment who are transgender persons.

- The plea referred to the provisions of the Indian Penal Code (IPC) and other criminal laws which do not mention offences against "transgenders, transsexuals, kinnar and eunuchs".

- In spite of declaring transgender people to be a 'third gender' by this court, there is no provision/section in the Indian Penal Code which may protect the third gender from sexual assault by male/female or another transgender.

Steps taken to protect and end discrimination against transgender persons:

- The Ministry of Social Justice and Empowerment has constituted the National Council for Transgender Persons.

Way forward:

- The PIL has urged SC to issue an order directing the respondents to pass an Anti-Discrimination Bill that penalises discrimination and harassment on the basis of gender.

- The plea has sought a direction to the Centre to make appropriate modification/interpretation of sections/provisions of IPC dealing with sexual assault to include transgender/transsexuals/kinnar and eunuchs in the definitions accordingly.

- It also sought a direction to the Centre to adopt and implement the Universal Declaration of Human Rights.

  * India is a signatory to the Universal Declaration of Human Rights.

Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections.

9. '76% of rural Indians can't afford nutritious diet'

» Mains: Malnutrition, food fortification.

Context:

- The recently published paper, titled "Affordability of nutritious diets in rural India", by an economist of the International Food Policy Research Institute.

Details:

Methodology of the study:

- The study used the wages of unskilled workers, and dietary items such as dairy, fruit and dark green leafy vegetables as the reference baseline for the study.

  * Unskilled workers account for a larger proportion of the total workers in the rural areas. The industrial workers are in a much smaller proportion.

  * The National Institute for Nutrition's guidelines for a nutritionally adequate diet call for adult women to eat 330 gm of cereals and 75 gm of pulses a day, along with 300 gm of dairy, 100 gm of fruit, and 300 gm of vegetables, which should include at least 100 gm of dark green leafy vegetables.

- The study used the latest available food price and wage information from the National Sample Survey's 2011 dataset.

- Selecting the cheapest options from actual Indian diets the study calculated that a day's meals would cost ₹45 for a women and ₹51 for an adult man.

Salient observations:

- As per the benchmarks of the study, even if a person spent all his/her income on food, 63.3% of the rural population or more than 52 crore Indians would still not be able to afford a nutritious meal.

- If a person sets aside just a third of his/her income for non-food expenses, in such a scenario around 76% of rural Indians would not be able to afford the recommended diet.

- On indicators that simply measure calorie intake, India performs relatively better, but this metric does not account for the nutrition value of those calories, which provides a more comprehensive view of the nutrition quality.

Concerns:

- Notably, the study does not account for the meals of non-earning members of a household, such as children or older adults implying that a larger number would be facing the issue of non-affordability of nutritious diet in rural areas.

- The observations made in the study go against the observations made in the recent Economic Survey. This year's Economic Survey's 'Thalinomics', had noted that the affordability of meals had increased in India.

- The findings seem to reiterate the fact that India performs abysmally on many nutrition indicators even while the country claims to have achieved food security.

Mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections.

10. National Commission for Protection of Child Rights (NCPCR)

- » Prelims: Composition of National Commission for Protection of Child Rights.

- » Mains: Child rights.

- It is a statutory body set up in 2007 under the Commission for Protection of Child Rights Act, 2005 under the administrative control of the Ministry of Women & Child Development

  - * State Commissions for the protection of child's rights are also to be established under its supervision.

- For the Commission, protection of all children in the 0 to 18 years age group is of equal importance.

  - * Thus, policies define priority actions for the most vulnerable children.

  - * This includes focus on regions that are backward or on communities or children under certain circumstances

- The objective of the commission is to protect, promote and defend child rights in India including the rights adopted in the United Nations Convention on the Rights of the Child, 1989 — with an accession by India in 1992.

  - * The Commission's Mandate is 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 also the UN Convention on the Rights of the Child.

What are the powers of the National Commission for Protection of Child Rights (NCPCR)?

The powers given to the commission are extremely broad.

- It examines and reviews the safeguards provided under any law for the protection of child rights and recommends measures to the government.

- It can present a report annually, or as it deems fit, for implementation of these measures.

- Undertake and promote research in the field of child rights.

- Spread child rights literacy among various sections of society and promote awareness of the safeguards available for protection of these rights through publications, media, seminars and other available means.

Issues relating to poverty and hunger

11. National Institute of Nutrition (NIN)

- » Mains: Nutrition status of the population and dietary practices

- It is an Indian Public health, Nutrition and Translational research center located in Hyderabad

- The institute is one of the oldest research centers in India, and the largest center, under the Indian Council of Medical Research

- The Institute was founded in 1918 by Sir Robert McCarrison. It was originally a single room laboratory at the Pasteur Institute, Coonoor, Tamil Nadu for the study of Beriberi, and was called the Beri-Beri Enquiry Unit

- The scope of the laboratory expanded to include all deficiency diseases, and around 1928-29 became the Nutrition Research Laboratories (NRL), with McCarrison as its first Director

- The facility moved to Hyderabad in 1958 and in 1969 was renamed the National Institute of Nutrition

MANDATE

- Periodic Assessment of Nutrient intakes, Health and Nutrition status of the population for optimal health, and assist the Government and regulatory bodies in policy making

- Establishment of Dietary Reference Intake values, Recommended Dietary allowances, Dietary guidelines for Indian population; and assessment of Nutrient Composition of Foods

- Identify various nutrition deficiency disorders prevalent among different segments of the population

- Conduct operational research for planning and implementation of National Nutrition Programmes in the country

- Conduct surveys and study the risk factors of NCDs through multidisciplinary research

- Conduct innovative basic science research on nutrient metabolism, interactions, requirements and responses

- Identify and study food and environmental safety challenges for providing scientific input for policy and regulation.

- Development of human resource in nutrition and also provide evidence-based nutrition knowledge to the community

GEOGRAPHY

Important Geophysical Phenomena

1. Science of monsoons

» Prelims: Features of monsoon

» Mains: El nino, La Nina, Monsoon forecast.

Context:

- The southwest monsoon 2020 has officially drawn to an end with the India Meteorological Department (IMD) declaring a withdrawal of the associated winds and rainfall pattern from India

Long Period Average (LPA)

- IMD brands the monsoon as 'normal' or 'deficient' based on how it fares against its benchmark Long Period Average (LPA).

- LPA is derived from the average rainfall from June to September across the country over a 50-year time period.

  * The new LPA for India is 88 cm, one unit less than the previous LPA of 89 cm..

  * For the revised value, the time frame under consideration has been shifted to 1961-2010.

  * This acts as a benchmark against which the rainfall in any monsoon season is measured.

IMD maintains five rainfall distribution categories on an all-India scale. These are:

- less than 90% of the LPA is considered 'deficient';

- 90-96% 'below-normal';

- 96-104% 'normal';

- 104-110% as 'above-normal'; and

- more 110% of the LPA is considered 'excess'.

North East Monsoon

- The southwest monsoon's withdrawal also heralds the advent of north-easterly winds that bring in the northeast monsoon

- The India Meteorological Department (IMD) recognises October to December as the time for the northeast monsoon.

- During this period, rainfall is experienced over Tamil Nadu, Kerala, and Andhra Pradesh, along with some parts of Telangana and Karnataka.

  * The northeast monsoon is particularly important for Tamil Nadu, which receives almost half its annual rainfall during this season.

- Many other parts of the country, like the Gangetic plains and northern states, also receive some rain in November and December but this is not due to the northeast monsoon.

  * It is caused mainly by the Western Disturbances, an eastward-moving rain-bearing wind system that originates beyond Afghanistan and Iran, picking up moisture from as far as the Mediterranean Sea, even the Atlantic Ocean.

- While significant to the agriculture there, the northeast monsoon contributes 10%-12% of India's annual rainfall, against the southwest monsoon's 75%-80%.

Concerns

- Its limited geographic spread has meant that the northeast monsoon is not showered with as much research attention.

- However, studies show that northeast monsoon rainfall displays significant variation and climate models are fairly inaccurate in their forecasts of its unfolding over the subcontinent.

  * Part of the problem is that the evolution of the northeast monsoon is harder to predict than that of the southwest monsoon.

  * The northeast monsoon is highly variable because it is governed by the climatic dynamics of the Bay of Bengal, which is itself is hard to predict

- There have been significant investments in super computing infrastructure to simulate weather as well as to tune forecasts to go beyond just giving rainfall estimates and factor in the potential damage of floods and cyclones.

- Building on these, scientists must also put in more effort and design research programmes that better analyse the vagaries of the northeast monsoon.

Conclusion

- Along with more understanding of how climate is changing locally, India needs better science to prepare more effective disaster management plans and improve resilience in a warming world.

Awareness in the fields of Space

2. Indian astronomers uncover mystery behind decline of star formation rate after its peak 8-10 billion years ago

» Prelims: Giant Metre wave Radio Telescope (GMRT)

» Mains: stages of star formation

What's in News?

- A team of astronomers from the National Centre for Radio Astrophysics (NCRA-TIFR), Pune, and the Raman Research Institute (RRI), Bangalore, an autonomous institute of the Department of Science & Technology (DST), Government of India has used the upgraded Giant Metre wave Radio Telescope (GMRT), operated by NCRA-TIFR, to measure the atomic hydrogen content of galaxies seen as they were 8 billion years ago.

- The research, funded by the DST, has been published in the journal 'Nature'.

- The research records the earliest epoch in the universe for which the atomic gas content of galaxies has been measured.

Background:

- For long, scientists have been intrigued by the decrease in the rate at which stars were formed in galaxies after it peaked about 8-10 billion years ago.

- They have now deciphered the mystery behind this decline in star formation activity by measuring the atomic hydrogen of the galaxies.

- Galaxies are made up mostly of gas and stars. Gas converts to stars with time.

- Understanding this conversion requires measurement of the atomic hydrogen gas, the primary fuel for star formation in galaxies in early times.

- Astronomers have long known that galaxies formed stars at a higher rate when the universe was young than they do today.

- But the cause of this decline is unknown, mostly because there was no information about the amount of atomic hydrogen gas at that time.

EDUCATION

Social Sector/Services relating to Education, Human Resources

1. STARS Project

» Prelims: Provisions of NEP.

» Mains: Measures to enhance the learning outcomes in education.

• The Strengthening Teaching-Learning and Results for States (STARS) program would be under the National Education Policy 2020.

• The central idea of the initiative is to enhance the learning outcomes in schools and revolutionise school learning process.

• The project is partly funded by the World Bank.

• It would be implemented as a new Centrally Sponsored Scheme under the Department of School Education and Literacy, Ministry of Education (MOE).

• The scheme will facilitate enhanced classroom layouts, developmentally appropriate teaching-learning material, academic support systems, parental engagement strategies, and administrative & academic monitoring for early education.

• A National Assessment Centre – PARAKH will be established for continuous tracking of learning, conceptual assessments, and data-driven decision making leading to examination reforms.

• The STARS program will also focus on the training module of teachers, by "bolstering need-based teacher training, peer learning, revamp in-service professional development, & institute effective, transparent systems for performance management." The program will also include career counselling and in-school vocational education along with internships with market relevance.

• Keeping in mind the goal of NEP 2020, STARS program will also train students in soft skills and STEM/STEAM (Science, Technology, Engineering, Art & Math) related skills.

• The project covers 6 States namely Himachal Pradesh, Rajasthan, Maharashtra, Madhya Pradesh, Kerala and Odisha.

  * The identified States will be supported tor various interventions for improving the quality of education.

• Besides this project, it is also envisaged to implement a similar ADB funded project in 5 states namely Gujarat, Tamil Nadu, Uttarakhand, Jharkhand and Assam.

• All states will partner with one other state for sharing their experiences and best practices.

• The STARS project seeks to support the states in developing, implementing, evaluating and improving interventions with direct linkages to improved education outcomes and school to work transition strategies for improved labour market outcomes.

• The Project envisions improving the overall monitoring and measurement activities in the Indian School Education System through interventions.

Two components of the STARS Project:

• At the national level, the project envisages the following interventions:

  * To strengthen MOE's national data systems to capture robust and authentic data on retention, transition and completion rates of students.

  * To support MOE in improving states' PGI scores by incentivizing their governance reform agenda through SIG (State Incentive Grants).

  * To support the strengthening of learning assessment systems.

  * To support MOE's efforts to establish a National Assessment Centre (PARAKH).

  * To have a Contingency Emergency Response Component (CERC) which would enable it to be more responsive to any natural, man-made and health disasters.

• At the State level, the project envisages:

  * Strengthening Early Childhood Education and Foundational Learning

  * Improving Learning Assessment Systems

  * Strengthening classroom instruction and remediation through teacher development and school leadership

  * Governance and Decentralized Management for Improved Service Delivery

  * Strengthening Vocational education in schools through mainstreaming, career guidance and counselling, internships and coverage of out of school children

Context

• Cabinet approves the implementation of the STARS project.

HISTORY

Indian Freedom Struggle

1. **Mohammad Ali Jauhar**

   » Prelims: Personalities involved in Khilafat movement

   » Mains: Causes for khilafat movement, its outcome.

   • Maulana Mohammad Ali Jauhar was among the leading figures of the Khilafat Movement.

   • Mohammad Ali Jauhar was a product of the Aligarh Movement

   • He was elected to become the President of Indian National Congress party in 1923 and it lasted only for a few months.

   • He was also one of the founders and presidents of the All-India Muslim League.

   • Jouhar was disillusioned by the failure of the Khilafat movement and Gandhi's suspension of non-cooperation movement in 1922, owing to the Chauri Chaura incident.

DISASTER MANAGEMENT

Disaster and Disaster Management

1. Flash Flood Guidance Services for South Asia

» Mains: causes of flash flood , measures to prevent it.

Context:

- India has launched Flash Flood Guidance services for South Asian countries — India, Bangladesh, Bhutan, Nepal and Sri Lanka — to issue impact-based forecasting of floods, which are very sudden and of short duration, at watershed and also city level.

Details:

- The Flash Flood Guidance services is the first of its kind for South Asian countries namely, India, Sri Lanka, Nepal, Bhutan and Bangladesh.

- The Flash Flood Guidance is a robust system designed to provide the necessary products in real-time to support the development of warnings for flash floods about 6- 12 hours in advance at the watershed level with a resolution of 4km x 4km for the Flash Flood prone South Asian countries.

- IMD has tested the performance of the system during recent monsoon seasons in the preoperational mode and the Flash Flood Bulletins were issued to National Hydrological and Meteorological Services in the Region for its validation.

- The system has in-depth science, dynamics and diagnostics to provide guidance for the possible occurrences of flash floods at the local level.

- The guidance for flash floods in the form of threats (6 hours in advance) and risks (24 hours in advance) will be provided by the Regional Centre to the National Meteorological and Hydrological Services, National and State Disaster Management Authorities and all other stakeholders for taking necessary mitigation measures to reduce the loss of life and property.

- Recognizing that flash floods have a particularly disastrous impact on the lives and properties of the affected populations, the 15th World Meteorological Organization (WMO) Congress had approved the implementation of a Flash Flood Guidance System project with global coverage that had been developed by the WMO Commission for Hydrology jointly with the WMO Commission for Basic Systems.

Important Geophysical Phenomena

2. 'India is much safer against tsunami threat'

» Mains: Early warning system, causes for tsunami

What's in News?

The Indian National Centre for Ocean Information Services (INCOIS) director has asserted that India is much safer against the threat of tsunamis than it was in 2004, owing to the state-of-the-art tsunami early warning system established in INCOIS.

- Currently, large under sea earthquakes can be detected in real-time and provide a tsunami warning in 10-20 minutes after the earthquake occurrence.

- However, he warned that the best of warning systems could fail, if communities are not prepared, if they do not understand the official and natural warning signs of a tsunami, and appropriate and timely response is not taken.

- He said that the focus in recent times has been on:

  * Enhancing community awareness and response through several capacity-building activities.

  * Biennial Indian Ocean-wide tsunami drills.

  * Piloting of the UNESCO-IOC Tsunami Ready initiative to provide a structured framework to build and measure capacities of coastal communities to respond effectively to tsunamis, through 11 important indicators.

Important Geophysical Phenomena

3. Hyderabad Floods.

» Prelims: Rivers and lakes in and around Hyderabad

» Mains: Urbanization problems, NDMA guidelines.

Context

- The development of deep monsoon depression over the west-central Bay of Bengal and its subsequent landfall on the Indian subcontinent resulted in downpours over several districts in the state of Telangana severely affecting the city of Hyderabad.

- The rainfall on a single day on October 13th surpassed the monthly average rainfall of Hyderabad for October.

Causative factors:

Natural causes:

- The high-intensity downpour in a short span is a primary factor for the current flooding in Hyderabad.

Lack of functional drainage infrastructure:

- The inadequate drainage infrastructure has contributed to worsening the impact of the flooding.

- Hyderabad city drainage system has been neglected by the city municipal corporation, unblocking of existing storm drains or upgradation of the existing drainage system has not been undertaken for years

together.

- Dependence upon an antiquated sewerage and drainage system has led to city being flooded.

Developmental activities:

- Construction over lake beds and encroachments of drainage channels have played a role in exacerbating flooding and inundation in the city.

  * Much of the damage was due to the overflowing of lakes — in particular, the Hussain Sagar Lake in the middle of Hyderabad.

    * Charkop Lake in Maharashtra, Ousteri Lake in Puducherry, Deeporbeel in Guwahati are examples from other parts of India

- Rapid urbanisation in Hyderabad has resulted in the loss of a large portion of the wetlands. Wetlands and watersheds play a vital role in absorbing excess rainfall.

  * An analysis by the Centre for Science and Environment in 2016 revealed that 3,245 hectares of water bodies were lost in Hyderabad between 1989 and 2001.

Lack of planning:

- The current flooding also shows a lack of preparation and disaster mitigation, a problem that plagues most urban centres in the country.

- The term urban flood is a misnomer. The problem of flooding in urban areas is not only due to overflowing rivers, but the uninformed way in which our cities are coping with urbanisation also plays a large role

Recurrent pattern

- In Patna, severe water logging brought the city to a standstill, with hospitals and residential areas filled with waist-deep water.

- The secondary runway of Chennai International Airport was built right over the Adyar river. Major part of the airport was constructed on the riverine floodplains, paving way to massive flooding during the 2015 Chennai floods.

- Andhra Pradesh's Amaravati Capital City Project in its proposal stage had major areas to be constructed on the floodplains of Krishna river.

In 2010, NDMA had issued guidelines on Urban Flood Management in India

- Early warning and data collection.

  * Create a National Hydro-meteorological Network.

  * The guidelines say that for providing early warning, the Central Water Commission (CWC) should maximize the real-time hydro-meteorological network to cover all urban centres to effectively deal with the problem of urban flooding

* Use of Doppler Weather Radars to be expanded to cover all urban areas in the country

* An inventory of the existing storm water drainage system to be prepared. The inventory will be both watershed-based and ward-based.

* Flood hazard assessments should be done on the basis of projected future scenarios of intensities and duration of the rainfall and land-use changes.

- Planning

  * Catchment to be the basis for planning and designing the storm water drainage systems in all Urban Local Bodies (ULBs)

  * All future road and rail bridges in cities crossing drain to be designed such that they do not block the flows resulting in backwater effect

  * Every building in an urban area must have rainwater harvesting as an integral component of the building utility.

  * Low-lying areas in cities have to be reserved for parks and other low-impact human activities

  * Every building in an urban area must have rainwater harvesting as an integral component of the building utility.

  * Concept of Rain Gardens to be incorporated in planning for public parks and on-site storm water management for larger colonies and sites that are to be developed.

- Drainage

  * Pre-monsoon desilting of all major drains to be completed by March 31 each year.

  * Suitable interventions in the drainage system like traps, trash racks can be provided to reduce the amount of solid waste going into the storm sewers.

  * Inlets to be provided on the roads to drain water to the roadside drains and these have to be designed based on current national and international practices.

Way forward:

- Hyderabad urgently needs to expand and remodel its drainage system.

- In the long term, there is a need to take into account the hydro-geology of cities in planning developmental activities.

- Recognizing the vital role played by the wetland in flood mitigation, there is the need for a focused conservation programme for these wetland ecologies in cities.

Urbanization

4. Sponge Cities

» Mains: Urban Planning

- The article talks about recent instances of urban floods while suggesting the need and methods for effective management of urban floods.

Background:

- Torrential rains in Hyderabad caused devastation in the city killing over 50 people washing away hundreds of riverbed hutments. Thousands of homes remain submerged weeks after the flood.

- This experience is not unique to the city of Hyderabad but something that cities across India have been experiencing in recent years.

Way forward:

Involving local communities:

- The risk is going to increase year after year with changing rainfall patterns and a problem of urban terrain which is incapable of absorbing, holding and discharging water.

- There is a need to start paying attention to the management of our wetlands by involving local communities — people with traditional rights for fishing and farming.

Participation of civil society organisations:

- Urban floods of this scale cannot be contained by the municipal authorities alone. Nor can they be dealt with by the State government.

- They cannot be managed without concerted and focused investments of energy and resources. Such investments can only be done in a mission mode organisation with the active participation of civil society organisations at the metropolitan scale.

Watersheds, terrain alteration:

- Urban watersheds are micro ecological drainage systems, shaped by contours of the terrain.

- Watershed management and emergency drainage plan should be clearly stated in policy and law.

- Detailed documentation of these must be held by agencies that are not bound by municipal jurisdictions.

  * There is a need to consider natural boundaries such as watersheds instead of governance boundaries like electoral wards for shaping a drainage plan.

- The Metropolitan Development Authorities, National Disaster Management Authority, State revenue and irrigation departments along with municipal corporations should be involved in such work together.

Ban against terrain alteration:

- Lasting irreversible damage has been done to the city by builders, property owners, and public agencies by flattening terrain and altering drainage routes.

- Terrain alteration needs to be strictly regulated and a ban on any further alteration of terrain needs to be introduced.

Sponge cities mission:

Background

- City infrastructure is filled with thick concrete and other impermeable materials which might not allow the water to seep into it

- Gray infrastructures such as floodwalls and human-made drains can handle some amounts of water

- But when the floods are heavy they can rarely handle it.

What is a sponge City?

- These unique cities implement natural materials into their architecture to soak up rainwater, instead of allowing it to flood areas.

- The idea of a sponge city is to make cities more permeable so as to hold and use the water which falls upon it.

- Sponge cities absorb the rain water, which is then naturally filtered by the soil and allowed to reach urban aquifers.

- This water can be treated easily and used for city water supply.

What does a Sponge City need in practise?

- A sponge city needs to be abundant with spaces that allow water to seep through them.

  * To improve the city's capacity to absorb water, new porous materials and technologies must be encouraged or mandated across scales.

  * Examples of these technologies are bioswales and retention systems, permeable material for roads and pavement, drainage systems which allow storm water to trickle into the ground and harvesting systems in buildings.

  * Green roofs that can retain rainwater

  * Contiguous open green spaces, interconnected waterways, channels and ponds across neighbourhoods that can naturally detain and filter water.

Implementation

- These can all be delivered effectively through an urban mission along the lines of the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), National Heritage City Development and Augmentation Yojana (HRIDAY) and Smart Cities Mission.

What are the benefits of a Sponge City?

- Reduction in flood risk as the city offers more permeable spaces for the natural retention and percolation of water. This leads to better resilience and in particular greater ability to deal with higher flood risks resulting from climate change

- More clean water for the city. Replenished groundwater and thus greater accessibility to water resources for cities.

    * These not only reduce run-off and the load on infrastructure, but also help keep water in the city for later use.

- Greener, healthier, more enjoyable urban spaces.

Challenges Remain for Sponge Cities

- There are many reasons other countries aren't pushing for sponge cities right now, but the cost is the most significant factor.

- Major vehicle accident with a tanker could result in an oil spill. The oil could seep into the ground with rainwater and pollute the entire city's drinking water.

GOVERNANCE

Important Aspects of Governance

1. Data Governance Quality Index (DGQI)

» Prelims: on Data Governance Quality Index.

Context:

- Department of Fertilizers ranked 2nd amongst the 16 Economic Ministries/Departments and ranked 3rd amongst the 65 Ministries/Departments in the Survey Report on Data Governance Quality Index.

DGQI:

- The DGQI exercise was undertaken by the Development Monitoring & Evaluation Office (DMEO), NITI Aayog.

- The exercise is a 'Self-assessment based review of data preparedness levels' to produce a DGQI scorecard.

- The survey was initiated with an objective to assess the data preparedness of Ministries or Departments on a standardized framework.

- The survey was also meant to drive healthy competition among them and promote cooperative peer learning from best practices.

- For the survey, an online questionnaire was prepared under six major themes of DGQI

  * Data Generation

  * Data Quality

  * Use of Technology

  * Data Analysis, Use and Dissemination

  * Data Security

  * HR Capacity and Case Studies

- The ministries and departments were classified into six categories namely, administrative, economic, strategic, infrastructure, social and scientific.

Development Monitoring and Evaluation Office (DMEO)

- DMEO was constituted in 2015 by merging the erstwhile Program Evaluation Office (PEO) and the Independent Evaluation Office (IEO).

- It is an attached office under NITI Aayog, aimed at fulfilling the organization's monitoring and evaluation (M&E) mandate and building the M&E ecosystem in India.

- DMEO has been mandated to actively monitor and evaluate the implementation of the Government of India programmes and initiatives so as to strengthen their implementation and scope of delivery on an ongoing basis.

- Additionally, DMEO undertakes evaluation of selected programmes/schemes, suo-moto or on the request of the Prime Minister's Office (PMO) or programme implementing Ministries/Departments of the Government of India.

Important Aspects of Governance

2. Deepfake

» Mains: Measures to tackle copyright infringement. Law and order problem.

- Deepfakes are the synthetic digital media content (video, audio, and images) manipulated using Artificial Intelligence.

  * Deepfakes use a form of artificial intelligence called deep learning to make videos/images of fake events, hence the name deepfake.

- Deepfakes leverage powerful techniques from machine learning and artificial intelligence to manipulate or generate visual and audio content.

  * The main machine learning methods used to create deepfakes are based on deep learning and involve training generative neural network architectures, such as autoencoders or Generative Adversarial Networks (GANs).

- Apart from doctoring existing videos, deepfake technology can create entirely fictional photos from scratch. Audio can also be deepfaked too, to create "voice skins" or "voice clones" of public figures.

Increasing use of deepfakes:

- As per the available reports, the number of deepfake videos online is increasing at an exponential pace.

- With the increasing access to synthetic media technology, AI-generated fake videos are becoming more common (and convincing).

  * Access to cloud computing, algorithms, and abundant data has created an ideal scenario for the creation of deepfakes.

- Plenty of tools are now available to help people make deepfakes. Several companies offer this as a service. There are even mobile phone apps that let users add their faces to a list of TV and movie characters on which the system has trained.

- The advent of new techniques allows even unskilled people to make deepfakes with only a handful of photos.

Legal position:

- Deepfakes are not illegal per se, but depending on the content, a deepfake may infringe copyright, breach data protection law, and be defamatory if it exposes the victim to ridicule.

Concerns:

- As with any new innovative technology, deepfakes can be and have been weaponised to inflict harm. Deepfakes can inflict damage to individuals, institutions, businesses and democracy.

Targeting women:

- The very first use case of malicious use of a deepfake was seen in pornography, inflicting emotional, reputational violence upon women.

Spread of false news:

- Deepfakes being hyper-realistic digital falsification, it becomes very hard to differentiate them from authentic media.
- Deepfakes are being used to spread propaganda and disinformation with ease and unprecedented speed and scale. Such disinformation and hoaxes can have undesirable consequences.

Potential for malicious use:

Amplifying division in society:

- Deepfakes can be used to sow the seeds of polarisation and amplifying division in society.
  * Deepfakes can be used by insurgent groups and terrorist organizations to represent their adversaries as making inflammatory speeches or engaging in provocative actions to stir up anti-state sentiments among people.
  * A deepfake of a community leader denigrating a religious site of another community has the potential to cause riots.

Harming an individual's reputation:

- Deepfakes can depict a person indulging in antisocial behaviours or saying inappropriate things. These can have severe implications on his/her reputation, sabotaging their professional and personal life.

Economic fraud:

- Deepfakes can also pose a personal security risk: deepfakes can mimic biometric data, and can potentially trick systems that rely on face or voice recognition.
- Malicious actors can take advantage of unwitting individuals to defraud them for financial gains using audio and video deepfakes. Deepfakes can be deployed to extract money or confidential information.

As a weapon:

- A deepfake could be used as a tool by a nation-state to undermine public safety and create uncertainty and chaos in the target country. This provides an opportunity to harm a country without the resort to traditional aspects of warfare.

Undermining democracy:

- Nation-state actors with geopolitical aspirations and ideological believers can use deepfakes to their advantage by using deepfakes to alter the democratic discourse and undermine trust in democratic institutions. False information about institutions, public policy, and politicians powered by a deepfake can be used to influence election outcomes.
  * A deepfake of a political candidate can sabotage their image and reputation and thus damage their election campaign. Voters can be confused and elections can be disrupted.
  * Deepfakes can be used to cast a shadow of illegitimacy over the voting process and election results.

False evidences:

- As the technology becomes more accessible, deepfakes could also mean trouble for the courts, particularly in child custody battles and employment tribunals, where faked events could be entered as evidence. Deepfakes can be used to fabricate false evidence.

Long term harm:

Loss of trust:

- Apart from the short term harm caused by deepfakes, they are capable of also inflicting long-term social harm by accelerating the already declining trust in news media. Such erosion in trust can contribute to a culture of factual relativism. This would lead to the creation of a zero-trust society, where people cannot, or no longer bother to, distinguish truth from falsehood. And when trust is eroded, it is easier to raise doubts about specific events.
- Combined with distrust, the existing biases amplified due to the echo chamber and filter bubble effects would lead to discord in society.
  * The echo chamber effect is a situation in which beliefs are amplified or reinforced by communication and repetition inside a closed system and insulates them from rebuttal. People are able to seek out information that reinforces their existing views, potentially as an unconscious exercise of confirmation bias.
  * A filter bubble is a state of intellectual isolation that allegedly results from personalized searches when a website algorithm selectively guesses what information a user would like to see based on information about the user, his/her location, past click-behaviour and search history. As a result, users become separated from information that disagrees with their viewpoints, effectively isolating them in their own cultural or ideological bubbles.

Liar's dividend:

- It would also lead to what is often referred to as a liar's dividend, wherein an undesirable truth is dismissed as deepfake or fake news and people may start providing an alternative-facts narrative to replace the truth.

Are deepfakes always malicious?

- Not all deepfakes are malicious. Many are entertaining and some are helpful.

    * Deepfake videos can enliven galleries and museums. For the entertainment industry, technology can be used to improve the dubbing on foreign-language films, and more controversially, resurrect dead actors.

    * Voice-cloning deepfakes can restore people's voices when they lose them to disease.

Way forward:

- To counter the grave threat posed by deepfakes there is the need for a multi-stakeholder and multi-modal approach.

Media literacy:

- Media literacy for consumers and journalists is the most effective tool to combat disinformation and deepfakes.

    * Media literacy is the ability to identify and understand the messages of the media. The people should be aware of the fact that media have embedded values and points of view and that most media messages are organized to gain profit and/or power. This understanding would enable them to decipher, understand, translate, and use the information that they encounter.

- Media literacy efforts must be enhanced to cultivate an alert public. This can lessen the damage posed by fake news.

Responsible digital behaviour:

- The general citizenry has a critical role to play in countering the challenge posed by deepfakes. The people must take the responsibility to be a critical consumer of media on the Internet and think and evaluate the authenticity of a message before sharing it on social media. This could prove to be the most effective solution to the deepfake driven infodemic.

Regulations:

- For effective regulation of deepfakes there is a need for collaboration between the technology industry, civil society, and policymakers. These regulations must be aimed at disincentivising the creation and distribution of malicious deepfakes.

    * Twitter is taking active measures to handle synthetic and manipulated media on its platform. In order to prevent disinformation from spreading, Twitter is placing a notice on tweets that contain manipulated media and/or deepfakes that signal to viewers that the media is manipulated. There will also be a warning that appears to users who plan on retweeting, liking, or engaging with the tweet.

Technology intervention:

- There is a need for easy-to-use and accessible technology solutions to detect deepfakes.

    * Artificial intelligence can help spot fake videos.

Tech firms are now working on detection systems that aim to flag up fakes whenever they appear.

    * Another technology-led strategy focuses on the provenance of the media. A blockchain online ledger system could hold a tamper-proof record of videos, pictures and audio so their origins and any manipulations can always be checked.

- Governments, universities and tech firms are all funding research to detect deepfakes. Recently a Deepfake Detection Challenge was kicked off, backed by Microsoft, Facebook and Amazon. It will include research teams around the globe competing for supremacy in the deepfake detection game.

Amplifying authoritative sources:

- Authentic and authoritative sources must be made more visible to help inform people. This will help negate the effects of false news.

- The government has an important role to play in this regard.

Additional information:

Shallowfakes:

- Shallowfakes are videos that are either presented out of context or are doctored with simple editing tools. They are crude but still impactful.

E-governance

3. ICT Grand Challenge

   » Prelims: Jal Jeevan Mission

   » Mains: Internet of things application.

- It is launched by the Jal Jeevan Mission in partnership with the Ministry of Electronics & Information Technology (MeitY).

- It invites proposals to create an innovative, modular, and cost-effective solution to develop a 'Smart Water Supply Measurement and Monitoring System' to be deployed at the village level.

- A total of 213 proposals from various Indian tech start-ups, MSMEs, and other companies have been received which will now be scrutinized by a jury committee appointed by MeitY and select the proposals.

- The mission focuses on service delivery rather than the mere creation of infrastructure.

- This grand challenge will harness the vibrant Internet of Things ecosystems of India for creating a smart rural water supply ecosystem to measure and monitor the service delivery of the water supply in rural areas.

- This challenge will provide an opportunity to work for the cause of Jal Jeevan Mission and to assure potable water supply through functional household tap connection to every rural household of the country.

- The Grand Challenge will provide support at the ideation stage, prototype development stage, deployment stage. The pilot will be conducted in 100

villages.

- The best solution will get a cash prize of Rs. 50 Lakh and runners up will get prizes of Rs. 20 Lakh each.

- The successful developers will be given an opportunity to join the MeitY-supported incubator for further nurturing of the solution.

Important aspects of governance

4. Public Affairs Index (PAI)

» Prelims: Organisation releasing the index. Components of the index.

- It is a data driven platform to rank the States of India from the lens of governance.

- Public Affairs Centre (PAC) has developed PAI as a unique statistical tool to evaluate the performance of governance in the States.

    * The Public Affairs Centre is a not-for-profit research think tank situated in Bengaluru. It works at improving the quality of governance in India.

    * The institute conducts research activities in two major fields, public policy and participatory governance

- PAI is largely based on secondary data and has been extracted from Union Government Ministries and Departments.

- The governance performance is analysed in the context of sustainable development defined by three pillars of equity, growth and sustainability.

Context

- Public Affairs Index-2020 released by the Public Affairs Centre

Ranking

- Four southern states, Kerala (1.388 PAI Index point), Tamil Nadu (0.912), Andhra Pradesh (0.531) and Karnataka (0.468) stood in the first four ranks in the large state category in terms of governance

    * Uttar Pradesh, Odisha and Bihar were at the bottom of the ranking, scoring negative points in the category. They got -1.461, -1.201 and -1.158 points respectively.

- In the small state category, Goa ranked first with 1.745 points, followed by Meghalaya (0.797) and Himachal Pradesh (0.725).

    * Worst performers who scored negative points are Manipur (-0.363), Delhi (-0.289) and Uttarakhand (-0.277)

- Chandigarh emerged the best governed union territory in the category of UTs with 1.05 PAI points, followed by Puducherry (0.52) and Lakshadweep (0.003). Dadar and Nagar Haveli (-0.69), Andaman, Jammu and Kashmir (-0.50) and Nicobar (-0.30) were the least performers.

Important aspects of governance.

5. RTI

» Mains: Transparency and accountability.

Context:

- The year 2020 marks 15 years of the enactment of the Right to Information (RTI) law in India. In this context, the article analyzes the significance of the RTI Act and also evaluates some concerns regarding the weakening of the right to information regime.

Background:

Right to information as a fundamental right:

- The right to information has been upheld by the Supreme Court as a fundamental right flowing from Article 19 of the Constitution (right to freedom).

- Article 19 guarantees every citizen the right to free speech and expression. Without access to relevant information, people's ability to formulate opinions and express themselves meaningfully is curtailed.

    * This observation was made in the Kulwal v/s Jaipur Municipal Corporation case (1986).

RTI law in India:

- Every year nearly six million applications are filed under the RTI Act, making the RTI act of India, the most extensively used transparency legislation in the world.

Significance of the RTI law:

Increasing government accountability:

- The RTI law has allowed the citizens to hold governments accountable by seeking information. RTI has empowered citizens to question those who govern and hold them to account.

    * Example: During the COVID-19 crisis, the RTI law has been widely used to seek information about the availability of medical facilities, like ventilators and ICU beds.

Increasing transparency:

- Example: RTI applications have been filed to obtain information about the anonymous electoral bonds funding the political parties.

- Increased transparency can help improve decision making by public authorities by removing unnecessary secrecy.

Exposing corruption:

- The RTI Act by reducing information asymmetries has been instrumental in exposing corruption and arbitrary abuse of power by the state.

- By giving every citizen of India the right to access government files and records, the law has potentially created 1.3 billion whistleblowers and auditors.

    * RTI applications have helped expose wrongdoings in the organisation of the Commonwealth Games, and the allocation of 2G spectrum and coal blocks.

Empowering the marginalized:

- The RTI law has helped empower the poorest and most marginalized sections of the society to access their basic rights and entitlements, even in the absence of effective grievance redress mechanisms to address service delivery failures.

- National assessments have shown that a large proportion of the RTI applications are filed by the poorest and the most marginalised.

  * Example: The RTI Act has been used to hold government departments accountable for the delivery of food grains and social security benefits.

Empowering people vis-a-vis the highest authorities:

- People have used the RTI law to question the highest offices of the country.

  * Example: The Prime Minister's Office has been queried about the expenditure of the PM CARES Fund set up to provide relief during disasters like the current pandemic.

Deepening democracy:

- The RTI law has enhanced people's participation in the democratic process and has allowed the citizens to assert their citizenship.

- The right to information would be key to strengthening participatory democracy and ushering in people-centered governance.

Concerns:

- The article laments the recent amendments to the law and events, which it claims can have a detrimental impact on the effectiveness of the law and the institutions governing the law.

Amendment to RTI act:

- The 2019 amendments to the RTI Act has done away with the statutory protection of fixed tenure and high status conferred on the information commissioners. The new amendment allows the Central Government to determine the tenure and salaries of all information commissioners.

- This would have a negative impact on the independence of the information commissioners.

  * Ex • Information Commissions at the Centre and in the States are the final adjudicators empowered to act against violations of the RTI Act.

Lack of timely appointments:

- The governments have not been appointing information commissioners in a timely manner.

  * Despite Supreme Court orders to fill all vacancies, six out of 11 posts of commissioners are currently vacant in the CIC, including that of the chief. Eight State Information Commissions are

functioning without a chief. Two commissions — Tripura and Jharkhand — are totally defunct with no commissioners.

- This has severely impeded the functioning of commissions.

- Vacancies in Information Commissions lead to large backlogs of appeals/complaints and long delays in the disposal of cases, effectively frustrating the people's right to know.

Conclusion:

- The right to question is the hallmark of a democracy and any weakening of the RTI law or its implementation does not augur well for a democratic republic.

Important aspects of governance.

6. **SVAMITVA Scheme**

   » Prelims: Details of the scheme

   » Mains: Role of Panchayath Raj Institutions

   - SVAMITVA (Survey of villages and mapping with improvised technology in village areas) scheme

   - It is a new initiative of the Ministry of Panchayati Raj.

   - It aims to provide rural people with the right to document their residential properties so that they can use their property for economic purposes.

   - The scheme is for surveying the land parcels in rural inhabited area using Drone technology.

Objectives

- To bring financial stability to the citizens in rural India by enabling them to use their property as a financial asset for taking loans and other financial benefits.

- Creation of accurate land records for rural planning.

- Determination of property tax, which would accrue to the GPs directly in States where it is devolved or else, add to the State exchequer.

- To support in preparation of better-quality Gram Panchayat Development Plan (GPDP) by making use of GIS maps.

- To reduce property related disputes and legal cases

Expected outcome

- The outcome from the scheme would include updating the 'record-of-rights' in the revenue/property registers and issuance of property cards to the property owners. This would facilitate monetization of rural residential assets for credit and other financial services.

- Further, this would also pave the way for clear determination of property tax, which would accrue to the GPs leading to better civic amenities.

Important aspects of governance.

7. TRP Racket

» Mains: Role and responsibility of media.

Context:

- Mumbai Police Commissioner has said that the Crime Branch has busted a racket involving Republic TV, Box Cinema and Fakt Marathi that manipulated Television Rating Points (TRPs).

- It has been found that a company that is a part of the Broadcast Audience Research Council (BARC) misused confidential data, which had been entrusted to them.

- It has apparently been done for wrongful gains of various TV channels, which resulted in a wrongful loss to various advertisers and their agencies.

What is TRP?

- The Target Rating Point (TRP) or Television Rating Point is the metric used by the marketing and advertising agencies to evaluate the viewership.

- Anyone who watches television for more than a minute is considered a viewer.

Why is TRP important?

- The TRP, or Target Rating Point, is the metric used by the marketing and advertising agencies to evaluate this viewership.

- Better ratings would promote a programme while poor ratings will discourage a programme.

- Advertising rates for particular channels are determined as per their TRPs.

TRP is calculated by Indian agency the Broadcast Audience Research Council (BARC) using "BAR-O-meters."

BARC

- It is an industry body jointly owned by advertisers, ad agencies, and broadcasting companies, represented by The Indian Society of Advertisers, the Indian Broadcasting Foundation and the Advertising Agencies Association of India.

- It is the world's largest television audience measurement service.

- The BARC releases weekly TRP results every Thursday ranking all TV channels and TV programmes.

How is TRP recorded?

- BARC has installed these meters in nearly 44,000 households across the country, so far.

- Audio watermarks are embedded in video content prior to broadcast. These watermarks are not audible to the human ear, but can easily be detected and decoded using dedicated hardware and software.

- Viewing details and watermarks are recorded by the Bar-O-Meters.

How are the households selected?

- The selection of households is a two-stage process.

- The first step is the establishment survey.

* A large-scale face-to-face survey of a sample of approximately 3 lakh households from the target population is done annually.

* Out of these, the households which will have Bar-O-Meters are randomly selected.

* The fieldwork to recruit households is not done directly by the BARC.

* On its website, it has said that the viewing behaviour of panel homes is reported to BARC India daily.

* Coincidental checks either physically or telephonically are done regularly.

- BARC India also involves a separate vigilance agency to check on outliers that it considers highly suspicious.

* As per the guidelines of the Ministry of Information and Broadcasting, these households rotate every year.

* This rotation is in such a manner that older panel homes are removed first while maintaining the representativeness of the panel. The rotation is conducted in a staggered manner every month.

* The Ministry guidelines call for maintenance of secrecy and privacy of the panel homes.

* BARC is directed to follow a voluntary code of conduct.

What are the loopholes in the process?

- Public broadcaster Doordarshan has time and again said that TRP did not reflect the actual viewership.

* As per reports, about 70% of the revenue for television channels comes from advertising and only 30% from the subscription.

- Several doubts have been raised on many previous occasions about the working of the TRP.

- The Mumbai police alleged that households are being paid to manipulate the TRP.

- Information and Broadcasting Minister has said that the TRP process needs a rethink and criticized what he called "TRP journalism".

Important aspects of governance.

8. Approaching the misinformation storm

» Mains: Accountability of social media platforms, Information and Technology Act

Context:

- The article discusses the major concerns over the advent of social media platforms and suggests certain measures to counter these shortcomings.

Details:

- The advent of the Internet has led to the creation of big tech companies based on the social media platform business models.

- The number of people on these platforms has

increased exponentially.

- Of late, there has been a growing call to hold the tech firms accountable for their actions. These firms have been struggling to meet calls to contain the online spread of misinformation and hate speech online and are also being accused of suppressing both left-wing and right-wing views.

Biased 'news':

- Most of the information available to the people have been through the social networks such as Facebook, WhatsApp, and Twitter where there are no journalistic norms and anyone can say anything at any time about any topic with scant respect for the truth.

- Everything is an opinion, but not clearly labelled as such. As a result, much of the 'news' available on these platforms is biased.

Echo chamber algorithms:

- The echo chamber effect has been greatly enhanced by the highly targeted algorithms that the social media companies use. The algorithms with an aim to make users stay online longer are likely to bombard users with information that serves to reinforce what the algorithm thinks the searcher needs to know.

- The fact that the social media platforms target advertising and hyper-personalisation of content makes them further suspect as arbiters of balanced news.

The threat of false news:

- The advent of the Internet was expected to lead to democratic access to a large variety of news from all corners of the globe. Though it has been able to ensure greater access to information, it has also exposed the people to false news/information which can transmit very fast across society with detrimental impacts. Most people now get their news from dubious Internet sources.

- The spread of false and malicious news can stoke violence at short notice.

Impending global threat:

- The US experience has shown the potential of misinformation/biased information on society. There has been a growing polarization in the U.S.

- This might be an indication of the impending creation of an unmanageable fifth estate in the form of Big Tech.

Way forward:

- Learning from the U.S.'s experience with the Internet, India should brace itself for the impending Internet misinformation storm through the following measures.

Regulation:

- India might need to consider regulating social media firms through appropriate new legislations. Indian legislation needs to preserve free speech while still applying pressure on the platforms to make sure that Internet content is filtered for accuracy and decency.

Corporate responsibility principle:

- There is a need to hold the firms accountable for their actions based on the principle of corporate responsibility. There should be greater efforts to ensure transparency of information in the functioning of these tech firms.

User's role:

- The users too have to play an equally important role in this regard. Those who use social media platforms must also ensure that they maintain access to a range of sources and views.

MISCELLANEOUS

1. Antifa and Proud Boys

- Antifa is an umbrella term that denotes a broad spectrum of groups and individuals of far-left or anarchist tendencies in the United States of America. The term itself means simply anti-fascist.

  * The first known use of the term 'Antifa' was during Nazi Germany and is "borrowed from German Antifa, short for antifaschistisch."

- Their aim is to confront those who they view as authoritarian or racist, right-wing groups and white supremacists

  * They take up causes such as LGBTQ and indigenous rights.

- Antifa members typically dress in black and often wear a mask at their demonstrations

- Antifa members run websites that track white extremist and ultra-right groups.

Proud Boys

- It is an all-male neo-fascist group founded in 2016

- Proud Boys are known for their "misogynistic rhetoric" and have been classified as an 'extremist group' by the FBI.

2. Asafoetida (Heeng) cultivation

Context

- CSIR-IHBT makes history by introducing asafoetida (Heeng) cultivation in the Indian Himalayan region.

Details:

- The Institute of Himalayan Bioresource Technology (IHBT), Palampur, a constituent laboratory of the CSIR, has introduced asafoetida cultivation in the remote Lahaul valley in Himachal Pradesh.

- CSIR-IHBT brought in seeds of asafoetida and developed its agro-technology.

- The plant prefers cold and dry conditions for its growth and takes approximately five years for the production of oleo-gum resin in its roots, therefore the cold desert areas of the Indian Himalayan region are suitable for cultivation of asafoetida.

- Asafoetida is one of the top condiments and is a high-value spice crop in India.

- India imports about 1200 tonnes of raw asafoetida annually from Afghanistan, Iran and Uzbekistan and spends approximately 100 million USD per year.

- Lack of planting material of Ferula assa-foetida plants in India was a major bottleneck in the cultivation of this crop.

- Although there are about 130 species of Ferula found in the world, only Ferula assa-foetida is the economically important species used for the production of asafoetida.

- In India, we do not have Ferula assa-foetida, but other species Ferula jaeschkeana is reported from the western Himalaya (Chamba, HP), and Ferula narthex from Kashmir and Ladakh, which are not the species that yield asafoetida.

3. Ayurveda Day

Context

- Ayurveda Day 2020 falls on November 13.

About Ayurveda Day:

- The Ayurveda Day is being observed every year from 2016, on the day of Dhanwantri Jayanti.

- The theme for this year's Ayurveda day is "Ayurveda for Covid-19".

- The objective of Ayurveda Day are:

  * To focus on the strengths of Ayurveda and its unique treatment principles.

  * To work towards reducing the burden of disease and related mortality by utilising the potential of Ayurveda.

  * To tap into the potential of Ayurveda to contribute towards the National Health Policy and national health programmes.

  * To promote Ayurvedic principles of healing in society.

- According to tradition, Ayurveda was revealed by Dhanvantari (also spelled Dhanwantri), the Hindu god of medicine.

4. Dr Tulsi Das Chugh Award – 2020

Context

- CSIR-CDRI Scientist, Dr Satish Mishra bags "Dr Tulsi Das Chugh Award – 2020" given by the National Academy of Medical Sciences (India).

Details:

- Dr Mishra was selected for his research work on the Malaria parasite's life cycle which is a complex process involving two hosts and three invasive stages.

About the National Academy of Medical Sciences (India):

- The Academy functions under the Ministry of Health and Family Welfare, GOI.

- Founded in 1961 as the Indian Academy of Medical Sciences. It was renamed in 1976.

- The Academy encourages and sponsors nation-wide CME (Continuing Medical Education) programmes, symposia, workshops, etc.

- Over the years the Academy has recognized the outstanding achievements made by Indian scientists in the field of medicine and allied sciences and conferred Fellowship as well as Membership to selected persons through a peer-reviewed process and finally voting by all the Fellows.

5. Gov Tech – Thon 2020

Context

- National Informatics Centre (NIC), IEEE Computer Society and Oracle organised Gov Tech- Thon 2020 under the aegis of the Ministry of Electronics and Information Technology (MeitY).

Details:

- It was a pan India virtual Hackathon.

- The virtual hackathon was open to students, working professionals, start-ups, freelance technologists, faculty, and other IT service firms in India.

- During the hackathon, participants received mentorship and advice from technical experts from NIC, IEEE and Oracle, as well as senior domain experts from the Ministries of Agriculture, Education and Transport Departments, Government of India.

- Participating teams had access to the latest tools from Oracle, Oracle Autonomous Database, built-in and easy-to-use cloud security, and compute – to help them develop prototypes that are practical and scalable.

- Additionally, they were able to leverage open source technologies that bring benefits of high performance, reliability and data security.

6. Gyan Circle Ventures

Context

- Union Education Minister virtually inaugurates Gyan Circle Ventures.

About Gyan Circle Ventures:

- It is a Technology Business Incubator (TBI) of the Indian Institute of Information Technology, Sri City (Chittoor), Andhra Pradesh, funded by the Ministry of Electronics and Information Technology (MeitY).

  * Technology Business incubator (TBI) is an entity, which helps technology-based start-up businesses with all the necessary resources/ support that the start-up needs to evolve and grow into a mature business.

- Gyan Circle Ventures would function as a Technology Incubation and Development of Entrepreneurs (TIDE 2.0) incubation centre as approved by the MeitY.

- The incubator would leverage the institution's entrepreneurial spirit by utilizing its intellectual capital and engage in using emerging technologies such as Artificial Intelligence (AI), Block-chain, Cyber Physical Systems (CPS), Cyber Security, Internet of Things (IoT), Robotics, etc.

- The venture will serve as a hub for innovation and start-ups by providing support, in various phases, via investments, infrastructure and mentoring.

- Notably, the TBI would have an Advisory Committee comprising leading industrialists, entrepreneurs and technical experts.

7. Ideal weight of Indian men, women redefined

What's in News?

- The ideal weight of Indian men and women has been redefined based on the latest nationally representative data sourced from the National Family Health Survey-4 (NFHS-4, 2015-16), the National Nutrition Monitoring Bureau (NNMB, 2015-16), the World Health Organisation (WHO, 2006-07) and the Indian Academy of Paediatrics (IAP 2015).

Details:

- The ICMR-National Institute of Nutrition (NIN) has redefined the ideal or reference Indian adult man and woman with regard to age 19-39 years instead of 20-39 years.

- The body weight has been put at 65 kg for men and 55 kg for women (earlier 60 kg and 50 kg respectively).

- The 'Recommended Dietary Allowances' and 'Nutrient Requirements' report prepared by NIN includes Estimated Average Requirements (EARs) and Tolerable Upper Limits of nutrients for the first time.

Recommended Dietary Allowance:

- Recommended Dietary Allowances (RDA) are daily dietary nutrient intake levels which would be sufficient to meet the nutrient requirements of nearly all healthy individuals while EARs are the average daily nutrient intake levels of the population.

- The cereal-legume-milk composition of the diet; visible fat intake for sedentary, moderate and heavy activity, fiber based on energy intake, sodium and potassium intake, etc. have been recommended.

8. International Day of the Girl

- It is a United Nations designated day, observed every year on October 11.

- It celebrates the importance, power, and potential of girls around the world.

- The observation supports more opportunity for girls and increases awareness of gender inequality faced by girls worldwide based upon their gender.

- It is also a day to highlight girls' needs and the particular problems they can face, and drive efforts that meet these needs and fulfill their rights – not benevolently for them, but in partnership with them.

- This year the theme of International Day of the Girl Child is "My voice, our equal future".

9. Mahila Kisan Diwas

Context

- 15th October is observed as Mahila Kisan Diwas.

About Mahila Kisan Diwas:

- The Union Ministry of Agriculture and Farmers' Welfare set aside this day to empower women in the field of agriculture.

- The main objective of celebrating this day is to create awareness and to encourage women farmers to take up different income generation activities in agriculture and allied sectors to enhance the economy of the nation.

- The UN also observes 15th October as the 'International Day of Rural Women'.

10. National Awards for Science & Technology Communication

Context

- The National Council for Science & Technology Communications invites nominations for National Awards for Science & Technology Communication for 2020.

About the Awards:

- The awards, carrying a citation, a memento, and a cash award, are presented every year to an individual or an institution for outstanding contribution in the field of science and technology communication and for promoting scientific temper, which has created a significant impact in the country during the last five years in 6 categories.

- The categories are:

   * Outstanding efforts in science & technology communication

   * Science & technology communication through print media including books and magazines

   * Science & technology popularization among children

   * Translation of popular science & technology literature

   * Science & technology communication through innovative and traditional methods

   * Science & technology communication in the electronic medium

- The awards are conferred annually and are open to all Indian citizens above 35 years of age as well as to institutions registered in India or created by the Central/State governments/Union Territories recommended in writing by a competent authority.

11. National Startup Awards 2020

What's in News?

- The Department for Promotion of Industry and Internal Trade (DPIIT) has conceived the first ever National Startup Awards.

Details:

- The award aims to recognize and reward outstanding Startups and ecosystem enablers that are building innovative products or solutions and scalable enterprises, with high potential of employment generation or wealth creation, demonstrating measurable social impact.

   * Not only financial gains for the investors but also the contribution to the social good will be considered.

- The first edition invited applications across 12 sectors further sub-classified into 35 categories.

   * 12 sectors are Agriculture, Education, Enterprise Technology, Energy, Finance, Food, Health, Industry 4.0, Space, Security, Tourism and Urban Services.

   * Besides this, startups will be selected from those which create impact in rural areas, are women-led and founded in academic campuses.

Rewards:

- The winning Startups will get cash prizes of Rs 5 lakh each, along with opportunities to present their solutions to relevant public authorities and corporates, for potential pilot projects and work orders.

- As key building blocks of a robust Startup ecosystem, one exceptional Incubator and one Accelerator each will get a cash prize of Rs 15 lakh.

12. Rashtriya Kamdhenu Aayog (RKA)

Context

- Rashtriya Kamdhenu Aayog begins a nationwide campaign to celebrate "Kamdhenu Deepawali Abhiyan" – Promoting extensive use of cow-dung/Panchgavya products this Diwali Festival.

About the Kamdhenu Deepawali Abhiyan:

- Through this campaign, the RKA is promoting extensive use of cow-dung/Panchgavya products during this Diwali Festival.

- Manufacture of cow dung based diyas, candles, dhoop, agarbatti, shubh-labh, swastik, samrani, hardboard, wall-piece, paper-weight, havan samagri, idols of Lord Ganesha and Goddess Lakshmi for this year's Diwali festival has already started.

- Apart from generating business opportunities for thousands of cow-based entrepreneurs/farmers, the use of cow-dung products will lead to a cleaner and healthier environment.

- By providing an environmentally friendly alternative to Chinese made Diyas, the campaign will boost the 'Make in India' vision also.

About Rashtriya Kamdhenu Aayog (RKA):

- The Government of India has constituted the

"Rashtriya Kamdhenu Aayog" to organize animal husbandry on modern and scientific lines and to take steps for preserving and improving breeds, and prohibiting the slaughter, of cows and calves and other milch and draught cattle.

• The Aayog is a high powered permanent apex advisory body with the mandate to help the Central Government to develop appropriate programmes for conservation, sustainable development and genetic upgradation of indigenous breeds of cows.

13. Synedrella Yellow Vein Clearing Virus

• The virus was isolated by the researchers from a plant named Synedrella nodiflora, and it was able to infect tobacco and tomato plant

• This virus is a representative of the Begomovirus family of viruses.

• Begomoviruses are a large family with about 400 members. They infect economically important plants and are a major reason for crop loss

How does it harm the plant?

• When the virus attacks the plant, it produces vein-clearing symptoms which make the plant look beautiful.

• It does not make it better for the plant. It actually makes it difficult for the plant to produce flowers and fruits.

Plant Response

• In turn, the plant develops defence mechanisms to destroy the virus. It targets the protein called BetaC1 made by the virus

• Plants degrade BetaC1 protein of virus by tagging this protein with another smaller protein called ubiquitin.

• Without BetaC1, a viral protein, the virus will not be able to defeat the host attacks and also will not be able to completely infect the plant, as the virus will not be able to move through the veins of the plant

14. Vigilance Awareness Week, 2020

Context

• The Central Vigilance Commission observes the Vigilance Awareness Week from 27th October to 2nd November 2020.

About Vigilance Awareness Week:

• This is observed every year during the week in which the birthday of Sardar Vallabhbhai Patel (31st October) falls.

• The theme for the Vigilance Awareness Week 2020 is "Satark Bharat, Samriddh Bharat (Vigilant India, Prosperous India)".

• The Central Bureau of Investigation hosted a National Conference on Vigilance and Anti-Corruption during Vigilance Awareness Week.

• Central Vigilance Commission objectives:

* Integrity Pledge to be taken by all government ministries and organisations.

* Spread the word on the prevention of corruption across the nation.

* Conduct workshops and campaigns for government employees and other stakeholders on policies/procedures of the organization and preventive vigilance measures.

* Establish Integrity Clubs in schools and colleges.

* Gram Sabhas to sensitize the rural citizens about the ill-effects of corruption.

15. World Habitat Day 2020

• The United Nations has designated the first Monday of October every year as World Habitat Day.

• World Habitat Day was first celebrated in 1986 with the theme "Shelter is My Right". Nairobi was the host city for the observance that year.

• The purpose is to recognize the basic rights of all humanity to adequate shelter and to encourage grassroots action toward ending poverty housing.

• The theme of World Habitat Day 2020 is "Housing For All: A better Urban Future". The host city is Surabaya, Indonesia.

16. Nobel Prize in Literature

What's in News?

American poet Louise Gluck won the 2020 Nobel Literature Prize.

• The academy said that Ms. Gluck was honoured for her unmistakable poetic voice that with austere beauty makes individual existence universal.

• She won the Pulitzer Prize in 1993 for her collection 'The Wild Iris' and the National Book Award for her latest collection, 'Faithful and Virtuous Night', in 2014.

• She is the fourth woman to win the Nobel Literature Prize in the past decade and only the 16th since the Nobel prizes were first awarded in 1901.

PRACTICE QUESTIONS

1. **Which of the following could be the reason/s for Current Account Deficit?**

   1. Overvalued exchange rate
   2. Increase in exports
   3. Long periods of consumer-led economic growth
   4. High inflation

   Choose the correct option:

   A. 1, 3 and 4 only
   B. 2, 3 and 4 only
   C. 2 only
   D. 1 and 4 only

2. **Consider the following statements with respect to the Environment Pollution Control Authority (EPCA):**

   1. EPCA is a Supreme Court-mandated body tasked with taking various measures to tackle air pollution in all the metropolitan cities across India.

   2. System of Air Quality and Weather Forecasting And Research (SAFAR) is a national initiative introduced by EPCA.

   3. The body is constituted under the provisions of the Environment (Protection) Act, 1986.

   Which of the given statement/s is/are correct?

   A. 1 and 2 only
   B. 3 only
   C. 1, 2 and 3
   D. None of the above

3. **Which of the following have been given the Geographical Indication Tag?**

   1. Sawantwadi toys
   2. Channapatna toys
   3. Etikoppaka toys
   4. Kondapalli toys
   5. Kinhal toys

   Choose the correct option:

   A. 1, 2, 3 and 4 only
   B. 2, 3, 4 and 5 only
   C. 2, 3 and 5 only
   D. 2 and 4 only

4. **Consider the following statements with respect to BrahMos:**

   1. It is a supersonic cruise missile developed by the Defence Research and Development Organisation of India (DRDO) and Russia.

   2. It is a two-stage missile with a solid propellant engine in the first stage and a liquid ramjet in the second.

   3. It can be launched from land, air, and sea.

   Which of the given statement/s is/are correct?

   A. 1 only
   B. 1 and 3 only
   C. 1, 2 and 3
   D. 1 and 2 only

5. **Consider the following statements with respect to Beijing Declaration:**

   1. It is an agenda for women's empowerment adopted by the UN.

   2. The Beijing Declaration was adopted at the end of the 2nd World Conference on Women (WCW).

   3. It set strategic objectives and actions for the achievement of gender equality in 12 critical areas of concern.

   Which of the given statement/s is/are correct?

   A. 1 and 3 only
   B. 2 only
   C. 2 and 3 only
   D. 1, 2 and 3

6. **Consider the following statements with respect to 'Bongosagar':**

   1. It is a trilateral Naval Exercise between India, Bangladesh and Myanmar.

   2. Its first edition was held in 2019.

   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

7. **Consider the following statements with respect to National Company Law Appellate Tribunal (NCLAT):**

   1. It was constituted under the Companies Act, 1956.

2. The chairperson and judicial members of the Appellate Tribunal shall be appointed after consultation with the Chief Justice of India.

3. It is the Appellate Tribunal to hear and dispose of appeals against any direction issued or decision made or order passed by the Competition Commission of India.

Which of the given statement/s is/are correct?

A. 2 and 3 only

B. 1 and 2 only

C. 1 only

D. 1, 2 and 3

8. **Consider the following statements:**

1. The regulatory and administrative jurisdiction of minor minerals falls under the purview of state governments.

2. River sand is considered a minor mineral.

3. Power to notify the minor minerals lies with the Central Government.

Which of the given statement/s is/are correct?

A. 2 and 3 only

B. 1 and 2 only

C. 1 only

D. 1, 2 and 3

9. **Consider the following statements with respect to Earthquake swarms:**

1. It is a series of multiple low magnitude earthquakes.

2. They are the aftershocks of a high magnitude earthquake.

3. Rampur in Himachal Pradesh and Koyna in Maharashtra have experienced Earthquake swarms.

Which of the given statements is/are correct?

A. 1 and 2 only

B. 1 and 3 only

C. 1, 2 and 3

D. 1 only

10. **Arrange the following from North to South:**

1. Marshall Island

2. Soloman Island

3. New Caledonia

4. Vanuatu

Choose the correct option:

A. 1, 2, 4, 3

B. 2, 1, 3, 4

C. 1, 4, 2, 3

D. 1, 3, 2, 3

11. **"Madhuca Diplostemon" recently in news is:**

A. A species of plant commonly known as mangrove apple, an indicator of environmental changes in mangrove ecosystem.

B. A threatened species of tree in the Western Ghats rediscovered after a gap of about 180 years.

C. A bacteria that causes peptic ulcer.

D. A is a semi-aquatic frog indigenous to Western Ghats that actively breeds in the monsoon.

12. **Consider the following statements:**

1. Sun's magnetic field reverses its polarity roughly every 11 years.

2. A plage is a bright region in the chromosphere of the Sun typically found in regions of the chromosphere near sunspots.

3. Solar filaments are large regions of very dense, cool gas, held in place by magnetic fields.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 2 and 3 only

C. 3 only

D. None of the above

13. **Consider the following statements with respect to Nagorno-Karabakh:**

1. It is a mountainous territory bordered by the Caspian Sea in the east.

2. It is internationally recognized as part of Armenia.

3. Lake Sevan is located within Nagorno – Karabakh.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 1 and 2 only

C. 1, 2 and 3

D. None of the above

14. **Involuntary administration of Narco analysis test would be an intrusion of which one of the following articles of the Indian Constitution?**

A. Article 18

B. Article 21

C. Article 32

D. Article 25

15. **Consider the following statements with respect to Insolvency and Bankruptcy Board of India (IBBI):**

1.   Established under the Reserve Bank of India Act of 1934, it is the regulator for overseeing insolvency proceedings.

2.   It oversees Insolvency Professional Agencies, Insolvency Professionals and Information Utilities in India.

3.   The members of IBBI include representatives from the Ministries of Finance, Law and Corporate Affairs, and the Reserve Bank of India.

Which of the given statement/s is/are INCORRECT?

A.   1 only

B.   2 and 3 only

C.   1, 2 and 3

D.   None of the above

16. **Consider the following statements:**

1.   India has set a target of 450 GW of renewable capacity by 2030, comprising 100 GW of solar capacity.

2.   India is third among the countries with the largest solar capacity in the world.

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

17. **Consider the following statements with respect to Coalition for Epidemic Preparedness Innovations (CEPI):**

1.   It is a subsidiary of World Health Organisation.

2.   It takes donations to finance independent research projects to develop vaccines against emerging infectious diseases (EID).

3.   CEPI was formally launched in 2017 at the World Economic Forum (WEF).

Which of the given statement/s is/are correct?

A.   1 and 2 only

B.   1 only

C.   2 only

D.   2 and 3 only

18. **Consider the following statements with respect to Hepatitis C:**

1. Hepatitis C virus belongs to the same family as Zika Virus.

2.   It causes inflammation of the liver.

3.   It is a positive-sense single-stranded RNA virus.

Which of the given statement/s is/are correct?

A.   1 and 2 only

B.   2 and 3 only

C.   1 and 3 only

d.   1, 2 and 3

19. **Consider the following statements with respect to Supersonic Missile Assisted Release of Torpedo (SMART):**

1.   It is a missile-assisted release of heavyweight anti-submarine torpedo system.

2.   It is an addition to Anti-Submarine Warfare (ASW) capabilities of India.

3.   It is an indigenously developed system by laboratories of Defence Research and Development Organisation (DRDO).

Which of the given statement/s is/are correct?

A.   1 only

B.   1 and 2 only

C.   2 and 3 only

D.   3 only

20. **Consider the following statements:**

1.   Agriculture falls within the legislative competence of State governments.

2.   The Commission for Agricultural Costs and Prices (CACP) announces MSP for various crops based on the recommendations of the Cabinet Committee of Economic Affairs.

3.   Minimum Support Price (MSP) has no legislative backing.

Which of the given statement/s is/are INCORRECT?

A.   2 only

B.   1 only

C.   1 and 3 only

D.   None of the above

21. **Which of the following statement/s is/are correct with respect to the appointment of external members to the Monetary Policy Committee?**

1.   They are appointed for a term of three years.

2.   They are not eligible for re-appointment.

Options:

A.   1 only

B.   2 only

C.   Both 1 and 2

D.   Neither 1 nor 2

22. Which of the following is not a report published by the International Monetary Fund?

    A. World Economic Outlook

    B. Global Financial Stability Report

    C. Fiscal Monitor

    D. Global Competitiveness Report

23. Which of the following statement/s is/are incorrect with respect to the Production Linked Incentive (PLI) Scheme of the Ministry of Electronics and IT?

    1. It is applicable only to the domestic firms and global firms are barred from applying under the scheme.

    2. The scheme shall extend an incentive of 40% to 60% on incremental sales (over the base year) of goods manufactured in India and covered under target segments, to eligible companies, for a period of 10 years subsequent to the base year as defined.

    Options:

    A. 1 only

    B. 2 only

    C. Both 1 and 2

    D. Neither 1 nor 2

24. Which of the following statement/s is/are correct?

    1. Article 262 of the Indian Constitution provides for the adjudication of inter-state water disputes.

    2. Article 263 provides for the establishment of Inter-State Council to effect coordination between the states and between Centre and states.

    Options:

    A. 1 only

    B. 2 only

    C. Both 1 and 2

    D. Neither 1 nor 2

25. Consider the following statements regarding CRISPR:

    1. CRISPR-Cas9 was adapted from a naturally occurring genome editing system in bacteria.

    2. CRISPR-Cas9 technology behaves like a cut-and-paste mechanism on DNA strands that contain genetic information.

    3. A women-only team has been awarded the Nobel Chemistry Prize for the CRISPR-Cas9 technique.

    Which of the given statement/s is/are correct?

    A. 1 only

    B. 1 and 2 only

    C. 2 and 3 only

    D. 1, 2 and 3

26. Raghavan Committee dealt with:

    A. Competition Policy and Competition Law

    B. Data Protection Framework for India

    C. Criminal Justice System in India

    D. Agricultural Credit System

27. Consider the following statements with respect to the National Company Law Appellate Tribunal (NCLAT):

    1. National Company Law Appellate Tribunal has replaced the Competition Appellate Tribunal.

    2. It is the Adjudicating Authority for insolvency proceedings under the Insolvency and Bankruptcy Code.

    3. It is the Appellate Tribunal to hear and dispose of appeals against any direction issued or decision made or order passed by the Competition Commission of India (CCI).

    Which of the given statement/s is/are correct?

    A. 1 and 2 only

    B. 2 only

    C. 2 and 3 only

    D. 1 and 3 only

28. Which of the following statements most accurately describes "Pratyush" and "Mihir", recently seen in the news?

    A. They are two of the fastest supercomputers built for weather forecasting in India.

    B. They are indigenously developed advanced Doppler weather radars.

    C. They are the anti-submarine warfare systems developed by DRDO laboratories.

    D. They are both indigenously built Medium Range air-to-air missiles.

29. Consider the following statements:

    1. Nobel Prizes in the fields of Chemistry, Economic Science, Peace, Physics, and Physiology or Medicine were established as per the will of the Swedish scientist Alfred Nobel in 1895.

    2. By far, only one women-only team has been awarded the Nobel Chemistry Prize.

    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

30. **Consider the following statements with respect to the Comptroller and Auditor General (CAG) of India:**

1. CAG audits all expenditures from the contingency fund of India and the public account of India as well as those of the states.

2. CAG audits the accounts related to expenditure from the consolidated fund of India, the consolidated fund of each state and UTs having a legislative assembly.

3. The Indian Constitution lays down the qualification criteria for the CAG.

4. Public Accounts Committee (PAC) examines the audit reports submitted by the CAG.

Which of the given statement/s is/are correct?

A. 1 and 2 only

B. 1, 2 and 4 only

C. 1, 3 and 4 only

D. 1, 2, 3 and 4

31. **Which of the following committee/s or commission/s are associated with "Scheduled Tribes"?**

1. Lokur Committee

2. Bhuria Commission

3. Xaxa Committee

4. Mandal Commission

Choose the correct option:

A. 1, 2 and 3 only

B. 2, 3 and 4 only

C. 1 and 3 only

D. 1, 2, 3 and 4

32. **Consider the following pairs with respect to Nagaland's borders:**

1. Myanmar – East

2. Arunachal Pradesh – West

3. Manipur – South

4. Assam – West

Which of the pairs are correctly matched?

A. 1, 2, 3 and 4

B. 1, 2 and 3 only

C. 1, 3 and 4 only

D. 1 and 3 only

33. **Which of the following is not a species of butterfly found in India?**

A. Indian Jezebel

B. Krishna Peacock

C. Orange Oakleaf

D. Garden Tiger

34. **"Cnemaspis anandani" recently in news, is:**

A. A rock-dwelling gecko endemic to the Western Ghats

B. A dung beetle from Tawang

C. A wild ginger variety discovered from the forests in Nagaland

D. A wild fern found in Kerala

35. **Consider the following statements with respect to "Langa & Manganiar":**

1. They are famous for their folk dance called Kalbeliya.

2. They are Muslim communities predominantly residing in the Jaisalmer and Barmer districts of Rajasthan.

3. They play a traditional percussion instrument called "Khartal".

Which of the given statement/s is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 and 3 only

D. 3 only

36. **Kyrgyzstan shares borders with:**

1. China

2. Uzbekistan

3. Tajikistan

4. Turkmenistan

5. Russia

6. Kazakhstan

Choose the correct option:

A. 1, 2, 3 and 6 only

B. 2, 3, 4 and 6 only

C. 3, 4, and 6 only

D. 1, 2, 4 and 5 only

37. **Which of the following statement/s is/are correct with respect to The System of Air Quality and Weather Forecasting and Research (SAFAR)?**

1. It aims to measure the location specific air quality of the cities.

2. It is an initiative under the Ministry of Environment, Forest and Climate Change.

Options:

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

38. Which of the following statement/s is/are correct with respect to the World Food Programme?

1. It is a specialized agency of the United Nations.

2. It was established in the year 2005, in the aftermath of the Indian Ocean Tsunami.

Options:

A. 1 only

B. 2 only

C. Both1 and 2

D. Neither 1 nor 2

39. Which of the following statement/s is/are correct with respect to lesser Flamingos?

1. They are found spread across the continents of Africa, South America and Asia.

2. The Spirulina algae on which they primarily feed on is the reason for their pink colour.

Options:

A. 1 only

B. 2 only

C. Both1 and 2

D. Neither 1 nor 2

40. Which of the following countries border Kyrgyzstan?

1. Tajikistan

2. Afghanistan

3. Uzbekistan

4. Kazakhstan

5. China

6. Turkmenistan

Options:

A. 1, 2, 3, 4 and 6

B. 1, 3, 4, 5 and 6

C. 1, 3, 4 and 5

D. 1, 2, 3, 4, 5 and 6

41. Consider the following statements:

1. Antibiotics are used to treat infections by viruses and bacteria.

2. Antibiotic resistance means that the body of the human or animal is becoming resistant to antibiotics.

3. Antibiotic-resistant bacteria can be transmitted between humans and animals.

Which of the given statement/s is/are INCORRECT?

A. 1 and 2 only

B. 1 only

C. 1, 2 and 3

D. None of the above

42. "Madrid Principles" recently in news, is related to:

A. Nagorno-Karabakh conflict

B. Israel-Palestine conflict

C. Korean War

D. South China Sea Dispute

43. Which of the given pairs are correctly matched?

1. Padubidri Beach – Kerala

2. Radhanagar beach – Gujarat

3. Golden Beach – Odisha

4. Rushikonda Beach – Andhra Pradesh

5. Ghoghala Beach – Diu

Choose the correct option:

A. 1, 2, 3 and 4 only

B. 1, 2, 3, 4 and 5

C. 3, 4 and 5 only

D. 2, 3 and 4 only

44. SVAMITVA scheme has been launched for:

A. Making collateral-free working capital loans available to street vendors.

B. Provision of an integrated property validation solution for rural India.

C. Promoting entrepreneurship across Indian tribal communities by connecting agriculture and forest produce with markets using technology and creating self-sustainable enterprises.

D. Supporting innovations by the soldiers in the Indian Armed Forces.

45. Consider the following statements:

1. The UN Office for Disaster Risk Reduction (UNDRR) is an organisational unit of the UN Secretariat set up to facilitate the implementation of the International Strategy for Disaster Reduction (ISDR).

2. Global Assessment Report on Disaster Risk Reduction (GAR) is published by UNDRR.

3. Sendai Framework for Disaster Reduction is the successor instrument to the Hyogo Framework for Action (HFA).

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 2 and 3 only

C. 3 only

D. None of the above

46. The Island of Kastellorizo is located in:

    A. Mediterranean Sea

    B. Black Sea

    C. South China Sea

    D. East China Sea

47. Consider the following statements with respect to Line of Credit (LoC):

    1. It is a soft loan provided on concessional interest rates to developing countries.

    2. The LoCs promote exports of Indian goods and services.

    3. Under an LoC, 75% of the value of the contract must be sourced from India.

    Which of the given statement/s is/are correct?

    A. 1 only

    B. 1 and 3 only

    C. 1, 2 and 3

    D. 1 and 2 only

48. Which of the following countries are members of both the Asia-Pacific Group on Money Laundering and the Financial Action Task Force (FATF)?

    1. India

    2. Hong Kong

    3. United States

    4. Pakistan

    5. Australia

    Choose the correct option:

    A. 1, 2, 4 and 5 only

    B. 1, 2, 3 and 5 only

    C. 1, 4 and 5 only

    D. 1, 2 and 3 only

49. Which of the following pollutants are considered by SAFAR to measure air quality?

    1. Mercury

    2. Carbon Dioxide

    3. Ozone

    4. Toluene

    5. Benzene

    Choose the correct option:

    A. 1, 2, 3, 4 and 5

    B. 1, 3, 4 and 5 only

    C. 3, 4 and 5 only

    D. 2 and 3 only

50. India is a member of which of the following?

    1. Financial Action Task Force (FATF)

    2. Eurasian Group (EAG)

    3. Asia Pacific Group (APG)

    Choose the correct option:

    A. 1 and 3 only

    B. 1 only

    C. 1, 2 and 3

    D. None of the above

51. Consider the following statements with respect to eVIN:

    1. It is an indigenously developed technology system that digitizes vaccine stocks and monitors the temperature of the cold chain through a smartphone application.

    2. It is an initiative by the Ministry of Health and Family Affairs that started in 2004 with the assistance of the World Bank.

    3. It is being implemented under the National Health Mission (NHM).

    Which of the given statement/s is/are correct?

    A. 1 and 2 only

    B. 2 and 3 only

    C. 1 and 3 only

    D. 1, 2 and 3

52. "Aquaponics" refers to:

    A. The technique of cultivating, harvesting, freshwater and saltwater fish as well as shellfish in a controlled environment.

    B. The technique of growing plants without soil.

    C. The technique used for regulating water temperatures to prevent Coral Bleaching.

    D. The technique of growing both fishes as well as plants in an integrated manner.

53. Consider the following statements with respect to Thalassemia:

    1. It is a blood disorder commonly characterised by the abnormal production of haemoglobin in the body.

    2. Bone marrow transplant is the only cure available for the disease.

    3. Thalassemia is contagious.

    Which of the given statement/s is/are correct?

    A. 1 only

    B. 1 and 2 only

    C. 2 and 3 only

    D. 1, 2 and 3

54. Consider the following statements with respect to retreating monsoon season:

1. The South-Eastern coast of India receives a lot of rainfall.

2. With the onset of retreating monsoon, skies become clearer and clouds disappear.

3. The weather during the retreating monsoon is dry in North India.

Which of the given statement/s is/are correct?

A. 1, 2 and 3

B. 1 and 3 only

c. 1 only

D. 2 and 3 only

55. Philip's curve describes the relationship between which of the following?

A. Inflation and unemployment

B. Tax rates and tax revenue

C. Demand and Supply of money

D. Growth and equality

56. Consider the following statements about the Strengthening Teaching-Learning and Results for States (STARS) program:

1. The project is partly funded by the Asian Development Bank.

2. The project covers all the states across India.

3. It would be implemented as a Centrally Sponsored Scheme under the Department of School Education and Literacy.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 1 and 2 only

C. 1, 2 and 3

D. None of the above

57. Consider the following statements:

1. It is a classical dance form that was initially practiced by male dancers only.

2. It includes a display of dexterity of the dancer's footwork through techniques such as dancing on the rim of a brass plate and with a pitcher full of water on the head.

The dance form being talked about is:

A. Bharatanatyam

B. Mohiniattam

C. Kuchipudi

D. Sattriya

58. Consider the following statements with respect to Nandankanan Zoological Park

1. It is located in Tamil Nadu.

2. It is the first zoo in India to become a member of the World Association of Zoos & Aquariums (WAZA).

3. It is recognized as a leading zoo for the breeding of the Indian pangolin and white tiger.

Which of the given statement/s is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1 only

D. None of the above

59. Which of the following pairs are correctly matched?

1. Sustainable Development Goal 1: No Poverty

2. Sustainable Development Goal 2: Gender Equality

3. Sustainable Development Goal 5: Quality Education

4. Sustainable Development Goal 7: Affordable and clean energy

Choose the correct option:

A. 1 and 4 only

B. 1, 2 and 4 only

C. 2 and 3 only

D. 1, 2, 3 and 4

60. Consider the following statements with respect to Formosa Strait:

1. It separates Taiwan and mainland China.

2. It is a part of the South China Sea and connects to the Sea of Japan to the north.

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

61. Consider the following statements with respect to the Giant Metrewave Radio Telescope (GMRT):

1. It is an array of three hundred fully steerable parabolic radio telescopes.

2. It is located in Narayangaon, near Pune in India.

3. It is operated by the National Centre for Radio Astrophysics of the Tata Institute of Fundamental Research.

Which of the given statement/s is/are correct?

A. 1 and 2 only

B. 1 and 3 only

C.   2 and 3 only

D.   1, 2 and 3

62. Which of the following statements best describes "Knesset"?

A.   It is the unicameral national legislature of Israel.

B.   It is a special type of legal assembly, in the traditional code of laws of the Pashtun people.

C.   It is the federal authority of the United Arab Emirates formed to represent the general Emirati people.

D.   It is a mass national gathering that brings together representatives from the various ethnic, religious, and tribal communities in Afghanistan.

63. Consider the following statements with respect to the New START Treaty:

1.   It is a treaty for cooperation in the field of nuclear energy.

2.   The treaty was signed between the United States, the Russian Federation and China.

3.   New START replaced the Treaty of Moscow (SORT).

Which of the given statement/s is/are correct?

A.   1 and 2 only

B.   2 and 3 only

C.   3 only

D.   None of the above

64. Consider the following statements with respect to 'Reed Bank' island:

1.   It is an oil-rich and gas-rich island located in the Caspian Sea.

2.   The disputed island is claimed by Turkey and Greece.

Which of the given statement/s is/are INCORRECT?

A.   1 only

B.   2 only

C.   Both 1 and 2

D.   Neither 1 nor 2

65. Which of the following statement/s is/are correct with respect to Carbon fertilization effect?

1.   It is the increased rate of photosynthesis in plants that results from increased levels of carbon dioxide in the atmosphere.

2.   It is witnessed in all types of plants except in C4 variety of plants.

Options:

A.   1 only

B.   2 only

C.   Both 1 and 2

D.   Neither 1 nor 2

66. Which of the following statement/s is/are incorrect with respect to the UN Human Rights Council?

1.   The UNHRC was reconstituted from its predecessor organisation, the UN Commission on Human Rights.

2.   The members are elected from the UN general assembly for a term of 2 years.

Options:

A.   1 only

B.   2 only

C.   Both 1 and 2

D.   Neither 1 nor 2

67. Which of the following statement/s is/are correct with respect to superconductivity?

1.   Superconductivity is exhibited in certain materials when its temperature becomes lower than a "critical temperature."

2.   During superconductivity, the magnetic flux fields are expelled from the material and is referred to as the Meissner effect.

Options:

A.   1 only

B.   2 only

C.   Both 1 and 2

D.   Neither 1 nor 2

68. Which of the following statement/s is/are correct with respect to Sir Syed Ahmed Khan?

1.   He founded The Mohammedan Literary Society in 1875.

2.   He is considered a revivalist.

3.   He was a strong supporter of the work of the Indian National Congress.

Options:

A.   1 only

B.   1 and 3 only

C.   2 and 3 only

D.   None of the above

69. Which of the following statement/s is/are correct?

1.   The Bhima originates in the Belgaum district of Karnataka.

2.   The majority of its catchment area or basin area is spread across the state of Karnataka.

3. It is a major tributary of the Godavari River.

Options:

A. 1 and 2 only

B. 1, 2 and 3

C. 2 and 3 only

D. None of the above

70. Which of the following are parameters considered in the compilation of the Global Hunger Index?

1. Under-nourishment

2. Child wasting

3. Child stunting

4. Child mortality

5. Anaemia

6. Nutritional deficiency diseases

Options:

A. 1, 2, 3 and 4 only

B. 2, 3 and 4 only

C. 1, 2, 3, 4, 5 and 6

D. 2, 3, 5 and 6 only

71. Which of the following laws does not come under the ambit of the National Green Tribunal?

A. The Water (Prevention and Control of Pollution) Cess Act, 1977

B. Wildlife (Protection) Act, 1972

C. The Public Liability Insurance Act, 1991

D. The Biological Diversity Act, 2002.

72. Which of the following statement/s is/are correct with respect to the National Food Security Act?

1. The Act legally entitles up to 75% of the rural population and 50% of the urban population to receive subsidized foodgrains under the Targeted Public Distribution System.

2. It also recognizes some maternity entitlements.

Options:

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

73. Which of the following statement/s is/are correct?

1. Currently, India is the largest sugar-producing country in the world.

2. Maharashtra is the largest sugar-producing state in India.

Options:

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

74. The 'Mutual Logistics Support Agreement' was signed by India with which of the following countries?

A. Australia

B. Russia

C. Japan

D. The U.S.

75. Who among the following became the first Indian and the first elected president of the Central Legislative Assembly?

A. G. V. Mavalankar

B. Vithalbhai J Patel

C. Sachidanand Sinha

D. Rajendra Prasad

76. The 90-90-90 strategy is associated with which of the following?

A. Green House Gas emission mitigation

B. Poverty alleviation measure

C. AIDS epidemic

D. Achieving land degradation neutrality

77. Consider the following statements with respect to Kaleshwaram Lift Irrigation Project:

1. It is in Andhra Pradesh.

2. It is being built at the confluence of the Pranhita and Godavari rivers.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

78. Consider the following statements with respect to FELUDA:

1. It is a paper-strip test for SARS-CoV-2 diagnosis.

2. The test uses an indigenously-developed, cutting-edge CRISPR technology.

3. The test will deploy Cas9 protein.

Which of the given statement/s is/are correct?

A. 1 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

79. "Sunflower Movement" is associated with:

A. Hong-Kong

B. Tibet

C. Taiwan

D. Nepal

80. Consider the following statements:

1. Global Innovation Index (GII) is published by the World Economic Forum.

2. India has shown no improvement in its GII ranking for the last 5 years.

3. India has never been among the top 50 in the Global Innovation Index.

Which of the given statement/s is/are correct?

A. 1 only

B. 2 and 3 only

C. 1, 2 and 3

D. None of the above

81. Consider the following statements:

1. Malabar Exercise started as a bilateral Japan-India naval exercise in 1995.

2. Australia is included as a permanent participant in the Malabar Exercise from the year 2020.

3. Australia has never participated in the Malabar Exercise before 2020.

Which of the given statement/s is/are correct?

A. 1 only

B. 2 only

C. 2 and 3 only

D. None of the above

82. Consider the following statements with respect to National Payments Corporation of India (NPCI):

1. It is an umbrella organisation for operating retail payments and settlement systems in India.

2. It is an initiative of the State Bank of India.

3. It is incorporated as a Not for Profit Company.

Which of the given statement/s is/are INCORRECT?

A. 2 and 3 only

B. 2 only

C. 3 only

D. 1, 2 and 3

83. Consider the following statements with respect to Thanjavur Brihadeeshwara Temple:

1. It is located on the banks of River Kaveri.

2. The temple is a part of the UNESCO World Heritage Site.

3. The temple is popularly known as Dakshina Meru.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 3 only

C. 2 and 3 only

D. None of the above

84. Consider the following statements with respect to National Automated Clearing House (NACH):

1. It is an offline web-based system for bulk push and pull transactions.

2. It is being implemented by the National Payments Corporation of India (NPCI).

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

85. Consider the following statements with respect to Organization of American States (OAS):

1. OAS brings together all 35 independent states of the Americas.

2. European Union, India, China and Pakistan are permanent observers of OAS.

3. The four main pillars of the organisation are democracy, human rights, security, and development.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 1 and 2 only

C. 3 only

D. None of the above

86. Which of these foundational military communication agreements have been signed by India and the U.S.?

1. General Security of Military Information Agreement

2. Basic Exchange and Cooperation Agreement

3. Logistics Exchange Memorandum of Agreement

4. Communications Compatibility and Security Agreement

Choose the correct option:

A. 1, 2, 3 and 4

B. 1 and 3 only

C. 2, 3 and 4 only

D. 1, 3 and 4 only

87. Consider the following statements:

1. The Disorders Inquiry Committee of 1919 was appointed by the Secretary of State for India, Edwin Montagu.

2. The committee did not have Indian representation.

3. The committee was appointed in the aftermath of the Jallianwala Bagh Massacre.

4. It was tasked with the investigation of the disturbances in Bombay, Delhi and Punjab in 1919.

Which of the given statement/s is/are correct?

A. 1, 2 and 4 only

B. 1, 3 and 4 only

C. 2 and 3 only

D. 1, 2, 3 and 4

88. Consider the following statements with respect to INS Kavaratti:

1. It is an anti-submarine warfare corvette built under Project 28.

2. The ship has up to 90% indigenous content.

3. It belongs to the same class as INS Kamorta, INS Kadmatt and INS Kiltan.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 2 only

C. 2 and 3 only

D. None of the above

89. Consider the following statements about the National Institute of Communicable Diseases (NICD):

1. It has its origin as the Central Malaria Bureau, established in 1909.

2. The Institute has its headquarters in Patna, Bihar.

3. It functions as the nodal agency in the country for disease surveillance facilitating prevention and control of communicable diseases.

Which of the given statement/s is/are correct?

A. 1 and 3 only

B. 1 and 2 only

C. 3 only

D. 2 and 3 only

90. Consider the following statements with respect to Parliamentary Privilege:

1. It refers to rights and immunities enjoyed by the Parliament as an institution and by Members of Parliament in their individual capacity.

2. It is provided under Article 105 of the Constitution.

3. Immunity to a member from any proceedings in any court in respect of anything said or any vote given by him in Parliament or any committee is one of the Parliamentary Privileges specified in the Indian Constitution.

Which of the given statement/s is/are correct?

A. 1 and 3 only

B. 1 and 2 only

C. 2 and 3 only

D. 1, 2 and 3

91. Consider the following statements:

1. Foreign Currency Assets, Special Drawing Rights, gold reserves are a part of India's Forex Reserves.

2. India has never featured among the top 10 countries with highest Forex Reserves.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 2 only

C. Both 1 and 2

D. Neither 1 nor 2

92. Which of these countries hold a permanent seat in the governing body of the International Labour Organisation as the state of chief industrial importance?

1. Germany

2. China

3. Pakistan

4. India

5. Australia

Choose the correct option:

A. 1, 2 and 4 only

B. 1, 2 and 5 only

C. 2, 3, 4 and 5

D. 1, 2, 3, 4 and 5

93. Which of the following statement/s is/are correct with respect to OSIRIS-REx?

1. It is a NASA asteroid study and sample-return mission targeted at near-earth asteroid, Bennu.

2. This would be the first-ever asteroid-study and sample-return mission.

Options:

A. 1 only

B. 2 only

C Both 1 and 2

D. Neither 1 nor 2

94. The Chatar festival is associated with which of the following states?

A. Chhattisgarh

B. Odisha

C. Jharkhand

D. West Bengal

95. Which of the following can be potential areas of applications of high tempera ture superconductors?

1. low-loss power cables

2. Quantum computers

3. Maglev trains

4. Particle accelerators

5. Nuclear fusion reactors

Options:

A. 1 and 3 only

B. 1, 2 and 3 only

C. 3, 4 and 5 only

D. 1, 2, 3, 4 and 5

96. Which of the following would be the first indigenously built Aircraft Carrier in India?

A. INS Vishal

B. INS Viraat

C. INS Vikrant

D. INS Vikramaditya

97. Consider the following statements with respect to Assumption Island:

1. It is one of the islands constituting the Seychelles archipelago.

2. It is located to the north of Madagascar.

3. India has signed an agreement to develop transport infrastructure facilities on the Island.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 2 and 3 only

C. 1, 2 and 3

D. None of the above

98. India holds ministerial level '2+2' Dialogue with which of the following countries?

1. The U.S.A.

2. Japan

3. China

4. Australia

Options:

A. 1, 2 and 4 only

B. 1 and 2 only

C. 1, 2 and 3 only

D. 1 and 4 only

99. Arrange the following military communication agreements between India and the US in chronological order in which they were signed:

1. General Security of Military Information Agreement

2. Industrial Security Annex

3. Logistics Exchange Memorandum of Agreement

4. Communications Compatibility and Security Agreement

Options:

A. 1, 3, 4, 2

B. 1, 4, 3, 2

C. 1, 2, 3, 4

D. 3, 4, 1, 2

100. Arrange the following Elephant Reserves from North to South:

1. Dihing-Patkai Elephant Reserve

2. Dandeli Elephant Reserve

3. Anamalai Elephant Reserve

4. Mayurbhanj Elephant Reserve

Choose the correct option:

A. 1, 2, 4, 3

B. 4, 1, 2, 3

C. 1, 4, 2, 3

D. 4, 2, 3, 1

101. Which of these EU member countries border Turkey?

1. Georgia
2. Greece
3. Armenia
4. Bulgaria

Choose the correct option:

A. 1, 2 and 4 only
B. 2 and 4 only
C. 1, 2 and 3 only
D. 1, 2, 3 and 4

102. Consider the following statements with respect to the Harpoon Block II missile:

1. It is an all-weather, over-the-horizon, anti-ship missile that can be launched from submarines.
2. The missile was indigenously developed by DRDO.
3. Its range is around 1000 km.

Choose the correct option:

A. 1 and 2 only
B. 1, 2 and 3
C. 2 and 3 only
D. 1 only

103. Consider the following statements with respect to Sittwe Port:

1. It is a deepwater port constructed by India.
2. It is situated at the mouth of River Kaladan.
3. It is located in the Rakhine state in Myanmar.

Which of the given statement/s is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1, 2 and 3
D. 1 and 3 only

104. Consider the following statements with respect to IndiGen Program:

1. It is an initiative of the Council of Scientific & Industrial Research (CSIR).
2. The programme undertook the whole-genome sequencing of individuals representing diverse ethnic groups from India.
3. The programme was launched in 2009.

Which of the given statement/s is/are INCORRECT?

A. 1 and 2 only
B. 1 only

C. 3 only
D. 1 and 3 only

105. Consider the following statements with respect to Green Crackers:

1. Green Crackers are manufactured using pyrotechnic to ensure that the emission of sulphur dioxide and nitrogen oxide does not occur.
2. They have a chemical formulation that produces water molecules.
3. They are made of chemicals such as lithium, arsenic, barium and lead.

Which of the given statement/s is/are correct?

A. 1 and 2 only
B. 1, 2 and 3
C. 2 and 3 only
D. 1 and 3 only

106. Petroleum and Explosives Safety Organisation (PESO) was formed under which of the following ministries?

A. Ministry of Commerce and Industry
B. Ministry of Chemicals and Fertilizers
C. Ministry of Petroleum and Natural Gas
D. Ministry of Earth Sciences

107. Where was India's first International Financial Service Centre (IFSC) set up:

A. Maharashtra
B. Gujarat
C. West Bengal
D. Karnataka

108. Which of the following tiger reserves are located in Tamil Nadu?

1. Mudumalai Tiger Reserve
2. Kalakad Mundanthurai Tiger Reserve
3. Kawal Tiger Reserve
4. Sathyamangalam Tiger Reserve

Choose the correct option:

A. 1 and 4 only
B. 2 and 3 only
C. 1, 2 and 4 only
D. 1, 2, 3 and 4

109. Which of these countries border the Red Sea?

1. Yemen

2. Jordan

3. Saudi Arabia

4. Egypt

5. Sudan

Choose the correct options:

A. 1, 4 and 5 only

B. 1, 2, 4 and 5 only

C. 1, 2, 3, 4 and 5

D. 1, 3, 4 and 5 only

110. Nagorno-Karabakh region is a subject of dispute between: Consider the following statements:

1. The excess of the government's total expenditure over its total non-borrowed receipts is called the fiscal deficit.

2. The primary deficit is the fiscal deficit minus interest payments.

3. The FRBM Act suggests bringing the fiscal deficit down to about 4 percent of the GDP as the ideal target for India.

Which of the given statement/s is/are INCORRECT?

A. 1 only

B. 1 and 3 only

C. 3 only

D. 2 only

111. Consider the following statements with respect to River Mahanadi:

1. It originates in Odisha.

2. It is an east-flowing river draining into the Bay of Bengal.

3. The Hirakud dam is built across this river.

Which of the given statement/s is/are correct?

A. 1 and 2 only

B. 2 and 3 only

C. 1, 2 and 3

D. 3 only

112. Arrange the eight Core Industries in decreasing order of their weightage in the Index of Industrial Production:

1. Electricity

2. Fertilizers

3. Natural Gas

4. Crude oil

5. Steel

Choose the correct option:

A. 1, 5, 4, 3, 2

B. 1, 4, 3, 5, 2

C. 5, 1, 4, 2, 3

D. 4, 2, 1, 5, 3

113. Which of the following is/are known for its/their unique mass nesting called Arribada?

1. Olive Ridley Turtle

2. Indian Star Tortoise

3. Kemp's Ridley Turtle

Choose the correct option:

A. 1 only

B. 1 and 2 only

C. 1 and 3 only

D. 1, 2 and 3

114. Consider the following statements with respect to star campaigners:

1. Any recognised political party can have only 20 star campaigners.

2. An unrecognised (but registered) political party cannot have any star campaigners.

3. If a candidate or her election agent shares the stage with a star campaigner at a rally, then the entire expenditure on that rally other than the travel expenses of the star campaigner is added to the political party's expenses.

Which of the given statement/s is/are INCORRECT?

A. 2 and 3 only

B. 1 only

C. 1, 2 and 3

D. None of the above

115. Consider the following statements:

1. The Finance Commission is constituted by the Prime Minister under Article 280 of the Constitution.

2. The 15th Finance Commission was constituted in the backdrop of the abolition of the Planning Commission.

Which of the given statement/s is/are correct?

A. 1 only

B. 2 only

C. 1 and 2 only

D. Neither 1 nor 2

116.   Arrange the following from West to East:

1.   Alboran Sea

2.   Ionian Sea

3.   Aegean Sea

4.   Tyrrhenian Sea

Choose the correct option:

A.   1, 4, 2, 3

B.   2, 4, 3, 1

C   1, 3, 2, 4

D.   1, 3, 4, 2

ANSWER KEYS

1	A		21	B
2	B		22	D
3	B		23	C
4	C		24	C
5	A		25	D
6	B		26	A
7	A		27	D
8	D		28	A
9	B		29	B
10	A		30	B
11	B		31	A
12	D		32	C
13	C		33	D
14	B		34	A
15	A		35	B
16	B		36	A
17	D		37	A
18	D		38	D
19	C		39	B
20	A		40	C

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41	A
42	A
43	C
44	B
45	D
46	A
47	C
48	B
49	B
50	C
51	C
52	D
53	B
54	A
55	A
56	B
57	C
58	B
59	A
60	A

61	C
62	A
63	C
64	C
65	A
66	B
67	C
68	D
69	D
70	A
71	B
72	C
73	D
74	A
75	B
76	C
77	A
78	D
79	C
80	D

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81	D		101	B
82	B		102	D
83	D		103	C
84	C		104	C
85	D		105	A
86	D		106	A
87	B		107	B
88	D		108	C
89	A		109	D
90	D		110	C
91	B		111	B
92	A		112	A
93	A		113	C
94	B		114	C
95	D		115	B
96	C		116	A
97	D			
98	B			
99	A			
100	C			

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MAINS PRACTICE QUESTIONS

GS Paper 1

Social Issues

1.   1Regressive beliefs in the society are major impediments to developing scientific temper, humanism and the spirit of inquiry. Discuss. Does India need an anti-superstition law? (15 Marks, 250 Words)

2.   India needs a comprehensive law to curb killings in the name of honour and prohibit interference in the matrimonial choice of individuals. Examine. (15 Marks, 250 Words)

3.   Discuss the challenges faced by the sanitation workers in India and also suggest what measures are required to overcome these challenges. (10 marks, 150 words)

Geography

1.   What are Earthquake Swarms? Which regions of India have experienced it? Discuss the reasons. (10 Marks, 150 Words)

Urbanisation

1.   With monsoons causing flooding and enormous damages in cities across India, it is time to focus on smart urbanisation. Discuss. (15 Marks, 250 Words)

GS Paper 2

International Relations

1.   With India's excessive focus on the continental sphere since independence not having yielded great returns, the time has come for a shift in its strategic approach to the maritime sphere. Evaluate. (15 Marks, 250 Words)

2.   India's aim of deepening its participation in the Quad should be to nudge the Indo-Pacific region's geopolitics towards cooperation as opposed to conflict. Comment. (10 marks, 150 words)

3.   The increasing global integration without the commensurate strengthening of global solidarity is a cause of concern. Discuss the significance of multilateralism in current circumstances and also enumerate the impeding factors. (15 marks, 250 words)

4.   With the pandemic posing a hurdle to China in its march to global hegemony, the time is opportune for India to push for institutional changes and reformed multilateralism in the global system. Discuss. (15 Marks, 250 Words)

5.   Despite the commendable improvement over its predecessor organization, the UN Human Rights Council (UNHRC) still faces many external challenges and internal contradictions in its global fight for human rights. Comment. (15 marks, 250 words)

6.   Analyze the changes in the U.S.'s West Asia policy over the years and evaluate its outcomes for the region and the world with an emphasis on the impact on India. (15 marks, 250 words)

7.   Any deviation from the long-cherished principle of 'Non-alignment' should be based purely on India's immediate as well as long term national interests. Discuss in the context of India-US-China ties. (15 marks, 250 words)

8.   Discuss the concerns associated with the current structure and functioning of the United Nations and analyze how it has been a hindrance to the achievement of its set ideals and objectives. (10 marks, 150 words)

9.   FATF has retained Pakistan in the "greylist" for its failure in implementing the plan of action on terror financing and money laundering. Discuss how being placed in the FATF "Grey List" affects countries with a special emphasis on Pakistan. (10 Marks, 150 Words)

10.   'Strategic autonomy' should not be understood as 'non-alignment'. Issue-based alignment may be a necessary component in contemporary times. Analyze in the backdrop of the evolving geopolitical situation for India. (15 marks, 250 words)

11.   Examine the significance of a robust bilateral relation with Myanmar for India and enumerate the recent initiatives taken to strengthen this bilateral relation. (10 marks, 150 words)

12.   Analyze the major hurdles to India's emerging Indo-Pacific strategy. (10 marks, 150 words)

13.   Analyze the deepening bilateral relationship between India and the U.S. over the years, particularly in the domain of defence partnership and discuss the factors which are driving this partnership forward. (15 marks, 250 words)

Polity and Governance

1.   What are the issues associated with prioritising a single language in multi-lingual India? Discuss the need for preserving India's linguistic diversity. (15 Marks, 250 Words)

2.   Discuss the major concerns over the advent of social media platforms as information and news dispersion media and suggest measures to address these concerns. (15 marks, 250 words)

3.   The Supreme Court ruling on "protests" that seeks to strike a balance between the right to protest and the right to free movement could lead to suppression of protests by the force of the state. Critically examine. Also discuss the provisions regarding the right to protest peacefully enshrined in the Indian Constitution. (15 Marks, 250 Words)

4.   Discuss the significance of the Right to Information (RTI) law and analyze how the recent amendments to it and the inefficient implementation of the Act has had a detrimental impact on the effectiveness of the law and the institutions governing the law. (15 marks, 250 words)

5.   Given the unprecedented scenario of a Chief Minister accusing the sitting judges of misconduct, corruption and political bias, discuss the established procedures to deal with such complaints against sitting judges. (10 marks, 150 words)

6.   Discuss the significance of the defence offset policy in India and also evaluate the impact of the recent amendments on the policy objectives. (10 marks, 150 words)

7.   There is a need for a relentless focus on innovation given the significance of innovation in a country like India. Comment. Also enumerate the government measures in this direction. (10 marks, 150 words)

8.   A centralised approach to issues that affect millions of farmers ill-serves a diverse country. Critically analyse the statement. (15 Marks, 250 Words)

Education

1.   Discuss the major principles that could aid the transformation of the educational sector in India. (15 marks, 250 words)

Health

1.   Discuss the challenges faced by the people suffering from mental health problems or illness. Also suggest what measures are required in this direction. (10 marks, 150 words)

2.   Evaluate India's performance in controlling the HIV-AIDS epidemic and suggest what additional measures are required in this direction. (10 marks, 150 words)

Nutrition

1.   In light of the many indications of poor nutritional status in India, suggest measures required to overcome this nutrition challenge in India. (10 marks, 150 words)

GS Paper 3

Environment and Ecology

1.   How are China's latest climate commitments significant to the world? What are its implications for India? (15 Marks, 250 Words)

2.   Air pollution is a grave challenge in the National Capital Region. Discuss the causative factors for the high air pollution in NCR and suggest suitable short and long term solutions to address this issue. (15 marks, 250 words)

3.   Analyze the performance of the National Green Tribunal (NGT) over the years and evaluate its achievements and shortcomings. (10 marks, 150 words)

4.   Discuss the factors which have contributed to the problem of stubble burning in North Indian states and the associated concerns. Also suggest what measures can be taken to address the stubble burning challenge in India. (15 marks, 250 words)

Defence

1.   What do you understand by "offset clause" in defence deals? How does the recent change in the offset clause requirement unveiled in the new Defence Acquisition Procedure (DAP) 2020 affect future defence deals? Critically comment. (15 marks, 250 Words)

Economy

1.   Discuss the major provisions of the Insolvency and Bankruptcy Code (IBC 2016) and evaluate its significance in the Indian context. Also suggest measures to further streamline the insolvency process under the IBC 2016. (15 marks, 250 words)

2.   Discuss the mandate of the GST Council and also elaborate on its functioning. (10 marks, 150 words)

3.   There is the critical need to have a renewed approach to economic growth and development process in the post COVID scenario. Comment. (15 marks, 250 words)

4.   Enumerate the recent schemes and programmes launched in India in the domain of electronic manufacturing and discuss their significance. (15 marks, 250 words)

5.   Though the new labour codes take the much necessary step of acknowledging platform and gig workers as new occupational categories and provide for them certain benefits and rights, they fail to truly empower through better pay and definitive rights to these platform workers. Comment. (10 marks, 150 words)

6.   Discuss why the inordinate dominance of global tech giants is a cause of concern and suggest what measures are required in this direction. (15 marks, 250 words)

7.   Discuss the significance of the Monetary Policy Committee and also throw light on the composition and mandate of the Monetary Policy Committee. (10 marks, 150 words)

8.   Discuss the factors which contribute to inflation and also enumerate the measures that are available to control inflation in an economy. (10 marks, 150 words)

9.   The COVID-19-triggered recession has led to some of the strongly held economic assumptions being revised around the world. Comment. (10 marks, 150 words)

10.   Though the schemes like the Phased Manufacturing Programme and Production Linked Incentive scheme are well intended, there are some reservations over the benefits that can accrue from these to India. Analyze. (15 marks, 250 words)

11.   Is increasing the Minimum Support Price (MSP) the best measure to address farmers' distress? Critically examine. Discuss the role of MSP as a tool to ensure food security in India. (15 Marks, 250 Words).

12.   Putting women at the heart of the post-COVID economic recovery and ensuring an environmentally sustainable approach will make the process faster, just, inclusive and also sustainable. Comment. (10 marks, 150 words)

13. Analyze the reasons for the poor performance of the Discoms in India and suggest measures to overcome these shortcomings. (15 marks, 250 words)

Disaster Management

1. Given the criticality of an effective flood forecasting system in limiting the damage caused, evaluate the current flood forecasting system in India and analyze its shortcomings. Also suggest appropriate measures to make the flood forecasting system more effective. (15 marks, 250 words)

2. In light of two consecutive years of generous monsoons, India needs better science to prepare more effective disaster management plans. Comment. (10 Marks, 150 Words)

Science and Technology

1. Evaluate the potential of CRISPR technology and also analyze the need to regulate the use of this technology. (10 marks, 150 words)

2. Discuss how the CRISPR/Cas9 system offers immense potential for the emergence of novel biological applications by making it easier to edit genes. Also evaluate the associated concerns with this method. (15 marks, 250 words)

3. With the 2020 Chemistry Nobel thrusting CRISPR-Cas9 into the limelight, discuss the prevalent laws, rules with respect to gene editing in India and suggest suitable measures to avoid misuse or unintended consequences due to gene editing. (10 marks, 150 words)

4. What is meant by superconductors? What are the characteristics of a superconductor? Enumerate the technological applications of high-temperature superconductors. (10 marks, 150 words)

5. The ongoing COVID-19 pandemic has compelled companies to embrace technologies and systems that have accelerated the pace of digital transformation worldwide. Comment. Also, evaluate the possible benefits of such a transformation. (10 marks, 150 words)

6. Analyze the threats posed by the use of deepfakes and suggest suitable counter-measures. (15 marks, 250 words)

Food Security

1. Despite impressive progress over the years, more than two billion people globally still lack access to sufficient, nutritious and safe food. Identify the factors responsible and suggest suitable measures required to meet the target of zero hunger by 2030. (15 marks, 250 words)

Internal Security

1. The temporary lull in terrorist activities should not lead to complacency given the threats posed by terror outfits to India and its neighbourhood. Comment. Also suggest the measures to be taken by India to counter the threat posed by terrorism. (15 marks, 250 words)

INTERVIEW TRANSCRIPT

Candidate Details:

- Name: Keerthi Vasan V

- AIR: 29 (CSE 2017)

- Chairperson: Air Marshal Ajit Bhonsle sir

- Duration: 20 – 25 minutes

- Hometown: Dharmapuri, Tamil Nadu

Keerthi Vasan V

- Optional Subject: Political Science and International Relations

- Work Experience: No work experience

- Education: B.Tech in Civil Engineering, National Institute of Technology

- Hobbies: Digital poster designing, Watching English web series

Air Marshal Ajit Bhonsle

Service: Air Marshal, Indian Air Force

- Prior to joining UPSC, he held the Office of Chief of HQ, Integrated Defence Staff (IDS) and also as Deputy Chief of Joint Operations, Doctrines, Organization & Training.

- Air Marshal Bhonsle has participated in the Sri Lanka Indian Peace Keeping Force Operations, Siachin and Kargil operations, and has 5200 hours of flying experience.

- Air Marshal Bhonsle is an avid traveller and takes a keen interest in performing arts, culture and culinary. An animal lover, he is fond of golf, swimming and equestrian sports.

Education Background

- An alumnus of Bhonsala Military School, National Defence Academy, Defence Services Staff College, College of Defence Management and National Institute of Defence Studies, Japan; Post Graduate Diploma in Mass Communication from IIMC, Delhi.

- M.Sc. Defence Studies from University of Madras, Masters in Business Management from IGNOU and Osmania University, and M.Phil from Tokyo.

Interview

Chairman gives a few instructions: That this interview is to determine your functional suitability for the services. He also asks the candidate to use the paper and pencil kept on the table to note down the points before answering.

Questions on educational background and skillset

- 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? (Keerthi Vasan got 10.00/10.00 (CGPA) in 10th Standard)

- People who are good in academics are generally 'dull' when it comes to social or administrative responsibilities. What about you?

- The training process would make you a good administrator. But, what qualities of a good administrator do you think you already have?

- What do you mean by 'Objective Decision Making'? (Follow up question from the previous answer)

Questions based on DAF and follow-up questions

1. What was your contribution in Unnat Bharat Abhiyaan? (DAF based)

2. What is Kanchipuram famous for?

3. What are the issues with respect to the saree weavers in Kanchipuram?

4. How can you utilise Unnat Bharat Abhiyaan to address these issues?

Follow-up questions (International Relations)

- You studied in Maharishi International School. What is 'International' about this school?

- What was the proportion of foreign students in your class?

- How has India-Nepal relations evolved in the recent past?

- There was a news in today's paper with respect to Nepal. Did you read the news? What was it about?

- Don't you think China would overshadow India in such an economic grouping?

- Is the current Nepal PM pro-China or pro-India?

- Do you think morality is relevant in domestic as well as international administration?

Questions about State Government, schemes and governance

- 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 where 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? Don't we see a dichotomy here compared to the earlier observation? (Of better policy implementation)

- 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?

Questions based on hobby

- What is this 'web series'? Is it different from any other regular series? (DAF based)

- What is your favourite genre?

- Which one is your favourite series? (Answer was GoT)

- So you want to know who finally gets the throne?

Questions related to economy

- What are the major functions of the RBI?

- The RBI governor was summoned recently by the PSC. Why?

- Is the monetary policy committee's mandate implementable in the longer run?

- Don't you think government appointees to MPC affect its independence?

- Is the RBI really independent today?

Chairman: Thank you Mr. Keerthi. Your interview is over. What other plans do you have for the day?

Interview Guidance Program

- A detailed roadmap for Interview Preparation with a special focus on Detailed Application Form (DAF).
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(Eminent Academician)

C Uday Bhaskar
(Defence Analyst and Strategist)

Arun Kumar Mago
(IAS Retd., Former
Chief Secretary, Maharashtra)

AK Rastogi
(IAS Retd., Former
Secretary to Govt of India)

S N Jha
(IAS Retd., Former
Chief Secretary, Bihar)

CNS Nair
(IAS Retd., Former
Secretary to Govt of India)

AK Puri
(IPS Retd., Former
DGP, Himachal Pradesh)

B L Vohra
(IPS Retd., Former
DGP, Tripura)

Vineet Ohri
(IRS Retd., Former
Chief Commissioner,
Customs & Excise)

B S Lamba
(IAS Retd., Former
Indian Envoy to UNO)

Prabhakar Mani Tripathi
(Sr. Psychologist)

G. Subba Rao
(IAS Retd., Former Chairman,
Gujarat State Police
Complaints Authority)

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In-depth coverage of syllabus which includes the following guides: Indian Polity by M Laxmikanth, India's Ancient Past by R S Sharma, History Of Modern India by Bipan Chandra, Ethics, Integrity and Aptitude by P N Roy Chowdhury and G Subba Rao +16 more titles

Test Your Knowledge
Perfect your exam writing skills and knowledge with - modular tests (MCQ and descriptive), question paper discussions, personalised analysis of answers and answer writing strategies

Current Affairs Webinar
Twice a week live webinar classes to discuss current affairs followed by revision notes

Ease of Accessibility
Prepare at your own convenience, anywhere and anytime with the BYJU'S IAS tablet

Course Highlights

Daily news analysis based on The Hindu

Practice to perfection with Prelims and Mains Test Series

Post Mains Interview Guidance Program

Delhi

B-1/8, Lower Ground Floor, Apsara Arcade, Sadhu Vasvani Marg, Pusa Road, Karol Bagh, Rajinder Nagar, Delhi 110005

Shop No. 19, Vardhaman Central Mall, Nehru Vihar, Delhi. nearest metro- Vishwa Vidyalaya metro station

Hyderabad

Srishti Tower, Hitech City Rd, VIP Hills, Silicon Valley, Madhapur, Hyderabad, Telangana 500081

3-6-196/197, 2nd Floor, Prime Plaza, Himayatnagar Main Road, Himayatnagar, Hyderabad, Telangana 500029

Bangalore

BYJU'S Classes, Tavarekere Main Rd, Opp: Forum back gate, Venkateshwara Layout, S.G. Palya, Bengaluru, Karnataka 560029

Chennai

St Patricks School, Kasturba Nagar 3rd Cross St, Gandhi Nagar, Adyar, Chennai, Tamil Nadu 600020

To know more about our courses contact: **+91 92435 00460**