



# CURRENT AFFAIRS PROGRAM

## PRE-CUM-MAINS 2024

### AUG 2023 - BOOKLET-2

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### 1) EXECUTIVE: ORDINANCE MAKING POWER

- **Why in news?**
  - » In May 2023, the President of India promulgated the ordinance - 'National Capital Territory of Delhi (Amendment) Ordinance, 2023' (May 2023)
    - The ordinance promulgated by President Droupadi Murmu gave the LG of Delhi, who is appointed by the Centre, power over services, and established a "National Capital Service Authority" comprising of chief ministers and two senior IAS officials, which would decide matters "by majority of votes of the members present and voting" - essentially creating a stipulation in which the view of the elected CM could potentially be overruled.
- **Example Questions**
  - » "The ordinance route is bad, re-promulgation worse" Illustrate with examples [15 marks, 250 words]
  - » Why is there a temptation to use the power vested in the President and Governors under Article 123 and 213 of the constitution? What is the opinion of Supreme Court on frequent use of this power? [12.5 marks, 200 words]
  - » Discuss the constitutional safeguards which are designed to prevent misuse of ordinance making power of the President. [10 marks, 150 words]
- **Introduction:**
  - » **Article 123 (Article 213 for Governors)** of the constitution empowers the President to promulgate ordinance during recess of Parliament. The Ordinance making power is the most important legislative power of the President. It has been vested in her to deal with unforeseen and urgent matters.
  - » These ordinances have the same force and effect as an act of Parliament but are in the nature of temporary laws.
  - » **What can ordinance do?**
    - It cannot amend constitution. Otherwise, it can do everything which parliament is empowered to implement.
- **Constitutional Safeguards:** The exercise of the Ordinance power is subject to 4 limitations:
  - i. Ordinance can be promulgated only when atleast one of the Houses of the Parliament is not in session.
  - ii. President can make ordinance only when he is satisfied that the circumstances exist that render it necessary for him to take immediate action.
    - In Cooper case, (1970), the Supreme Court held that President's satisfaction can be questioned in a court on the ground of Malafide.
  - iii. His ordinance making power is coextensive as regards all matters except duration, with the law-making powers of the Parliament. Two implications - Subject restrictions and Article 13 restriction.
  - iv. Every ordinance issued by president during recess of Parliament must be laid before both the Houses of Parliament when it reassembles.

- If the ordinance is approved by both the houses, it becomes an act.
  - If Parliament takes no action at all, the ordinance ceases to operate on the expiry of six weeks from the reassembly of Parliament.
- **Statement explaining the circumstances.**
  - The rules of Lok Sabha require that whenever a bill seeking to replace an ordinance is introduced in the House, a statement explaining the circumstances that had necessitated immediate legislation by ordinance should also be placed before the Houses.
- **Important SC Judgments**
  - In Cooper case, (1970), the Supreme Court held that **President's satisfaction can be questioned in a court on the ground of Malafide**.
  - **D C Wadhwa Case (1987)**
    - The court ruled that successive re-promulgation of ordinances with the same text without any attempt to get the bills passed by the assembly would amount to violation of the constitution and the ordinance so re-promulgated is liable to be struck down. It held that the exceptional power of law-making through ordinance cannot be used as a substitute for legislative power of the state legislature.
  - **Krishna Kumar Singh vs. State of Bihar, 2017:** In a blow to Ordinance Raj, a 7 judge Constitutional Bench of the Supreme Court widened the boundaries of judicial review to the extent that it can now examine whether the President or the State Governor was spurred by an "oblique motive" to bypass the legislature and promulgate an ordinance.
    - Further, the court added that "the ordinance making power is not a parallel source of legislation. The court also held that "re-promulgation of ordinance is a fraud on the constitution and a sub-version of democratic and legislative process".
- **Ordinance has been a handy tool since 1952.**
  - All the governments have misused the provisions of Ordinance to sideline the legislature.
  - In the 1950s, central ordinances were issued at an average of 7.1 per year. The number peaked in the 1990s at 19.6 per year and declined to 7.9 per year in the 2010s.
  - The years 2019 with 16 ordinance and the year 2020 with 15 ordinances have again started seeking a spike.
- **Why this temptation for ordinance?**
  - Reluctance to face legislatures on certain issues
  - Lack of majority in upper house
  - Repeated and willful disruption by opposition parties
- **Conclusion**
  - It is clear that misuse of ordinance making power is tantamount to violation of Separation of Power doctrine where executive takes on the legislative responsibility. Therefore, Ordinance mechanism should only be used for emergency and adverse matters.
  - As governments, both at the Center and States, are violating this principle, the legislatures and the courts should check the practice.

- Opposition can also play an important role here by ensuring that house is functioning smoothly and thus government is given sufficient opportunity to get important laws legislated. Moreover, it will also provide the legislature an opportunity to hold government accountable by questioning it on the need of ordinance.

## 2) PARLIAMENT: MONEY BILL

- Why in news?
  - » Chief Justice DY Chandrachud recently made an oral remark on the constitution of a 7-judge bench for considering the money bill issue. (June 2023)
    - Its formation is due to the reference made by the Constitution bench in *Roger Mathew v. South Indian Bank* on the interpretation of Article 110(1) of the Constitution of India. The correctness of the majority judgement in Aadhaar case on this point was also doubted by the court.
    - Thereafter in the PMLA case, the question was left open for the consideration of larger bench.
    - The decision of the 7-judge bench which is yet to be formed will definitely have a far reach impact on the constitutional law and the contemporary development in the Indian Parliamentary system and politics.
- Example Questions
  - The Constitution of India provides special provisions for the passage of a Money Bill to ensure the financial independence and continuity of government function. But these provisions are sometimes being misused to bypass the Rajya Sabha in the legislative process. Illustrate some of this misuse with examples. Suggest the way forward to deal with this trickery of the money bill. [15 marks, 250 words]
- Introduction
  - » In BR Ambedkar's vision, the Constitution embodied not only a charter of rights but also a foundation for republican governance. But sometimes the constitutional provisions are misused which negatively hampers the legislative process and federal structure of the country. Provisions related to money bill are among such misused provisions.
- What is Money Bill
  - » According to Article 110 of the Constitution of India a bill is deemed to be money bill if it contains 'only' provisions dealing with all or any of the following matters:
    - the imposition, abolition, remission, alteration or regulation of any tax;
    - the regulation of the borrowing of money or the giving of any guarantee by the Government of India, or the amendment of the law with respect to any financial obligations undertaken or to be undertaken by the Government of India;
    - the custody of the consolidated Fund or the Contingency Fund of India, the payment of moneys into or the withdrawal of moneys from any such Fund;
    - the appropriation of moneys out of the consolidated Fund of India;
    - the declaring of any expenditure to be expenditure charged on the Consolidated Fund of India or the increasing of the amount of any such expenditure;

- f. the receipt of money on account of the Consolidated Fund of India or the public account of India or the custody or issue of such money or the audit of the accounts of the Union or of a State; or
  - g. any matter incidental to any of the matters specified in sub clause (a) to (f)
- » Article 110(3)-> Speaker's decision final.
- » Article 122 -> prohibits courts from inquiring into proceedings of Parliament and examining their validity.
- In order to ensure financial independence and continuity to government functioning, the Constitution gives primacy to Lok Sabha with respect to Money Bill. Such bills can only be introduced in Lok Sabha, can't be amended by Rajya Sabha. The upper house can only make some recommendations to the money bill passed by the lower house within a period of fourteen days which the lower house may accept or reject.
- Since Powers of Rajya Sabha are greatly reduced on Money bill, government (majority in Lok Sabha) sometimes bypasses the Rajya Sabha by getting a bill which doesn't satisfy the conditions for money bill declared as money bill.
- Some recent examples include:
  - » Adhaar Bill, 2016 contained provisions relating to providing of benefits, subsidies and services funded from Consolidated Fund of India, but it also contained several other provisions like allowing Adhaar to be used for opening bank accounts etc.
  - » Finance Bill, 2016 also had provisions other than those related to taxation. It amended the RBI Act to create Monetary Policy Committee. It also amended the Foreign Contribution Regulation Act (FCRA) (with retrospective effect) to change the definition of foreign company.
  - » Finance Bill, 2017 also had provisions related to structure and organization of the Tribunals.
  - » Finance Bill, 2019 was used to amend the provisions of the Prevention of Money Laundering Act (PMLA).
- Supreme Court Verdict on Aadhaar Bill, 2016 in Sep 2018
  - Accepts Adhaar as money bill.
    - The Supreme Court held that government was fine to use money bill route as long as the main focus on the bill fit the criteria - and even if other provisions were unconnected to taxation or government expenditure.
  - Dissenting Judgment: Adhaar Act as Money Bill is a fraud on constitution.
    - Justice Chandrachud said that superseding the authority of the Rajya Sabha is in conflict with the Constitutional Scheme and the legitimacy of democratic institutions.
      - He pointed to an important word in provision (i) of Article 110: "only".
- Supreme Court Verdict on Finance Bill, 2017 (Nov 2019): Rojer Mathew vs South Indian Bank Ltd and Ors

- In Nov 2019, a five Judge Constitutional Bench of the Supreme Court judgement while examining the legality of a number of changes to the composition of tribunals passed through Finance Bill, 2017, which the court struck down, it also brought up the money bill question.
  - The bench headed by CJI Ranjan Gogoi decided "It is clear to us that the majority dictum [in the Aadhaar judgment] did not substantially discuss **the effect of the word 'only'** in Article 110(1) and offers little guidance on the repercussions of a finding when some of the provisions of an enactment passed as a "Money Bill" do not conform to Article 110(1)(a) to (g)." The court was dissatisfied with the way the Aadhar judgement in the K Puttuswamy case had dealt with the issue of what could be certified as a money bill.
  - The court has thus also raised question of whether the Finance Act 2017 could have been passed as money bill.
  - The matter has been referred to a larger Seven Judge Bench.
- In July 2022, while giving verdict on the Constitutionality of PMLA, the SC reiterated that the question if the amendment to PMLA could be passed as part of Finance Bill, will be determined by a larger bench.
- Conclusion and Way Forward
- It appears that many of the bills discussed above don't qualify to be money bill under Article 110 of the Constitution. Therefore, concerns have been raised about bypassing of the upper house. The upper house has special role in Indian federal structure and therefore there is an urgent need to arrest these developments.
  - Steps that can be taken
    - The 7 judge Constitutional bench should examine the issue on priority.
    - The Supreme court should examine the issue under its power of judicial review under the principles laid down in the Kihoto Hollohan, 1992 and Raja Ram Pal, 2007 cases.
    - **Reforming the officer of Speaker** to make it more neutral as in the case of Britain.
      - Resignation from party
      - Guarantee of continuity of office
      - Election campaign on non-political issues
    - Further, **Speaker removal procedure should be made more stringent**. Instead of 50% of the total membership, allow speaker to be removed only by special majority (as in the case of a Supreme Court Judge)
    - **A committee** to decide whether a bill is **money bill** or not.
      - This committee can have representation from various political parties.
    - **Opposition parties should also play a constructive role** by reducing the disruption of upper house.

### 3) PARLIAMENT: DEPUTY SPEAKER

- Why in news?
  - As of Aug 2023, the post of Deputy Speaker in Lok Sabha remains vacant (Aug 2023)
- Example Question

- Discuss the key constitutional provisions regarding the office of the Deputy Speaker of Lok Sabha. What are the key functions of a Deputy Speaker [10 marks, 150 words]
- **Introduction:**
  - The post of Deputy Speaker has been lying vacant since the beginning of the 17th Lok Sabha in May 2019.
- **Constitutional Provisions:**
  - **Article 93:** The Lok Sabha shall, as soon as possible, choose two members of the House (simple majority) to be respectively **Speaker** and **Deputy Speaker** and thereof, so often as the office of Speaker or Deputy Speaker becomes vacant, the House shall choose another member to be Speaker or Deputy Speaker, as the case may be.
  - **Article 178** contains the corresponding position for speaker and Deputy Speaker of the Legislative assembly of the state.
- **Term of Deputy Speaker, vacation of office, and disqualification**
  - Once elected, a deputy speaker usually continues in office until the dissolution of the house.
  - Speaker or deputy speaker **vacate** her office if she ceases to be member of the house.
  - They may also resign or may be removed from office by a resolution of the House of the People passed by a majority of all the then members of the house.
- **Disqualification provisions of MPs** are still valid on Speaker /Deputy Speaker except **one exception**.
  - Para-5 of the **tenth Schedule** says that a person who has been elected **speaker/deputy speaker** shall not be disqualified if she, by reason of his election to that office, voluntarily gives up the membership of the political party to which he belonged immediately before such election - and doesn't, so long as she continues to hold office thereafter, rejoin that political party or become a member of another political party.
  - **Note:** This exception is also applicable to Vice chairperson of Rajya Sabha, Speaker/Deputy Speakers of Legislative assembly and Chairman/Deputy chairman of Legislative Council.
- **Functions of Deputy Speaker**
  - Deputy Speaker is a Presiding Officer.
    - Article 95(1) of the Constitution says that when the office of speaker is vacant, the duties of the office shall be performed by the Deputy Speaker.
  - He is also ex-officio chairman of some committees by virtue of his position.
  - In case of joint sitting of the two houses and absence of speaker, Deputy Speaker presides over the joint sitting of the two houses.
- **Powers of Deputy Speaker**
  - In general, the deputy speaker has the same powers as the speaker when presiding over a sitting of the house. All references to the speaker in the rules are deemed to be references to the Deputy Speaker when he presides.
  - Further, no appeal lies to the Speaker against a ruling given by Deputy Speaker or any person presiding over a sitting of the House in the absence of Speaker.

- **Note:** Deputy Speaker is not subordinate to Speaker. When he presides over a sitting, he has all the powers of a speaker.
- **Is it mandatory to elect a deputy speaker?**
  - Constitutional experts point out that both Article 93 and Article 178 use the words "shall" and "as soon as may be" - indicating that not only is the selection of Speaker and Deputy Speaker mandatory, it must be held at the earliest.
- **Is there a time frame?**
  - **Constitution** provides for "as soon as possible".
- **Conventions which are being followed:**
  - **Generally**, the practice in both Lok Sabha and the State Legislative Assemblies has been to elect speaker during the (mostly short) first session of the new House - usually on the third day after oath-taking and affirmation take place over the first two days.
    - The **election of deputy speaker** generally takes place in the second session, even though there is no bar in having the elections in the first session of the new Lok Sabha/Assembly. But the election of **deputy speaker** is usually not delayed beyond the second session without genuine and unavoidable constraints.
  - Since, the term of Morarji Desai government, the tradition of the post of the Deputy Speaker going to the Opposition party has been followed.
- **Why Deputy Speaker hasn't been elected yet?**
  - The ruling party hasn't been able to agree on a suitable opposition party member for the post. Opposition doesn't have the required numbers to choose their own person.
  - **Speaker from the ruling party:** Rule 8 of The Rules of Procedure and Conduct of Business in Lok Sabha provides that the election shall be held on such date as the Speaker may fix", and the Deputy Speaker is elected once a motion proposing his name is carried.
- **Can Courts intervene in situation of non-appointment of deputy speaker?**
  - No Precedent, nothing mentioned in the Constitution.
  - Further, Article 122(1) says that validity of any proceedings in Parliament shall not be called in question on the ground of any alleged irregularity of procedure.
  - However, constitutional experts say that courts do have jurisdiction to at least enquire why there has been no election to the post of Deputy Speaker, since the constitution envisage an election "as soon as may be".
- **Significance of Deputy Speaker**
  - **Continuity of the Speakers Office** by acting as the Speaker when the office becomes vacant due to illness, death, resignation, or any other reason.
  - **Unlike the panel of chairpersons**, appointed by Speaker, which comprise of 9 MPs from various political parties, who preside over the house when the Speaker is not in the chair, they don't enjoy the same constitutional or administrative power as the speaker.

- Further, since the position of deputy speaker by convention is held by opposition party, it increases the accountability of majority party to legislative process to some extent.
- Conclusion**
  - The post of the speaker and deputy speaker are both crucial for the smooth working of the Parliament and thus their appointments should be made as soon as possible right at the beginning of the new term of Lok Sabha.

## 4) DELIMITATION COMMISSION

- Understanding Delimitation and Delimitation Commission:**
  - Delimitation is the act of redrawing boundaries of Lok Sabha and State Legislative Assemblies to represent changes in population.
  - The exercise of delimitation is carried out by an independent, high powered body, called Delimitation Commission. It is appointed by GoI under the provisions of the Delimitation Commission Act.
- Purpose:**
  - Ensuring equal representation to equal segment of a population ("one value one vote" principle)
  - Fair division of geographical areas so that one party doesn't have advantage over others in election.
- Constitutional Provisions**
  - Article 82: Readjustment After Each Census:** The allocation of seats in the Lok Sabha to the states and division of each state into territorial constituencies shall be readjusted in such a manner as Parliament may by law determine.
    - According to this provision, the Parliament has enacted the Delimitation Commission Acts in 1952, 1962, 1972 and 2002.
    - The 42nd Constitutional Amendment Act, 1976 froze the allocation of seats in the Lok Sabha to the states and division of each state into territorial constituencies till the year 2000 at the 1971 level.
      - Therefore, there were no delimitation commission after 1981 and 1991 census.
    - The 84th Constitutional Amendment Act, 2001 extended this freeze for another 25 years (i.e. upto year 2026)
      - But, it allowed internal readjustment and rationalization of territorial constituencies in the states on the basis of population figures of 1991.
      - Later, the 87th Amendment Act of 2003 allowed this readjustment and rationalization on the basis of 2001 census and not 1991 census.
  - Why?**
    - The states which were effectively implementing population control measures were at a disadvantage. The fear of losing meaningful political representation was specially great in the southern states which not only had great success in

controlling populations but also economically developed such that they generated a lot more per capita revenue than the northern states.

- Article 170 has similar provisions for division of states into territorial constituencies.

- **Composition of Delimitation Commission (as per the 2002 Act)**

- Chairperson - A sitting or former judge of the Supreme Court, to be appointed by the Central government
- Ex-officio member - The Chief Election Commissioner or an Election Commissioner nominated by the Chief Election Commissioner.
- Ex-officio members - The State Election Commissioners of the concerned states

- **Associate Members (Members without any voting rights)**

- As per the 2002 Act, The Delimitation Commission shall have 10 associate members for each state.
  - Five Lok Sabha members from the state nominated by speaker of the Lok Sabha speaker
  - Five MLAs from the state nominated by legislative assembly speaker

- **Judicial Bar**

- As per section 10(2) of the 2002 Act, the order of delimitation commission will have the force of law and will not be called into question in any court.

- **Objective of creating Delimitation Commission**

- Provide equal representation for equal population segments, and a fair division of geographical areas, so that no political party has an unfair advantage.

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**A) DELIMITATION COMMISSION FOR J&K, ASSAM, ARUNACHAL PRADESH, MANIPUR, NAGALAND (FORMED IN MARCH 2020)**

- As per the section 3 of the Delimitation Act, 2002.
- **Purpose**
  - Delimitation of Assembly and Parliamentary Constituencies in the UT of J&K and state of Assam, Arunachal Pradesh, Nagaland and Manipur.
- **Delimitation of J&K** has been completed as per the provisions of the J&K Reorganization Act. It is based on the 2011 census.
- **Why delimitation of only these states?**
  - Assam, Arunachal Pradesh, Nagaland and Manipur were left out of the delimitation exercise 2002-08.
    - The four states had moved to Guwahati High Court against 2002-08 exercise, challenging the use of the 2001 census for reference. They demanded that delimitation be called off till NRC was not updated.

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**B) DELIMITATION COMMISSION'S FINAL REPORT FOR UT OF JAMMU AND KASHMIR (MAY 2022)**

- Erstwhile J&K state had 111 assembly seats - 46 in Kashmir, 37 in Jammu, 4 in Ladakh and 24 seats reserved for POK. (Since Ladakh is a separate territory, the present J&K had 107 seats in the assembly). It didn't provide reservation for STs in the assembly.
- **Final Order of the Delimitation Commission:**
  - » **Assembly:** An increase of 7 seats: 114 seats for J&K (including 24 seats reserved for POK)
    - Reservation of seats for STs, SCs and Kashmiri Pandits.
  - » **Lok Sabha:** Total number of LS seats remain 5 (but they have been reorganized)
    - All LS constituencies now comprise 18 assembly segments each.
- It has further recommended an unspecified number of seats for those who were forced to migrate from Pakistan controlled areas.
- » **Analysis: Positives**
  - The commission has done well to ensure that all communities in the UT of J&K will have a share in the assembly including Dogras of Jammu, the Scheduled Castes, the Scheduled Tribes, and the Kashmiri Muslims.
  - The completion of the delimitation exercise paves the way for assembly elections - a crucial step in the possible restoration of statehood for J&K.
- » **Analysis: Criticism**
  - The regional parties have criticized the delimitation as a highly political exercise intending to benefit the ruling dispensation at the Center.
  - In 2002, the then J&K government amended the J&K Representation of the People Act to freeze delimitation exercise until 2026, as the rest of the country.
  - 44% of population in Jammu have got 48% of the seats and 56% of the population in Kashmir have got only 52% of the seats.

#### C) ELECTION COMMISSION COMES OUT WITH FINAL REPORT ON ASSAM DELIMITATION (AUG 2023)

- **Key Highlights:**
  - All assembly and parliamentary constituencies in the state of Assam were delimited (redrawn) based on 2001 census.
  - **No change in numbers:** Assembly constituencies (126); Parliamentary Constituencies (14)
  - **Nomenclature modified for 19 assembly constituencies and 1 parliamentary constituencies.**
  - **Reservation for STs and SCs in 19 Assembly, 2 Lok Sabha and nine assembly and 1 Lok Sabha seats** respectively. [Overall reserved assembly seats for both SCs and STs have increased]
- **Criticism:**
  - Use of 2001 data (when the 2011 data existed) [for J&K delimitation, the 2011 data was used]

#### D) CRITICISM AND CONCLUSION OF DELIMITATION EXERCISE

- Delimitation based on population seriously harms the states which are better in implementing family planning norms.

- The state's political influence at Center reduces.
- It pits Indian citizens against one another across arbitrary, divisive cleavages - North vs South, Hindi vs non-Hindi, so on, and so forth.
- **Sometimes delimitation commission are influenced by the politics** and the delimitation is criticized for weakening the political influence of some groupings.
- **Conclusion**
  - A properly functioning delimitation commission is crucial for effective working of a democracy. At the same time there is need to create a balance between a regular conduct of delimitation and proper enforcement of the family planning norms. A politically neutral delimitation commission will also go a long way in ensuring acceptance of the outcomes of the delimitation commission.

## 5) FEDERAL ISSUES: INTER-STATE RIVER WATER ISSUES

- **Why in news recently?**
  - Why is Cauvery Water Sharing Issue flaring up again (Aug 2023: Source-TH)
  - Supreme Court Bench recuses from hearing Pennaiyar river water dispute (July 2023)
    - » Justice Bopanna hails from Karnataka and Justice Sundresh form Tamil Nadu. The bench referred to the original suit filed by TN against Karnataka to the Chief Justice of India for Constitution of an appropriate bench.
    - » **Background:**
      - In 2018, TN had moved the court against Karnataka's work on check dams and diversions' structure on the river.
      - The Union Cabinet has filed an affidavit before the Supreme Court to apprise it that, pursuant to its order, the centre submitted a proposal to cabinet secretariat for formation of **Pennaiyar Water Dispute Tribunal** to resolve the Pennaiyar river water dispute between TN and Karnataka.
  - Experts question timing of Chhattisgarh's release of water into Mahanadi (April 2023)
    - » Water experts and political leaders accused the neighbouring state of attempting to mislead the Mahanadi Water Dispute Tribunal led by Supreme Court Justice A.M. Khanwilkar.
    - » As per Odisha, Chhattisgarh has opened 20 gates at Kalma Barrage through which 1,000 - 1,500 cusecs of water is flowing into Mahanadi in Jharsuguda district - a rarity as Chhattisgarh hardly releases water during non-Monsoon season.
    - » **Note:** Mahanadi Water Disputes Tribunal was formed in March 2018. This tribunal has been asked to submit the report by 2025.
- **Example Questions:**
  1. Constitutional mechanism to resolve the inter-state water disputes have failed to address and solve the problems. Is the failure due to structural or process inadequacy or both? Discuss [12.5 marks, 200 words] [CSM, 2013]
  2. Disputes between the riparian states on sharing of river waters in post-independence era India are becoming increasingly complex. Objectively analyze the major disputes in this connection with special reference to the southern states? [CSM 2010]

3. Riparian rights are a source of disputes. How are they resolved in a federal system? [10 marks Mains 1986]
4. Discuss the key challenges and gaps in the institutional and political fabric of inter-state river water governance within the Indian federal system. [15 marks, 250 words]
5. Setting up of a permanent tribunal to adjudicate river water dispute among states is a positive step forward. Critically Evaluate [10 marks, 150 words]
6. Discuss the key factors behind origin of the river water disputes. Why, in recent years, the river water disputes are becoming more and more difficult to resolve? [12.5 marks, 200 words]

- **Introduction**

- » Inter-state river water disputes have become one of the most contentious issues in the Indian federalism today. Disputes are no longer just about water allocation, but have become hugely politicized.

- **Constitutional Provisions regarding Inter-State River Water Disputes**

1. Article 262 of the constitution say that Parliament may by law will provide for adjudication of any inter-state river water dispute and the Parliament may also provide that Judiciary will not exercise any jurisdiction in respect of any such dispute.
2. Schedule 7 distributes legislative power concerning water between Centre and States to ensure optimum utilization while balancing the interests of the states.
  - Entry 56 of Union list gives power to the Union Government for the regulation and development of interstate river valleys to the extent declared by Parliament to be expedient in public interest.
  - Entry 17 of the state list deals with water i.e., water supply, irrigation, canal, drainage, embankments, water storage and water power.

- **Laws formed by the Parliament.**

- » Under the provisions of Article 262, the parliament has enacted two laws
  - i. **The River Boards Act (1956)**
  - ii. **Inter-State Water Dispute Act (1956)**
- » **The River Board Act** provides for the establishment of river boards for the regulation and development of inter-state river and river valleys. A river board is established by Central Government on the request of state governments concerned to advise them.
- » **The Inter-State Water Dispute Act (1956)** empowers central government to set up an ad hoc tribunal for the adjudication of a dispute between two or more states in relation to the waters of an inter-state river or river valley.
  - The decision of the tribunal is final and binding on the parties to the dispute.

- Neither Supreme Court nor any other court is to have jurisdiction in respect of any water dispute which may be referred to such a tribunal under this Act.
  
- **What is the need of extra judicial machinery to set inter-state water dispute?**
  - The supreme court would indeed have jurisdiction to decide any dispute between states in connection with water supplies, if legal rights or interests are concerned; but the experience of most countries has shown that rules of law based upon the analogy of private proprietary interests in water do not afford a satisfactory basis for settling disputes between the states where the interests of the public at large in the proper use of water supplies are involved.
  
- India has 25 major river basins, with most rivers flowing across states. As river basins are shared resources, a coordinated approach between the states, with adequate involvement of the Centre, is necessary for preservation, equitable distribution and sustainable utilization of river water.
  
- **However**, interstate rivers in India have become sites of contestations.
  - For e.g., Pennaiyar river dispute (between Karnataka and TN); Mahadayi River dispute (between Karnataka and Goa), Krishna Water Dispute (Andhra, Telangana, Maharashtra and Karnataka); Cauvery Water Dispute (TN, Kerala, Karnataka, Puducherry)
  
- **Sources of Inter-State River Water Disputes:**
  - Imprecise distribution of power between the Centre and the States, creating federal jurisdictional ambiguity.
    - **Union list** mentions 'interstate water', the State List simply uses the term "water" to signify what is essentially "surface water" confined within the boundaries of the state.
    - This has allowed states to legislate on the entire extent of surface water available within its borders, regardless of whether the source of the river or its tributary is located outside its boundary or the river is draining into another state.
  
  - **Evolving state borders:**
    - The changing borders complicate the existing jurisdictional and resource-sharing agreements and eventually become source of inter-state political contestation, leading to historico-geographical ambiguity in inter-state river water governance.
  
  - **Institutional Ambiguity regarding which body is ultimate adjudicatory power on ISWDs in India.**
    - While Article 262 deters the highest judiciary from adjudicating ISWDs, Article 136 empowers it to hear appeals against the tribunals and ensure the implementation of the tribunal.
  
  - **Hostile hydro-politics at subnational level:**
    - Identity politics, coupled with demand for resources, have triggered major mass-based political mobilization in the country.
  
  - **Increasing water scarcity**
    - Depleting ground water, drying rivers and increasing droughts are leading to long legal wrangles between states.

- Some problems in Current Water Dispute mechanism
  - i. Delays
    - Constitution of Adhoc tribunal itself takes a lot of time on many occasions
    - Protracted Proceedings and Extreme delay in resolutions
      - Cauvery water resolution took more than 25 years.
    - **Delay in government notification** of the final tribunal order also in some cases have been a cause of concern.
  - ii. **Absence of baseline data** agreeable by all states
  - iii. **Opacity in institutional framework and guidelines** that define these proceedings
    - "There are too many options, and there is too much discretion at too many stages of the process."
    - This leads to litigations and counter litigations and thus cases go on for years.
  - iv. **Ensuring compliance of the order of tribunal has become a problem**
    - Generally states go to Supreme Court challenging the tribunal awards and ensuring compliance of the tribunal's verdict becomes difficult
  - v. **No upper age limit for the Chairman or the Members**
    - Affects efficiency of tribunals
  - vi. **Politicization of Inter-State water dispute** makes any compromise on the part of any party difficult.
- Planned amendment to the 1956 act.
  - i. **Inter-State Water Disputes (Amendment) Bill, 2019: Permanent Tribunal, Benches and Dispute Resolution Committee**
    - The bill seeks to amend the Inter-State River Water Dispute Act, 1956 with a view to streamline adjudication of inter-state river water disputes and make the present institutional architectural robust.
    - **Key Provisions of the Bill:**
      - **Dispute Resolution Committee (1Y+6m);**
      - **Single Permanent Tribunal[2Y+1Y; fix term and age limit];**
      - **Benches for each dispute** from permanent tribunal;
      - **Assessors** to provide technical support to tribunals;
      - **Data Collection agency at national level** to maintain databank;
      - Decision final and binding
    - **Analysis of the bill**
      - **Positives**
        1. **Dispute Resolution Committee** will contribute towards reduce the cases going to the Tribunal. By bringing two sides on negotiating table, it will also be helping in promoting **cooperative federalism**.
        2. **Single Permanent Tribunal** should improve the quality of judgement as well as the efficiency of it. It will ensure a **permanent infrastructure** for river water dispute resolution and delays which are caused in the process of getting a tribunal formed will end.

- Earlier, delays used to be caused due to delays in finding judges for the tribunal etc. Now the permanent tribunal will do away with such limitations.
  - 3. **Faster Awards:** Time bound mechanisms ensure an improvement over the current mechanisms.
  - 4. **Automatic Awards**
    - A reason for delay in the earlier mechanism was that sometimes center took years to notify the award of the ad-hoc tribunal. e.g. - this took three years for the Krishna award.
    - Now, the proposals are that the award will be notified automatically by the tribunal.
  - 5. **Expert agency to collect data** on rainfall, irrigation and surface water flows would be very beneficial
    - Party states have a tendency to fiercely question data provided by other side.
    - A permanent forum having reliable data in its hands sounds like an ideal mechanism to apportion water.
  - 6. **Dispute resolution committee may help in** reducing the unnecessary litigations.
    - But its benefit will depend on the mechanism's efficiency.
- **Limitations**
1. **Difficult for a single tribunal to deal with all the inter-state water sharing issues**
    - Given the number of ongoing inter-state disputes and those likely to arise in future, it may be difficult for a single institution with a former Supreme Court judge as its chairperson to give its ruling within three years.
  2. **Ensuring compliance will still be a problem**
    - It's interlocutory order as well as final award are likely to be challenged in the Supreme Court.
    - In Dec 2016, in a landmark verdict, the Supreme Court said it had unfettered power to hear an appeal arising from a river water dispute tribunal under Article 136 of the constitution. It has interpreted the ouster clause in the Inter-State Water Disputes Act as one that merely bars the court from entertaining an original complaint or suit on its own, but not its power to hear appeals against the tribunal decision.
    - **Thus finality and enforcement of tribunal's award may remain elusive.**
  3. **Transparency would still be an issue**
    - Opacity in proceedings and guidelines have not been resolved in the new mechanism.
  4. **Tribunal only deal with infrastructural and architectural mechanisms. Political postures and brinkmanship will remain an issue.**
  5. **States don't tend to agree over a particular piece of data**
    - Challenge is not about gathering of data, but more about states agreeing over a particular piece of data. The challenge is also about tapping the data to produce knowledge that can be used for decision making.

- **Way Forward:**

- Focus on **avoiding/preventing water conflict**. Here water harvesting, planning of resource use etc is going to play a key role.
- There needs to be **development of consensus among states** about a critical role that centre will play in the river water dispute resolution.
- Without cooperation between states, the inter-state river water disputes will keep raising its head. The problem will only be resolved if there are **robust and replicable institutional model for inter-state cooperation**. The River Board mechanism which is supposed to facilitate inter-state collaboration over water resources should be reinvigorated.
- There should be a **mechanism to regularly monitor** the implementation of the tribunals order.
- A **robust institutional mechanism** which is not only fast but also transparent is must to placate states and public.
- **Consensus at electoral level** also needs to be achieved for long term resolution of dispute.
  - It can be achieved by the "**Positive politicization**" of the issue, which can only happen when the electorate is sensitized regarding the tangible economic and ecological costs of prolonged disputes.
  - Here, political parties, which are chief mass mobilizers, will have no immediate incentive. Instead, other institutions must create the narratives: the media; civil society; academia; and social political and environmental activists working at the grassroot level.
- **Involvement of Local People** in the dispute resolution process: A mechanism should be devised to consider inputs from civil society in a transparent manner.

- **Conclusion**

- River water disputes are very crucial issues and have implications for India's integration. The 2019 bill brings in the infrastructural changes, but India still needs to work upon policy level changes. There needs to be more focus on defining key principles to enhance transparency in functioning of Tribunals, increasing cooperation between states, integrating river water dispute resolution with India's water policy and finally, increased focus on environmental protection.

## 6) FEDERAL ISSUES: INTER-STATE BORDER DISPUTES IN NORTH-EAST INDIA

- **Why in news?**
  - Meghalaya committed to resolve inter-state border dispute with Assam: CM (Aug 2023)
- **Border Disputes in North-East** are associated with Assam as four states were carved out of it over the years:
  - i. **Assam-Meghalaya Border Dispute:**
    - During the British rule, the undivided Assam included present-day Nagaland, Arunachal Pradesh, Meghalaya and Mizoram. Meghalaya was carved out in 1972, its boundaries demarcated as per the Assam reorganization (Meghalaya) Act of 1969, but has held different interpretation of the border since.
    - Assam and Meghalaya have a longstanding dispute in 12 stretches of their 884 km shared border.
      - In March 2022, the two states signed a pact resolving dispute in 6/12 areas.
    - In May 2023, the two CMs start talks to resolve border disputes in six remaining sectors.

## ii. Assam - Arunachal Border Dispute finally resolved (April 2023)

- **Background:**

- The border dispute between the two states dates back to 1873, when the then British government introduced the inner line regulations, vaguely separating the plains from the frontier hills (now Arunachal Pradesh) that were later designated as the North-East Frontier Tracts in 1915.
- Based on the Bordoloi committee report (1951), around 3,648 sq km of the plain area of Balipara and Sadiya foothills was transferred from Arunachal Pradesh to Assam's then Darrang and Lakhimpur.

- **Dispute:**

- In 1972 Arunachal Pradesh was separated from Assam as an UT. Since then it maintained that transfer of 3,648 sq km was done in an arbitrary and defective manner without consultation of its people them. Assam on the other hand, has been holding that the demarcation as per 1951 notification is constitutional and legal.
- Further, at the time of separation, the inter-state borders were not properly demarcated triggering claims and counter claims by people living on both sides of the inter-state border.

- **Various attempts at resolving the issue:**

- Between 1971 and 1974, there were multiple efforts to demarcate the boundary that didn't work out due to constant conflicts amongst the people living in the disputed areas.
- A **tripartite committee** (representatives of the two states and Union), set up in 1979 also met with limited success as AP reneged and refused to accept the recommendations. Later Assam also juked the proposal and moved to Supreme Court against Arunachal Pradesh for encroachment of its territory by Arunachal.
- **Supreme court formed a Local Boundary Commission** in 2007 headed by a retired judge of SC. It submitted its report in 2014 and recommended transfer of some of the lands which were taken away from NEFT based on Bordoloi declaration in 1951. It also urged two states to arrive at consensus through discussion.

- **The Namsai Declaration:**

- Resolution efforts gained momentum in 2022 as both the parties had BJP rule.
- Two states decided that all border issues between them will be confined to those raised before the Local Boundary Commission in 2007.
- Both states formed 12 regional committees for joint verification of 123 disputed areas/ villages and to make recommendations keeping in view the historical perspective, administrative convenience, contiguity and people's will.
- The first joint meeting of the inter-state regional committees was held in Aug 2022, at Namsai, after the field inspection of the inter-state border areas. Based on the discussion at the meeting, the first treaty between the two states - the Namsai declaration was signed. As per the declaration, the two states agreed to restrict the number of contested villages to 86 instead of 123.
  - Other 37 disputed villages was agreed upon.

- **Later in April 2023**, the two CMs in front of the Home Minister Amit Shah signed an MoU to end 50 years of dispute.
  - They agreed that they will not be making any new further claims.
  - Boundary demarcation of most of the remaining regions/villages will be finalized in next six months.
  - The final boundary demarcation will be done by survey of India based on the MoU.
- **Why the dispute could be resolved this time?**
  - Close and Constant monitoring by the Central government.
    - PM Modi had made it very clear that the disputes would have to be resolved very fast and in a spirit of give and take. Home Minister Amit Shah also kept a close watch on the progress.
  - **Significance:**
    - Ushering in peace and development in the entire region.

### iii. Assam Nagaland

- The dispute predates formation of Nagaland as a state in 1963. The demand was raised in both the Nine Point Agreement (1947) and 16 point agreement (1960) that Naga representatives signed. Nagaland demands 12,488 sq kms of Assamese territory. Large forested areas of Assam had been encroached by the Naga rebels and violent clashes along Assam Nagaland border occurred regularly. Major armed conflicts were also reported in some situations.
- CMs of Assam and Nagaland held talks in April 2023 on settlement of border disputes and agreed in-principle on oil exploration in the disputed areas of economic benefit.

### iv. Assam Mizoram Border Dispute

- It is rooted in Mizoram's rejection of the colonial notification on which the inter-state boundary is based.
- While the Assam Mizoram boundary is based on a 1933 notification, according to North-eastern area (recognition) Act, 1971, Government of Mizoram has maintained that the border should be based on an 1875 notification.
- In Sep 2022, Assam and Mizoram agreed to form regional communities to resolve the inter-state disputes.

### - Root of the Border Dispute in the North-east

- **Colonial Legacy:**
  - The British never governed the region as an integral part but treated it as a frontier region that they left ungoverned to a large extent. They viewed NE as a buffer between India and China.
  - They were even not keen on demarcating borders between India and Burma as Burma was also part of British India.
- **The territorial Evolution of North-East India** after independence:

- In 1950, Assam was the only full fledged states. Manipur and Tripura were UT at the time. But, since then there are 7 full fledged states mostly created from the erstwhile Assam territory.
  - Difficult terrain also made demarcation difficult.
  - Underlying ethnic tensions and presence of militance in the region.
    - Militants use ethnic tensions and border disputes to instigate violence.
- Way forward:
  - Learn from the success of Assam-Arunachal Border dispute -> Effective involvement of the Centre would be crucial for inter-state land boundary disputes to be resolved.
  - Robust and Replicable model for inter-state cooperation. Northeast Council which is supposed to facilitate inter-state collaboration need to be reinvigorated.
  - Positive Politicization: It will happen only when the electorates are sensitized regarding the tangible socio-economic benefits of peaceful cordial border dispute resolution and there is more emphasis on national identity than on regional identity.
  - Adjudication by Supreme Court can be the last resort which states could approach to get their grievances resolved.
  - Inclusion of locals would bridge the gap between government and people, thus enhancing communication.
  - Resolving various border disputes at village level can address genuine grievances and put people's interest first for effective solutions.
- Conclusion:
  - The best solution would come from increased cooperation between states and if they are both ready to compromise in the spirit of cooperative federalism.

#### A) INTER-STATE BORDER DISPUTE (OUTSIDE NORTH-EAST INDIA)

- Haryana Himachal border dispute is over Parwanoo region, which lies next to the Panchkula district of Haryana. Haryana has laid claim to a large part of the land and has accused the hill state of encroaching upon the area.
- Ladakh-Himachal: Both claim Sarchu, a major halt point for those travelling through Leh-Manali highway. The region is located in between Lahaul and Spiti district of Himachal and Leh district of Ladakh.
- Maharashtra Karnataka: Dispute is over Belgaum district. The district has sizeable population of both Marathi and Kannada speaking people and the two states continue to fight over the region.
- Odisha-Andhra Pradesh: The disputed area is Kotia which is claimed by both the states.
- Kerala-Tamil Nadu also have some disputes in some of the districts.
- Different mechanisms to resolve current Inter-State Disputes:
  - i. Bilateral Talks in coordination with Centre: For e.g., the success in Assam-Arunachal dispute was made possible for this reason.
  - ii. Inter-State Council formed under Article 263 of the Constitution is expected to inquire and advise on disputes between states and make recommendations for better policy coordination.
  - iii. Zonal Councils set up under the States Reorganization Act can be crucial in increasing coordination.

- iv. **Adjudication Route:** As per Article 131 of the Constitution of India, the Supreme Court has original and exclusive jurisdiction to decide disputes between states.
- **Way Forward:**
- i. **Increase the role of Inter-State Councils by regularly meeting and discussing various issues:**  
For e.g., in the last 16 years, only two meetings of ISCs have been held.
  - ii. **Other suggestions already discussed with Northeast Border Dispute**

## 2. GENERAL STUDIES PAPER – 3

### 1) S&T: SPACE AND ASTRONOMY: PSLV-C56

#### - Why in news?

- ISRO's PSLV C-56 puts 7 satellites in orbit (July 2023)
- PSLV C-54 successfully places earth observation satellite (OCEANSAT-3, formally called EOS-6), 8 nano satellite in orbit (Nov 2022)

#### - Practice Questions:

- Why is Polar Satellite Launch Vehicle (PSLV) considering the workhorse of ISRO? Discuss the capabilities and achievements of PSLV [15 marks, 250 words]

#### - The PSLV is the third-generation satellite launch vehicle of India. It is an expandable system and was the first Indian Launch Vehicle to be equipped with Liquid Stage.

- **Note:** ISRO has over the years realized **5 generations of rockets** – SLV, ASLV, PSLV, GSLV, and GSLV-MK-III.

#### - Where is PSLV used?

- It was developed to allow India to launch its Indian Remote Sensing (IRS) satellite into **Sun synchronous orbit**, a service that was, until the advent of the PSLV, commercially available only from Russia.
- PSLV can also launch small size satellites into **Geostationary Transfer Orbit**.

#### - It is one of the world's most reliable launch vehicles.

#### - Launches So Far

- Developed in early 1990s, its first launch in 1993 was a failure.
- First successful launch of PSLV took place in 1994 and till Aug 2023 (i.e., PSLV C-56), PSLV has had 58 launches with only two failures.

#### - Technical Specifications of PSLV

##### - Capabilities

- Payload to SSPO (sun synchronous polar orbit): 1,860 Kg
- Payload to Sub GTO: 1,425 Kg
- **Key features of PSLV Engines:** PSLV has four stages using solid and liquid propulsion alternatively.

##### - Expansion of capabilities: Strap on Motors

- PSLV uses 6 solid rocket strap-on motors to augment the thrust provided by the first stage in its PSLV-G (1678 kg in SSPO) and PSLV-XL (1750 kg to SSPO) variants. PSLV-DL, PSLV-QL versions use 2 and 4 straps on motors respectively. PSLV-CA (1100 kg in LEO) uses no strap on motors.



» **Key Significance and Achievements of PSLV**

- **Reliability:** Only 2 failures in almost 3 decades of service and 58 launches.
- **Commercial use:** PSLV has launched **more than 350 foreign satellites** from 34 different countries so far.
- It has played significant role in various major ISRO missions (including Chandrayaan-1, MOM, IRNSS system etc.)
- **India's Soft Power:** PSLV by providing the capability to launch satellites for foreign countries enhances India's soft power in the region.
- Many **learnings** from the development of PSLV has helped scientists develop several non-space applications like fire resistant tiles, better engines for missiles etc.

» **Conclusion**

- Today, ISRO is playing a key role of connecting continents and people via its satellite launch business model. From education to mobile telephony/ communications and navigation to business, the footprint of ISRO is becoming all pervasive.

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**A) PSLV C-57/ ADITYA-L1 MISSION (AUG 2023)**

- ISRO has announced that the much-awaited Aditya-L1 mission will launch on-board PSLV-C57 mission to study the sun.

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**B) PSLV-C56 / DS-SAR MISSION (JULY 2023)**

- The launch of PSLV C-56 carrying DS-SAR satellite, along with 6 co-passengers [all 7 Singaporean satellites] was accomplished successfully on July 30, 2023.
- PSLV C-56 was configured in core alone model, similar to C-55.
- **DS-SAR** is a 360 kg satellite into a Near-equatorial Orbit (NEO) at 5 degrees inclination and 535 km altitude.
  - DS-SAR satellite is used for satellite imagery requirements of various agencies within the government of Singapore.
  - It carries a Synthetic Aperture Radar (SAR) payload developed by Israel Aerospace Industries (IAI). This allows DS-SAR to provide all weather day and night coverage, and capable of imaging at 1m-resolution at full polarimetry.
- **The co-passengers were:**
  - VELOX-AM, a 23 kg technology demonstration microsatellite
  - ARCADE Atmospheric coupling and dynamic explorer (ARCADE), an experimental satellite
  - SCOOB-II, a nanosatellite flying a technology demonstrator payload.
  - NuLion by NuSpace, an advanced 3U nanosatellite enabling seamless IoT connectivity in both urban & remote locations.
  - Galassia-2, a nanosatellite that will be orbiting at low earth orbit.
  - ORB-12 STRIDER, satellite is developed under an international collaboration.

- After the launcher placed all the seven satellites into a 535 km circular orbit, PS4 stage was brought back to a lower orbit of 295 km X 300 orbit. This has been done so that the stage spends less time in space, reducing its duration from over two decades to less than two months, before re-entering into the earth's orbit.

### C) PSLV C-55/TELEOS-2 MISSION (APRIL 2023)

- **PSLV C-55/ TeLEOS-2** was launched successfully on April 22, 2023, from SDSC-SHAR, Sriharikota.
- This is a dedicated commercial mission through NSIL with TeLEOS-2 as primary satellite and Lumelite-4 as a co-passenger satellite.
- The satellite weigh about 741 kg and 16 kg respectively. Both belong to Singapore.
- **POEM-2:** The mission has the PSLV Orbital Experiment Module (**POEM**), where the spent PS4 stage of the launch vehicle would be utilized as an orbital platform to carryout scientific experiment through non-separating payloads. The payloads belong to ISRO, Bellatrix, Dhruva Space, and Indian Institute of Astrophysics.

## 2) S&T: PHYSICS: SUPERCONDUCTIVITY

- **Why in news?**
  - In Aug 2023, two South Korean researchers posted two related papers on the internet, not yet peer-reviewed, claiming that a lead-based compound they had developed had shown superconducting properties at room temperature, under normal pressure conditions. (Aug 2023)
- **Example Questions:**
  - What is superconductivity? Discuss its key applications. [10 marks, 150 words]
- **Definition**
  - Some materials when they are cooled below certain temperatures ( $T_{critical}$ ), they lose all electrical resistivity. This is called superconductivity.
    - » It is one of the nature's most intriguing quantum phenomenon and was first discovered more than 100 years ago in mercury cooled to temperature of liquid helium (-270 degree C) by Heike Kamerlingh-Onnes in 1911. He received 1913 physics Nobel Prize.
    - » **How many elements show superconductivity** - Class discussion.
- **At what temperature superconductivity is achieved:**
  - The first material to have been discovered to show superconductivity was mercury. Most of the other materials commonly used as superconductors - Lead, Aluminium, Tin, Niobium, and several others also become superconducting at comparable temperatures, called **Critical temperature**.
  - **In some cases**, superconductivity is achieved at slightly higher temperature but that is under increased pressure conditions.

- Even the materials that are classified as '**high temperature superconductors**', as of now, show superconductivity properties only well below -150 degree C.
- The temperature at which the metals change from normal conducting state to superconducting state is called **Critical/Transition** temperature.
  - For e.g. below 4 degree Kelvin the metal mercury becomes a superconductor, therefore critical temperature for mercury is 4 K.

- The transition from normal conducting stage to superconducting stage is reversible.

- The super conducting material shows **some extra ordinary properties** which make them very important for modern technology. The research is still going on to understand and utilize these extraordinary properties of superconductors in various fields of technology.

» **Infinite conductivity** (zero electric resistance)

- **Persistent current**

» **Meissner Effect:** a superconductor, expel the magnetic field and doesn't allow the magnetic field to penetrate inside it. This phenomenon in superconductors is called Meissner effect.

» **Critical temperature**

» **Critical magnetic field**

» **Critical Current**

#### - Applications of Superconductivity

» **Medical Sector:** Used in magnetic resonance imaging, Magnetic Source imaging etc.

» **Electric Engineering:** For generation of high performing generators, motors, transformers, relays, superconducting magnets etc.

» **Electronics:** **Quantum Computing**, high quality sensors, filters, circuitry radar etc.

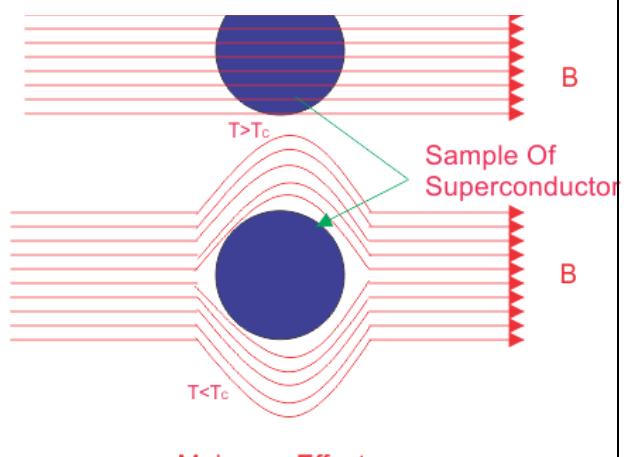
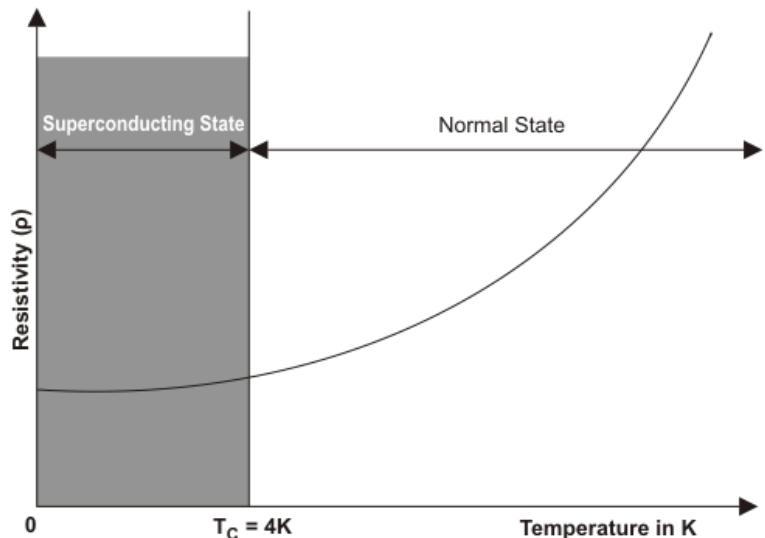
» **Transportation:** Magnetically levitated trains, Marine propulsion motors etc.

» **Fundamental Physics:** Particle accelerators, Magnets, Plasma / fusion research etc.

#### - Superconductivity at Room Temperature???

» The holy grail of superconductivity today is to find or create materials that can transfer energy between each other in a non-pressurized container.

- If an efficient superconductor becomes possible at room temperature, it would revolutionize power transmission system for industry, commerce, and transportation.



- » **Several Wrong Claims and Skepticism:** In recent years several claims of achieving superconductivity at room temperature has been found to be wrong. This has made scientific community a bit skeptic about any such new claim.
  - For e.g. in July 2023 only a research paper published in Physical Review Letters in 2021, by a US-based researcher making a similar claim had to be retracted.
  - Scientists at IISc Bengaluru had made similar claims in 2018, only to be sent for more reviews. The case is still unresolved.
- » **In July 2023**, the South Korean researchers have posted two related papers on internet, not yet peer reviewed, claiming that a lead-based compound that they had developed had shown superconducting properties at room temperature, under normal pressure conditions. They are calling this material to be LK-99.

- **Conclusion**

- » Superconductivity at room temperature and room pressure if achieved could revolutionize a number of sectors including energy, transportation, health etc. This remains a holy grail yet to be achieved.

### 3. PRELIMS FACTS

#### 1) CULTURE: NATIONAL HANDLOOM DAY: 7<sup>TH</sup> AUG

- In India, National Handloom Day is observed annually on 7th Aug to honour the handloom weavers and their significant contribution in the country's economy and culture. The GoI officially designated this day in 2015.
- **Theme** for 2023: "Handloom for Sustainable Fashion". It emphasizes on the significance of handloom weaving as an environmentally friendly and sustainable substitute for machine made fabrics.
- **History:** The origins of this day can be traced back to Swadeshi Movement which was launched on 7th Aug 1905.

#### 2) PLACES IN NEWS: SOUTH CHINA SEA – TRITON ISLAND

The South China Sea is a marginal sea of the Western Pacific Ocean.

It is bounded in the north by the shores of South China (hence the name), in the west by the Indochinese Peninsula, in the east by the islands of Taiwan and Northwestern Philippines (mainly Luzon, Mindoro and Palawan), and in the south by Borneo, eastern Sumatra and the Bangka Belitung Islands, encompassing an area of around 3,500,000 km<sup>2</sup> (1,400,000 sq. mi).

It communicates with the East China Sea via the Taiwan Strait, the Philippine Sea via the Luzon Strait, the Sulu Sea via the straits around Palawan (e.g. the Mindoro and Balabac Strait), the Strait of Malacca via the Strait of Singapore, and the Java Sea via the Karimata and Bangka Strait.

The Gulf of Thailand and the Gulf of Tonkin are also part of the South China Sea.

The shallow waters south of the Riau Islands are also known as the Natuna Sea.

The South China Sea disputes involve both island and maritime claims by several sovereign states within the region, namely Brunei, the People's Republic of China (PRC), Taiwan (Republic of China/ROC), Indonesia, Malaysia, the Philippines, and Vietnam



##### Triton Island:

It is one of the major islands in the Paracel group, which is roughly equidistant from the coast of Vietnam and China's island province of Hainan.

It is claimed by China, Vietnam and Taiwan.

**News:** Aug 2023 - China appears to be constructing an airstrip on the disputed South China Sea.

#### 3) PLACES IN NEWS: RED SEA

It is a sea-water inlet of the Indian ocean, lying between Africa and Asia.

It connects to Gulf of Aden through the **Bab el Mandeb strait**. In North it is bound by Sinai Peninsula, Gulf of Aqaba and the Gulf of Suez.

**Countries neighboring Red Sea:** Egypt, Sudan, Eritrea, Djibouti, Yemen, and Saudi Arabia.

#### Why in news?

More than 3,000 US military personnel have arrived in the Red Sea aboard two warships, part of beefed-up response from Washington after tanker seizure by Iran (Aug 2023). Iran had either seized or attempted to take control of nearly 20 internationally flagged ships in the region over the past two years.



#### 4) PLACES IN NEWS: DANUBE RIVER/ SULINA CHANNEL

2nd longest river of Europe (2,850 km) after Volga.

It is located in Central and Eastern Europe.

Originates in Germany and passes through Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, Moldova, and Ukraine before draining into Black Sea



#### Sulina Channel:

- It is a distributary of the river Danube that contributes to forming the Danube Delta. The other two main branches of Danube are the Chilia Branch to the north and the Sfantu Gheorghe branch to the south.

#### News: (Aug 2023)

The Danube delta has provided Ukraine with an alternative passage for its grain after Russia withdrew from Black Sea grain deal recently. The deal, was brokered by the UN and Turkey, and is used to provide safe passages for cargo ships carrying grain from Ukrainian Black Sea Ports of Odessa, Chornomorsk and Pivdennyi.

**Sulina** channel is of particular significance in this 'new' trade route. It connects major Ukrainian ports on the river to the Black Sea, lying completely within the borders of Romania, a NATO member.

## 5) INTERNATIONAL BODIES: INTERNATIONAL WHALING COMMISSION (IWC)

- **Key points**
  - » International Whaling Commission is an inter-governmental organization whose purpose is the conservation of whale and the management of whaling to allow orderly development of whaling industry.
  - » The legal framework of the IWC is **the International Convention for the regulation of Whaling**.
    - The convention was established in 1946, making it one of the first pieces of international environmental legislation.
    - All member countries of IWC are signatories of this convention.
  - » Currently (Aug 2023) IWC has 88 members.
  - » The **legally finding schedule** of the convention sets out specific measures that the IWC has collectively decided to be necessary in order to regulate whaling and conserve whale livestock.
  - » These measures include
    1. **catch limits** (which may be **zero in the case of commercial whaling**) by species and area.
    2. **Designating specified areas** as whale sanctuaries,
    3. Protection of calves and females accompanies calves etc.
  - » The commission also **coordinates and funds conservation work** including research related to conservation.
    - **India** joined the IWC in 1981.
  - » **Important countries which are not members**
    - Canada (left in 1982), Venezuela (left in 1999), Egypt (left in 1989), Japan (left in 2019).
- **Key Efforts**
  - » In 1982, the IWC adopted moratorium on commercial whaling.
    - Countries like Russia and Japan had opposed it.
  - » In 1994, the Southern Ocean Whale Sanctuary was created by the IWC.
- **Other facts**
  - » The IWC allows whaling quotas for aboriginal subsistence and also member nations can issue 'Scientific permits' to citizens.

## 6) ENVIRONMENT: CLOUDED LEOPARD

- **Why in news?**
  - A new study reveal that clouded leopard doesn't follow any specific pattern of operating in a certain space, unlike other carnivores (Aug 2023)
- **About Clouded Leopard**

The clouded leopard has been named so after the cloud-shaped pattern on its skin. They are considered evolutionary link between big cats and small cats.

#### Habitations

They are typically rainforest dwellers, but can also be found in drier forest of South East Asia.

**Distribution:** Himalayan foot hills to Southeast Asia and China.

In India, they are distributed in Northern West Bengal, Sikkim, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura.



**IUCN Status: VU**

It is also the **state animal of Meghalaya**.

**Study:** A new study revealed that clouded leopard doesn't follow any specific pattern of operating in a certain space, unlike other carnivores. They seemed to go wherever they pleased without worrying about other predators, primarily because of their ability to climb trees, even hang upside down from large branches.

## 7) ENVIRONMENT: BIRDS: 75 ENDEMIC BIRDS OF INDIA

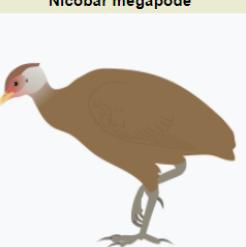
- **Why in news?**
  - » Zoological Survey of India (ZSI) have published a title called **75 Endemic Birds of India**. (Aug 2023)
- **Key Highlights**
  - » India is home to 1,353 bird species, which represent approximately 12.4% of the global bird diversity. Of these, 5% i.e. **78 birds** are **endemic to India**.
    - Of these 3 are CR (Bugun Liocichla; Himalayan Quail; Jerdon's Courser)
- Of these, 3 species have not been recorded in last few decades.

1	<b>Manipur Bush Quail (<i>Perdicula manipurensis</i>)</b>	<ul style="list-style-type: none"> <li>▫ Listed EN by IUCN</li> <li>▫ Last recording in 1907</li> </ul>	
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2	<p><b>Himalayan Quail</b> (<i>Ophyrsia superciliosa</i>)</p> <ul style="list-style-type: none"> <li>▫ Listed as CR by IUCN</li> <li>▫ Last sighting in 1876</li> </ul>	 <p>Himalayan quail</p> <p>Painting by John Gould based on specimens #1836a and #1836b</p> <p><b>Conservation status</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Extinct</td> <td>EW</td> <td>CR</td> <td>Threatened</td> <td>EN</td> <td>VU</td> <td>Least Concern</td> <td>NT</td> <td>LC</td> </tr> </table> <p>Critically Endangered (IUCN 3.1)<sup>[1]</sup></p>	Extinct	EW	CR	Threatened	EN	VU	Least Concern	NT	LC
Extinct	EW	CR	Threatened	EN	VU	Least Concern	NT	LC			
3	<p><b>Jerdon's Courser</b> (<i>Rhinoptilus bitorquatus</i>)</p> <ul style="list-style-type: none"> <li>▫ Listed as CR by IUCN</li> <li>▫ Last confirmed sighting in 2009</li> </ul>										

#### - 75 Endemic Birds of India

- They belong to 11 different orders; 31 families and 55 genera.
- **Highest number (28) of endemic birds** have been recorded in **Western Ghats**.
  - Interesting species include Malabar Grey Hornbill; Malabar Parakeet; Ashambu Laughing Thrush; and White Bellied Sholakili
- **Andaman and Nicobar Islands** (25 birds) have second highest number of endemic birds.  
Interesting species are:

1	<p><b>Nicobar Megapode:</b> It is a megapode found in some of the <b>Nicobar Islands only</b>.</p> <ul style="list-style-type: none"> <li>• Like other megapode relatives, it builds a <u>large mound nest with soil and vegetation</u>, with the eggs produced by the heat produced by decomposition.</li> <li>• <b>IUCN: VU</b></li> </ul>	 <p>Nicobar megapode</p> <p><b>Conservation status</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Extinct</td> <td>EW</td> <td>CR</td> <td>Threatened</td> <td>EN</td> <td>VU</td> <td>Least Concern</td> <td>NT</td> <td>LC</td> </tr> </table>	Extinct	EW	CR	Threatened	EN	VU	Least Concern	NT	LC
Extinct	EW	CR	Threatened	EN	VU	Least Concern	NT	LC			

2	<p><b>Nicobar Serpent Eagle:</b></p> <ul style="list-style-type: none"> <li>It is <u>probably smallest known eagle</u>, with a weight of about 450 g.</li> <li>IUCN: NT</li> </ul>	<p><b>Great Nicobar serpent eagle</b></p> 
3	<p><b>Andaman Crake:</b> IUCN status: LC</p>	
4	<p><b>Andaman Barn Owl:</b> Species endemic to <u>southern Andaman Island</u>.</p>	

- **Eastern Himalayas** has 4 endemic species.
- South deccan plateau and central Indian Forest have one species each.

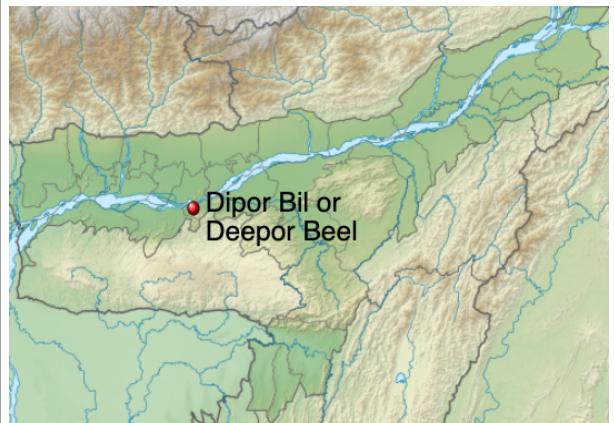
## 8) ENVIRONMENT: DEEPOR BEEL

Deepor Beel (lake of Elephant) is a lake located to the Southwest of Guwahati city in Assam.

It is a permanent freshwater lake, in a former channel of Brahmaputra River, to the south of the main river.

It is also an Important Bird Area.

It is the only Ramsar site of Assam. The Deepor Beel WLS measures 4.1 sq km within this wetland



- How locals are trying to save the dying Deepor Beel (Aug 2023: DTE)
  - Threats faced:
    - » **Anthropogenic factors** - Railway tracks that run parallel to the wetland, waste yard in the periphery.
  - Steps being taken:
    - » **Simang**, meaning dreams in the local language, is a collective initiative by six women from Keotpara. They have successfully transformed the invasive weed, water hyacinths into beautiful artefacts and yoga mats.
      - Advantages:
        - Improved health of Beel
        - Employment opportunities
    - » **Kumbhi Kagaz** - An innovative endeavour that focuses on ecologically restoring Deepor Beel while simultaneously creating alternative livelihoods for the locals. It converts water hyacinth into 100% biodegradable, chemical free handmade papers.

## 9) ENVIRONMENT: VAQUITA PORPOISE

### Why in news?

- » The plight of the vaquita forces International Whaling Commission to issue first extinction alert (Aug 2023)

**Drastic Decline in Population:** The Species global population is down to only 10. The species has seen a 98% decline in population in 2 decades.

- » It is the world's smallest cetacean and the most endangered marine mammal.
- » IUCN: CR

### Where is it found?

- » They are all found in northern part of the Gulf of California or Sea of Cortez.



**Extinction Alert:** The first extinction alert by IWC was released on 7th Aug 2023. It is to encourage wider recognition of the warning signs of impending extinctions, and to generate support and encouragement at every level for the actions needed now to save the vaquita.

- » It has smallest range of any whale, dolphin or porpoise and live in small 1500 square mile area in Mexico's upper Gulf of California, near the town of San Felipe.

The vaquita is caught as bycatch in gillnets meant for totoaba, a fish the swimbladders of which are priced in Chinese cuisines.

## 10) S&T: SPACE AND ASTRONOMY: ZARTH – A NEW APP TO CATCH SUPERNOVA

### SUPERNOVA

- A **Supernova** is what happens when a star has reached the end of its life and explodes in a brilliant burst of light.
- In its dying phase, the core of a large star contains mainly iron. It has exhausted all its fuel. This further collapses under gravity and explodes as Supernova. The extreme high pressure causes protons and electrons to combine together to form neutron (thus forming neutron star).
- Supernovas can briefly outshine entire galaxies and radiate more energy than our sun will in its entire lifetime. They are also the primary source of heavy elements in the universe.
- According to NASA, '**Supernovas**' are the largest explosion that takes place in sun.

### ZARTH (ZTF AUGEMENTED REALITY TRANSIENT HUNTER) (AUG 2023)

- Astronomers have a grandstand view of the dynamic cosmos every time they peer through their telescopes. But now, technology has made it possible for any space enthusiast, too, to watch cosmic events called transients (typically lasting fractions of a second to days or even years), with the help of nothing more than a smartphone.
- **Details:**
  - A team of scientists at Caltech, has developed an app that allows anyone with a smartphone to 'hunt' for transients.
  - It uses the open-source Sky Map and adds data daily from the Zwicky Transient Facility's robotic telescope at the Palomar Observatory in California.
  - The new app called ZARTH (ZTF Augmented Reality Transient Hunter) is built along the lines of the augmented reality mobile game Pokemon Go.

## 11) S&T: HAVANA SYNDROME

- **Why in news?**
  - The Central government has told the Karnataka High Court that it will look into the matter of 'Havana Syndrome' in India, in response to a Bengaluru resident's petition (Aug 2023)
- **Havana Syndrome**

- It refers to a series of unexplained health incidents that have affected American and Canadian diplomats and other government employees stationed in various countries. It typically involves symptoms such as hearing certain sounds without any outside noise, nausea, vertigo, and headaches, memory loss and balanced issues.
- It traces its roots to Cuba in late 2016. This was about a year after the US opened its embassy in the capital city of Havana after ties between the two countries were normalized in 2015.
- **Where all has this been experienced?**
  - » According to the US media reports, in the past few years, its officials have reported more than 130 such experiences across the world including, Havana, Chia, Moscow in Russia, Poland, Georgia, Taiwan, Colombia, Kyrgyzstan, Uzbekistan, and Austria among others.
  - » **Has any other country been targeted?**
    - Barring the Canadian embassy in Havana, there is no such report from any other country's official.
    - » In India, the first such case was reported in the same year, when a US intelligence officer after travelling to New Delhi with CIA director William Burns reported symptoms of Havana Syndrome.

- **Causes:**

- Not known.
- Speculations about Sonic Attacks; High powered microwaves etc.
  - » High powered microwaves may build pressure inside the brain that generated the feeling of a sound being heard.
- **But no conclusion has been reached yet.**

- **Cases in India?**

- As of July 2023, the 2021 incident was the only reported occurrence of the syndrome in India.
- In Aug 2023, the Central government has told the Karnataka High Court that it will look into the matter of the 'Havana Syndrome' in India, in response to a Bengaluru resident's petition. The petitioner had approached the court requesting writ of mandamus for an enquiry of Havana Syndrome in India and prevention of high-frequency microwave transmission in India.

## 12) S&T: DEFENCE: INS VINDHYAGIRI

- **Project 17A Frigates** are follow-on class of the Project 17 (Shivalik Class) Frigates, with improved stealth features, advanced weapons and sensors and platform management systems.
  - **Seven Project 17A Frigates** are under various stages of construction at MDL and GRSE.
    - INS Nilgiri, Udaygiri, Taragiri, Mahendragiri by MDL
    - INS Himgiri, Dunagiri, VindhyaGiri by GRSE
- **INS VindhyaGiri**
  - **Why in news?**
    - President Murmu launches stealth frigate INS VindhyaGiri (Aug 2023)
- **Background:**

- The first and second ships of the series are INS Himgiri and INS Dunagiri. The three Nilgiri-class frigates were ordered at a cost of approximately 19,200 crore and was the largest ever contract executed by Kolkata based **Garden Reach Shipbuilders and Engineers (GRSE)**.
- **INS VindhyaGiri** is the last in the series of three 17A (Alpha) frigates built by the Indian Navy.
  - It reflects country's commitment to self-reliance and technological advancement as well as indigenous innovation for developing state of art technology.
- **Features:**
  - These ships have length of 149 meters and displacement of over 6,670 tonnes. Their cutting-edge propulsion system allows for speeds of over 28 knots.

### 13) S&T: SPACE - ADITYA-L1 MISSION

#### About Aditya L-1 Mission (by ISRO):

- Aditya L1 shall be the **first** space based **Indian mission to study the Sun**.
- The spacecraft shall be placed in a halo orbit around the **Lagrange point 1 (L1)** of the Sun-Earth system, which is about 1.5 million km from the Earth.
  - ✓ A Lagrange point is a specific location in space where the gravitational forces of two large bodies, such as the Earth and the Moon or the Earth and the Sun, produce enhanced regions of attraction and repulsion. The Lagrange points allow for **relatively stable positions** in the gravitational field of the two bodies
  - ✓ A satellite placed in the halo orbit around the L1 point has the major **advantage** of continuously viewing the Sun **without any occultation/eclipses**.
- The spacecraft carries **seven payloads** to observe the **photosphere, chromosphere and the corona** (the outermost layers of the Sun) using electromagnetic and particle and magnetic field detectors.

#### Seven Payloads and their capabilities:

- **Remote Sensing Payloads:**
  - ✓ *Visible Emission Line Coronagraph (VELC)*: Corona/Imaging & Spectroscopy.
  - ✓ *Solar Ultraviolet Imaging Telescope (SUIT)*: Photosphere and Chromosphere Imaging.
  - ✓ *Solar Low Energy X-ray Spectrometer (SoLEXS)*: Sun as a star observation.
  - ✓ *High Energy L1 Orbiting X-ray Spectrometer (HEL1OS)*: Sun as a star observation.
- **In-Situ Payloads:**
  - ✓ *Aditya Solar Wind Particle Experiment (ASPEX)*: Solar wind/Particle Analyze Protons & Heavier ions with directions.
  - ✓ *Plasma Analyze Package for Aditya (PAPA)*: Solar wind/Particle Analyze Protons & Heavier ions with directions.
  - ✓ *Advanced Tri-axial High Resolution Digital Magnetometers*: In-situ magnetic fields.

### 14) S&T: MAYA OPERATING SYSTEM

### **About Maya OS (by DRDO):**

- It is a new Operation System (OS) based on an open-source platform.
- It has the interface and all functionality like Windows and users will not feel much difference as they transition to it.
- Maya was developed by government development agencies within six months.
- Aim: To prevent malware attacks and other cyberattacks which had seen a steep increase.

Currently, Maya is being installed only in Defence Ministry systems and not on computers connected to the networks of the three Services