



**KingMakers**  
**IAS Academy**

**Good Morning Test (GMT)**

**Prelims Compilation**

**November - 2025**

KingMakers IAS Academy

**GOOD MORNING TEST (GMT)**

**NOVEMBER 2025**

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**POLITY AND GOVERNANCE**

**1. Chief Justice of India**

**Q. With reference to Indian Judiciary, consider the following statements:**

1. According to Article 124, every judge of the Supreme Court shall be appointed by the President by warrant under his hand and seal.
2. According to the constitution of India, the seniormost Judge of the Supreme Court considered fit to hold the office should be appointed as the Chief Justice of India.

**Which of the statements given above is/are correct?**

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

**Answer: (a) 1 only**

**Explanation:**

**In NEWS:** Justice **Surya Kant** to take over as **53rd Chief Justice of India** on **November 24**

**Appointment of Supreme Court Judges:**

- The Chief Justice of India and the Judges of the Supreme Court are appointed by the **President** under **clause (2) of Article 124** of the Constitution. **Hence statement 1 is correct.**

**CHIEF JUSTICE OF INDIA :**

- Appointment to the office of the Chief Justice of India should be of the **seniormost Judge of the Supreme Court** considered fit to hold the office. **The Union Minister of Law, Justice and Company Affairs** would, at the appropriate time, seek the recommendation of the outgoing Chief Justice of India for the appointment of the next Chief Justice of India.

1. Whenever there is any doubt about the fitness of the seniormost Judge to hold the office of the Chief Justice of India, consultation with other Judges as envisaged in **Article 124 (2)** of the Constitution would be made for appointment of the next Chief Justice of India.

2. After receipt of the recommendation of the Chief Justice of India, the Union Minister of Law, Justice and Company Affairs will put up the recommendation to the Prime Minister who will advise the President in the matter of appointment.

- According to Article 124, every judge of the Supreme Court shall be appointed by the **President by warrant under his hand and seal** after consultation with such Judges of the Supreme Court and of the High Courts in the States as the President may deem necessary for this purpose.

- S/he shall hold office until the age of **65 years**, provided that in the case of appointment of a Judge other than the Chief Justice, the Chief Justice of India shall always be consulted.

**Qualifications:**

- A person shall not be qualified for appointment as a Judge of the Supreme Court unless,

○ S/he is a **citizen of India** and has been for at least **five years a Judge of a High Court** or of two or more such Courts in succession; or has been for at least **ten years an advocate of a High Court** or of two or more such Courts in succession; or is, in the **opinion of the President, a distinguished jurist.**

- The senior most judge was surpassed for the appointment as the Chief Justice of India 3 times in the history of the Supreme Court of India.

- **It is customary, and not law**, that the most senior judge of the Supreme Court, at the time when the current Chief Justice of India

(CJI) retires, becomes the next CJI. The seniority is measured by the length of service on the Supreme Court. **Hence statement 2 is incorrect.**

○ The first time this convention was breached was in February **1964**, when **Gajendragadkar J superseded Imam J**, who was seriously unwell.

○ The second breach was when **A.N. Ray J** was appointed as the CJI on April 25, **1973**, by superseding three senior-most judges (**Shelat, Hegde and Grover JJ**). The supersession was made on the day following the Supreme Court's judgment in Keshavanada Bharati v State of Kerala.

○ The custom was sidestepped for a third time in **1977** when **M H Beg J superseded H R Khanna J**. When the first Chief Justice of the Supreme Court of India, Harilal Kania J, passed away in 1951, on hearing the rumour that the government is contemplating appointing somebody other than the senior-most justice, all the judges threatened to resign if the seniority norm was not followed.

**PYQ REFERENCE: (2021)**

**Q. With reference to Indian Judiciary, consider the following statements:**

1. Any retired judge of the Supreme Court of India can be called back to sit and act as a Supreme Court judge by the Chief Justice of India with prior permission of the president of India.
2. A High Court in India has the power to review its own judgement as the Supreme Court does.

**Which of the statements given above is/are correct?**

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

**Source:** <https://www.thehindu.com/news/national/justice-surya-kant-appointed-as-the-53rd-chief-justice-of-india/article70221463.ece>

**2. Governor power to reserve a State Bill**

**Q. Under the Constitution, the Governor is mandatorily required to reserve a State Bill for the consideration of the President if the Bill:**

1. Undermines powers of High Courts.
2. Conflicts with central laws on subjects in the Concurrent List.
3. Affects the position of the Union in certain matters.

**Which of the statements given above are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (d) 1, 2 and 3**

**Explanation:**

**In NEWS:** Timelines Can't Be Fixed For Governors/President For Bills' Assent; No Concept Of 'Deemed Assent' : Supreme Court In Presidential Reference

**Assent to Bills: President & Governor (Articles 200 & 201)**

**Governor's Options (Article 200):** When a State Bill is presented, the Governor may:

- Give assent
- Withhold assent
- Return the Bill (if not a Money Bill) for reconsideration.

- Reserve the Bill for the President (mandatory in certain cases like derogation of High Court powers; optional in others).

**President's Options (Article 201) for a Bill reserved by the Governor:**

- Give assent
- Withhold assent
- Return the Bill (if not a Money Bill) for reconsideration of the State Legislature.
- Static Principles Related to Assent

**Discretion of the Governor**

- The Governor has constitutional discretion (especially in reserving Bills for the President).
- But discretion must be exercised not arbitrarily, but as per constitutional norms.

**Mandatory Reservation**

A Bill must be reserved for the President if it:

- Undermines powers of High Courts.
- Conflicts with central laws on subjects in the Concurrent List.
- Affects the position of the Union in certain matters.

**Hence all the statements are correct.**

**Effect of Reconsideration**

- If a Bill is returned and passed again by simple majority, the Governor must give assent (cannot reject again).
- This applies to the President also when handling reserved Bills.

**PYQ REFERENCE: (2025)**

**Q. Consider the following statements regarding constitutional provisions in India:**

- The Constitution of India explicitly mentions situations where the Governor of a State can act in his/her discretion.
- The President of India can, on his/her own, reserve a Bill passed by a State Legislature for consideration, even without it being forwarded by the Governor of the concerned State.

**Which of the above statements is/are correct?**

- I only
- II only
- Both I and II
- Neither I nor II

Source:

<https://www.thehindu.com/news/national/presidential-reference-supreme-courts-responses-to-president-murmus-14-questions/article70301979.ece>

<https://www.google.com/amp/s/www.livewlaw.in/amp/top-stories/timelines-cant-be-fixed-for-governors-president-for-bills-assent-no-concept-of-deemed-assent-supreme-court-in-presidential-reference-310575>

**3. Article 240**

**Q. Consider the following statements with respect to Article 240 of the Indian constitution:**

- Article 240 empowers the President of India to make regulations for certain Union Territories.
- The regulations made under this article have the same force as Acts of Parliament.
- The Article applies to Union Territories with a Legislative Assembly.
- Recently, Chandigarh was brought under the purview of this Article.

**Select the correct answer using the code given below.**

- I and II
- I, II and IV
- I and IV
- II, III and IV

**Answer: (a) I and II**

**Explanation:**

**In NEWS:** What will it mean for Chandigarh if it is brought under Article 240?

**Article 240:**

- Article 240 empowers the President of India to make regulations for certain Union Territories. **Hence statement I is correct.**
- These regulations have the same force as Acts of Parliament. **Hence statement II is correct.**
- The Article applies to Union Territories that do not have a Legislative Assembly. **Hence statement III is incorrect.**
- Currently, Article 240 covers UTs such as Andaman & Nicobar Islands, Lakshadweep, Dadra & Nagar Haveli and Daman & Diu, and Ladakh.
- Before gaining a legislature in 1987, Goa, Daman & Diu and Puducherry were also under Article 240.
- Regulations made under Article 240 may amend or repeal any existing law applicable to that UT.
- Article 240(2) states that any regulation made by the President is to be laid before Parliament, but Parliament cannot modify it like a regular Bill.
- These Presidential regulations become necessary where Parliament is not in session or where urgent administrative changes are required in a UT.
- Chandigarh is currently not under Article 240, as it is placed under Article 239 and administered by an Administrator (Punjab Governor). **Hence statement IV is incorrect.**
- Bringing Chandigarh under Article 240 would allow the Central Government to directly issue regulations for its governance.

**PYQ REFERENCE: (2019)**

**Q. If the President of India exercises his power as provided under Article 356 of the Constitution in respect of a particular State, then**

- the Assembly of the State is automatically dissolved.
- the powers of the Legislature of that State shall be exercisable by or under the authority of the Parliament.
- Article 19 is suspended in that State.
- the President can make laws relating to that State.

Source:

<https://indianexpress.com/article/explained/chandigarh-article-240-10382099/>

**4. Powers of the State Election Commission (SEC)**

**Q. With reference to Indian polity, The State Election Commission (SEC) is empowered to:**

- Prepare the main electoral rolls.
- Add, delete, or modify names in the electoral rolls of Assembly constituencies.
- Prepare and announce election schedules, notify elections, and enforce the Model Code of Conduct.
- Delimit wards, divide constituencies, and allocate seats for local bodies

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 3 and 4 only
- (c) 2, 3 and 4 only
- (d) 1, 3 and 4 only

**Answer: (b) 3 and 4 only**

**Explanation:**

**In NEWS:** Powers of the State Election Commission (SEC)

**What the State Election Commission (SEC) CAN do**

1. **Exercise superintendence, direction, and control** over elections to **Panchayats and Municipalities** (Article 243K & 243ZA).
2. **Conduct and supervise** the entire election process for local bodies.
3. **Prepare and announce election schedules**, notify elections, and enforce the Model Code of Conduct. **Hence statement 3 is correct.**
4. **Delimit wards**, divide constituencies, and allocate seats for local bodies (as authorised under State laws). **Hence statement 4 is correct.**
5. **Publish ward-wise electoral rolls** by using the **Assembly electoral rolls** provided by the Election Commission of India (ECI).
6. **Invite and decide objections** related to ward-wise voter lists — e.g., wrong ward assignment, missing names, duplicate entries.
7. **Appoint Returning Officers, Presiding Officers, and polling staff** for local body elections.
8. **Order repolling** in booths where major irregularities or malpractice occur.
9. **Countermand an election** if there is booth capturing, large-scale violence, or severe procedural violations.
10. **Monitor and regulate election expenditure** of candidates in local body elections (as per State laws).
11. **Enforce the Model Code of Conduct** during local body elections.

**What the State Election Commission (SEC) CANNOT do**

1. **Cannot prepare the main electoral rolls.** These are prepared solely by the **Election Commission of India (ECI)** under the Representation of the People Act, 1950. **Hence statement 1 is incorrect.**
2. **Cannot add, delete, or modify names** in the electoral rolls of Assembly constituencies. **Hence statement 2 is incorrect.**
3. **correct.**
4. **Cannot revise the cut-off date** for inclusion of first-time voters (e.g., those turning 18 after Jan 1).
5. **Cannot remove or correct defective entries** in the base electoral roll prepared by ECI.
6. **Cannot change voter identity details**, addresses, or polling booth assignments in the main ECI list.
7. **Cannot reject or approve citizenship/residency claims** — these fall under ECI and district-level electoral registration officers.
8. **Cannot modify laws related to reservation of seats** (women, SC, ST, OBC); it only implements State legislation.
9. **Cannot alter the model code or rules** framed by State governments; it only enforces them.
10. **Cannot change the timeline** mandated by the Supreme Court for completing elections.

**PYQ REFERENCE: (2017)**

**Q. Consider the following statements:**

1. The Election Commission of India is a five-member body.
2. Union Ministry of Home Affairs decides the election schedule for the conduct of both general elections and bye-elections.
3. Election Commission resolves the disputes relating to splits/mergers of recognised political parties.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only
- (b) 2 only
- (c) 2 and 3 only
- (d) 3 only**

**Source:**

<https://www.thehindu.com/news/national/maharashtra/how-is-sec-ensuring-fair-elections-explained/article70275386.ece>

### **5. Appointment of Supreme Court Judges**

**Q. With reference to Indian Judiciary, consider the following statements:**

1. According to Article 124, every judge of the Supreme Court shall be appointed by the President by warrant under his hand and seal.
2. According to the constitution of India, the seniormost Judge of the Supreme Court considered fit to hold the office should be appointed as the Chief Justice of India.

**Which of the statements given above is/are correct?**

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

**Answer: (a) 1 only**

**Explanation:**

**In NEWS:** CJI says court will consider plea seeking to revive NJAC, end the Collegium system

Justice Surya Kant takes oath as 53rd CJI. How is CJI appointed?

**Appointment of Supreme Court Judges:**

- The Chief Justice of India and the Judges of the Supreme Court are appointed by the President under clause (2) of Article 124 of the Constitution. **Hence statement 1 is correct.**

**CHIEF JUSTICE OF INDIA :**

- Appointment to the office of the Chief Justice of India should be of the **seniormost Judge of the Supreme Court** considered fit to hold the office. The Union Minister of Law, Justice and Company Affairs would, at the appropriate time, seek the recommendation of the outgoing Chief Justice of India for the appointment of the next Chief Justice of India.

1. Whenever there is any doubt about the fitness of the seniormost Judge to hold the office of the Chief Justice of India, consultation with other Judges as envisaged in Article 124 (2) of the Constitution would be made for appointment of the next Chief Justice of India.

2. After receipt of the recommendation of the Chief Justice of India, the Union Minister of Law, Justice and Company Affairs will put up the recommendation to the Prime Minister who will advise the President in the matter of appointment.

- According to Article 124, every judge of the Supreme Court shall be appointed by the President by warrant under his hand and seal after consultation with such Judges of the Supreme Court and of the High Courts in the States as the President may deem necessary for this purpose.

- S/he shall hold office until the age of **65 years**, provided that in the case of appointment of a Judge other than the Chief Justice, the Chief Justice of India shall always be consulted.

**Qualifications:**

- A person shall not be qualified for appointment as a Judge of the Supreme Court unless,

○ S/he is a **citizen of India** and has been for at least **five years a Judge of a High Court** or of two or more such Courts in succession; or has been for at least **ten years an advocate of a High Court** or of two or more such Courts in succession; or is, in the **opinion of the President, a distinguished jurist.**

● The senior most judge was surpassed for the appointment as the Chief Justice of India 3 times in the history of the Supreme Court of India.

● **It is customary, and not law,** that the most senior judge of the Supreme Court, at the time when the current Chief Justice of India (CJI) retires, becomes the next CJI. The seniority is measured by the length of service on the Supreme Court. **Hence statement 2 is incorrect.**

**PYQ REFERENCE: (2021)**

**Q. With reference to Indian Judiciary, consider the following statements:**

1. Any retired judge of the Supreme Court of India can be called back to sit and act as a Supreme Court judge by the Chief Justice of India with prior permission of the president of India.
2. A High Court in India has the power to review its own judgement as the Supreme Court does.

**Which of the statements given above is/are correct?**

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

Source: <https://indianexpress.com/article/upsc-current-affairs/upsc-essentials/knowledge-nugget-appointment-of-cji-articles-three-judges-cases-upsc-exam-10381510/>

#### 6. International Institute for Democracy and Electoral Assistance

**Q. Consider the following statements regarding the International Institute for Democracy and Electoral Assistance (International IDEA):**

1. It is a specialised agency of the United Nations.
2. It publishes the Global State of Democracy Report.
3. India is a member state of this organisation.

**Which of the above statements is/are correct?**

- (a) 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Answer: (a) 2 only**

**Explanation:**

**In NEWS:** CEC Gyanesh Kumar to assume Chairship of International IDEA

**International Institute for Democracy and Electoral Assistance:**

● International Institute for Democracy and Electoral Assistance (International IDEA) is an intergovernmental organisation founded in 1995 to promote sustainable democracy worldwide.

● Headquarters: Stockholm, Sweden.

● Works on electoral processes, constitution building, political participation, and democracy assessment.

● Publishes the Global State of Democracy (GSoD) Report and maintains global databases on electoral systems, political finance, gender quotas, and direct democracy mechanisms. **Hence statement 2 is correct.**

● Provides technical assistance to election management bodies and supports constitution-building in transitional or conflict-affected states.

● Governance: Council of Member States (decision-making) and Board of Advisers (strategic guidance).

● India is not a member of International IDEA. **Hence statement 3 is incorrect.**

● Not affiliated with the United Nations. **Hence statement 1 is incorrect.**

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2194702>

#### 7. Booth Level Officers (BLOs)

**Q. With reference to the functions of BLOs, consider the following:**

1. Facilitate addition, deletion, and correction of voter details.
2. Identifying vulnerable pockets to prevent voter intimidation
3. Distribution of EPIC cards
4. Counting of votes at the district counting centres

**How many of the above are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer: (c) Only three**

**Explanation:**

**In NEWS:** Booth Level Officers (BLOs) are back in focus with the ongoing Special Intensive Revision (SIR) of electoral rolls.

**Booth Level Officers (BLOs)**

● Booth Level Officer (BLO) is the representative of the Election Commission of India (ECI) at the polling station/booth level.

● Introduced in 2006 to strengthen grassroots electoral management and improve voter roll accuracy.

● Usually appointed from local government staff, teachers, anganwadi workers, or other government employees.

**Key Functions of BLOs**

1. Maintain and verify the Electoral Roll at the booth level.
2. Conduct door-to-door verification, especially during revision of rolls.
3. Facilitate addition, deletion, and correction of voter details.
4. Assist citizens in filling Form 6 (new voter), Form 7 (deletion), Form 8 (correction), Form 8A (transposition).
5. Ensure inclusion of eligible first-time voters.
6. Verify EPIC (Voter ID) applications and distribute EPIC cards.
7. Identify vulnerable pockets to prevent voter suppression/intimidation.
8. Act as a link between voters and ECI for grievance redressal.
9. Assist during elections for polling station preparation, voter list display, and awareness.

**BLOs do not count votes. Hence statement 4 is incorrect.**

**PYQ REFERENCE: (2023)**

**Q. With reference to Home Guards, consider the following statements:**

1. Home Guards are raised under the Home Guards Act and Rules of the Central Government.
2. The role of the Home Guards is to serve as an auxiliary force to

the police in maintenance of internal security.

3. To prevent infiltration on the international border/coastal areas, the Border Wing Home Guards Battalions have been raised in some States.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two**
- (c) All three
- (d) None

Source: <https://indianexpress.com/article/upsc-current-affairs/upsc-essentials/knowledge-nugget-booth-level-officer-blo-sir-electrol-roll-upsc-10388887/>

### 8. Comptroller and Auditor General (CAG) of India

**Q. Which among the following statements are correct with respect to the Comptroller and Auditor General (CAG) of India?**

1. The CAG is a constitutional authority established under Article 148 of the Constitution of India.
2. The CAG holds office for a term of five years or until the age of 60 years, whichever is earlier.
3. The CAG can only be removed through a process similar to the removal of a Supreme Court judge.
4. The CAG audits and accounts all receipts and expenditures of the Union and State governments.

**Select the correct answer using the code given below:**

- (a) 1 and 3 only
- (b) 1 and 4 only
- (c) 2 and 3 only
- (d) 2 and 4 only

**Answer: (a) 1 and 3 only**

**Explanation:**

**In NEWS:** CAG issues advisory to standardise govt. expenditure classification across India

#### **Comptroller and Auditor General (CAG) of India:**

##### **Constitutional Basis**

- The CAG is established under **Article 148** of the Constitution of India.
- It is a **constitutional authority** responsible for auditing government accounts. **Hence statement 1 is correct.**
- Serves as an **independent institution** to ensure accountability in financial administration.

##### **Appointment and Tenure**

- Appointed by the **President of India**.
- Holds office for a **term of six years** or until the age of **65 years**, whichever is earlier. **Hence statement 2 is incorrect.**
- Can only be removed through a **process similar to the removal of a Supreme Court judge** (impeachment by Parliament). **Hence statement 3 is correct.**

##### **Role and Functions**

- Audits **all receipts and expenditures of the Union and State governments.**
- Audits **autonomous bodies and government companies** under Article 151.
- Reports findings to **Parliament or State Legislatures** for action.
- Conducts **performance audits** to assess economy, efficiency, and effectiveness of government programs.
- Provides recommendations for **improving financial management and governance.**

Note: The CAG **does not maintain accounts**; it only **audits** them. The accounting is done by the **Controller General of Accounts (CGA)**. **Hence statement 4 is incorrect.**

##### **Powers and Autonomy**

- Has **authority to access all government accounts and records.**
- Can conduct **audits of government entities, PSUs, and authorities funded by public money.**
- Works independently of the executive branch to maintain **impartiality and transparency.**

##### **Reports**

- Presents reports to **Parliament or State Legislatures** through the **President or Governor.**
- Reports are classified as: **Audit Reports on Finance, Performance, Compliance, and Commercial entities.**

#### **PYQ REFERENCE: (2012)**

**Q. In India, other than ensuring that public funds are used efficiently and for their intended purpose, what is the importance of the office of the Comptroller and Auditor General (CAG)?**

1. CAG exercises exchequer control on behalf of the Parliament when the President of India declares a national emergency/financial emergency.
2. CAG reports on the execution of projects or programs by the ministers are discussed by the Public Accounts Committee.
3. Information from CAG reports can be used by investigating agencies to press charges against those who have violated the law while managing public finances.
4. While dealing with the audit and accounting of government companies, CAG has certain judicial powers for prosecuting those who violate the law.

**Which of the statements given above is/are correct?**

- (a) 1, 3 and 4 only
- (b) 2 only
- (c) 2 and 3 only**
- (d) 1, 2, 3 and 4

Source: <https://www.thehindu.com/news/national/cag-issues-advisory-to-standardise-govt-expenditure-classification-across-india/article70298582.ece#:~:text=The%20office%20of%20the%20Comptroller.and%20all%20the%20State%20governments>

### 9. 16th Finance Commission

**Q. The 16th Finance Commission recommended which of the following regarding Local Bodies?**

1. Grants to Panchayats are tied to improving sanitation and waste-management standards.
2. Urban local bodies may receive performance-linked grants for improving own-source revenue.
3. Local body grants should be directly transferred to elected bodies without routing through State Consolidated Funds.

**Select the correct answer using the code below:**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (a) 1 and 2 only**

**Explanation:**

**In NEWS:** What can local bodies expect from the 16th Finance Commission?

### 16th Finance Commission (FC):

#### Constitutional Basis

- Established under Article 280 of the Constitution.
- Constituted every **five years** to recommend:
  - Vertical devolution (Centre to States)
  - Horizontal devolution (among States)
  - Grants-in-aid
  - Measures to strengthen local bodies and disaster management

#### Recommendations:

1. The 16th Finance Commission retained the **vertical devolution of 41% of the divisible tax pool** to the States.
2. The 16th Finance Commission recommended altering the criteria and weights used for horizontal devolution among States.
3. The 16th Finance Commission recommended a separate share of the divisible pool exclusively for Local Bodies.
4. The 16th Finance Commission recommended that grants to Local Bodies continue to be routed through the State governments.
5. The 16th Finance Commission recommended continuation of grants to Local Bodies for basic services such as sanitation and waste management.

#### Local Body Grants

6. The 16th FC recommended tied grants to rural local bodies for improving sanitation and waste-management systems. **Hence statement 1 is correct.**
7. The 16th FC recommended performance-linked grants to urban local bodies for improving their own-source revenues. **Hence statement 2 is correct.**
8. The 16th FC recommended direct transfer of Local Body grants to **elected Panchayats and Municipalities (not elected bodies)** without routing through the State Consolidated Fund. **Hence statement 3 is incorrect.**
9. The 16th FC emphasised property-tax reforms as a part of performance-linked funding to municipalities.
10. The 16th FC highlighted that revenue-expenditure mismatch in panchayats justifies continued Union-to-State-to-local transfers.

#### Fiscal Architecture

11. The 16th FC recommended continuation of the State Disaster Risk Management Fund (SDRMF).
12. The 16th FC proposed changes to the weightage of “demographic performance” in tax devolution.
13. The 16th FC recommended a permanent institutional mechanism for resolving Centre–State fiscal disputes.
14. The 16th FC recommended equalisation-based principles for health and education sectors.
15. The 16th FC recommended increasing the share of performance-based grants relative to basic grants.

#### PYQ REFERENCE: (2025)

**Q. Which of the following statements with regard to recommendations of the 15th Finance Commission of India are correct?**

- I. It has recommended grants of 4,800 crores from the year 2022-23 to the year 2025-26 for incentivizing States to enhance educational outcomes.
- II. 45% of the net proceeds of Union taxes are to be shared with States.
- III. 45,000 crores are to be kept as performance-based incentive for all States for carrying out agricultural reforms.
- IV. It reintroduced tax effort criteria to reward fiscal performance.

**Select the correct answer using the code given below.**

- (a) I, II and III
- (b) I, II and IV**
- (c) I, III and IV
- (d) II, III and IV

Source: <https://www.thehindu.com/news/national/what-can-local-bodies-expect-from-the-16th-finance-commission-explained/article70296119.ece#:~:text=Main%20expectations%20include%20a%20percentage,its%20horizontal%20distribution%20among%20States.>

### 10. Public Service Commissions in India

**Q. Consider the following statements regarding Public Service Commissions in India:**

1. The first Public Service Commission in India was established under the Government of India Act, 1935.
2. The Montagu–Chelmsford Report recommended the creation of an independent Public Service Commission.
3. The Constitution specifies minimum age and qualifications for appointment as PSC members.

**Which of the above statements is/are correct?**

- (a) 2 only
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Answer: (a) 2 only**

**Explanation:**

**In NEWS:** How can State PSCs be reformed?

#### Public Service Commissions (PSCs) in India:

- **The first Public Service Commission in India was established in 1926 under the provisions of the Government of India Act, 1919**, following the Montagu–Chelmsford Reforms. **Hence statement 1 is incorrect.**
- The Montagu–Chelmsford Report (1918) recommended the creation of a permanent, independent Public Service Commission to ensure merit-based recruitment free from political influence. **Hence statement 2 is correct.**
- The Government of India Act, 1935 provided for the establishment of Provincial (State) Public Service Commissions.
- Articles 315 to 323 of the Constitution provide for the establishment, composition, tenure, removal, and powers of the UPSC and State PSCs.
- The Constitution does not prescribe minimum age, qualifications, or prior experience for appointment as members of the UPSC or State PSCs. **Hence statement 3 is incorrect.**
- The 41st Constitutional Amendment Act, 1976 increased the upper age limit of State PSC members from 60 to 62 years.
- The UPSC functions in a comparatively politically sterile environment, while State PSCs operate in a politically osmotic environment with visible influence on appointments.
- The Ministry of Personnel, Public Grievances and Pensions, created in 1985, ensures systematic manpower planning and timely vacancy notifications for UPSC examinations.
- Most States lack a dedicated personnel ministry, leading to irregular vacancy notifications and delayed recruitment cycles.
- UPSC periodically revises its syllabus through expert committees, whereas most State PSCs rarely update their syllabi.
- UPSC uses inter-se moderation to reduce subjectivity in evaluation; State PSCs often struggle with this process.
- State PSCs face increased litigation due to issues in vertical, horizontal, and zonal reservation calculations and translation errors between English and regional languages.
- Reforms suggested include setting a minimum age of 55 and maximum age of 65 for PSC members along with clearly defined qualifications.

- It is recommended that syllabus revision proposals be placed in the public domain and finalised after public consultation.
- A senior officer with experience in school or intermediate education administration should serve as the Secretary of State PSCs to improve exam management.

**PYQ REFERENCE: (2012)**

**Q. The distribution of powers between the Centre and the States in the Indian Constitution is based on the scheme provided in the**

- (a) Morley-Minto Reforms, 1909
- (b) Montagu-Chelmsford Act, 1919
- (c) Government of India Act, 1935**
- (d) Indian Independence Act, 1947

Source: <https://www.thehindu.com/news/national/how-can-state-pscs-be-reformed-explained/article70314087.ece>

**11. RTI Amendment 2023 and DPDP Act 2023**

**Q. Consider the following statements:**

**Statement I:** The 2023 amendment to the RTI Act strengthens citizens' privacy while maintaining transparency.

**Statement II:** It allows public authorities to deny RTI requests on personal data unless public interest overrides privacy concerns.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I
- (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I
- (c) Statement-I is correct, but Statement-II is incorrect
- (d) Statement-I is incorrect, but Statement-II is correct

**Answer: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I**

**Explanation:**

**In NEWS:** Data privacy law comes into effect, two years after Parliament approval

**Relationship between RTI Amendment 2023 and DPDP Act 2023:**

- The RTI Act, 2005, allowed citizens to access information from public authorities but included exemptions for personal information to protect privacy.
- The 2023 amendment updates these exemptions to align with the Digital Personal Data Protection (DPDP) Act, 2023, which gives stronger legal protection to personal data.
- Under the amendment, public authorities can refuse RTI requests involving personal data if disclosing it would violate privacy.
- However, disclosure is allowed if the public interest outweighs privacy concerns, maintaining transparency.

**Hence both Statement-I and Statement-II are correct and Statement-II explains Statement-I**

**Digital Personal Data Protection (DPDP) Act, 2023:**

- The Act is designed to protect the personal data of individuals in India and regulate how it is collected, processed, stored, and shared by government and private entities.
- It applies to all entities processing personal data of Indian citizens, whether the entity is in India or outside the country if it involves Indian citizens.
- Personal data includes any information that identifies or can identify an individual, directly or indirectly. Examples include names,

addresses, phone numbers, email IDs, biometric data, and financial information.

- **Data Fiduciary:** Any entity or person that decides how and why personal data is processed.
- **Data Principal:** The individual whose personal data is being processed.
- Processing of personal data generally requires the explicit consent of the individual, except in specific cases such as legal obligations, public interest, or emergencies.
- **Rights of Individuals:**
  - The Act grants citizens rights such as:
  - Right to access their data
  - Right to correct or update data
  - Right to withdraw consent for processing
  - Right to grievance redressal
- The Act prescribes fines and penalties for unlawful collection, processing, or disclosure of personal data.

**PYQ REFERENCE: (2020)**

**Q. Consider the following statements:**

1. Aadhaar metadata cannot be stored for more than three months.
2. State cannot enter into any contract with private corporations for sharing Aadhaar data.
3. Aadhaar is mandatory for obtaining insurance products.
4. Aadhaar is mandatory for getting benefits funded out of the Consolidated Fund of India.

**Which of the statements given above is/are correct?**

- (a) 1 and 4 only
- (b) 2 and 4 only**
- (c) 3 only
- (d) 1, 2 and 3 only

Source: <https://www.thehindu.com/news/national/digital-personal-data-protection-act-notified-after-two-years-rti-act-amended/article70278698.ece#:~:text=The%20Union%20Government%20notified%20large.data%20privacy%20of%20Indian%20citizens.>

**12. 'Digital arrests'**

**Q. Consider the following statements:**

1. Digital arrest is a type of cybercrime where fraudsters, posing as law enforcement officials, intimidate and extort money from victims.
2. In India, there is no system like digital arrest under law.

**Which of the statements given above is/are correct?**

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

**Answer: (c) Both 1 and 2**

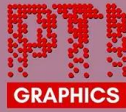
**Explanation:**

**In NEWS:** 'Digital arrests' are a very big challenge; victims, mostly elderly, lost ₹3,000 crore in India alone, says Supreme Court

**Digital Arrest:**

- A 'digital arrest' involves cybercriminals using deception and fear to control a victim's digital communication and movement to extract money or information. **Hence statement 1 is correct.**
- There is no system like digital arrest under law. **Hence statement 2 is correct.**

## ‘DIGITAL ARREST’



### What exactly is ‘Digital arrest’?

- New **cyber fraud**
- Accused video call and **pose as law enforcement agency officials, like CBI or customs officials**
- They **give threats of arrest in the name of fake international parcels of banned drugs**
- **Organised economic crime operated by cross-border crime syndicates**



3 Image generated via AI for representational purposes

#### How it works:

- Intimidation: The fraudsters call the victim and introduce themselves as officers from a government agency like the CBI, NCB, or Income Tax Department. They may use spoofed numbers or fake IDs to appear legitimate.
- False Accusations: The victim is falsely accused of involvement in serious crimes such as money laundering, drug trafficking, or tax evasion.
- Fear Tactics: The fraudsters create a sense of urgency and fear by threatening the victim with arrest, imprisonment, or other legal consequences.
- Extortion: The victim is demanded to pay a certain amount of money to avoid arrest or legal action. The payment is often made through online transactions or cryptocurrency.
- Constant Surveillance: In some cases, the victim is forced to remain under constant video surveillance through platforms like Skype or Zoom until the demands are met.

#### PYQ REFERENCE:

**Q. Consider the following statements:**

**A digital signature is**

1. an electronic record that identifies the certifying authority issuing it
2. used to serve as a proof of identity of an individual to access information or serve on Internet
3. an electronic method of signing an electronic document and ensuring that the original content is unchanged

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 and 3 only
- (c) 3 only**
- (d) 1, 2 and 3

Source: <https://www.thehindu.com/news/national/supreme-court-shocked-over-3000-crore-loss-in-digital-arrest-scams/article70235621.ece>

#### 13. Constitution Day

**Q. Consider the following statements with respect to the constitution of India:**

I. The constitution came into force on 26 January 1950, honouring the Purna Swaraj Declaration.

- II. The Constitution was signed by 284 members on 24 January 1950 and Dr. Rajendra Prasad was the first to sign.
- III. Originally, the Constitution of India was adopted in only two languages.

**Which of the statements given above are correct?**

- (a) I and II only
- (b) II and III only
- (c) I and III only
- (d) I, II and III**

**Answer: (d) I, II and III**

**Explanation:**

#### In NEWS:

- On 26 November 2025 (Constitution Day), Droupadi Murmu released a digital version of the Constitution of India in nine Indian languages.
- The nine languages are: Malayalam, Marathi, Nepali, Punjabi, Bodo, Kashmiri, Telugu, Odia, and Assamese.

#### Enactment & Adoption of the Constitution:

##### Drafting timeline

- The Constitution was drafted between December 1946 – November 1949.
- The Constituent Assembly held 11 sessions over 2 years, 11 months, 18 days.

##### Date of enactment

- The Constitution was adopted on 26 November 1949
- This is why we celebrate Constitution Day / Samvidhan Divas.

##### Date of commencement

- It came into force on 26 January 1950
- chosen to honour the Purna Swaraj Declaration (1930). **Hence statement I is correct.**

##### Partial commencement

**On 26 November 1949, only the following provisions came into effect:**

- Citizenship (Part II)
- Elections (Part XV)
- Provisional Parliament (Art. 379–391)
- Temporary & transitional provisions
- Article 394

##### Final commencement

- The rest of the Constitution came into force on 26 January 1950.

##### Constituent Assembly

###### Formation

- Formed under the Cabinet Mission Plan (1946).
- Total seats originally: 389, reduced to 299 after Partition.

###### Composition

- Members elected by Provincial Assemblies.
- Princely states nominated their members.

###### Key office bearers

- Dr. Rajendra Prasad – President of the Constituent Assembly.
- Dr. B.R. Ambedkar – Chairman, Drafting Committee.
- B.N. Rau – Constitutional Adviser.
- HC Mookerjee – Vice-President of the Assembly.

###### Drafting Facts

- Draft Constitution was presented on 4 November 1948.
- The Constituent Assembly debated for 114 days (of total 165 sitting days).

###### Final document contained:

- 395 Articles, 22 Parts, 8 Schedules.
- (Now expanded to 470+ Articles and 12 Schedules.)

###### Adoption Ceremony

- The Constitution was signed by 284 members on 24 January 1950.
- Dr. Rajendra Prasad was the first to sign. **Hence statement II is correct.**
- The Constituent Assembly held its last session on 24 January 1950.

**Enforcement & Birth of Republic**

- India became a Republic on 26 January 1950.
- Dr. Rajendra Prasad became the first President of India.

**Language:**

- Originally, the Constitution of India was adopted in only TWO languages:
  - English
  - Hindi **Hence statement III is correct.**
- Over time, the Government of India translated the Constitution into all 22 Scheduled Languages for wider accessibility.
- English remains the authoritative legal text under the Authoritative Texts (Central Laws) Act, 1973.

**PYQ REFERENCE: (2023)**

**Q. Consider the following statements in respect of the Constitution Day:**

Statement-I: The Constitution Day is celebrated on 26th November every year to promote constitutional values among citizens.  
Statement-II: On 26th November, 1949, the Constituent Assembly of India set up a Drafting Committee under the Chairmanship of Dr. B.R. Ambedkar to prepare a Draft Constitution of India.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- (c) Statement-I is correct but Statement-II is incorrect**
- (d) Statement-I is incorrect but Statement-II is correct

Source: <https://indianexpress.com/article/india/president-droupadi-murmu-digital-constitution-9-languages-10386874/>

**14. Arunachal Pradesh as an Integral Part of India:**

**Q. With reference to Indian polity, consider the following statements:**

1. The McMahon Line forms the boundary between Arunachal Pradesh and Tibet as a territorial separation.
2. The constitution of India provides special responsibility to the Governor regarding law and order in the administration of Arunachal Pradesh.
3. Arunachal Pradesh became a full-fledged State through the 22nd constitutional amendment in 1986.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (a) 1 and 2 only**

**Explanation:**

**In NEWS:** Arunachal Pradesh is an integral and inalienable part of India: MEA

**Arunachal Pradesh as an Integral Part of India:**

**1. Constitutional Status**

- **Article 1:** India is a "Union of States"; Arunachal Pradesh is one of the States of the Union.
- **Article 3:** Parliament has exclusive power to form new States or alter boundaries—basis for its creation.
- **Article 371H:** Provides special provisions for Arunachal Pradesh giving **Governor special responsibility for law & order. Hence statement 2 is correct.**
- Listed in the **First Schedule** of the Constitution as a State (since 1987).

**2. Historical-Administrative Background**

(a) British Period

- The region under the **North-East Frontier Tracts (NEFT)**; later **North-East Frontier Agency (NEFA)**.
- **McMahon Line (1914):** Boundary between British India & Tibet, accepted by India; China disputes it. **Hence statement 1 is correct.**

(b) Post-Independence

- NEFA is administered by the **Governor of Assam** under the External Affairs Ministry.
- **1962:** Sino-Indian War - strategic sensitivity.
- **1972:** NEFA renamed **Union Territory: Arunachal Pradesh.**
- **1987:** The Constitution (55th Amendment) Act, 1986 inserted **Article 371H** into the Constitution to provide special provisions for Arunachal Pradesh.
- It was passed alongside the State of Arunachal Pradesh Act, 1986 to prepare the region for full statehood (which happened on 20 February 1987). **Hence statement 3 is incorrect.**

**3. Legal and International Position**

India's Claim

- Based on **legal, historical, and administrative continuity.**
- **McMahon Line** is India's lawful boundary; recognized in international agreements (Simla Convention 1914, though not by China).
- Effective administrative control by India for decades (de facto and de jure sovereignty).

**China's Position**

- Calls Arunachal "South Tibet"; opposes visits by Indian leaders.
- Claims areas like **Tawang** due to Tibetan Buddhist links.
- India rejects this as **untenable and historically inaccurate.**

**PYQ REFERENCE: (2025)**

**Q. Consider the following pairs:**

State	Description
Arunachal Pradesh	The capital is named after a fort, and the State has two National Parks
Nagaland	The State came into existence on the basis of a Constitutional Amendment Act
Tripura	Initially a Part 'C' State, it became a centrally administered territory in 1956, and later attained full statehood

**How many of the above pairs are correctly matched?**

- (a) Only one
- (b) Only two
- (c) All the three**
- (d) None

Source: <https://www.newsonair.gov.in/india-reaffirms-arunachal-as-integral-part-mea-protests-chinas-detention-of-indian-passenger-calls-action-a-violation-of-travel-norms/#:~:text=34%20PM%20%7C%20Arunachal-India%20reaffirms%20Arunachal%20as%20integral%20part%3B%20MEA%20protests%20China's%20detention.to%20change%20this%20indisputable%20reality.>

### 15. Altruistic Surrogacy

**Q. Under the Surrogacy (Regulation) Act, 2021, which of the following conditions must be fulfilled by an intending couple to undertake altruistic surrogacy in India?**

1. The couple must be legally married.
2. The wife must be between 23–50 years of age and the husband between 26–55 years.
3. The couple must not have any living biological, adopted, or surrogate child, except a child who is physically or mentally challenged.
4. The couple must obtain eligibility certificates from the appropriate authority.

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only  
(b) 1, 2 and 4 only  
(c) 2, 3 and 4 only  
(d) 1, 2, 3 and 4

**Answer: (d) 1, 2, 3 and 4**

**Explanation:**

**In NEWS:** SC to examine if bar on surrogacy for a second child is state intrusion in citizens' private lives

- The **Supreme Court of India** has agreed to examine whether the **ban on surrogacy for couples who already have one child** amounts to *violation of reproductive autonomy and privacy under Article 21*.
- The issue arises from the **Surrogacy (Regulation) Act, 2021** and its 2023 Rules, which restrict **altruistic surrogacy** only to *married Indian couples without a living child*.

#### Altruistic Surrogacy

- **Altruistic Surrogacy** means a **surrogacy arrangement in which the surrogate mother is not paid any monetary compensation** except for **medical expenses and insurance coverage** during pregnancy.
- It is based on *compassion or goodwill* rather than commercial benefit.

#### Legal Framework in India:

##### 1. Surrogacy (Regulation) Act, 2021

- Came into force on **January 25, 2022**.
- **Bans commercial surrogacy** (where payment or reward is involved).
- **Allows only altruistic surrogacy for Indian married couples** who:
  - Have **no living biological, adopted, or surrogate child** (except in cases of child with physical/mental disability).
  - Are **legally married** (wife aged 23–50, husband aged 26–55).
  - Obtain **eligibility certificates** from the appropriate authority.

**Hence all the statements are correct.**

##### 2. The surrogate mother:

- Must be a **close relative** of the intending couple.
- Should be a **married woman having one child of her own**, aged 25–35 years.

- Can act as a surrogate **only once** in her lifetime.

**Objective:**

- To **prevent exploitation** of poor women by banning commercial surrogacy.
- To **protect the rights of the surrogate mother and the child**.
- To ensure **ethical and regulated reproductive practices**.

**PYQ REFERENCE: (2021)**

**Q. With reference to the “Medical Termination of Pregnancy (Amendment) Act, 2021”, consider the following statements:**

1. A pregnant woman can seek termination of pregnancy up to twenty weeks of gestation without the opinion of any registered medical practitioner.
2. The Act allows the termination of pregnancy up to twenty-four weeks for certain categories of women.
3. The law provides for the setting up of a Medical Board to decide on pregnancies beyond twenty-four weeks in case of substantial fetal abnormalities.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

Source: <https://www.thehindu.com/news/national/sc-to-examine-if-bar-on-surrogacy-for-a-second-child-is-state-intrusion-in-citizens-private-lives/article70240699.ece#:~:text=The%20Supreme%20Court%20on%20Tuesday,the%20reproductive%20choices%20of%20citizens>

### 16. Contempt of court in India

**Q. With reference to Contempt of Court in India, consider the following statements:**

- I. Both the Supreme Court and High Courts are Courts of Record having the power to punish for their contempt.
- II. Civil contempt refers to disobedience of a court order, while criminal contempt involves acts that scandalise or lower the authority of the court.

**Which of the statements given above are correct?**

- (a) I only  
(b) II only  
(c) Both I and II  
(d) Neither I nor II

**Answer: (c) Both I and II**

**Explanation:**

**In NEWS:** What constitutes as contempt of court in India?

#### Contempt of Court in India

##### Constitutional Basis

- **Article 129:** The Supreme Court shall be a Court of Record and have the power to punish for its contempt.
- **Article 215:** The High Courts shall be Courts of Record and have similar powers. **Hence statement 1 is correct.**
- **Article 19(2):** The right to freedom of speech and expression under **Article 19(1)(a)** can be reasonably restricted on grounds of contempt of court.

### What is a "Court of Record"?

A Court of Record is one whose:

- Acts and judicial proceedings are recorded and preserved for perpetual memory and testimony.
- Records have evidentiary value and are not to be questioned in any court.
- Possesses inherent power to punish for contempt of itself.

Thus, the Supreme Court and High Courts are both Courts of Record under the Constitution.

### Contempt of Court Act, 1971

The Contempt of Courts Act, 1971 elaborates the constitutional provision and classifies contempt into two types:

#### (a) Civil Contempt — [Section 2(b)]

● "Wilful disobedience of any judgment, decree, direction, order, writ or other process of a court, or wilful breach of an undertaking given to a court."

- **Example:** Disobeying a court's injunction order or violating a stay order.

#### (b) Criminal Contempt — [Section 2(c)]

● The publication (by words, spoken or written, or by any visible means) or any act which:

- Scandalises or lowers the authority of any court, or
- Prejudices or interferes with the due course of any judicial proceeding, or
- Interferes or tends to interfere with the administration of justice.

● **Example:**

- Using derogatory remarks against judges (e.g., *M.V. Jayarajan v. High Court of Kerala, 2015*).
- Making public statements likely to influence ongoing cases.

**Hence statement 2 is correct.**

### Procedure for Initiating Contempt

- Can be suo motu by the Supreme Court or High Court, or
- On a motion made by any person with the consent of:
  - Attorney General of India (for SC), or
  - Advocate General (for HC).

### PYQ REFERENCE: (2022)

#### Q. Consider the following statements:

1. Pursuant to the report of H.N. Sanyal Committee, the Contempt of Courts Act, 1971 was passed.
2. The Constitution of India empowers the Supreme Court and the High Courts to punish for contempt of themselves.
3. The Constitution of India defines Civil Contempt and Criminal Contempt.
4. In India, the Parliament is vested with the powers to make laws on Contempt of Court.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 1, 2 and 4**
- (c) 3 and 4 only
- (d) 3 only

Source: <https://www.thehindu.com/news/national/what-constitutes-as-contempt-of-court-in-india-explained/article70245733.ece>

### 17. The appointment of Vice-Chancellors (VCs) in State universities

Q. With reference to the Governor's role in state universities, which among the following statements is/are correct?

1. The Governor's role as Chancellor of State universities is derived from the Constitution, not from State university statutes.

2. The constitution of India under article 163 empowers the Governor for the appointment of Vice-Chancellors (VCs) in State universities.

Select the answer using the code given below:

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

**Answer: (d) Neither 1 nor 2**

**Explanation:**

**In NEWS:** SC to hear T.N.'s plea on State's power to appoint V-Cs

### The appointment of Vice-Chancellors (VCs) in State universities:

#### Constitutional Position of the Governor

● The Constitution **does not expressly** assign the Governor any role in university administration; this authority arises from State university statutes.

● **The Governor's role as Chancellor is statutory, not constitutional**, and distinct from Articles 153–161 functions.

○ Article 163 deals with the **Council of Ministers' advice and the limited discretionary powers** of the Governor.

○ It **does not** mention universities or the appointment of Vice-Chancellors.

○ VC appointment powers come from **State University Acts**, not Article 163. **Hence both statements 1 and 2 are incorrect.**

● **Article 163 discretion does not automatically extend to university matters**, creating interpretive ambiguity.

● The dual identity of the Governor - **as constitutional head and statutory Chancellor** - creates continuing institutional friction with the State government.

● The Governor's actions in university affairs often raise concerns regarding **accountability, neutrality, and adherence to ministerial advice.**

### PYQ REFERENCE: (2014)

Q. Which of the following are the discretionary powers given to the Governor of a State?

1. Sending a report to the President of India for imposing the President's rule
2. Appointing the Ministers
3. Reserving certain bills passed by the State Legislature for consideration of the President of India
4. Making the rules to conduct the business of the State Government

Select the correct answer using the code given below.

- (a) 1 and 2 only
- (b) 1 and 3 only**
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

Source: <https://www.thehindu.com/news/national/sc-to-hear-tns-plea-on-power-to-appoint-v-cs/article70291743.ece>  
<https://www.livelaw.in/top-stories/supreme-court-tamil-nadu-transfer-petition-madras-hc-pil-governor-power-to-appoint-vice-chancellor-310179>

### 18. National Cooperative Development Corporation (NCDC)

Q. With reference to the National Cooperative Development Corporation (NCDC), consider the following statements:

1. It is a statutory body under the Ministry of Cooperation.

2. It provides financial assistance to cooperatives and loans and grants to State Governments.
3. It can finance projects related to both agriculture and non-agricultural sectors.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Answer: (d) 1, 2 and 3**

**Explanation:**

**In NEWS:** National Cooperative Development Corporation (NCDC) - "Strengthening India's Cooperative Ecosystem"

**National Cooperative Development Corporation (NCDC):**

- **Established:** In 1963 under the **National Cooperative Development Corporation Act, 1962.**
- **Type:** A **statutory corporation** under the **Ministry of Cooperation** (earlier under Agriculture & Farmers Welfare). **Hence statement 1 is correct.**
- **Headquarters:** New Delhi.
- **Objective:** To **plan, promote, and finance** programmes for the **production, processing, marketing, storage, export, and import of agricultural produce and other notified commodities** through cooperatives. **Hence statement 3 is correct.**
- **Functions:**
  - Provides **financial assistance** to cooperatives for projects in sectors like agriculture, livestock, rural industries, and services.
  - Extends **loans and grants** to State Governments and directly to national/state-level cooperative societies. **Hence statement 2 is correct.**
  - Promotes **integrated cooperative development projects (ICDPs)** at the district level.
- **Funding:** Receives funds from the **Government of India, borrowings, and repayments from cooperatives.**
- **Recent focus:** Expanding support to **dairy, fisheries, food processing, FPOs, and digital cooperatives** under the "Sahakar 22" and "Sahakar Pragya" initiatives.

**PYQ REFERENCE: (2023)**

**Q. With reference to the "Primary Agricultural Credit Societies (PACS)" in India, consider the following statements:**

1. They are regulated by both the Reserve Bank of India and NABARD.
2. They are entities under the Companies Act, 2013.
3. They form the lowest tier of the three-tier cooperative credit structure in India.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 3 only**
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2186643>

### 19. NALSA

**Q. The Legal Services Authorities Act, 1987 provides for which of the following?**

1. Establishment of Lok Adalats
2. Free and competent legal services to weaker sections

3. Promotion of alternative dispute resolution

Select the correct answer using the code below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1, 2 and 3
- (d) 1 only

**Answer: (c) 1, 2 and 3**

**Explanation:**

**In NEWS:** PM Modi Inaugurates National Conference on Strengthening Legal Aid Delivery at Supreme Court

**National Legal Services Authority (NALSA)**

- Constituted under **Legal Services Authorities Act, 1987** (came into force in 1995).
- Objective: To provide **free and competent legal services** to weaker sections of society and ensure that **justice is not denied due to economic or social barriers.**

**Constitutional Basis**

- **Article 39A** of the Directive Principles of State Policy (DPSP): Directs the State to provide free legal aid to ensure equal justice for all.

**Structure**

Level	Body	Head
National	<b>NALSA</b>	Chief Justice of India (Patron-in-Chief) Second senior-most Supreme Court Judge (Executive Chairperson)
State	<b>SLSA – State Legal Services Authority</b>	Chief Justice of High Court (Patron-in-Chief)
District	<b>DLSA – District Legal Services Authority</b>	District Judge as Chairman
Taluk	<b>TLSC – Taluk Legal Services Committee</b>	Senior Civil Judge as Chairman

**Functions of NALSA**

1. Provide **free legal aid and representation** to the poor and marginalized.
2. Organize **Lok Adalats** for amicable dispute settlement.
3. Spread **legal awareness and literacy** among citizens.
4. Promote **alternative dispute resolution (ADR)** mechanisms.
5. Frame **schemes for vulnerable groups** – women, children, SC/ST, senior citizens, victims of trafficking, etc.
6. Monitor and coordinate the functioning of SLSAs, DLSAs, and TLSCs.

**Major Schemes by NALSA**

1. **Free Legal Services Scheme** – Legal representation for economically weaker and disadvantaged sections.
2. **Victim Compensation Scheme** – Financial support to victims of crime.
3. **Legal Literacy and Awareness Programme** – Grassroots awareness drives.

4. **Lok Adalats / Permanent Lok Adalats** – For pre-litigation and pending cases.
5. **Front Offices in Courts** – To assist litigants in availing legal aid.
6. **Nyaya Bandhu (Pro Bono Legal Services)** – In collaboration with the Department of Justice.

**Hence all the statements are correct.**

**PYQ REFERENCE: (2013)**  
**Q. With reference to National Legal Services Authority, consider the following statements:**

1. Its objective is to provide free and competent legal services to the weaker sections of the society on the basis of equal opportunity.
2. It issues guidelines for the State Legal Services Authorities to implement the legal programmes and schemes throughout the country.

**Which of the statements given above is/are correct?**

(a) 1 only  
 (b) 2 only  
 (c) Both 1 and 2  
 (d) Neither 1 nor 2

Source: <https://www.newsonair.gov.in/pm-modi-to-inaugurate-national-conference-on-strengthening-legal-aid-delivery-at-supreme-court-today/>

## 20. Pay commission

**Q. Consider the following statements with respect to Pay commissions in India:**

- I. A Pay commission is appointed by the Home minister of India.
- II. It revises retirement benefits, gratuity and leave encashment.
- III. The 7th Pay Commission constituted in 2014 is significant for the introduction of a simplified pay matrix.

**Which of the statements given above are correct?**

- (a) I and II only  
 (b) II and III only  
 (c) I and III only  
 (d) I, II and III

**Answer: (b) II and III only**

**Explanation:**

**In NEWS:** What is the role of a pay commission? | Explained

### Pay Commission:

- A Pay Commission is a government-appointed body that reviews and recommends salaries, allowances, pensions, and other service conditions for central government employees and defense personnel.
- Objective: To ensure fair and updated remuneration for employees in line with economic conditions and inflation.
- Appointed by: The President of India. **Hence statement I is incorrect.**

Pay Commission	Year of Appointment	Key Highlights / Recommendations
1st Pay Commission	1946	Reviewed pay scales and allowances post-independence.
2nd Pay Commission	1957	Revised pay scales, allowances and retirement benefits in line with growing economy.

3rd Pay Commission	1970	Recommended substantial pay hikes and addressed dearness allowance issues.
4th Pay Commission	1983	Emphasised improving living standards; revised pay, allowances & pensions.
5th Pay Commission	1994	Major increases in basic pay and allowances; improved retirement benefits.
6th Pay Commission	2006	Big salary hike (~40-50%), new pay bands, revised pensions.
7th Pay Commission	2014	Introduced simplified pay matrix, fitment factor of 2.57, implemented from Jan 2016. <b>Hence statement III is correct.</b>
8th Pay Commission	2025	Set up by Cabinet in Jan 2025; recommendations expected by ~2026; will review salaries, pensions and allowances of central government employees and pensioners.

### Key Roles of Pay Commissions:

- Revise Pay Scales – for central government employees and defense personnel.
- Update Allowances – house rent, travel, dearness allowance, and others.
- Revise Pension Rules – including retirement benefits, gratuity, leave encashment. **Hence statement II is correct.**
- Rationalize Pay Structure – simplify pay bands and remove disparities.
- Improve Employee Morale – ensure fair compensation in line with economic growth.

### PYQ REFERENCE: (2025)

**Q. Which of the following statements with regard to recommendations of the 15th Finance Commission of India are correct?**

- I. It has recommended grants of Rs 4,800 crores from the year 2022-23 to the year 2025-26 for incentivizing States to enhance educational outcomes.
- II. 45 % of the net proceeds of Union taxes are to be shared with States.
- III. 45,000 crores are to be kept as performance-based incentive for all States for carrying out agricultural reforms.
- IV. It reintroduced tax effort criteria to reward fiscal performance.

**Select the correct answer using the code given below.**

- (a) I, II and III  
 (b) I, II and IV  
 (c) I, III and IV  
 (d) II, III and IV

Source: <https://www.thehindu.com/news/national/what-is-the-role-of-a-pay-commission-explained/article70262556.ece#:~:text=The%20Central%20government%20has,India%2C%20as%20member%2Dsecretary.>

**SCHMES**

**21. The National Beekeeping and Honey Mission (NBHM)**

**Q. Regarding 'The National Beekeeping and Honey Mission (NBHM)', which of the following statements is/are correct?**

1. The National Beekeeping and Honey Mission (NBHM) is a Central Sector Scheme launched by the Government of India.
2. The scheme NBHM is being implemented by the National Bee Board (NBB).
3. As per the Agricultural and Processed Food Products Export Development Authority (APEDA), India is the second largest exporter of honey, after China

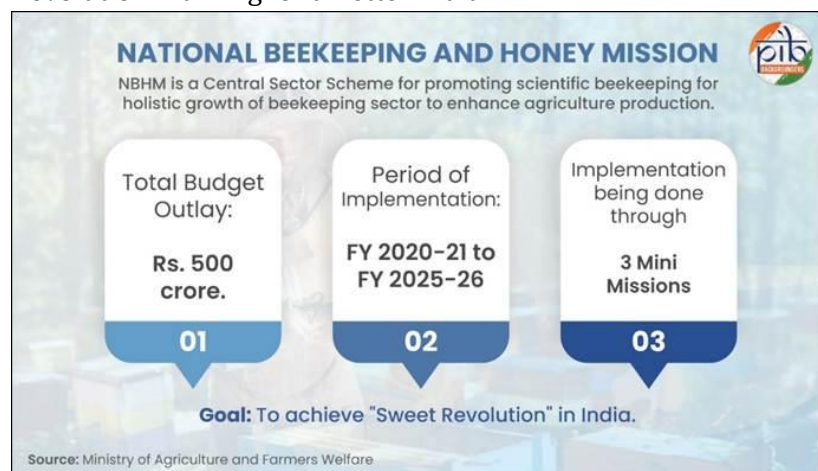
Select the correct answer using the codes given below:

- (a) 1 and 2 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (d) 1, 2 and 3**

**Explanation:**

**In NEWS:** National Beekeeping & Honey Mission - Bringing Sweet Revolution: Buzzing for a Better India



**The National Beekeeping and Honey Mission (NBHM)**

● The **National Beekeeping and Honey Mission (NBHM)** is a **Central Sector Scheme** launched by the Government of India for the **overall promotion and development of scientific beekeeping** and the **production of quality honey and other beehive products**.

**Hence statement 1 is correct.**

● Implemented through the **National Bee Board (NBB)**, the scheme was announced under the banner of **Atmanirbhar Bharat** with a total budget outlay of **₹500 crore for three years (FY 2020-21 to 2022-23)**. **Hence statement 2 is correct.**

● It has since been **extended for another three years (FY 2023-24 to 2025-26)** with a **remaining budget of ₹370 crore** from the original allocation.

● Beekeeping, an **agro-based activity** undertaken by farmers and landless labourers in rural areas, forms an integral part of the **Integrated Farming System**.

○ **Integrated farming** (or integrated agriculture) is a commonly and broadly used word to explain a more integrated approach to farming as compared to existing monoculture approaches. **It refers to agricultural systems that integrate livestock, fisheries, crop production, horticulture, etc.**

● It plays a crucial role in **pollination**, thereby enhancing **crop yields** and **farmers' income** while providing **honey and other high-value beehive products** such as beeswax, bee pollen, propolis, royal jelly, bee venom, etc., all of which serve as important sources of livelihood for rural communities.

**Export of Natural Honey from India:**

● India exports a variety of natural honey like Rapeseed/Mustard Honey, Eucalyptus Honey, Lychee Honey, Sunflower Honey, etc.

● Major Indian states producing honey are: **Uttar Pradesh (17%), West Bengal (16%), Punjab (14%), Bihar (12%) and Rajasthan (9%)**.

● India exported around **1.07 lakh metric tonnes (MT)** of natural honey worth **USD 177.52 million** in **FY 2023-24**.

● Major export destinations included the **U.S.A, UAE, Saudi Arabia, Qatar and Libya**.

● As per the **July 2025 Monthly Dashboard for Honey**, prepared jointly by the **Agricultural and Processed Food Products Export Development Authority (APEDA)** and Crisil, globally, India is the **second largest exporter of honey**, after China, as of marketing year 2024, up from the 9th rank in 2020. **Hence statement 3 is correct.**

**National Bee Board (NBB)**

● **National Bee Board** was registered as a society under **Societies Registration Act XXI of 1860**, on **July 19, 2000**, and was **reconstituted** under the Chairmanship of Secretary (A&C) in **June, 2006**.

● The main objective of NBB is overall development, promotion of scientific beekeeping in the country to increase the productivity of crops through pollination and increase the honey production for increasing the income of the beekeepers/farmers.

● NBB has been designated/recognized as **Nodal Agency** for overall development/promotion of scientific beekeeping in the country.

● The scheme **NBHM is being implemented by NBB**.

**PYQ REFERENCE: (2012)**

**Q. How does the National Rural Livelihood Mission seek to improve livelihood options of rural poor?**

1. By setting up a large number of new manufacturing industries and agribusiness centres in rural areas
2. By strengthening 'self-help groups' and providing skill development
3. By supplying seeds, fertilizers, diesel pump-sets and micro-irrigation equipment free of cost to farmers

Select the correct answer using the codes given below:

- (a) 1 and 2 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2185400>

**22. National Social Assistance Programme**

**Q. Consider the following schemes:**

1. Indira Gandhi National Old Age Pension Scheme (IGNOAPS)
2. Indira Gandhi National Widow Pension Scheme (IGNWPS)
3. Indira Gandhi National Disability Pension Scheme (IGNDPS)
4. National Family Benefit Scheme (NFBS)
5. Annapurna Scheme

**Which of the above are the components of the National Social Assistance Programme in India?**

- (a) 1, 2 and 3 only
- (b) 4 and 5 only
- (c) 1 and 2 only
- (d) 1, 2, 3, 4 and 5

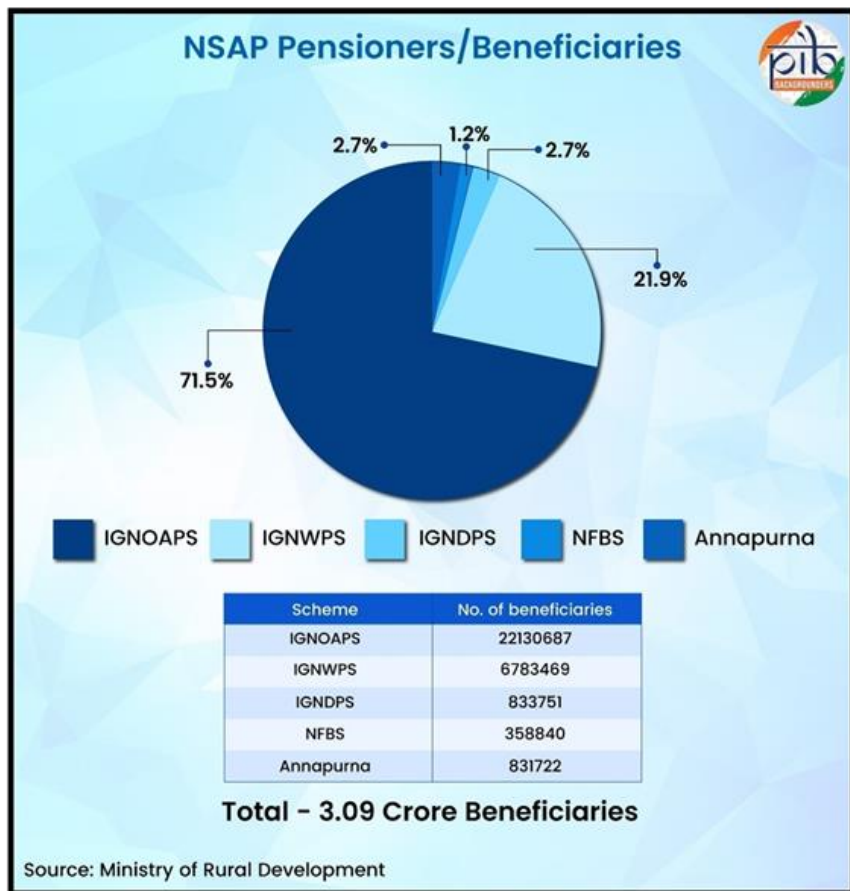
**Answer: (d) 1, 2, 3, 4 and 5**

**Explanation:**

**In NEWS:** National Social Assistance Programme - "Strengthening India's Social Security Framework through Inclusive Assistance"

**National Social Assistance Programme (NSAP):**

- It was launched on 15 August 1995.
- It is implemented by the Ministry of Rural Development
- It is a centrally Sponsored Scheme
- It covers Rural and urban BPL households
- It aims to provide a basic level of social security assistance to vulnerable groups - elderly, widows, persons with disabilities, and families facing the death of a breadwinner.


**Components of NSAP:**

Scheme	Beneficiary Criteria	Central Assistance
<b>Indira Gandhi National Old Age Pension Scheme (IGNOAPS)</b>	BPL persons aged $\geq 60$ years	₹200/month (60–79 yrs); ₹500/month (80+ yrs)
<b>Indira Gandhi National Widow Pension Scheme (IGNWPS)</b>	BPL widows aged 40–79 years	₹300/month (40–79 yrs); ₹500/month (80+ yrs)
<b>Indira Gandhi National Disability Pension Scheme (IGNDPS)</b>	BPL persons aged 18–79 years with severe/multiple disabilities	₹300/month; ₹500/month (80+ yrs)
<b>National Family Benefit Scheme (NFBS)</b>	BPL families losing breadwinner aged 18–59 years	₹20,000 (one-time)
<b>Annapurna Scheme</b>	BPL senior citizens eligible but not receiving IGNOAPS	10 kg food grains/month free

**Hence all are correct.**

**PYQ REFERENCE: (2013)**

**Q. Which of the following grants/grant direct credit assistance to rural households?**

1. Regional Rural Banks
2. National Bank for Agriculture and Rural Development
3. Land Development Banks

**Select the correct answer using below.**

- (a) 1 and 2 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2187327>

**23. National Technical Textiles Mission**

**Q. With reference to the National Technical Textiles Mission, consider the following statements:**

1. The National Technical Textiles Mission aims to make India a global leader in manufacturing and innovation of technical textiles.
2. The mission is implemented by the Ministry of Commerce and Industry.

**Which of the statements given above is/are correct?**

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

**Answer: (a) 1 only**

**Explanation:**

**In NEWS:** National Technical Textiles Mission supports the development of Indigenous Thermal Testing Instruments for Protective Textiles in association with NITRA

**About:**

**National Technical Textiles Mission (NTTM):**

- The **National Technical Textiles Mission (NTTM)** was **launched in February 2020**.
- It is implemented by the **Ministry of Textiles, Government of India**. **Hence statement 2 is incorrect.**
- The **mission period** is from **2020–21 to 2025–26**.
- The **total outlay** of the mission is **₹1,480 crore**.
- The mission aims to **position India as a global leader** in the field of **technical textiles**. **Hence statement 1 is correct.**
- It seeks to **increase domestic consumption** and **boost exports** of technical textiles.
- **Technical textiles** refer to **textiles used for functional, industrial, and technical purposes** rather than for aesthetics.
- Examples include **geotextiles, meditech, agrotech, protech, buildtech, sportech**, etc.
- The mission has **four key components** —
  - Research, Innovation & Development
  - Promotion & Market Development
  - Export Promotion
  - Education, Training & Skill Development
- It promotes **industry-academia-research collaboration** in technical textiles.
- The mission supports **startups and innovation** in high-end and strategic textiles.
- It encourages **mandatory use of technical textiles** in areas like **defence, highways, agriculture, and construction**.

- **Centres of Excellence (CoEs)** are being established for focused R&D in this sector.
- The mission contributes to the **Atmanirbhar Bharat** and **Make in India** initiatives.
- It helps create **employment, export potential, and technological advancement** in the textile industry.

**PYQ REFERENCE: (2019)**

**Q. Atal Innovation Mission is set up under the**

- Department of Science and Technology
- Ministry of Labour and Employment
- NITI Aayog**
- Ministry of Skill Development and Entrepreneurship

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2187085>

**24. PLI Scheme for White Goods**

**Q. Consider the following statements with respect to the Production Linked Incentive (PLI) Scheme for White Goods:**

- It is implemented by the Department for Promotion of Industry and Internal Trade (DPIIT).
- The scheme covers both air conditioner components and LED components.

**Which of the statements given above is/are correct?**

- I only
- II only
- Both I and II
- Neither I nor II

**Answer: (c) Both I and II**

**Explanation:**

**In NEWS:** 13 Companies file applications under PLI Scheme for White Goods (ACs & LED Lights) with committed investment of Rs. 1,914 crore

**PLI Scheme for White Goods:**

- The Production Linked Incentive (PLI) Scheme for White Goods was approved by the Union Cabinet chaired by Prime Minister Shri Narendra Modi on 7th April 2021.
- **The Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry** is the implementing agency for this scheme. **Hence statement I is correct.**
- The scheme has a total financial outlay of ₹6,238 crore, to be disbursed over a period of five years.
- The objective of the PLI Scheme for White Goods is to create a complete component ecosystem for Air Conditioners (ACs) and LED Lights in India.
- The scheme aims to enhance domestic manufacturing, reduce import dependency, and promote exports of components and sub-assemblies of ACs and LED products.
- It seeks to increase domestic value addition from the current 15–20 per cent to about 75–80 per cent, thereby strengthening India's manufacturing capabilities.
- The scheme provides incentives on incremental sales of goods manufactured in India to eligible companies that invest in the target sectors.
- The incentive is linked to performance parameters such as incremental sales and investment, ensuring accountability and results-based support.

- **The scheme covers two major segments:**

- **Air Conditioner Components:** Compressors, motors, copper tubes, aluminium stock, heat exchangers, control assemblies, and other sub-assemblies.
- **LED Components:** LED chips, drivers, PCB assemblies, heat sinks, and other electronic parts. **Hence statement II is correct.**
- The PLI scheme encourages the setting up of greenfield manufacturing units and expansion of existing facilities to promote large-scale production.
- It also aims to attract global component manufacturers to India and integrate them into the domestic supply chain.
- The scheme is designed to generate large-scale employment and boost skill development in manufacturing and allied sectors.

**PYQ REFERENCE: (2023)**

**Q. Consider, the following statements:**

**Statement-I:** India accounts for 3.2% of global export of goods.

**Statement-II:** Many local companies and some foreign companies operating in India have taken advantage of India's 'Production-linked Incentive' scheme.

**Which one of the following is correct in respect of the above statements?**

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect
- Statement-I is incorrect but Statement-II is correct**

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2189520>

**25. National Electric Mobility Mission Plan (NEMMP) 2020**

**Q. The National Electric Mobility Mission Plan (NEMMP) 2020 primarily seeks to:**

- Promote 100% conversion of all petrol vehicles to LNG-based engines
- Achieve energy security through adoption of electric and hybrid vehicles
- Replace all diesel-powered railway engines with hydrogen fuel cells
- Mandate conversion of all two-wheelers to electric vehicles by 2025

**Answer: (b) Achieve energy security through adoption of electric and hybrid vehicles**

**Explanation:**

**In NEWS:** SC wants govt. to promote EVs amid high air pollution

**National Electric Mobility Mission Plan (NEMMP) 2020:**

- Launched in 2012 by the **Ministry of Heavy Industries** as a **national mission framework** to promote **electric and hybrid mobility** in India. **Hence option (b) is correct.**
- It is a **vision document** laying the roadmap for faster adoption of electric vehicles (EVs), strengthening domestic manufacturing, and reducing fossil-fuel dependence by 2020.
- Serves as the umbrella mission under which **FAME India Scheme** was launched (Phase-I in 2015).

**Objectives**

- **Energy Security:** Reduce India's reliance on imported crude oil.
- **Environmental Benefits:** Reduce vehicular pollution and greenhouse gas emissions.

- **Promotion of e-Mobility:** Encourage adoption of hybrid and electric vehicles in multiple categories.
- **Domestic Manufacturing:** Build an indigenous EV ecosystem: batteries, motors, power electronics, charging components.
- **Technology + R&D:** Support research in battery tech, motors, BMS, testing infrastructure.
- **Infrastructure Development:** Charging stations, grid readiness, urban e-mobility systems.

#### Targets

- **6–7 million** annual hybrid/electric vehicles sales by 2020.
- **15–16 million** cumulative EV sales by 2020.
- Potential saving of **9,500 million litres of fuel** → approx **₹60,000+ crore** annual savings.
- Strategic target of positioning India as a **global leader in EV 2-wheelers and 4-wheelers**.

#### PYQ REFERENCE: (2025)

**Q. Consider the following types of vehicles:**

- Full battery electric vehicles
- Hydrogen fuel cell vehicles
- Fuel cell-electric hybrid vehicles

**How many of the above are considered as alternative powertrain vehicles?**

- Only one
- Only two
- All the three**
- None

Source: [https://epaper.thehindu.com/ccidist-ws/th/th\\_international/issues/156324/OPS/GSMF5N2DC.1+GRI F5QBR2.1.html](https://epaper.thehindu.com/ccidist-ws/th/th_international/issues/156324/OPS/GSMF5N2DC.1+GRI F5QBR2.1.html)

#### 26. Gender Guidance Clinics (GGCs)

**Q. Gender Guidance Clinics (GGCs), recently in the news, are primarily aimed at:**

- Providing mental health counselling for adolescents
- Offering multidisciplinary, gender-affirming healthcare under one roof
- Conducting STI surveillance and treatment exclusively
- Implementing income-linked health insurance portability

**Answer: (b) Offering multidisciplinary, gender-affirming healthcare under one roof**  
**Explanation:**

**In NEWS:** Can Tamil Nadu's reforms change transgender healthcare?

#### Gender Guidance Clinics (GGCs):

- **Established by** the *National Health Mission (Tamil Nadu)* in 2018.
- Created to provide **multidisciplinary, gender-affirming healthcare** for transgender persons **under one roof**. **Hence option (b) is correct.**
- Tamil Nadu is the **first State** to institutionalise such clinics at the district level. By **2025**, GGCs are functional in **eight districts** of Tamil Nadu.
- Offer **free gender-affirming surgeries, hormone therapy, counselling, psychiatry, endocrinology, and follow-up care.**
- Between **April 2019 - March 2024**, **7,644 transgender individuals** accessed GGC services.
- Services of GGCs are integrated into the **Chief Minister's Comprehensive Health Insurance Scheme (CMCHIS-PMJAY)** since 2022.

- Tamil Nadu is the **first South Asian government** to include gender-affirming care in a **public insurance package**.
- Income ceiling of **₹72,000** for CMCHIS-PMJAY **removed** for transgender persons.
- Ration card requirement **waived** for enrolment to avoid exclusion due to stigma or family rejection.
- GGC model aligns with "**leave no one behind**" principle of SDGs and **Universal Health Coverage**.
- Doctors at GGCs trained on **World Professional Association for Transgender Health (WPATH) Standards of Care, Version 8**.
- Supported by broader legal reforms: **Madras High Court judgments, TN Mental Health Policy (2019), State Policy for Transgender Persons (2025)**.
- Key challenges include: expanding primary-to-tertiary care, building provider capacity, regulating empanelled hospitals, including mental health benefits, and tackling societal stigma.

#### PYQ REFERENCE: (2023)

**Q. Consider the following statements in relation to Janani Suraksha Yojana :**

- It is a safe motherhood intervention of the State Health Departments.
- Its objective is to reduce maternal and neonatal mortality among poor pregnant women.
- It aims to promote institutional delivery among poor pregnant women.
- Its objective includes providing public health facilities to sick infants up to one year of age.

**How many of the statements given above are correct?**

- Only one
- Only two**
- Only three
- All four

Source: <https://www.thehindu.com/sci-tech/health/can-tamil-nadus-reforms-change-transgender-healthcare-explained/article70275209.ece>

#### 27. 'YUVA AI for ALL'

**Q. Which of the following best describes the 'YUVA AI for ALL' initiative?**

- A national programme to train government officials in advanced AI model development.
- A free, self-paced AI literacy course designed to give citizens basic understanding of Artificial Intelligence.
- A scheme to promote AI-based startups through financial incentives and incubation support.
- A curriculum framework for introducing AI as a compulsory subject in schools.

**Answer: (b) A free, self-paced AI literacy course designed to give citizens basic understanding of Artificial Intelligence.**  
**Explanation:**

**In NEWS:** Government of India launches 'YUVA AI for ALL' - a free national course to help everyone understand Artificial Intelligence

#### YUVA AI for ALL:

- It is a **free national course** launched by the **Ministry of Electronics and Information Technology (MeitY)** under the **IndiaAI Mission**.
- The initiative aims to empower **1 crore (10 million) citizens** with **foundational AI skills**.
- The course duration is **4.5 hours**, and it is **self-paced**.

- It focuses on **ethical, responsible, and inclusive use of Artificial Intelligence**. **Hence option (b) is correct.**
- The course is available on platforms like **FutureSkills Prime, iGOT Karmayogi**, and multiple **ed-tech platforms**.
- Learners receive an **official Government of India certificate** upon completion.
- The content includes **real-life Indian examples** and explains **AI basics, safe usage, and real-world applications**.
- It consists of **six short modules**, covering introduction to AI, its impact on education and work, safe AI practices, and future opportunities.
- The initiative targets **students, professionals, and general learners** across the country.
- Organisations, schools, and universities can **partner with IndiaAI** to promote and integrate the course.
- The course was designed by **Jaspreet Bindra**, an AI expert and founder of **AI & Beyond and Tech Whisperer Ltd.**
- It forms part of **India's efforts toward becoming an AI-powered nation** and aims to **bridge the digital divide**.

**PYQ REFERENCE: (2025)**

**Q. Consider the following statements regarding AI Action Summit held in Grand Palais, Paris in February 2025:**

I. Co-chaired with India, the event builds on the advances made at the Bletchley Park Summit held in 2023 and the Seoul Summit held in 2024.

II. Along with other countries, US and UK also signed the declaration on inclusive and sustainable AI.

**Which of the statements given above is/are correct?**

- (a) I only  
(b) II only  
(c) Both I and II  
(d) Neither I nor II

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2191334>

**28. The Integrated Child Development Services (ICDS) Scheme**

**Q. The Integrated Child Development Services (ICDS) Scheme focuses on which of the following?**

1. Health and nutrition of young children
2. Early childhood education
3. Support to pregnant and lactating mothers
4. Employment guarantee for care workers

**Select the correct answer using the code given below:**

- (a) 1 and 2 only  
(b) 1, 2 and 3 only  
(c) 2, 3 and 4 only  
(d) 1, 2, 3 and 4

**Answer: (b) 1, 2 and 3 only**

**Explanation:**

**In NEWS:** Recognise the critical role of the childcare worker

**The Integrated Child Development Services (ICDS) Scheme:**

- The **Integrated Child Development Services (ICDS) Scheme** was launched in **1975**.
- Its **main objective** is the holistic development of **children below six years**, pregnant women, and lactating mothers.
- **Core services** include **supplementary nutrition, immunization, health check-ups, referral services, and pre-school non-formal education**.

- **Anganwadi Centres (AWCs)** are the implementing units, run by Anganwadi workers and helpers.
- Currently, there are over **1.4 million Anganwadi Centres** in India.
- The **Palna Scheme** provides crèches for children **below three years**.
- **Beneficiaries** include children (0–6 years), pregnant and lactating women, and **adolescent girls**.
- ICDS is a **centrally sponsored scheme** with **cost-sharing between Centre and States**.
- The scheme addresses **malnutrition, early childhood education, and maternal and child health**.
- ICDS is **one of the largest early childhood care programmes in the world**.

**Note:** It does **not provide an employment guarantee** for care workers. **Hence statements 1, 2 and 3 are correct.**

**PYQ REFERENCE: (2023)**

**Q. Consider the following statements in the context of interventions being undertaken under Anaemia Mukt Bharat Strategy :**

1. It provides prophylactic calcium supplementation for pre-school children, adolescents and pregnant women.
2. It runs a campaign for delayed cord clamping at the time of childbirth.
3. It provides for periodic deworming. to children and adolescents.
4. It addresses non-nutritional causes of anaemia in endemic pockets with special focus on malaria, hemoglobinopathies and fluorosis.

**How many of the statements given above are correct?**

- (a) Only one  
(b) Only two  
(c) Only three  
(d) All four

**Source:** <https://www.thehindu.com/opinion/lead/recognise-the-critical-role-of-the-childcare-worker/article70299985.ece#:~:text=Recognition%20of%20the%20knowledge%20and,children%20are%20to%20be%20realised.>

**29. Natural farming**

**Q. With reference to Natural farming in India, consider the following statements:**

1. National Mission on Natural Farming (NMNF), 2023 is a flagship initiative launched to promote chemical-free agriculture.
2. Natural farming is the farming system that avoids synthetic chemicals, but may use permitted organic inputs.
3. Bharatiya Prakritik Krishi Paddhati (BPKP) aims to promote Zero Budget Natural Farming (ZBNF)

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

**Answer: (c) 1 and 3 only**

**Explanation:**

**In NEWS:** India will become hub of natural farming; science, tradition to lead way: PM

**Natural Farming:**

- **Natural farming is positioned as a 21st-century agricultural imperative**, aimed at restoring soil health degraded by excessive chemical fertilisers and pesticides.
- **Prime Minister Modi emphasises natural farming as both science-backed and tradition-aligned**, combining India's indigenous knowledge with modern research.
- **India aims to emerge as a global hub of natural farming**, supported by national missions, scientific institutions and farmer-led initiatives.
- **The National Mission on Natural Farming (NMNF)** has already influenced lakhs of farmers, with **Tamil Nadu bringing ~35,000 hectares** under natural and organic farming.

**Natural Farming vs Organic Farming**

- **Natural Farming:** Farming method without external inputs; relies entirely on locally available, biological, and regenerative processes.
- **Organic Farming:** Farming system that avoids synthetic chemicals, but may use permitted organic inputs. **Hence statement 2 is incorrect.**

**Natural Farming Initiatives in India**

**National Mission on Natural Farming (NMNF), 2023**

- Flagship initiative launched to promote chemical-free agriculture. **Hence statement 1 is correct.**
- Focuses on training, capacity building, and cluster-based natural farming.
- Implemented through **National Centre for Organic and Natural Farming (NCONF)** and SAUs/KVKs.
- Targets: **1 crore farmers** and **10 lakh hectares** by 2026-27 (as per policy documents).

**Bharatiya Prakritik Krishi Paddhati (BPKP)**

- A sub-scheme under **Paramparagat Krishi Vikas Yojana (PKVY)**.
- Promotes **Zero Budget Natural Farming (ZBNF)**. **Hence statement 3 is correct.**
- Provides financial assistance for:
  - On-farm inputs (Jeevamrit, Beejamrit, Ghanjeevamrit),
  - Training and certification,
  - Resource centres.

**PYQ REFERENCE: (2018)**

**Q. With reference to organic farming in India, consider the following statements:**

1. 'The National Programme for Organic Production' (NPOP) is operated under the guidelines and directions of the Union Ministry of Rural Development.
2. 'The Agricultural and Processed Food Products Export Development Authority' (APEDA) functions as the Secretariat for the implementation of NPOP.
3. Sikkim has become India's first fully organic State.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only**
- (c) 3 only
- (d) 1, 2 and 3

**Source:**

<https://www.thehindu.com/news/cities/Coimbatore/pm-narendra-modi-coimbatore-visit-south-india-natural-farming-summit-november-19-2025/article70298336.ece>

**30. India's Sanitation Journey**

**Q. Consider the following pairs:**

S.no	Mission	Objective
1.	Swachh Bharat Mission	Eliminate open defecation, promote cleanliness, and manage solid and liquid waste effectively
2.	AMRUT Mission	Ensure that urban households have access to a basic level of water supply and sewerage connections
3.	Jal Jeevan Mission	Provide safe and adequate drinking water through individual household tap connections to every rural household

**Which of the pairs given above are correctly matched?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3**

**Answer: (d) 1, 2 and 3**

**Explanation:**

**In NEWS:** Waste to Wellness: India's Sanitation Journey



Mission	Primary Focus	Objective	Rural vs. Urban
<b>Swachh Bharat Mission (SBM)</b>	Sanitation and solid waste management	Eliminate open defecation, promote cleanliness, and manage solid and liquid waste effectively	Covers both rural (SBM-Grameen) and urban (SBM-Urban) areas
<b>Atal Mission for Rejuvenation and Urban Transformation (AMRUT)</b>	Urban infrastructure, including water supply, sewerage, and drainage	Ensure that urban households have access to a basic level of water supply and sewerage connections	Focuses on urban areas

<b>Jal Jeevan Mission (JJM)</b>	Functional household tap water connections	Provide safe and adequate drinking water through individual household tap connections to every rural household	Primarily focuses on rural areas
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Hence all pairs are correctly matched.

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2191618>

### SCIENCE & TECHNOLOGY

#### 31. NASA's ESCAPE Mission

Q. What is 'ESCAPE Mission', recently in the news?

- (a) NASA's mission to send humans to explore Mars
- (b) NASA's twin-spacecraft mission to study Mars' atmosphere and magnetic environment
- (c) ESA's satellite mission to investigate Venus' clouds for the presence of charged particles
- (d) JAXA's telescope project to search for nearby exoplanets

Answer: (b) NASA's twin-spacecraft mission to study Mars' atmosphere and magnetic environment.

Explanation:

In NEWS: NASA's ESCAPE Mission to find life on Mars

ESCAPE Mission:

- The Escape and Plasma Acceleration and Dynamics Explorers (ESCAPE) is a twin-spacecraft mission to Mars aimed at studying how the solar wind interacts with Mars' magnetic environment and contributes to the loss of its atmosphere. Hence option (b) is correct.
- The mission is led by the Space Sciences Laboratory at the University of California, Berkeley, in collaboration with NASA's Goddard Space Flight Center and Rocket Lab, and is scheduled for launch in fall 2025.
- ESCAPE's main goals are to understand how energy and momentum from the solar wind are transferred through Mars' magnetosphere, how weak magnetic fields guide charged particles, and what processes drive atmospheric escape.
- By using two orbiters simultaneously, the mission will capture plasma and magnetic field data from different regions around Mars, providing dynamic, multi-point observations that single-spacecraft missions cannot achieve.
- ESCAPE also represents a cost-effective approach to planetary exploration, using small, efficient spacecraft and commercial launch systems.
- Its results will enhance understanding of how solar wind interactions shape planetary atmospheres, not only on Mars but across the solar system.

PYQ REFERENCE: (2016)

Q. What is 'Greased Lightning-10 (GL-10)', recently in the news?

- (a) Electric plane tested by NASA
- (b) Solar-powered two-seater aircraft designed by Japan
- (c) Space observatory launched by China
- (d) Reusable rocket designed by ISRO

Source: <https://timesofindia.indiatimes.com/science/nasa-launches-escapade-mission-to-find-life-on-mars-how-does-the-mission-work/articleshow/125188484.cms>

#### 32. Chandrayaan-5 / LuPEX mission

Q. With reference to the Chandrayaan-5 / LUPEX mission, consider the following statements:

1. It is a joint lunar mission of India and Japan.
2. The mission aims to detect and quantify water-ice and other volatiles in the lunar south pole region.
3. The rover for the mission is being developed by ISRO.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Answer: (a) 1 and 2 only

Explanation:

In NEWS: Japanese delegation visits ISRO to review status of Chandrayaan-5/LuPEX mission

Chandrayaan-5:

- Chandrayaan-5, also known as LUPEX (Lunar Polar Exploration Mission), is a joint lunar mission by ISRO (India) and JAXA (Japan). Hence statement 1 is correct.
- The mission aims to land near the Moon's south pole and explore permanently shadowed regions (PSRs).
- India will provide the lander, and Japan will provide the rover and launch vehicle (H3 rocket). Hence statement 3 is incorrect.
- It will provide the first deep drilling and in-situ volatile analysis in the lunar south pole.
- Data from LUPEX may confirm the presence and depth of water-ice deposits, crucial for future lunar exploration.
- It will expand scientific understanding of polar geology, thermal cycles, and volatile migration on the Moon.

Mission Objectives

- To detect and quantify water-ice and other volatiles in the lunar south pole. Hence statement 2 is correct.
- To drill the lunar surface up to ~1-1.5 meters to collect subsurface samples.
- To conduct in-situ chemical, mineralogical and thermal analysis of the samples.
- To study the lunar polar environment, regolith properties, and surface composition.
- To assess the feasibility of long-term human presence and resource use on the Moon.

Mission Configurations

- Total mass of the mission is estimated at around 6.5 tonnes.
- The lander is developed by ISRO with upgraded capabilities for extreme polar terrain.
- The rover is developed by JAXA and Mitsubishi Heavy Industries.
- International scientific payloads from ESA and NASA are expected.
- Mission life on the lunar surface is expected to be around 100 days, with possible extension.

**PYQ REFERENCE:**

**Q. Consider the following statements:**

The Mangalyaan launched by ISRO

1. is also called the Mars Orbiter Mission
2. made India the second country to have a spacecraft orbit the Mars after USA
3. made India the only country to be successful in making its spacecraft orbit the Mars in its very first attempt

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

- (a) 1 only  
(b) 2 and 3 only  
**(c) 1 and 3 only**  
(d) 1, 2 and 3

Source: [https://epaper.thehindu.com/ccidist-  
ws/th/th\\_international/issues/158238/OPS/G2DF67U3F.1+GL4  
F7D4CK.1.html](https://epaper.thehindu.com/ccidist-<br/>ws/th/th_international/issues/158238/OPS/G2DF67U3F.1+GL4<br/>F7D4CK.1.html)

**33. Aditya-L1**

**Q. Consider the following statements:**

**Statement I:** Aditya-L1 spacecraft is positioned at Sun-Earth Lagrange Point 1 (L1) to observe solar activity continuously.

**Statement II:** L1 allows a satellite to remain in a stable position relative to the Earth and Sun with minimal fuel consumption.

**Statement III:** L1 provides a continuous, unobstructed view of the Sun without Earth eclipses.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement II and Statement III are correct and both of them explain Statement I  
(b) Both Statement II and Statement III are correct but only one of them explains Statement I  
(c) Only one of the Statements II and Statement III is correct and that explain statement I  
(d) Neither Statement II nor Statement III is correct

**Answer: (a) Both Statement II and Statement III are correct and both of them explain Statement I**

**Explanation:**

**In NEWS:** Aditya-L1 gets a close look at eruptions from the sun

**Aditya-L1 – Mission Overview**

- Aditya-L1 is India's first dedicated solar mission by ISRO.
- Purpose: To study the Sun, including its corona, solar emissions, and space weather effects.
- Type: Sun-observing satellite at Lagrangian point 1 (L1).

**Scientific Objectives**

- Study solar corona and chromosphere.
- Measure solar irradiance and magnetic field variations.
- Investigate space weather phenomena affecting Earth.
- Study coronal mass ejections (CMEs) and solar winds.
- Provide early warning for geomagnetic storms impacting Earth's environment, satellites, and power grids.

**Instruments on Board**

- VELC (Visible Emission Line Coronagraph) – studies solar corona.
- SUIT (Solar Ultraviolet Imaging Telescope) – UV imaging of Sun.
- ASPEX (Aditya Solar Wind Particle Experiment) – measures solar wind particles.
- PAPA (Plasma Analyser Package for Aditya) – plasma and particle detection.

- SIXS (Solar X-ray Monitor) – measures X-ray emissions.
- MAG (Magnetometer) – measures magnetic fields near L1.

**Strategic & Scientific Significance**

- First ISRO mission to Lagrangian point L1 – first in India for Sun observation.
- Helps improve understanding of Sun-Earth interactions.
- Supports space weather forecasting – important for satellite safety, aviation, and power grids
- Contributes to global solar science alongside NASA, ESA, and other space agencies.
- Demonstrates India's growing capabilities in interplanetary and deep-space missions.

**Hence Both Statement II and Statement III are correct and both of them explain Statement I**

**PYQ REFERENCE: (2016)**

**Q. Consider the following statements:**

The Mangalyaan launched by ISRO

1. is also called the Mars Orbiter Mission
2. made India the second country to have a spacecraft orbit the Mars after USA
3. made India the only country to be successful in making its spacecraft orbit the Mars in its very first attempt

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

- (a) 1 only  
(b) 2 and 3 only  
**(c) 1 and 3 only**  
(d) 1, 2 and 3

Source: [https://www.thehindu.com/sci-tech/science/aditya-l1-  
jia-nasa-collaborate-to-record-spectroscopic-observations-of-a-  
cme-in-visible-wavelength-range-for-very-first-  
time/article70258711.ece](https://www.thehindu.com/sci-tech/science/aditya-l1-<br/>jia-nasa-collaborate-to-record-spectroscopic-observations-of-a-<br/>cme-in-visible-wavelength-range-for-very-first-<br/>time/article70258711.ece)

**34. Vikram-1**

**Q. With reference to the Vikram-1 rocket, which of the following statements is correct?**

- (a) Vikram-1 is the first Indian lunar mission to attempt a soft landing.  
(b) Vikram-1 is India's first commercial private rocket, aiming to enhance scientific exploration.  
(c) Vikram-1 will carry astronauts to the Moon.  
(d) Vikram-1 is a joint mission with the European Space Agency (ESA).

**Answer: (b) Vikram-1 is India's first commercial private rocket, aiming to enhance scientific exploration.**

**Explanation:**

**In NEWS:** PM Modi unveils India's first commercial private rocket Vikram-1; inaugurates Skyroot's new Infinity campus

**Vikram-1**

- Vikram-1 is India's upcoming robotic lunar lander mission.
- The mission is led entirely by ISRO (Indian Space Research Organisation).
- It is named after Dr. Vikram Sarabhai, the father of the Indian space program.
- The primary objective of Vikram-1 is to demonstrate soft landing technology on the Moon.
- The mission will explore the lunar south polar region, which is rich in water ice and volatiles.
- Vikram-1 carries scientific payloads to conduct in-situ experiments on the lunar surface.
- It builds upon the technology and lessons from Chandrayaan-3's Vikram lander.
- Vikram-1 is a robotic mission and will not carry astronauts.

- The mission supports India's future robotic and crewed lunar missions.
- Launch is expected post-2025, depending on ISRO's schedule and payload readiness.
- The mission enhances India's capability in planetary landing and lunar exploration.
- Vikram-1 contributes to global lunar scientific research, particularly regarding water ice and mineral resources.

**PYQ REFERENCE: (2016)**

**Q. Consider the following statements:**

**The Mangalyaan launched by ISRO**

1. is also called the Mars Orbiter Mission
2. made India the second country to have a spacecraft orbit the Mars after USA
3. made India the only country to be successful in making its spacecraft orbit the Mars in its very first attempt

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

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only**
- (d) 1, 2 and 3

Source: <https://timesofindia.indiatimes.com/business/india-business/pm-modi-unveils-indias-first-commercial-private-rocket-vikram-1-inaugurates-skyroots-new-infinity-campus/articleshow/125607522.cms>

**35. Geosynchronous Transfer Orbit (GTO)**

**Q. Which among the following best describes the term 'Geosynchronous Transfer Orbit (GTO)'?**

- (a) A circular orbit above the equator where a satellite appears stationary relative to the Earth.
- (b) An elliptical orbit used to transfer a satellite from low Earth orbit (LEO) to geostationary orbit (GEO).
- (c) An orbit in which a satellite passes over both poles during each revolution.
- (d) A medium Earth orbit primarily used for navigation satellites like NavIC or GPS.

**Answer: (b) An elliptical orbit used to transfer a satellite from low Earth orbit (LEO) to geostationary orbit (GEO).**

**Explanation:**

**In NEWS:** ISRO launches advanced GSAT-7R, India's heaviest communication satellite

**GSAT-7R:**

- GSAT-7R is an Indian military communication satellite developed by ISRO.
- It is intended to provide secure real-time communication for the Indian Navy.
- Serves as an upgrade to GSAT-7, enhancing network-centric operations and data sharing among naval assets.
- Operates in Geostationary Orbit (GEO) to cover wide oceanic regions.
- Part of India's strategic defense satellite program for secure military communications. **Hence option (b) is correct.**

**Geosynchronous Transfer Orbit (GTO):**

- Geosynchronous Transfer Orbit (GTO) is an elliptical Earth orbit used to transfer a satellite from low Earth orbit (LEO) to a geosynchronous orbit (GEO).

- It serves as an **intermediate orbit** — a stepping stone for satellites to reach their final **circular geosynchronous orbit** (~35,786 km altitude).

- A **launch vehicle** places the satellite in GTO; the satellite then uses its **onboard propulsion system** (apogee kick motor) to circularize the orbit at geosynchronous altitude.

**Other important Space orbitals:**

1. **Low Earth Orbit (LEO)** – 160–2,000 km above Earth, ~90–120 min orbit; used for Earth observation, remote sensing, ISS, small satellites.
2. **Medium Earth Orbit (MEO)** – 2,000–35,786 km altitude, 2–12 hr orbit; mainly for navigation satellites like GPS, Galileo, NavIC.
3. **Geosynchronous Orbit (GSO)** – 24-hour orbital period matching Earth's rotation; satellite returns to same sky position daily.
4. **Geostationary Orbit (GEO)** – Circular GSO above equator at 35,786 km; satellite appears stationary, used for TV, communication, weather.
5. **Geosynchronous Transfer Orbit (GTO)** – Elliptical orbit from LEO → GEO with perigee ~250–300 km and apogee ~35,786 km; used for satellite deployment.
6. **Polar Orbit** – Passes over both poles, ~700–800 km altitude; covers the whole Earth over time, used for mapping, reconnaissance, environmental monitoring.
7. **Sun-Synchronous Orbit (SSO)** – Special polar orbit maintaining constant local solar time; used for uniform lighting in imaging satellites.
8. **Hohmann Transfer Orbit** – Energy-efficient transfer orbit between two circular orbits; basis for LEO → GTO → GEO transitions.
9. **Escape Velocity** – Minimum speed to break free from Earth's gravity, ~11.2 km/s; used in interplanetary missions.
10. **Lagrange Points (L1–L5)** – Points where Earth's and Sun's gravity balance; ideal for space observatories and missions like Aditya-L1.

**PYQ REFERENCE: (2011)**

**Q. Satellites used for telecommunication relay are kept in a geostationary orbit. A satellite is said to be in such as orbit when:**

1. The orbit is geosynchronous.
2. The orbit is circular.
3. The orbit lies in the plane of the earth's equator.
4. The orbit is at an altitude of 22,236 km.

**Select the correct answer using the codes given below:**

- (a) 1, 2 and 3 only**
- (b) 1, 3 and 4 only
- (c) 2 and 4 only
- (d) 1, 2, 3 and 4

Source: <https://www.thehindu.com/sci-tech/science/isros-lvm3-m5-rocket-with-heaviest-communication-satellite-lifts-off/article70232624.ece>

**36. Project Suncatcher**

**Q. Which of the following best describes the "sun-synchronous dawn-dusk orbit" used in Project Suncatcher?**

- (a) An orbit allowing satellites to remain over the same region of Earth continuously.
- (b) An orbit enabling nearly constant sunlight exposure for solar energy generation.
- (c) A geostationary orbit at ~36,000 km altitude for continuous Earth observation.
- (d) A polar orbit used primarily for weather forecasting.

**Answer: (b) An orbit enabling nearly constant sunlight exposure for solar energy generation.**

**Explanation:**

**In NEWS:** Google's Project Suncatcher aims to scale AI data centres in space

**Project Suncatcher:**

- Project Suncatcher is a moonshot initiative launched by Google in 2025 to establish AI data centres in space.
- The project aims to address the energy and cooling challenges faced by terrestrial data centres by shifting computing infrastructure to Low-Earth Orbit (LEO).
- Under the project, Google plans to deploy solar-powered satellites equipped with Tensor Processing Units (TPUs) — specialised chips designed for AI workloads.
- These satellites will operate in a sun-synchronous dawn–dusk orbit, enabling near-continuous solar energy generation. **Hence option (b) is correct.**
- The data centres in orbit will use free-space optical communication (laser links) to achieve high-speed data transfer between satellites and Earth.
- The project envisions tight satellite clusters, functioning as an interconnected orbital supercomputer for large-scale AI computations.
- Solar panels in orbit can generate 6–8 times more energy than ground-based ones due to constant sunlight and absence of atmospheric interference.
- Google plans to launch two prototype satellites by 2027 in collaboration with Planet Labs PBC to test hardware, networking, and radiation resistance.
- By moving AI compute infrastructure to space, Google aims to reduce land, water, and carbon footprint associated with Earth-based data centres.

**Key technical challenges include:**

- Heat dissipation in vacuum (no convection)
- Satellite formation control and precise alignment
- Radiation shielding for chips
- High launch and maintenance costs
- Risk of space debris and orbital congestion

**PYQ REFERENCE: (2011)**

**Q. Satellites used for telecommunication relay are kept in a geostationary orbit. A satellite is said to be in such as orbit when:**

1. The orbit is geosynchronous.
2. The orbit is circular.
3. The orbit lies in the plane of the earth's equator.
4. The orbit is at an altitude of 22,236 km.

**Select the correct answer using the codes given below:**

- (a) 1, 2 and 3 only  
(b) 1, 3 and 4 only  
(c) 2 and 4 only  
(d) 1, 2, 3 and 4

**Source:** <https://www.thehindu.com/sci-tech/technology/googles-project-suncatcher-aims-to-scale-ai-data-centres-in-space/article70243542.ece>

**37. Rare earth hypothesis**

**Q. The Rare Earth Hypothesis, often cited in astrobiological discussions, primarily addresses which of the following ideas?**

- (a) That planets with Earth-like geological and astronomical conditions enabling complex, multicellular life are extremely uncommon in the universe.
- (b) That the availability of rare earth minerals determines a planet's potential to sustain technological civilizations.
- (c) That the abundance of heavy elements in a planet's crust governs its biological evolution and mineral resource distribution.
- (d) That metallicity gradients in galaxies limit the formation of Earth-like planets in habitable zones.

**Answer: (a) That planets with Earth-like geological and astronomical conditions enabling complex, multicellular life are extremely uncommon in the universe.**

**Explanation:**

**In NEWS:** What's the status of the rare earth hypothesis?

**Rare Earth Hypothesis:**

- The **Rare Earth Hypothesis** suggests that while **simple microbial life may be common** in the universe, the emergence of **complex and intelligent life is extremely rare**. **Hence, option (a) is correct**
- It was proposed by **Peter Ward (paleontologist)** and **Donald Brownlee (astronomer)** in their 2000 book "*Rare Earth: Why Complex Life is Uncommon in the Universe.*"
- The hypothesis **challenges the Copernican Principle (Principle of Mediocrity)**, which assumes Earth and life on it are not special or unique.
- It argues that **Earth-like conditions suitable for complex life** depend on a rare combination of **astronomical, geological, and biological factors**.
- **Key conditions** required for complex life, according to the hypothesis, include:
  - A **stable star** of the right type (not too hot or short-lived).
  - A **planet in the habitable zone**, where liquid water can exist.
  - A **large moon** to stabilize Earth's axial tilt and climate.
  - A **magnetic field** to protect the atmosphere from solar radiation.
  - **Plate tectonics** to recycle nutrients and regulate carbon dioxide.
  - Presence of a **Jupiter-like giant planet** to shield Earth from frequent asteroid impacts.

**PYQ REFERENCE: (2015)**

**Q. The term 'Goldilocks Zone' is often seen news in the context of**

- (a) the limits of habitable zone above the surface of the Earth
- (b) regions inside the Earth where shale gas is available
- (c) search for the Earth-like planets in outer space
- (d) search for meteorites containing precious metals

**Source:** <https://www.thehindu.com/sci-tech/science/whats-the-status-of-the-rare-earth-hypothesis-explained/article70267373.ece>

**38. Hawking radiation**

**Q. Which one of the following statements best reflects the idea behind the "Hawking Radiation" often talked about in the media?**

- (a) Radiation emitted by the Sun due to nuclear fusion in its core.
- (b) Emission of energy by a black hole due to quantum effects near its event horizon.
- (c) X-ray emission produced when matter falls onto a neutron star.
- (d) Gamma radiation emitted during supernova explosions.

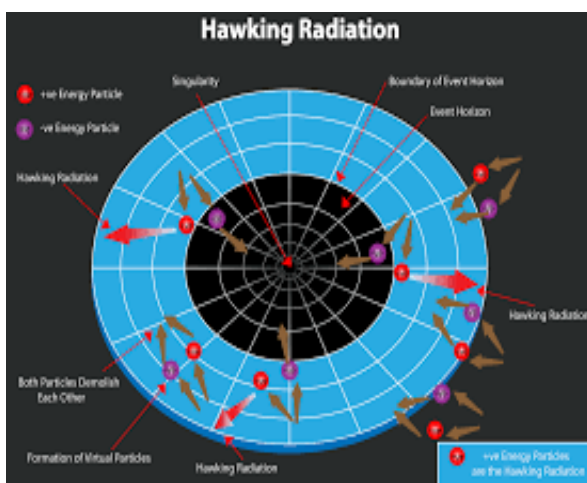
**Answer: (b) Emission of energy by a black hole due to quantum effects near its event horizon.**

**Explanation:**

**In NEWS:** Gamma-ray bursts from black hole 'morsels' could expose quantum gravity

**Hawking Radiation:**

- **Proposed by:** British physicist **Stephen Hawking** in **1974**.
- **Definition:** Hawking radiation is the **theoretical emission of particles and energy from black holes** due to quantum effects near the event horizon.
- **Concept Basis:** It arises from **quantum fluctuations** — temporary particle-antiparticle pairs that form near the black hole's event horizon. **Hence option (b) is correct.**
- Normally, such pairs annihilate each other, but near a black hole, **one particle falls in** while the **other escapes**, appearing as radiation.
- This causes the black hole to **lose mass and energy gradually** — a process known as **black hole evaporation**.
- The radiation is **thermal** in nature and depends on the **mass of the black hole** — smaller black holes emit more radiation.
- Hawking radiation suggests that **black holes are not entirely black**, but slowly emit energy until they vanish.
- The theory combines principles of **quantum mechanics, general relativity, and thermodynamics** — bridging major areas of physics.
- It provides insight into the "**information paradox**" — whether information is lost when a black hole evaporates.
- So far, **Hawking radiation has not been directly observed**, but experiments attempt to simulate it using analogue systems like Bose-Einstein condensates.



**PYQ REFERENCE: (2022)**

**Q. Which one of the following statements best reflects the idea behind the "Fractional Orbital Bombardment System" often talked about in media ?**

- (a) A hypersonic missile is launched into space to counter the asteroid approaching the Earth and explode it in space;
- (b) A spacecraft lands on another planet after making several orbital motions.
- (c) A missile is put into a stable orbit around the Earth and deorbits over a target on the Earth.**

(d) A spacecraft moves along a comet with the same speed and places a probe on its surface.

**Source:** <https://www.thehindu.com/sci-tech/science/gamma-ray-bursts-from-black-hole-morsels-could-expose-quantum-gravity/article70239488.ece#:~:text=A%20new%20theoretical%20study%20has.unique%20probes%20of%20quantum%20gravity&text=We%20know%20gravity%20as%20the.makes%20things%20fall%20down>

### **39. Coronal Mass Ejection**

**Q. If a Coronal mass ejection (CME) from the sun reaches the Earth, which of the following are the possible effects on the Earth?**

1. GPS and navigation systems could fail.
2. Tsunamis could occur at equatorial regions.
3. Power grids could be damaged.
4. Intense auroras could occur over much of the Earth.
5. Forest fires could take place over much of the planet.
6. Orbits of the satellites could be disturbed.
7. Shortwave radio communication of the aircraft flying over polar regions could be interrupted.

**Select the correct answer using the code given below:**

- (a) 1, 2, 4 and 5 only
- (b) 2, 3, 5, 6 and 7 only
- (c) 1, 3, 4, 6 and 7 only
- (d) 1, 2, 3, 4, 5, 6 and 7

**Answer: (c) 1, 3, 4, 6 and 7 only**

**Explanation:**

**In NEWS:** Astronomers spot coronal mass ejection on another star for first time

**Coronal mass ejection:**

- CMEs release large quantities of matter from the Sun's atmosphere into the solar wind and interplanetary space. The ejected matter is a plasma consisting primarily of electrons and protons embedded within its magnetic field.
  - This magnetic field is commonly in the form of a flux rope, a helical magnetic field with changing pitch angles.
    - **Geomagnetic storms:** A CME can cause a geomagnetic storm by transferring energy to Earth's magnetic field. This can cause the ionosphere and upper thermosphere to heat up, and create intense currents in Earth's magnetosphere.
    - **Auroras:** When a CME collides with Earth's magnetosphere, it can send radiation into Earth's upper atmosphere. This radiation causes gas molecules in the atmosphere to release light, creating auroras, also known as the northern and southern lights.
    - **Radio signal and navigation system disruption:** CMEs can disrupt radio signals and navigation systems.
    - **Satellite drag:** CMEs can create drag for low-orbiting satellites.
    - **Power grid damage:** CMEs can damage electrical transmission line facilities, which can lead to power outages.
    - **Radiation storms:** The radiation storms associated with CMEs can be hazardous to astronauts and spacecraft.
- Hence, statements 1, 3, 4, 6 and 7 are correct.**

Coronal mass ejection (CME) does not cause tsunamis or forest fires on Earth:

- **Tsunamis:** Tsunamis are caused by the displacement of a large amount of water in an ocean or lake, such as by earthquakes, volcanic eruptions, or underwater explosions. CMEs are giant clouds of

electrically charged particles from the sun that move at high speeds. While solar storms can generate shock waves that affect the sun, they can't directly cause tsunamis on Earth.

● Forest fires: There is no causal link between CMEs and forest fires.

**Hence, statements 2 and 5 are incorrect.**

**PYQ REFERENCE: (2022)**

**Q. If a major solar storm (solar flare) reaches the Earth, which of the following are the possible effects on the Earth?**

1. GPS and navigation systems could fail.
2. Tsunamis could occur at equatorial regions.
3. Power grids could be damaged.
4. Intense auroras could occur over much of the Earth.
5. Forest fires could take place over much of the planet.
6. Orbits of the satellites could be disturbed.
7. Shortwave radio communication of the aircraft flying over polar regions could be interrupted.

**Select the correct answer using the code given below:**

- (a) 1, 2, 4 and 5 only
- (b) 2, 3, 5, 6 and 7 only
- (c) 1, 3, 4, 6 and 7 only**
- (d) 1, 2, 3, 4, 5, 6 and 7

Source: <https://www.thehindu.com/sci-tech/science/astronomers-spot-storm-on-another-star-for-first-time/article70286720.ece>

#### 40. The Nipah virus (NiV) disease

**Q. Consider the following statements with respect to the 'Nipah virus infection'.**

1. It is a type of RNA virus in the genus Henipavirus, which normally circulates among fruit bats of the genus Pteropus.
2. It can be spread from animals to people and there is no human to human transmission.
3. There is neither vaccine nor specific treatment.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (a) 1 only**

**Explanation:**

**In NEWS:** ICMR invites EoI to develop monoclonal antibodies against Nipah virus in India

**Nipah virus:**

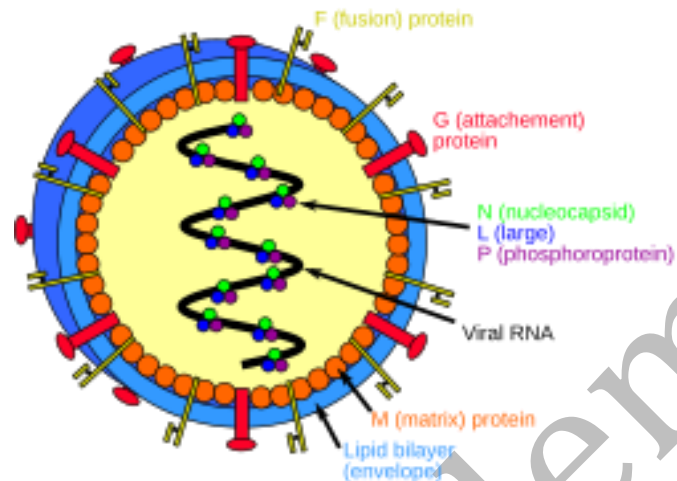
● Nipah virus infection is an infection caused by the Nipah virus. The Nipah virus (NiV) is a type of RNA virus in the genus Henipavirus, which normally circulates among fruit bats of the genus Pteropus.

**Hence statement 1 is correct.**

- **Symptoms** None, fever, cough, headache, diarrhea, confusion
- **Complications** Inflammation of the brain, seizures
- **Diagnostic method** Based on symptoms, confirmed by laboratory testing
- **Prevention** Avoiding exposure to bats and to sick pigs and people and not drinking raw date palm sap.
- **Deaths** ~50 to 75% risk of death

● **Transmission:** Spread typically requires direct contact with an infected source; it can both spread between people and from other animals to people. **Hence statement 2 is incorrect.**

● **Vaccine:** Management is restricted to supportive care; as of 2021 there is neither vaccine nor specific treatment. **Hence statement 3 is incorrect.**



**PYQ REFERENCE: (2017)**

**Q. Consider the following statements:**

1. In tropical regions, Zika virus disease is transmitted by the same mosquito that transmits dengue.
2. Sexual transmission of Zika virus disease is possible.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2**
- (d) Neither 1 nor 2

Source: <https://www.thehindu.com/news/national/icmr-invites-eoi-to-develop-monoclonal-antibodies-against-nipah-virus-in-india/article70232755.ece/amp/>

#### 41. Global antibiotic resistance surveillance report 2025 (GLASS)

**Q. 'Global antibiotic resistance surveillance report 2025 (GLASS)' is released by which of the following?**

- (a) The Global Leaders Group on Antimicrobial Resistance (GLG)
- (b) The World Health Organization (WHO)
- (c) The Food and Agriculture Organization (FAO) under its One-Health initiative
- (d) The World Organisation for Animal Health (WOAH)

**Answer: (b) The World Health Organization (WHO)**

**Explanation:**

**In NEWS:** Holding up GLASS to India; securing stewardship to tackle AMR

**GLASS 2025 Report:**

- **GLASS (Global Antimicrobial Resistance & Use Surveillance System)** is WHO's global surveillance platform for AMR and antimicrobial use. **Hence option (b) is correct.**
- **GLASS 2025** provides global AMR estimates based on data from **over 23 million confirmed infections** across more than **100 countries**.
- The report notes that **1 in 6 bacterial infections globally** in 2023 was resistant to standard antibiotic treatment.
- GLASS 2025 provides national and regional estimates for **93 pathogen - infection - antibiotic combinations**, with trend data for 16 combinations (2018-2023).
- GLASS collects data across multiple modules:
  - AMR surveillance (GLASS-AMR)

- Antimicrobial consumption/use (GLASS-AMC)
- Emerging resistance (GLASS-EAR)
- Invasive fungal infections (GLASS-FUNGI)
- One-Health surveillance (human–animal–environment linkages)

**PYQ REFERENCE: (2019)**

**Q. Which of the following are the reasons for the occurrence of multi-drug resistance in microbial pathogens in India?**

1. Genetic predisposition of some people
2. Taking incorrect doses of antibiotics to cure diseases
3. Using antibiotics in livestock farming
4. Multiple chronic diseases in some people

Select the correct answer using the code given below.

- (a) 1 and 2  
(b) 2 and 3 only  
(c) 1, 3 and 4  
(d) 2, 3 and 4

Source: <https://www.thehindu.com/news/national/holding-upglass-to-india-securing-stewardship-to-tackle-amr/article70272630.ece>

**42. Universal Immunisation Programme (UIP)**

**Q. With reference to the Universal Immunisation Programme (UIP), consider the following statements:**

1. It provides free vaccination against vaccine-preventable diseases (VPDs) for all children and pregnant women.
2. The Ministry of Health & Family Welfare (MoHFW) is responsible for policy, funding, and nationwide implementation of the Universal Immunisation Programme.

**Which of the statements given above is/are correct?**

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

**Answer: (c) Both 1 and 2**

**Explanation:**

**In NEWS:** Why Hepatitis A deserves a place in India's universal immunisation programme

**Universal Immunisation Programme (UIP):**

- The **Universal Immunisation Programme (UIP)** is one of the **largest public health programmes in the world**, launched in **1985** in India.
- It provides **free vaccination** against **vaccine-preventable diseases (VPDs)** for all children and **pregnant women**. **Hence statement 1 is correct.**
- The **Ministry of Health & Family Welfare (MoHFW)** is responsible for policy, funding, and nationwide implementation of the Universal Immunisation Programme. **Hence statement 2 is correct.**

**Objectives**

1. Increase **full immunisation coverage** among children and pregnant women.
2. Reduce **morbidity, mortality, and disability** due to VPDs.
3. Introduce **new/underutilised vaccines** based on scientific evidence.
4. Strengthen cold chain, surveillance, supply chain, and service delivery.

**Key Features**

- **Mission Indradhanush (MI)** (2014) and **Intensified MI** improve coverage in low-performing districts.
- **eVIN (electronic Vaccine Intelligence Network):** Digital vaccine stock and temperature monitoring.
- **U-WIN platform (in pilot)** immunisation registry (similar to CoWIN).
- **Cold chain strengthening:** >27,000 cold chain points.
- **AEFI surveillance:** For adverse events following immunisation.

**Vaccines Under UIP (as of now) UIP provides free vaccines against 12 VPDs:**

**Routine Childhood Vaccines**

1. **BCG** – Tuberculosis
2. **OPV** – Polio
3. **IPV** – Polio
4. **DPT** – Diphtheria, Pertussis, Tetanus
5. **Hepatitis B**
6. **Measles + Measles-Rubella (MR)**
7. **Pentavalent** (DPT + Hepatitis B + Hib)
8. **Rotavirus**
9. **Pneumococcal Conjugate Vaccine (PCV)**
10. **Japanese Encephalitis (JE)** (endemic districts)

**Vaccines for Pregnant Women**

11. **Td vaccine** (Tetanus + Diphtheria)

**Adolescents (in some states)**

12. **HPV vaccine** (recent introduction in phases)

**PYQ REFERENCE: (2020)**

**Q. What is the importance of using Pneumococcal Conjugate Vaccines in India?**

1. These vaccines are effective against pneumonia as well as meningitis and sepsis.
2. Dependence on antibiotics that are not effective against drug-resistant bacteria can be reduced.
3. These vaccines have no side effects and cause no allergic reactions.

Select the correct answer using the code given below:

- (a) 1 only  
(b) 1 and 2 only  
(c) 3 only  
(d) 1, 2 and 3

Source: <https://www.thehindu.com/sci-tech/health/why-hepatitis-a-deserves-a-place-in-indias-universal-immunisation-programme/article70251374.ece>

**43. World Diabetes Day 2025**

**Q. With reference to World Diabetes Day (WDD), consider the following statements:**

1. It is observed on 14th November every year to commemorate the birth anniversary of Sir Frederick Banting.
2. It was established jointly by the World Health Organization (WHO) and the International Diabetes Federation (IDF).
3. India ranks among the top three countries in global diabetes burden.

**Which of the statements given above are correct?**

- (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

**Answer: (d) 1, 2 and 3**

**Explanation:**

**In NEWS: World Diabetes Day 2025: Morning habits that can help you control blood sugar levels naturally**

**World Diabetes Day (WDD):**

- Observed every year on 14th November.
- Established in 1991 by the International Diabetes Federation (IDF) and the World Health Organization (WHO). **Hence statement 2 is correct.**
- Officially recognized by the United Nations in 2006 through UN Resolution 61/225.
- The date marks the birthday of Sir Frederick Banting, co-discoverer of insulin. **Hence statement 1 is correct.**

**Objective:**

- To raise global awareness about prevention, diagnosis, and management of diabetes.
- To advocate universal access to diabetes care, including medicines, technology, and education.

**Theme (2025):**

- The 2025 theme continues the multi-year focus on “Access to Diabetes Care: Education to Protect Tomorrow.”
- Emphasizes the importance of empowering individuals and health workers with knowledge to manage diabetes effectively.

**Global Initiatives**

- WHO Global Diabetes Compact (2021): Targets improved prevention and access to care by 2030.
- Insulin@100 Campaign (2021): Marked 100 years of insulin discovery (1921–2021).
- Blue Circle Symbol: Represents unity in the global fight against diabetes.

**India’s Diabetes Scenario**

- India has over 100 million diabetics and 136 million pre-diabetics (ICMR–INDIAB Study, 2023).
- India ranks among the top three countries in global diabetes burden. **Hence statement 3 is correct.**
- Rising incidence even among younger populations and rural areas.

**Government Initiatives in India**

- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS): Screening and management at primary healthcare level.
- Ayushman Bharat Health and Wellness Centres (AB-HWCs): Offer free NCD screening including diabetes.
- Fit India Movement and Eat Right India Campaign: Promote preventive lifestyle changes.
- Digital initiatives: e-Sanjeevani and ABHA (Ayushman Bharat Health Account) for telemedicine and data integration.

**Source:** <https://m.economictimes.com/news/new-updates/world-diabetes-day-2025-morning-habits-that-can-help-you-control-blood-sugar-levels-naturally/articleshow/125296557.cms>

#### **44. The National Centre for Disease Control (NCDC)**

**Q. Consider the following statements:**

1. Integrated Disease Surveillance Programme (IDSP)
2. Antimicrobial Resistance (AMR) Containment
3. Indian SARS-CoV-2 Genomic Consortium (INSACOG)
4. Centre for One Health
5. Zoonosis Division

**How many of the above are the key programmes of the National Centre for Disease Control (NCDC) in India?**

- (a) Only two
- (b) Only three
- (c) Only four
- (d) All five

**Answer: (d) All five**

**Explanation:**

**In NEWS: NCDC flags study on rising antibiotic resistance in India**

**National Centre for Disease Control (NCDC):**

- The NCDC was originally established as the **Central Malaria Bureau** in 1909 in Delhi.
- It was renamed the **National Institute of Communicable Diseases (NICD)** in 1963 and later became **National Centre for Disease Control (NCDC)**.
- Functions under the **Ministry of Health and Family Welfare (MoHFW), Government of India.**

**Mandate / Functions**

- **Surveillance of communicable diseases** across India.
- **Prevention and control** of outbreaks of infectious diseases.
- Provides **training and capacity building** in public health and epidemiology.
- Conducts **research in microbiology, epidemiology, and public health.**
- Supports **policy formulation** for disease control and health interventions.

**Key Programmes and Divisions**

- **Integrated Disease Surveillance Programme (IDSP):** A program aimed at strengthening IT-enabled, decentralized, laboratory-based disease surveillance systems to monitor trends and respond to outbreaks quickly.
- **Antimicrobial Resistance (AMR) Containment:** A program to monitor AMR trends and promote the responsible use of antibiotics to combat the growing threat of antibiotic resistance.
- **Indian SARS-CoV-2 Genomic Consortium (INSACOG):** A network of national laboratories established in 2020 to monitor and research genomic variations of the SARS-CoV-2 virus.
- **Centre for One Health:** A division focused on the interconnectedness of human, animal, and environmental health, particularly concerning zoonotic diseases.
- **Zoonosis Division:** A specialized division that provides diagnostic and surveillance services for zoonotic diseases, which are diseases that can be transmitted from animals to humans.

**Hence all five are correct.**

**Source:** <https://www.thehindu.com/sci-tech/health/indias-drug-resistant-infection-rates-lower-than-us-europe-despite-higher-microbial-colonisation/article70298818.ece>

#### **45. "BIRSA 101"**

**Q. Which one of the following statements best reflects the idea behind the “BIRSA 101” technology recently seen in the news?**

- (a) A vaccine developed using recombinant DNA technology to prevent Sickle Cell Disease in tribal populations.
- (b) A stem-cell transplantation protocol developed for the treatment of hereditary blood disorders.
- (c) A population-level genomic screening programme to identify carriers of Sickle Cell Disease in high-risk districts.
- (d) A CRISPR-based gene therapy that edits the patient’s own cells to correct the genetic mutation responsible for Sickle Cell Disease.

**Answer: (d)** A CRISPR-based gene therapy that edits the patient's own cells to correct the genetic mutation responsible for Sickle Cell Disease.

**Explanation:**

**In NEWS:** Union Minister Dr. Jitendra Singh launches India's first indigenous "CRISPR" based gene therapy for Sickle Cell Disease, which particularly affects India's tribal population

**BIRSA 101 (CRISPR-based Gene Therapy):**

- BIRSA 101 is India's **first** indigenous CRISPR-based gene therapy developed for **Sickle Cell Disease**. **Hence option (d) is correct.**
- The therapy has been developed by CSIR-Institute of Genomics & Integrative Biology (IGIB).
- The CRISPR platform used in BIRSA 101 is based on the **enFnCas9** gene-editing system.
- A technology transfer agreement for BIRSA 101 has been signed between **CSIR-IGIB and the Serum Institute of India**.
- The therapy is named in honour of **Bhagwan Birsa Munda** on his 150th birth anniversary.
- BIRSA 101 aims to offer a **low-cost alternative** to global Sickle Cell Disease treatments that cost **₹20-25 crore**.
- The therapy particularly targets tribal populations in central and eastern India, where Sickle Cell Disease prevalence is high.
- The initiative supports the government's vision of making India Sickle Cell-Free by **2047**.
- The launch of BIRSA 101 aligns with the goals of **Atmanirbhar Bharat** in advanced biomedical technologies.

**PYQ REFERENCE: (2019)**

**Q. What is Cas9 protein that is often mentioned in news?**

- A molecular scissors used in targeted gene editing
- A biosensor used in the accurate detection of pathogens in patients
- A gene that makes plants pest-resistant
- A herbicidal substance synthesized in genetically modified crops

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2191740>

#### **46. BrahMos missile**

**Q. Consider the following statements:**

- BrahMos is a supersonic cruise missile jointly developed by India and Russia.
- It is considered the world's fastest operational supersonic cruise missile.

**Which of the statements given above is/are correct?**

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

**Answer: (c) Both 1 and 2**

**Explanation:**

**In NEWS:** Indonesian Defence Minister to visit Delhi for talks on BrahMos

**BrahMos:**

- BrahMos is a **supersonic cruise missile** jointly developed by **India (DRDO)** and **Russia (NPOM)**. **Hence statement 1 is correct.**
- It is named after the **Brahmaputra** and **Moskva** rivers.

- It is considered the **world's fastest operational supersonic cruise missile**. **Hence statement 2 is correct.**

- The missile follows a **two-stage configuration**: solid-propellant booster (1st stage) and liquid-fuelled ramjet (2nd stage).

**Performance & Capabilities**

- Has an operational speed of **Mach 2.8-3.0**, making interception extremely difficult.
- The original range was **290 km** but newer versions have **450-500 km** range; trials for **800+ km** are ongoing.
- Warhead capacity: **200-300 kg**, conventional only.
- The guidance system includes **Inertial Navigation System (INS)** and **active radar homing**.
- Features **sea-skimming and terrain-hugging flight**, reducing radar detectability.
- Achieves **CEP ~ 1 meter**, making it highly accurate.

**Launch Platforms**

- Can be launched from **Land, Ship, Air, and Submarine** platforms.
- India is among the few nations with a **fighter jet-launched supersonic cruise missile** (BrahMos-A on Su-30MKI).

**Variants**

- **Block I:** Land attack version.
- **Block II:** High-precision strikes in urban/complex terrains.
- **Block III:** Steep-dive capability for mountain warfare.
- **BrahMos-A:** Air-launched version with reduced weight.
- **BrahMos-NG (Next Generation):** Under development; lighter, faster (~Mach 3.5).
- **BrahMos-II:** Hypersonic (Mach 6-7), under development.

**Strategic Importance**

- Enhances India's **precision-strike** and **deterrence capabilities**.
- Strengthens **A2/AD (Anti-Access/Area Denial)** capabilities in the Indian Ocean.
- Key asset against high-value, time-sensitive targets.
- Supports **Make in India** through higher indigenous content (70%+ in new variants).
- Forms a major part of India's defence **export push**; Philippines is first buyer.

**PYQ REFERENCE: (2023)**

**Q. Consider the following statements:**

- Ballistic missiles are jet-propelled at subsonic speeds throughout their flights, while cruise missiles are rocket-powered only in the initial phase of flight.
- Agni-V is a medium-range supersonic cruise missile, while BrahMos is a solid-fuelled intercontinental ballistic missile.

**Which of the statements given above is/are correct?**

- 1 only
- 2 only
- Both 1 and 2
- Neither 1 nor 2

**Source:** <https://www.thehindu.com/news/national/indonesian-ministers-delhi-visit-to-advance-brahmos-defence-partnership/article70295146.ece>

#### **47. INS Mahe**

**Q. Which one of the following is the best description of 'INS Mahe', that was in the news recently?**

- Amphibious warfare ship
- Anti-Submarine shallow water warfare vessel
- Torpedo launch and recovery vessel
- Nuclear-powered aircraft carrier

**Answer: (b) Anti-Submarine shallow water warfare vessel**

**Explanation:**

**In NEWS:** The Indian Navy commissioned INS Mahe

**INS Mahe:**

- First indigenously designed and built Mahe-class Anti-Submarine Warfare Shallow Water Craft (ASW-SWC). **Hence option (b) is correct.**
- Lead ship of eight vessels in her class.
- Over 80% indigenous content, reinforcing Atma Nirbhar Bharat and India's naval self-reliance.

**Design & Features:**

- Named after the historic coastal town of Mahe.
- Crest: Urumi (flexible sword) rising from stylised waves – symbolizing agility, precision, and lethal grace.
- Mascot: Cheetah, representing speed and focus.
- Motto: "Silent Hunters" – reflecting stealth, vigilance, and readiness.

**Combat Capability:**

- Advanced weapons, sensors, and communication systems for anti-submarine operations in coastal and shallow waters.
- Can detect, track, and neutralise sub-surface threats.
- Designed for prolonged shallow water operations.
- Integration of systems from BEL, L&T Defence, Mahindra Defence, NPOL, and 20+ MSMEs.

**Strategic Importance:**

- Strengthens coastal defence and the Indian Navy's ASW capabilities.
- Integrates with larger surface combatants, submarines, and aviation assets.
- Enhances near-sea dominance, maritime security, and multi-domain operational synergy with Army and Air Force.
- Supports joint operations, HADR, and amphibious missions.

**PYQ REFERENCE: (2016)**

**Q. Which one of the following is the best description of 'INS Astradharini', that was in the news recently?**

- (a) Amphibious warfare ship
- (b) Nuclear-powered submarine
- (c) Torpedo launch and recovery vessel**
- (d) Nuclear-powered aircraft carrier

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2193558>

**48. INS Sahyadri**

**Q. INS Sahyadri belongs to which class of Indian Navy warships?**

- (a) Kolkata-class
- (b) Shivalik-class
- (c) Nilgiri-class
- (d) Visakhapatnam-class

**Answer: (b) Shivalik-class**

**Explanation:**

**In NEWS:** Navy deploys INS Sahyadri for Malabar exercise

**INS Sahyadri:**

- INS Sahyadri is a **stealth guided-missile frigate** of the Indian Navy.

- It belongs to the **Shivalik-class (Project 17)**. **Hence option (b) is correct.**

- The ship was built by **Mazagon Dock Shipbuilders Ltd, Mumbai.**

- It was **commissioned on 21 July 2012.**

- The ship operates under the **Eastern Naval Command, Visakhapatnam.**

**Specifications:**

- Full-load displacement is around **6,200 tonnes.**
- Length is approximately **142.5 m** and beam **16.9 m.**
- It uses **CODOG propulsion** (2 diesel + 2 gas turbines) and can reach **32 knots.**

- INS Sahyadri has **stealth features:** reduced radar, infrared, and acoustic signatures.

- It is armed with **BrahMos anti-ship/land-attack missiles** and **Barak-1 surface-to-air missiles.**

**Roles & Capabilities**

- Roles include **anti-air, anti-surface, anti-submarine warfare,** long-range deployment, and escort missions.

- INS Sahyadri participates in multilateral naval exercises like **JAIMEX, Malabar, and Indo-French maritime drills.**

- It demonstrates India's capability in **indigenous warship design** and **"Make in India" defence initiatives.**

- Strategically, it enhances India's **blue-water navy capabilities** and presence in the **Indo-Pacific and Indian Ocean Region.**

**PYQ REFERENCE: (2016)**

**Q. Which one of the following is the best description of 'INS Astradharini', that was in the news recently?**

- (a) Amphibious warfare ship
- (b) Nuclear-powered submarine
- (c) Torpedo launch and recovery vessel**
- (d) Nuclear-powered aircraft carrier

**Source:**

<https://economictimes.indiatimes.com/news/defence/indian-navy-deploys-warship-ins-sahyadri-for-malabar-exercise/articleshow/125203921.cms?from=mdr>

**49. Sagar Kavach-02/25**

**Q. In the context of coastal security, which of the following was a specific objective of Sagar Kavach-02/25?**

- (a) Establishing a new maritime boundary between Maharashtra and Goa
- (b) Testing the efficiency of inter-agency coordination against maritime threats
- (c) Conducting a scientific survey of the western coastline
- (d) Enhancing fisheries regulation along the Konkan coast

**Answer: (b) Testing the efficiency of inter-agency coordination against maritime threats**

**Explanation:**

**In NEWS:** ICG conducts two-day coastal security exercise Sagar Kavach along Maharashtra & Goa coastline

**Sagar Kavach-02/25:**

- Sagar Kavach-02/25 was conducted along the Maharashtra and Goa coastline on 19–20 November 2025.

- The Indian Coast Guard led the 2-day coastal security exercise with participation from multiple central and state agencies.

- The exercise aimed to assess preparedness against threats posed by Anti-National Elements (ANEs) targeting coastal and offshore assets.

- It tested the efficiency of coordination among security stakeholders under the multi-agency coastal security mechanism. **Hence option (b) is correct.**

- More than 6,000 personnel and over 115 assets were deployed during the exercise.
- Assets included ICG ships, Dornier aircraft, Chetak helicopters, Air Cushion Vehicles, Marine Police boats, Customs vessels, and CISF craft.
- A total of 19 central agencies and 13 state agencies participated in the exercise.
- One major port and 21 minor ports also took part in coast-based drills and response activities.
- The exercise validated both sea-based and shore-based responses to simulated maritime security threats.
- Sagar Kavach-02/25 aimed to strengthen the multi-layered coastal security network on India's western coast.

jSource:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2192653>

### 50. Sintered rare-earth permanent magnets (REPMs)

**Q. Which of the following policy objectives does the REPM scheme support?**

1. Atmanirbhar Bharat
2. Net-Zero 2070 climate targets
3. Reducing India's import dependence in critical minerals
4. National Hydrogen Mission

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only
- (b) 1 and 4 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

**Answer: (a) 1, 2 and 3 only**

**Explanation:**

**In NEWS:**

- The Indian Union Cabinet has approved a scheme with a financial outlay of ₹7,280 crore to promote domestic manufacturing of sintered rare-earth permanent magnets (REPMs).
- It is the first-of-its-kind initiative in India aimed at building a fully integrated REPM manufacturing ecosystem.

**Main Objectives & What the Scheme Will Do**

- Establish a production capacity of 6,000 metric tonnes per annum (MTPA) of REPMs.
- Support the full value chain: from rare-earth oxides → metals → alloys → finished permanent magnets.
- Provide financial incentives: of the total outlay, ₹6,450 crore will be in the form of sales-linked incentives over five years; and ₹750 crore as capital subsidy for setting up plants.
- Allocate capacity to five beneficiaries chosen through a global competitive bidding — each beneficiary can get up to 1,200 MTPA.
- The scheme will span 7 years: first a 2-year gestation period to set up manufacturing facilities, followed by 5 years of incentive disbursement based on sales.

**Strategic Significance**

- REPMs (rare-earth permanent magnets) are critical inputs for modern technologies: electric vehicles (EVs), renewable energy (wind turbines), electronics, aerospace, defence, medical devices, etc.
- India currently depends heavily on imports for REPMs.
- The scheme aims to reduce import dependence by building domestic supply-chain resilience.

- The scheme aligns with larger policy goals: self-reliant India (Atmanirbhar Bharat), building technological and industrial base, and supporting Net-Zero 2070 climate/energy targets. **Hence 1, 2, and 3 are correct.**

- With growing demand for EVs and clean energy, domestic demand for magnets is expected to double by 2030, making this a timely strategic push.

**PYQ REFERENCE: (2025)**

**Q. Consider the following statements:**

**Statement I:** Some rare earth elements are used in the manufacture of flat television screens and computer monitors.

**Statement II:** Some rare earth elements have phosphorescent properties.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I
- (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I
- (c) Statement-I is correct, but Statement-II is incorrect
- (d) Statement-I is incorrect, but Statement II is correct

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2194684>

### 51. Vanadium Redox Flow Battery

**Q. Consider the following:**

1. 100% Depth of Discharge
2. Non-flammable Electrolyte
3. Rapid reaction in milliseconds
4. No toxic heavy metals or rare elements
5. Operation across wide temperature ranges

**How many of the above are the advantages of Vanadium Redox Flow Batteries?**

- (a) Only two
- (b) Only three
- (c) Only four
- (d) All the five

**Answer: (d) All the five**

**Explanation:**

**In NEWS:** Hon'ble Minister of Power, Housing & Urban Affairs, Shri Manohar Lal inaugurates India's First MWh-Scale Vanadium Flow Battery at NTPC NETRA

**Vanadium Redox Flow Battery (VRFB):**

- A Vanadium Redox Flow Battery (VRFB) is a type of rechargeable flow battery that stores energy in liquid electrolytes containing vanadium ions in different oxidation states.
- It's used for large-scale energy storage, especially for renewable energy (solar, wind) integration and grid stability.

**Applications of Vanadium Redox Flow Battery (VRFB):**

- Grid-Scale Energy Storage
- Renewable Energy Integration (Solar and Wind)
- Peak Shaving and Load Leveling
- Backup Power Supply
- Microgrids and Remote Area Power Systems
- Frequency Regulation and Voltage Support
- Industrial and Commercial Energy Management
- Utility-Scale Energy Storage Projects

- Data Centers and Critical Infrastructure Support
- Off-Grid and Islanded Power Systems

#### Key Advantages of VRFBs

**1. Long Lifespan:** Can last 20–25 years or >15,000–20,000 charge-discharge cycles.

Electrolyte and cell components do not degrade easily, unlike lithium-ion cells.

**2. 100% Depth of Discharge:** VRFBs can be fully discharged (0% state of charge) without damaging the battery or reducing its lifespan. This makes all stored energy usable.

**3. High Safety:** Electrolyte is non-flammable and operates at ambient temperature and pressure. No risk of thermal runaway, explosion, or fire (unlike lithium-ion).

**4. Scalable and Flexible Design:** Energy (MWh) depends on tank size, and power (MW) depends on stack size — they can be sized independently. This makes it ideal for large-scale (grid) and long-duration energy storage.

**5. Long-Duration Storage Capability:** Excellent for storing energy for 4 to 10+ hours, supporting renewable integration and grid stability.

**6. Low Maintenance and Easy Refurbishment:** Most parts (pumps, tanks, membranes) are easy to replace or recycle. Electrolyte doesn't degrade, it can be reused indefinitely.

**7. Environmentally Friendly:** Uses vanadium, which can be recycled from industrial waste or reused from the electrolyte after battery life ends. No toxic heavy metals or rare elements like cobalt or nickel.

**8. Stable Performance:** Power output doesn't degrade over time with consistent voltage and capacity even after many cycles. Can operate across wide temperature ranges.

**9. Rapid Response Time:** Reacts in milliseconds, making it suitable for frequency regulation and voltage support on electrical grids.

**10. Low Levelized Cost Over Lifetime:** While initial cost is higher, the long life and low operating cost make the total cost per kWh (over 20+ years) very competitive for stationary storage.

#### PYQ REFERENCE: (2024)

**Q. Consider the following:**

1. Battery storage
2. Biomass generators
3. Fuel cells
4. Rooftop solar photovoltaic units

**How many of the above are considered "Distributed Energy Resources"?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2188809>

#### 52. Ammonium Nitrate

**Q. Which among the following can become highly explosive when mixed with fuel oil?**

- (a) Ammonium nitrate
- (b) Sodium chloride
- (c) Calcium carbonate
- (d) Potassium sulfate

**Answer: (a) Ammonium nitrate**

**Explanation:**

**In NEWS:**

● The Delhi Police's Special Cell is investigating a possible connection between the **Red Fort blast** and a **358 kg ammonium nitrate haul** seized in **Faridabad**.

● Forensic analysis aims to determine whether the same explosive chemical was used in both cases.

● This case revives concerns about **industrial chemicals being diverted for terror use**, a key issue in India's **internal security and counter-terrorism framework**.

**Ammonium Nitrate - Explosive nature:**

● Not explosive by itself — becomes highly explosive when mixed with fuel oil or other accelerants like Ammonium Nitrate Fuel Oil (ANFO). **Hence option (a) is correct.**

● Can cause massive damage, as seen in **Beirut (2020)** and several Indian blasts (Hyderabad 2013, Pune 2010).

**PYQ REFERENCE: (2025)**

**Q. . What is the common characteristic of the chemical substances generally known as CL-20, HMX and LLM-105, which are sometimes talked about in media?**

- (a) These are alternatives to hydrofluorocarbon refrigerants
- (b) These are explosives in military weapons
- (c) These are high-energy fuels for cruise missiles
- (d) These are fuels for rocket propulsion

Source: <https://indianexpress.com/article/cities/delhi/red-fort-blast-case-why-investigators-are-tracking-ammonium-nitrate-link-between-delhi-blast-and-faridabad-haul-10362059/>

#### 53. Neurotechnology

**Q. "Neurotechnology" has applications in which of the following?**

1. Treating Parkinson's disease via deep brain stimulation
2. Brain-controlled prosthetic limbs
3. Sleep improvement tools
4. Monitoring productivity at workplace
5. Brain-controlled drones

**Select the correct answer using the code given below.**

- (a) 1, 3 and 4 only
- (b) 2, 3 and 5 only
- (c) 1 and 4 only
- (d) 1, 2, 3, 4 and 5

**Answer: (d) 1, 2, 3, 4 and 5**

**Explanation:**

**In NEWS:** What are UNESCO's new guidelines for the use of neurotechnology?

**Neurotechnology:**

● Neurotechnology refers to **tools, devices, and methods that interact directly with the brain or nervous system** to monitor, assess, repair, or enhance neural activity.

● It includes technologies that:

- Read brain signals (neural recording)
- Write or modify brain activity (neural stimulation)
- Interface the brain with computers or machines (BCIs/BNIs)
- Map or analyze the structure and function of the nervous system
- Its Scope includes monitoring, stimulation, BCIs, neuroprosthetics, neuroinformatics, consumer devices, defence uses.

### Applications of Neurotechnology

#### Medical Applications

1. Treatment of Neurological Disorders - Parkinson's disease (via Deep Brain Stimulation), Epilepsy, Essential tremor and Stroke rehabilitation
2. Psychiatric Interventions - Depression, OCD, PTSD and Addiction treatment (experimental)
3. Restoring Lost Abilities - Speech restoration for people with paralysis, brain-controlled prosthetic limbs and vision restoration (retinal implants)
4. Diagnosis & Monitoring - Detecting Alzheimer's, dementia, brain tumors, Monitoring sleep disorders and detecting early signs of mental health issues

#### Non-Medical Applications

1. Education & Cognitive Enhancement - Improving attention & memory, Neurofeedback for learning and brain-state monitoring in classrooms (controversial)
2. Consumer Wellness - Stress or focus monitoring headsets, Meditation neurodevices and sleep improvement tools
3. Brain-Machine Interaction - Gaming controlled by brain signals and VR/AR integration for immersive experiences
4. Workplace Applications (Ethically Sensitive) - Monitoring fatigue, attention, productivity

#### Research & Scientific Applications

1. Understanding brain circuits
2. Brain mapping projects
3. AI models inspired by neural activity
4. Drug testing using neural simulations

#### Security & Defense (High-risk segment)

1. Enhancing soldier cognition
  2. Detecting deception or hostile intent (experimental)
  3. Brain-controlled drones or exoskeletons
- UNESCO recommends strict regulation here.

**Hence all are correct.**

#### UNESCO's new guidelines for neurotechnology:

1. UNESCO stresses strong protection of **mental privacy**, treating neural data as highly sensitive and requiring explicit, informed consent for its use.
2. The guidelines uphold **freedom of thought and cognitive autonomy**, prohibiting coercive or manipulative uses of neurotechnology.
3. Non-therapeutic or enhancement uses, especially in workplaces and for children or other vulnerable groups, should be **strictly limited**.
4. Neurotechnology that can influence behaviour or emotions must be **clearly regulated**, with full transparency about how brain data is collected and used.
5. Countries should ensure **equitable access** to therapeutic neurotechnologies so they do not deepen social inequalities.
6. Developers and companies must follow **safety, accountability, and privacy-by-design** principles, with mechanisms for grievance and redress.
7. Governments are encouraged to integrate these guidelines into national laws and create **oversight systems** for research, commercial products, and consumer neurotech.

#### PYQ REFERENCE: (2018)

**Q. "3D printing" has applications in which of the following?**

1. Preparation of confectionery items
2. Manufacture of bionic ears
3. Automotive industry
4. Reconstructive surgeries

5. Data processing technologies

**Select the correct answer using the code given below.**

- (a) 1, 3 and 4 only
- (b) 2, 3 and 5 only
- (c) 1 and 4 only
- (d) 1, 2, 3, 4 and 5**

**Source:** <https://www.thehindu.com/sci-tech/science/what-are-the-new-unesco-recommendations-for-neurotechnology-use/article70267926.ece>

#### 54. 'Enshittification'

**Q. The term 'Enshittification', recently seen in the news refers to**

- (a) The gradual improvement of a product or service over time due to technological innovation.
- (b) The systematic decline in quality of a product or digital platform as it prioritizes profit over user experience.
- (c) A government policy to regulate digital platforms for better consumer protection.
- (d) A software engineering process that automatically updates legacy code for efficiency.

**Answer: (b) The systematic decline in quality of a product or digital platform as it prioritizes profit over user experience.**

**Explanation:**

**In NEWS:** Are your favourite social platforms being degraded?

- 'Enshittification' is a term increasingly being used to describe how your digital experiences, services, and transactions have become worse over time. However, the word's creator says this is a deliberate process, and that pushing back is possible

#### Enshittification:

Enshittification refers to the gradual degradation of a digital platform or service over time, often as it shifts focus from serving users to maximizing profits. **Hence option (b) is correct.**

#### Stages of Enshittification:

- **Bait:** The platform initially prioritizes users, offering a high-quality experience to attract a large audience.
- **Switch:** Once the user base is established, the platform starts favoring business customers (advertisers, content creators) over regular users.
- **Extraction:** The platform maximizes profit from both users and business customers, often by increasing ads, fees, or reducing user-friendly features.

#### Effects on Users:

- More intrusive advertisements.
- Reduced quality of service and user experience.
- Features designed to increase monetization rather than usability.

#### Effects on Business Customers:

- Diminishing returns unless they pay more or adapt to new monetization strategies.
- Favoritism towards paid promotions or premium users.

#### Significance:

- Highlights the tension between user interests and profit motives on digital platforms.
- Shows the importance of competition, regulation, and alternatives to prevent quality decline.

#### PYQ REFERENCE: (2016)

**Q. In the context of the developments in Bioinformatics, the term 'transcriptome', sometimes seen in the news, refers to**

- (a) a range of enzymes used in genome editing
- (b) the full range of mRNA molecules expressed by an organism**

- (c) the description of the mechanism of gene expression  
(d) a mechanism of genetic mutation taking place in cells

Source: <https://www.thehindu.com/sci-tech/technology/are-your-favourite-social-platforms-being-degraded/article70228459.ece>

**ENVIRONMENT AND AGRICULTURE**

**55. Himalayan black bears**

**Q. Consider the following statements regarding the Himalayan Black Bear:**

1. It is found only in the higher Himalayan region above 3,500 metres.
2. It undergoes long, deep hibernation similar to polar bears.
3. Under the Wildlife Protection Act, 1972, it is classified as 'vermin' under Schedule V.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only  
(b) 3 only  
(c) 2 and 3 only  
(d) None of these statements

**Answer: (d) None of these statements**

**Explanation:**

**In NEWS:** Shoot-at-sight orders for Himalayan black bears in Uttarakhand district as global warming messes up ursids' hibernation schedules

- In three months, the state recorded 71 bear attacks, killing 6 humans and 60 livestock.

**Himalayan Black Bear:**

- The Himalayan black bear (*Ursus thibetanus laniger*) is a subspecies of the **Asiatic black bear**.
- It is found in Kashmir, Himachal Pradesh, Uttarakhand, Nepal, and Arunachal Pradesh.
- The species also inhabits warmer **foothill forests (not above 3,500 m)**, including **Rajaji NP and Corbett TR. Hence statement 1 is incorrect.**
- It is listed as **Vulnerable** on the **IUCN Red List**.
- Under the **Wildlife Protection Act, 1972**, it is protected under **Schedule I. Hence statement 3 is incorrect.**
- Climate change induced warm winters have **disrupted bear hibernation cycles**.
- Himalayan black bears' hibernation is **shallow and shorter** than that of polar bears. **Hence statement 2 is incorrect.**
- In warmer regions, Himalayan black bears **do not hibernate**.
- Human - bear conflict has increased steadily over the last 25 years in Uttarakhand.
- A total of **1,972 people** have been attacked by bears in Uttarakhand since 2000.
- Similar climate-linked bear conflicts are reported from Japan and Canada.



**PYQ REFERENCE: (2018)**

**Q. The Red Panda is naturally found in which of the following regions?**

1. Eastern Himalayas
2. Central China
3. Southern India

**Select the correct answer using the code given below:**

- (a) 1 only  
(b) 1 and 2 only  
(c) 2 and 3 only  
(d) 1, 2 and 3

Source: <https://www.downtoearth.org.in/climate-change/shoot-at-sight-orders-for-uttarakhands-himalayan-black-bears-as-global-warming-messes-up-ursids-hibernation-schedules>

**56. Rhesus Macaque**

**Q. Consider the following statements:**

**Statement-I:** Under Schedule II listing of the Wildlife (Protection) Amendment Act 2022, hunting or illegal capturing or trading of Rhesus Macaque are strictly prohibited without exceptions.

**Statement-II:** The species is facing increasing human-monkey conflict, trafficking, and ecological role disruptions, thus necessitating stricter legal safeguards.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I  
(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I  
(c) Statement-I is correct but Statement-II is incorrect  
(d) Statement-I is incorrect but Statement-II is correct

**Answer: (d) Statement-I is incorrect but Statement-II is correct**

**Explanation:**

**In NEWS:** Panel seeks higher protection for Rhesus Macaque under Wildlife Act





#### Rhesus Macaque - Protection under Wildlife (Protection) Act, 1972

- The **Standing Committee of the National Board for Wildlife (NBWL)** has recommended **restoring higher protection** to the *Rhesus Macaque* (*Macaca mulatta*) under the Wildlife (Protection) Act, 1972.
- The Rhesus Macaque is one of the **most widespread primate species** in India, found across northern and central parts of the country.
- It was earlier listed in **Schedule II, Part I**, of the Wildlife (Protection) Act. After the **2022 Amendment** to the Act, it was **shifted to Schedule IV**, which provides a **lower degree of legal protection**.
- The recent panel recommendation seeks to **move it back to Schedule II** to ensure **stricter penalties** against illegal capture, trade, and cruelty.
- Several **States such as Madhya Pradesh, Gujarat, and Uttarakhand** have supported the proposal for enhanced protection.
- Some **States like Assam, Uttar Pradesh, and Punjab** have opposed it, citing the **species' abundance and human-monkey conflict**.
- The NBWL directed **States to prepare site-specific management and mitigation plans** for monkey-human conflict areas.
- The **Wildlife Institute of India (WII)** has been asked to undertake **baseline population and distribution studies** of the species.
- The panel also recommended **strengthening rescue and rehabilitation centres** to handle conflict and rescued animals.
- The species is currently listed as **"Least Concern"** on the **IUCN Red List**, but is under pressure from **urbanisation, habitat loss, and illegal trade**.
- The proposal aims to strike a balance between **animal welfare, ecological protection, and human safety**.
- Higher protection will help regulate **research use, captive management, and inter-state movement** of the species.
- The move reflects growing recognition that **abundant species can still face welfare and conservation issues** if poorly managed.
- The decision will take effect only after **notification by the Ministry of Environment, Forest and Climate Change (MoEFCC)**.

#### PYQ REFERENCE: (2023)

**Q. Consider the following statements :**

**Statement-I:** Marsupials are not naturally found in India.

**Statement-II:** Marsupials can thrive only in montane grasslands with no predators.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I  
 (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I  
 (c) **Statement-I is correct but Statement-II is incorrect**  
 (d) Statement-I is incorrect but Statement-II is correct

Source: <https://indianexpress.com/article/india/panel-seeks-higher-protection-for-rhesus-macaque-under-wildlife-act-10352785/#:~:text=The%20standing%20committee%20of%20the.protection%2C%20enforcement%20against%20illegal%20capture%2C>

#### 57. The Great Indian Bustard

**Q. With reference to the Great Indian Bustard, which of the following statements are correct?**

1. The Great Indian Bustard is a flagship species and acts as a barometer of grassland health.
2. Due to the species' smaller population size, the International Union for Conservation of Nature (IUCN) has categorised GIBs as critically endangered

**Select the correct answer using the code given below:**

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

**Answer: (c) Both 1 and 2**

**Explanation:**

**In NEWS:** SC judge: imported ideas may not save endangered species

#### The Great Indian Bustard (GIB)

- The **Great Indian Bustard (Ardeotis nigriceps)** is one of the **largest and heaviest flying birds in the world**, endemic to the **Indian subcontinent**.
- It is a **flagship species of India's grasslands**, symbolizing the health and sustainability of these fragile ecosystems. **Hence statement 1 is correct.**

Feature	Details
<b>Habitat</b>	Arid and semi-arid grasslands; dry plains of western India (esp. Rajasthan, Gujarat, Maharashtra, Karnataka, Andhra Pradesh).
<b>Behavior</b>	<b>Diurnal</b> (active during daytime); <b>terrestrial</b> — prefers walking and running over flying.
<b>Diet</b>	Omnivorous — feeds on grass seeds, insects, small reptiles (lizards), and berries.
<b>Breeding</b>	Lays <b>one egg per season</b> ; incubation by the female; slow breeding rate hampers recovery.
<b>Status</b>	State bird of <b>Rajasthan</b> (largest remaining population). <b>Hence statement 2 is correct.</b>
<b>Ecological Role</b>	<b>Flagship species</b> and <b>barometer of grassland health</b> .

#### Other Bustard Species Found in India

1. **Great Indian Bustard** (*Ardeotis nigriceps*) — endemic, largest species.
2. **Lesser Florican** (*Sypheotides indicus*) — smallest and highly endangered.
3. **Bengal Florican** (*Houbaropsis bengalensis*) — seen in Assam, UP, and Nepal Terai.
4. **MacQueen's Bustard** (*Chlamydotis macqueeni*) — migratory, from Central Asia to western India.

### Conservation Status

Convention/Act	Status
IUCN Red List	Critically Endangered
Wildlife (Protection) Act, 1972	Schedule I
CITES (Convention on International Trade in Endangered Species)	Appendix I
CMS (Convention on Migratory Species)	Appendix I

### Conservation Efforts

#### 1. National-Level Measures

- **Project Great Indian Bustard (2015):** Implemented under the **Integrated Development of Wildlife Habitats (IDWH)** scheme of the **Ministry of Environment, Forest and Climate Change (MoEFCC)**. Focus on habitat conservation, breeding, and reducing mortality.
- **Supreme Court Directive (2021):** Ordered **undergrounding of power transmission lines** in priority GIB habitats in Rajasthan and Gujarat to prevent electrocution.
- **Breeding and Hatchery Programs:**
  - Initiated at **Sam and Sorsan (Rajasthan)** under the **Great Indian Bustard Captive Breeding Programme**.
  - **First successful artificial insemination (Oct 2024)** produced chick "**Arambh**" — a breakthrough for genetic diversity.
- **Eco-sensitive Zones & Protected Areas:**
  - Desert National Park (Rajasthan) – main habitat.
  - Kutch Bustard Sanctuary (Gujarat)
  - Nannaj (Maharashtra)
  - Karera (Madhya Pradesh)
  - Rollapadu (Andhra Pradesh)

#### PYQ REFERENCE: (2020)

**Q. With reference to India's Desert National Park, which of the following statements are correct?**

1. It is spread over two districts.
2. There is no human habitation inside the Park.
3. It is one of the natural habitats of the Great Indian Bustard.

**Select the correct answer using the code given below:**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only**
- (d) 1, 2 and 3

Source: <https://www.thehindu.com/sci-tech/energy-and-environment/imported-ideas-like-inter-generational-equity-are-anthropocentric-may-not-protect-endangered-species-justice-narasimha/article70268280.ece>

### 58. Vultures in India

**Q. Consider the following statements:**

1. All Indian vulture species are listed under Schedule I of the Wildlife (Protection) Act, 1972, providing the highest protection.
2. The National Action Plan for Vulture Conservation mandates the establishment of at least one vulture-safe zone (VSZ) in each state.
3. India has the highest vulture diversity in the world after Africa.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only
- (b) 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (d) 1, 2 and 3**

**Explanation:**

**In NEWS:** Vultures disappear from 72% of historical nesting sites, WII assessment reveals

#### Vultures in India

- Vultures are **scavenging raptors** crucial for maintaining ecosystem health by feeding on animal carcasses, thus **preventing disease spread**.
- India was once home to **~4 crore vultures (1980s)**, but their populations **crashed by over 95%** in the 1990s–2000s due to toxic veterinary drugs.
- India has the **highest vulture diversity in the world** after Africa.  
**Hence statement 3 is correct.**

#### Vulture Species in India

There are **9 species** of vultures recorded in India:

##### Resident Species (6)

1. Oriental White-backed Vulture (*Gyps bengalensis*)
2. Long-billed Vulture (*Gyps indicus*)
3. Slender-billed Vulture (*Gyps tenuirostris*)
4. Red-headed (King) Vulture (*Sarcogyps calvus*)
5. Egyptian Vulture (*Neophron percnopterus*)
6. Indian Griffon (*Gyps fulvus*)

##### Migratory Species (3)

7. Eurasian Griffon (*Gyps fulvus*)
8. Himalayan Griffon (*Gyps himalayensis*)
9. Cinereous Vulture (*Aegypius monachus*)

#### Conservation Status (IUCN Red List)

Species	IUCN Status
Oriental White-backed Vulture	<b>Critically Endangered</b>
Slender-billed Vulture	<b>Critically Endangered</b>
Long-billed Vulture	<b>Critically Endangered</b>
Red-headed Vulture	<b>Critically Endangered</b>
Egyptian Vulture	<b>Endangered</b>
Himalayan Griffon	<b>Near Threatened</b>

#### Causes of Decline

1. **Diclofenac poisoning:**
  - Veterinary drug used to treat livestock.
  - Vultures feeding on carcasses of treated animals suffer **kidney failure**.
  - Caused >95% population crash in Gyps species.
2. **Habitat loss and food scarcity** (due to improved carcass disposal).
3. **Electrocution and collision** with power lines and wind turbines.
4. **Poisoned bait** used by poachers.
5. **Inbreeding and low breeding rate** in small populations.

### Conservation Efforts

#### (a) Legal Protection

● All Indian vulture species are listed under **Schedule I of the Wildlife (Protection) Act, 1972**, providing the **highest protection**. **Hence statement 1 is correct.**

● Diclofenac use was **banned for veterinary purposes in 2006**; alternatives like **meloxicam** are promoted.

#### (b) National Policies

● **National Action Plan for Vulture Conservation (2020-2025):**

○ Establish at least **one vulture-safe zone (VSZ)** in each state. **Hence statement 2 is correct.**

○ Regulate veterinary drugs toxic to vultures (e.g., ketoprofen, aceclofenac).

○ Expand **vulture breeding centres** to 8-10 across India.

○ Conduct periodic surveys and tagging.

● **Vulture Safe Zones (VSZs):** Established around breeding sites (e.g., Pinjore, Rajabhatkhawa, Rani).

#### (c) Captive Breeding Centres

● First established in **Pinjore, Haryana** (BNHS & Forest Dept.)

● Other centres: **Rajabhatkhawa (WB), Rani (Assam), Bhopal (MP)**.

● Aim to breed and reintroduce vultures into safe wild habitats.

#### PYQ REFERENCE: (2012)

**Q. Vultures which used to be very common in Indian countryside some years ago are rarely seen nowadays. This is attributed to**

- (a) the destruction of their nesting sites by new invasive species  
**(b) a drug used by cattle owners for treating their diseased cattle**  
 (c) scarcity of food available to them  
 (d) a widespread, persistent and fatal disease among them

Source: <https://www.downtoearth.org.in/wildlife-biodiversity/vultures-disappear-from-72-of-historical-nesting-sites-wii-assessment-reveals>

### 59. African grey parrot

**Q. With reference to the African Grey Parrot, consider the following statements:**

- It is native to the tropical forests of West and Central Africa.
- It is listed as Critically Endangered on the IUCN Red List.
- Habitat loss is the only major threat to its survival in the wild.

**How many of the above statements are correct?**

- (a) Only one  
 (b) Only two  
 (c) All three  
 (d) None

**Answer: (a) Only one**

**Explanation:**

**In NEWS:** State Forest Departments across India have no record of African grey parrot trade, reveal RTI responses

#### African Grey Parrot

● The African Grey Parrot (*Psittacus erithacus*) is native to the tropical rainforests of West and Central Africa. **Hence statement 1 is correct.**

● It is globally known for its high cognitive ability and advanced mimicry skills.

● The species is listed as Endangered on the IUCN Red List due to habitat loss and extensive trapping for the pet trade. **Hence statement 2 is incorrect.**

● It is included under CITES Appendix I, which prohibits international commercial trade of wild-caught specimens.

● The major threats to the species are illegal wildlife trade, habitat destruction, and deforestation in Central African countries. **Hence statement 3 is incorrect.**

● Key range countries include the Democratic Republic of Congo, Cameroon, Ghana, and Côte d'Ivoire.

● The African grey parrot plays an important ecological role as a seed disperser in tropical forests.



● **Two main subspecies are recognized:**

- Congo African Grey (*Psittacus erithacus erithacus*)  
 ○ Timneh African Grey (*Psittacus timneh*)  
 ● Timneh Grey Parrot is smaller and darker, and is found primarily in West Africa (e.g., Sierra Leone, Liberia).  
 ● Population decline has been particularly severe in Ghana, where numbers have reduced by over 90% in some areas.  
 ● Many African countries have imposed export bans, but illegal trade routes still operate through Central and West Africa.  
 ● Conservation efforts include community-based forest protection, captive-breeding regulation, and strengthening CITES enforcement.

#### PYQ REFERENCE: (2025)

**Q. Regarding Peacock tarantula (Gooty tarantula), consider the following statements:**

- It is an omnivorous crustacean.
- Its natural habitat in India is only limited to some forest areas.
- In its natural habitat, it is an arboreal species.

**Which of the statements given above is/are correct?**

- (a) I only  
 (b) I and III  
 (c) II only  
**(d) II and III**

Source: <https://www.thehindu.com/sci-tech/energy-and-environment/forest-departments-across-india-have-no-record-of-african-grey-parrot-trade-reveal-rti-responses/article70306499.ece>

### 60. Ginkgo-toothed beaked whales

**Q. Consider the following statements regarding the Ginkgo-toothed Beaked Whale:**

- It is a deep-diving cetacean species belonging to the family Ziphiidae.
- It is listed as Endangered on the IUCN Red List.
- It is known primarily from stranding records rather than live sightings.

Which of the above statements is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (c) 1 and 3 only**

**Explanation:**

**In NEWS:** What are ginkgo-toothed beaked whales, spotted in the wild by researchers for the first time?

**Ginkgo-toothed beaked whales:**

- They are a deep-diving cetacean species belonging to the family **Ziphiidae**. **Hence statement 1 is correct.**
- Scientifically known as **Mesoplodon ginkgodens**.
- Named due to their **ginkgo leaf shaped teeth**, present mainly in adult males.
- Distribution is **poorly known**, but strandings indicate presence in **Indo-Pacific tropical and warm-temperate waters**.
- Mostly known from **strandings**, as live sightings are extremely rare. **Hence statement 3 is correct.**
- The diet consists primarily of **deep-sea squid** along with fish and crustaceans.
- Classified as **Data Deficient (DD)** by the IUCN Red List. **Hence statement 2 is incorrect.**
- Major threats include **bycatch, marine noise pollution, and naval sonar**.
- Very limited information exists on their **population, breeding, and behavior**.



Source: <https://indianexpress.com/article/explained/ginkgo-toothed-beaked-whales-10372400/>

### 61. Cuban gar

**Q. Consider the following statements regarding the Cuban gar:**

1. It is listed as Endangered on the IUCN Red List.
2. It is an endemic brackishwater species found mainly in the Zapata Swamp of Cuba.
3. It is capable of breathing atmospheric oxygen and moving short distances on land.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (d) None**

**Explanation:**

**In NEWS:** A fish as old as dinosaurs: Cuban scientists race against time to save it

- The Cuban gar (*Atractosteus tristoechus*) is listed as **Critically Endangered** on the IUCN Red List. **Hence statement 1 is incorrect.**
- It is an endemic **freshwater** fish species found primarily in the Zapata Swamp of Cuba. **Hence statement 2 is incorrect.**
  - Centuries of exploitation for meat and other uses have contributed significantly to its population decline.
  - Habitat loss due to wetland degradation and human activities has reduced the natural breeding grounds of the Cuban gar.
- The introduction of the African walking catfish in 1999 has severely impacted the Cuban gar species through competition and predation.
- The **African walking catfish** is an invasive species capable of breathing atmospheric oxygen and moving short distances on land, making it highly disruptive to native ecosystems. **Hence statement 3 is incorrect.**
- The once-pristine Zapata Swamp ecosystem has been ecologically stressed due to invasive species, habitat alteration, and overuse.



**PYQ REFERENCE: (2025)**

**Q. Regarding Peacock tarantula (Gooty tarantula), consider the following statements:**

- I. It is an omnivorous crustacean.
- II. Its natural habitat in India is only limited to some forest areas.
- III. In its natural habitat, it is an arboreal species.

**Which of the statements given above is/are correct?**

- (a) I only
- (b) I and III
- (c) II only
- (d) II and III

Source: <https://www.indiatoday.in/science/story/cuba-manjuari-cuban-gar-cienaga-zapata-swamp-restoration-endangered-iucn-red-list-invasive-catfish-hatchery-reintroduction-2825736-2025-11-25>

### 62. The Finn's Weaver

**Q. Consider the following statements regarding The Finn's Weaver:**

1. It is endemic to the Indian subcontinent.
2. It typically inhabits dry scrub forests and rocky slopes.
3. It is listed as Vulnerable on the IUCN Red List.

**Which of the statements given above are correct?**

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

**Answer: (b) 1 and 3 only**

**Explanation:**

**In NEWS:** Extinction Alert: The Finn's Weaver is silently disappearing from the marshy lowlands of the Terai

**The Finn's Weaver**

1. The Finn's Weaver (*Ploceus megarhynchus*) belongs to the Ploceidae family.
2. It is commonly known as Finn's Baya.
3. The species is endemic to the Indian subcontinent. **Hence statement 1 is correct.**
4. Major distribution includes Uttar Pradesh, Bihar, Assam (Brahmaputra Valley), and the Terai region of Nepal.
5. The bird prefers wet grassland habitats, marshes, riverine floodplains, and tall grass ecosystems. **Hence statement 2 is incorrect.**
6. The Finn's Weaver builds intricately woven nests suspended from tall grasses.
7. Males construct the nest to attract females during the breeding season.
8. Breeding mostly occurs during the monsoon season (July-September) in northern India.
9. The species is primarily granivorous, feeding on seeds and grains; insects are consumed during breeding.
10. It is listed as Vulnerable (VU) on the IUCN Red List. **Hence statement 3 is correct.**
11. Habitat loss due to agriculture, burning of grasslands, and wetland drainage are major threats.
12. The species exists in two subspecies — Eastern and Western Finn's Weaver.
13. Overgrazing and fragmentation of tall grass ecosystems reduce suitable breeding areas.
14. Conservation measures include floodplain grassland protection, regulated burning, and monitoring of breeding colonies.

**PYQ REFERENCE: (2020)**

**Q. With reference to India's biodiversity, Ceylon frogmouth, Coppersmith barbet, Gray-chinned miniyet and White-throated redstart are**

- (a) Birds
- (b) Primates
- (c) Reptiles
- (d) Amphibians

**Source:** <https://www.downtoearth.org.in/wildlife-biodiversity/extinction-alert-the-finns-weaver-is-silently-disappearing-from-the-marshy-lowlands-of-the-terai>

**63. Pilia malenadu**

**Q. The species Pilia malenadu recently seen in the news is:**

- (a) A newly discovered orchid from Arunachal Pradesh
- (b) A new species of jumping spider from Karnataka
- (c) A new amphibian species from Western Ghats
- (d) A cave-dwelling fish from Meghalaya

**Answer: (b) A new species of jumping spider from Karnataka**

**Explanation:**

**In NEWS:** Researchers discover new species of spider in a Chikkamagaluru village, name it after 'Malenadu'

**Pilia malenadu:**

- *Pilia malenadu* is a newly discovered species of jumping spider belonging to the family Salticidae. **Hence option (b) is correct.**
- It was discovered in the Malenadu region of Karnataka, part of the central Western Ghats, a UNESCO biodiversity hotspot.

- The species was described in 2025 by Indian arachnologists, marking the **rediscovery of the genus Pilia after 123 years.**
- The name "malenadu" refers to the **hilly and rainy region of Karnataka**, known for rich biodiversity and evergreen forests.
- It represents the **first female specimen** ever recorded for the genus *Pilia*.
- The spider was found on **Memecylon plants**, in **moist evergreen forest habitats**, showing micro-habitat specialization.
- The discovery underscores the **ecological importance of Western Ghats**, highlighting the need for **species documentation and habitat conservation.**
- The find contributes to India's **taxonomic diversity records** and supports **in-situ conservation efforts** under the **Convention on Biological Diversity (CBD)** framework.



**PYQ REFERENCE: (2025)**

**Q. Regarding Peacock tarantula (Gooty tarantula), consider the following statements:**

- I. It is an omnivorous crustacean.
- II. Its natural habitat in India is only limited to some forest areas.
- III. In its natural habitat, it is an arboreal species.

**Which of the statements given above is/are correct?**

- (a) I only
- (b) I and III
- (c) II only
- (d) II and III

**Source:**

<https://www.thehindu.com/news/national/karnataka/researchers-discover-new-species-of-spider-in-a-chikkamagaluru-village-name-it-after-malenadu/article70236081.ece#:~:text=A%20team%20of%20researchers%20exploring,the%20place%20it%20was%20found.>

**64. Red Sanders**

**Q. With reference to 'Red Sanders' Consider the following statements:**

1. Red Sanders grows extensively in the Western Ghats due to high rainfall.
2. This species prefers moist tropical evergreen conditions.

**Which of the statements given above is/are correct?**

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

**Answer: (d) Neither 1 nor 2**

**Explanation:**

**In NEWS:** NBA releases ₹39.84 crore to Andhra Pradesh for Red Sanders conservation

**Red Sanders:**

● Red Sanders (*Pterocarpus santalinus*) is endemic to the dry deciduous forests of the Eastern Ghats, mainly Andhra Pradesh.

**Hence both the statements are incorrect.**

- It is classified as Endangered on the IUCN Red List.
- It is listed under CITES Appendix II, making its international trade strictly regulated.
- India imposes an export ban, except through government-authorized auctions.
- Wood is valued for its deep red color (santalin pigment), durability, and cultural demand in East Asia.
- It is among India's most smuggled forest products, driven by high black-market prices.
- AP has formed a Red Sanders Anti-Smuggling Task Force (RSASTF).

**PYQ REFERENCE: (2024)**

**Q. Consider the following :**

1. Cashew
2. Papaya
3. Red sanders

**How many of the above trees are actually native to India?**

- (a) Only one  
(b) Only two  
(c) All three  
(d) None

Source: <https://ddnews.gov.in/en/nba-releases-%e2%82%b939-84-crore-to-andhra-pradesh-for-red-sanders-conservation/>

**65. Pambadum Shola National Park**

**Q. The Pambadum Shola National Park consisting of evergreen montane forests interspersed with grasslands is located in which among the following states?**

- (a) Tamil Nadu  
(b) Kerala  
(c) Karnataka  
(d) Goa

**Answer: (b) Kerala**

**Explanation:**

**In NEWS:** How Pambadum Shola's fight against wattle invasion is reshaping India's restoration story

**Pambadum Shola National Park:**

- Pambadum Shola National Park is the smallest national park in Kerala, covering an area of about 1.32 square kilometers. **Hence option (b) is correct.**
- It is located in the Idukki district, near Marayoor and Kanthalloor, close to the hill station of Munnar.
- The park was established in 2003 to protect the unique shola forest ecosystem of the Western Ghats.
- The name "Pambadum Shola" means "the forest where snakes dance" in Malayalam.
- It forms part of the Anamalai sub-cluster of the Western Ghats, recognized as a UNESCO World Heritage Site.
- The park's terrain consists of evergreen montane forests (sholas) interspersed with grasslands.
- Rare and endemic species like the Nilgiri marten, Indian leopard, gaur, sambar deer, and Nilgiri wood pigeon are found here.

● The park is part of Kerala's protected area network, along with Eravikulam, Anamudi Shola, and Mathikettan Shola National Parks.

**Australian Wattle:**

- While wattles are native to Australia, several species have been introduced to other countries (especially in Africa, Asia, and the Mediterranean) for timber, fuelwood, or land stabilization.
- In many of these regions, certain wattles have become highly invasive, spreading rapidly and outcompeting native plants.
- These species produce large numbers of long-lived seeds and can resprout after fire, giving them a competitive advantage.
- Invasive wattles form dense thickets that:
  - Reduce biodiversity by crowding out native species
  - Alter soil chemistry (due to nitrogen fixation)
  - Change fire regimes and water availability



**PYQ REFERENCE: (2019)**

**Q. Which one of the following National Parks lies completely in the temperate alpine zone?**

- (a) Manas National Park  
(b) Namdapha National Park  
(c) Neora Valley National Park  
(d) Valley of Flowers National Park

Source: <https://www.downtoearth.org.in/environment/how-pampadum-sholas-fight-against-wattle-invasion-is-reshaping-indias-restoration-story>

**66. Magnetoreception**

**Q. Which of the following animals are known to exhibit magnetoreception?**

1. Pigeons
2. Sea turtles
3. Honeybees
4. Salmon

**Select the correct answer using the code given below:**

- (a) 1, 2 and 3 only  
(b) 2 and 4 only  
(c) 1, 2, 3 and 4  
(d) 1 and 3 only

**Answer: (c) 1, 2, 3 and 4**

**Explanation:**

**In NEWS:** Why do pigeons have a good sense of direction?

- A wide variety of animals detect magnetic fields. This sensory ability helps birds and insects migrate and turtles remember the locations of rich feeding areas.

**Magnetoreception – Sense of Earth's Magnetic Field**

- Magnetoreception is the ability of organisms to **detect Earth's magnetic field** and use it for **orientation, navigation, and migration.**

### Mechanism

- Some animals have **magnetite crystals** (iron oxide) that act as compasses.
- Others use **photoreceptor proteins (cryptochromes)** in the eyes that respond to magnetic fields.
- Recent studies show **pigeons** may sense magnetic fields via **electrical currents in the inner ear** (vestibular system).
- Brain integration occurs in areas like the **vestibular nuclei, mesopallium, and hippocampus** for spatial orientation.

### Examples in Nature

Organism	Mechanism	Function
Pigeons	Inner-ear electrical currents	Homing & navigation
Sea turtles	Magnetite in brain	Long-distance ocean migration
Birds (general)	Cryptochromes in retina	Orientation during migration
Salmon	Magnetite nose/olfactory system	River homing
Honeybees	Magnetite + sun compass	Foraging

**Hence all are correct.**

### Significance

- Helps **migratory birds, marine turtles, and insects** navigate over long distances.
- Understanding it aids in **wildlife conservation, tracking migration**, and studying effects of **electromagnetic pollution**.
- Insight into **animal sensory biology** and evolutionary adaptation.

### PYQ REFERENCE: (2021)

**Q. Which of the following have species that can establish symbiotic relationship with other organisms?**

1. Cnidarians
2. Fungi
3. Protozoa

**Select the correct answer using the code given below.**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3**

**Source:** <https://indianexpress.com/article/explained/explained-sci-tech/pigeons-sense-of-direction-10383601/>

### 67. The Mokolodi Nature Reserve

**Q. The Mokolodi Nature Reserve is located in**

- (a) Angola
- (b) Botswana
- (c) Namibia
- (d) Egypt

**Answer: (b) Botswana**

**Explanation:**

### In NEWS:

- The President of India, Smt. Droupadi Murmu, and the President of Botswana, H.E. Advocate Duma Gideon Boko, visited the Mokolodi Nature Reserve near Gaborone on the morning of November 13, 2025.
- During their visit, the two Presidents witnessed the release of captured cheetahs from the Ghanzi region of Botswana into the quarantine facility at Mokolodi Nature Reserve.
- This event marked Botswana's symbolic donation of eight cheetahs to India under the framework of Project Cheetah, a flagship conservation initiative of the Government of India.

### Mokolodi Nature Reserve:

- Mokolodi Nature Reserve is a well-known private, non-profit wildlife reserve located near Gaborone, the capital city of Botswana. **Hence option (b) is correct.**
- The reserve is home to a wide range of indigenous African wildlife species, including giraffes, zebras, impalas, kudus, warthogs, wildebeests, hippos, and crocodiles.
- It also provides a sanctuary for white rhinoceroses, one of the key conservation species in the park.
- Leopards, cheetahs, and hyenas are occasionally sighted, though they are more elusive.
- The area supports diverse birdlife, making it a popular destination for birdwatching enthusiasts.
- The vegetation primarily consists of thornveld savanna, characterized by acacia trees, shrubs, and grassland ecosystems typical of Botswana's semi-arid climate.
- Mokolodi Nature Reserve has become a flagship model for private conservation in Botswana, demonstrating how wildlife protection and education can coexist sustainably.

### PYQ REFERENCE: (2017)

**Q. Recently there was a proposal to translocate some of the lions from their natural habitat in Gujarat to which one of the following sites?**

- (a) Corbett National Park
- (b) Kuno Palpur Wildlife Sanctuary
- (c) Mudumalai Wildlife Sanctuary
- (d) Sariska National Park

**Source:** <https://www.thehindu.com/news/national/symbolic-handover-of-8-cheetahs-to-droupadi-murmu-at-botswanas-nature-reserve/article70274688.ece>

### 68. Khangchendzonga National Park

**Q. With reference to the Khangchendzonga National Park, consider the following statements:**

1. It is India's only "mixed" UNESCO World Heritage Site.
2. It is the only Indian natural World Heritage Site rated "Good" by the IUCN 2024 assessment.
3. It is home to both snow leopards and red pandas.
4. The park forms part of the Northern Himalayas biodiversity hotspot.

**Which of the statements given above are correct?**

- (a) 1, 2 and 3
- (b) 2 and 4 only
- (c) 4 only
- (d) 1, 3 and 4

**Answer: (a) 1, 2 and 3**

**Explanation:**

**In NEWS:** Khangchendzonga National Park Rated “Good” By IUCN, Only Indian Site With Positive Status

**Khangchendzonga National Park:**

- Khangchendzonga National Park is located in the **state of Sikkim**, covering parts of North and West Sikkim districts.
- It was **established in 1977** and later declared a **UNESCO World Heritage Site in 2016**.
- It is India’s **first “Mixed” World Heritage Site**, recognised for both **natural and cultural significance**. **Hence statement 1 is correct.**
- The park covers an area of about **1,784 sq. km**. The park forms part of the **Eastern Himalayas biodiversity hotspot**. **Hence statement 4 is incorrect.**
- It includes **Mount Khangchendzonga (8,586 m)** — the **third highest peak in the world**.
- The park features **diverse ecosystems**, ranging from **subtropical forests to glaciers and snowfields**.
- It contains over **280 glaciers** and **more than 70 glacial lakes**, including the **Zemu Glacier**.
- Important animal species found here include **Snow Leopard, Clouded Leopard, Red Panda, Blue Sheep, Himalayan Tahr, and Musk Deer**. **Hence statement 3 is correct.**
- Notable bird species include the **Impeyan Pheasant, Satyr Tragopan, and Blood Pheasant**.
- For the **Lepcha community**, the area is sacred and known as *Mayel Lyang* (“hidden paradise”).
- In **Tibetan Buddhism**, the region is considered a **beyul** — a sacred hidden valley of peace and spirituality.
- The park includes important cultural sites such as **Tholung Monastery**.
- The **Khangchendzonga Biosphere Reserve**, designated in 2018, connects the core park with buffer zones where locals practice **sustainable agriculture**.
- Conservation efforts involve **community participation** and **transboundary cooperation** with Nepal’s **Kanchenjunga Conservation Area**.
- It effectively managed recent **glacial lake outburst flood (GLOF)** threats through **hazard mapping** and preparedness.
- In the **IUCN 2024 assessment**, it was rated **“Good”**, making it the **only Indian natural World Heritage Site** with a positive status. **Hence statement 2 is correct.**
- Other Indian natural World Heritage Sites like the **Western Ghats** and **Sundarbans** are listed under **“serious concern.”**
- The park serves as a **model for people-nature coexistence**, blending biodiversity conservation with cultural values.

**PYQ REFERENCE: (2020)**

**Q. With reference to India’s Desert National Park, which of the following statements are correct?**

1. It is spread over two districts.
2. There is no human habitation inside the Park.
3. It is one of the natural habitats of the Great Indian Bustard.

**Select the correct answer using the code given below:**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Source:** <https://www.newsonair.gov.in/khangchendzonga-national-park-rated-good-by-iucn-only-indian-site-with-positive-status/>

**69. Ramsar site tag for wetlands in Assam**

**Q. The Rowmari–Donduwa Wetland Complex, recently in news, is significant because:**

- (a) It meets Ramsar criteria by hosting more than 20,000 waterbirds and several threatened species.
- (b) It is India’s first wetland to be designated under Ramsar in Assam.
- (c) It is a high-altitude wetland in the Eastern Himalayas.
- (d) It is a coastal lagoon in the Sundarbans delta.

**Answer: (a) It meets Ramsar criteria by hosting more than 20,000 waterbirds and several threatened species.**

**Explanation:**

**In NEWS:** Push for Ramsar site tag for wetlands in Assam wildlife sanctuary

**Ramsar Convention on Wetlands (Ramsar) site tag for wetlands in Assam:**

- The Ramsar Convention is an **international treaty (1971)** for the conservation and **“wise use”** of wetlands of international importance.
- In India, the first wetland to be designated under Ramsar in Assam is **Deepor Beel (near Guwahati)**, which was declared in 2002.
- Despite Assam having thousands of wetlands (estimates over 3,000) owing to its floodplain, braided rivers and marshy systems, only one site in the state so far has Ramsar status.

**The Current Proposal: Rowmari–Donduwa Wetland Complex**

- Conservationists, scientists and local stakeholders in Assam are actively pushing for this wetland complex to be designated as a Ramsar site.
- **Location & Nature:** The complex comprises marshes, seasonally-flooded grasslands, riverine channels in central Assam (in the Nagaon area) that function as a habitat for migratory inland water-birds, resident birds, fish nursery grounds, and as a hydrological buffer.

**Why it qualifies:**

- Over 47,000 water-birds counted from 75-107 species in recent surveys ⇒ meets one of Ramsar’s threshold criteria (20,000 water-birds) for designation.
- Presence of threatened bird species (e.g., Lesser Adjutant, Black-necked Stork, Ferruginous Pochard, Knob-billed Duck).
- Supports at least 48 fish species and local livelihoods via fisheries and seasonal agriculture.
- Provides flood attenuation, groundwater recharge — critical for Assam’s flood-prone Brahmaputra valley.

**Hence option (a) is correct.**

**PYQ REFERENCE: (2014)**

**Q. With reference to a conservation organization called ‘Wetlands International’, which of the following statements is/are correct?**

1. It is an intergovernmental organization formed by the countries which are signatories to Ramsar Convention.
2. It works at the field level to develop and mobilize knowledge, and use the practical experience to advocate for better policies.

**Select the correct answer using the code given below.**

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

Source: <https://www.thehindu.com/news/national/assam/push-for-ramsar-site-tag-for-wetlands-in-assam-wildlife-sanctuary/article70232863.ece>

### 70. Characteristics of Moss Spores

**Q. Consider the following statements regarding mosses (Bryophytes):**

1. Some mosses can survive complete desiccation and revive upon rehydration.
2. Some mosses can tolerate high levels of radiation, including those found in outer space.
3. Some mosses can act as bioindicators of air pollution.
4. Some mosses can perform nitrogen fixation.

**How many of the above statements are correct?**

- (a) Only one  
(b) Only two  
(c) Only three  
(d) All four

**Answer: (c) Only three**

**Explanation:**

**In NEWS:** Moss spores survive months in space: Why is this significant?

#### Characteristics of Moss Spores:

##### Desiccation Tolerance:

- Certain mosses such as *Tortula ruralis* and *Syntrichia caninervis* can survive up to 95% water loss.
- These mosses revive completely when water becomes available again.
- Desiccation tolerance in mosses is enabled by protective proteins, sugar molecules like trehalose, and flexible cell walls.
- This trait evolved because mosses are among the earliest land plants, exposed to harsh terrestrial conditions.

##### Radiation and Space Survival

- Moss spores of *Physcomitrium patens* survived 283 days outside the International Space Station (ISS).
- Over 80% of the exposed moss spores remained viable and successfully germinated after returning to Earth.
- Moss spores tolerate cosmic radiation, UV exposure, extreme temperatures, and vacuum.
- Multi-layered spore walls act as natural "passive shields" against radiation damage.
- Space-modelling studies estimate that moss spores could survive in outer space for up to 15 years.

##### Bioindicator Role

- Mosses absorb nutrients and contaminants directly from the atmosphere, not through roots.
- This enables them to accumulate heavy metals, SO<sub>2</sub>, NO<sub>x</sub>, and organic pollutants from the air.
- Mosses are widely used in moss monitoring programs for air-quality assessment in Europe and Asia.
- Species such as *Hypnum cupressiforme* and *Pleurozium schreberi* are standard bioindicator mosses.

##### Nitrogen Fixation Myth

- Mosses do not perform nitrogen fixation themselves. **Hence 4 is incorrect.**
- Nitrogen fixation occurs via cyanobacteria living on the surface of mosses, especially on *Sphagnum* moss.
- Ecosystems benefit from nitrogen fixed by cyanobacteria, but the moss is not the nitrogen-fixing organism.

#### Significance of Moss

- Mosses demonstrate ancient plant survival strategies, helping scientists understand early plant evolution on land.
- Their desiccation tolerance serves as a model for improving drought resistance in modern crops.
- Their ability to survive cosmic radiation and vacuum provides insights into the possibility of life enduring harsh extraterrestrial environments.
- Moss spores surviving on the ISS show potential for bio-regenerative life-support systems in future lunar and Martian habitats.
- Mosses contribute to carbon sequestration, especially in peatlands dominated by *Sphagnum* species.
- Moss-dominated peatlands store nearly 30% of global soil carbon, making them crucial in climate regulation.
- Mosses act as low-cost bioindicators for monitoring air quality and heavy-metal pollution.
- Their sensitivity to atmospheric contaminants helps governments design pollution-control policies.
- In ecosystems, mosses help in soil formation, moisture retention, and preventing erosion.
- Moss-cyanobacteria associations enhance nitrogen input into nutrient-poor ecosystems, supporting biodiversity.
- Understanding moss stress tolerance aids biotechnology research in stress-resistant biomaterials.
- Their space survival provides evidence relevant to astrobiology, particularly studies on panspermia (life dispersal).

#### PYQ REFERENCE: (2023)

**Q. Consider the following statements:**

1. Some mushrooms have medicinal properties.
2. Some mushrooms have psycho-active properties.
3. Some mushrooms have insecticidal properties.
4. Some mushrooms have bioluminescent properties.

**How many of the above statements are correct?**

- (a) Only one  
(b) Only two  
(c) Only three  
(d) All four

Source: <https://indianexpress.com/article/explained/explained-sci-tech/moss-spores-space-10381796/>

### 71. Ningaloo Reef

**Q. Consider the following statements:**

**Statement-I:** Nearly 70% of corals faced destruction at the UNESCO-listed Ningaloo Reef.

**Statement-II:** Recently, an unprecedented marine heat wave occurred in Western Australia.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I  
(b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I  
(c) Statement-I is correct, but Statement-II is incorrect  
(d) Statement-I is incorrect, but Statement-II is correct

**Answer: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I**

**Explanation:**

**In NEWS:** 'Unprecedented' heatwave kills nearly two-thirds of corals at UNESCO-listed Ningaloo Reef

**Ningaloo Reef:**

- An unprecedented marine heatwave has killed nearly 70% of corals at the UNESCO-listed Ningaloo Reef in Western Australia. **Hence both Statement-I and Statement-II are correct and Statement-II explains Statement-I**
- The reef's northern lagoon, covering eight survey sites, now shows more than 60% coral mortality.
- In March, researchers counted over 1,600 individual corals; by October, only about 600 remained alive.
- The heatwave was described as the longest, largest, and most intense "underwater" heatwave ever recorded in Australia.
- The reef was already under stress before this event: in 2022, low oxygen levels caused a sharp drop in live coral cover in some areas.
- On a global scale, bleaching-level heat stress has affected a very large portion of reefs: according to NOAA data cited, about 84.4% of the world's coral reef area has been exposed to such stress.



**Threats to corals:**

- Rising sea temperatures cause coral bleaching and mass mortality.
- Ocean acidification reduces coral growth and weakens reef structures.
- Marine heatwaves lead to widespread coral stress and die-offs.
- Cyclones and storms physically damage and break coral reefs.
- Sedimentation from land runoff smothers corals and blocks sunlight.
- Nutrient pollution promotes algal blooms that outcompete corals.
- Chemical pollution (oil, toxins, sunscreen) poisons coral tissues.
- Plastic pollution injures corals and increases disease risk.
- Coastal development destroys reef habitats and increases turbidity.
- Overfishing disrupts reef food webs and promotes algal overgrowth.
- Destructive fishing (blast, cyanide) directly kills corals.
- Invasive species like crown-of-thorns starfish consume corals rapidly.
- Coral diseases spread faster under warm and polluted conditions.
- Ship groundings and anchors physically crush and break reefs.
- Tourism pressure causes physical damage and chemical contamination.
- Increased UV radiation stresses and bleaches corals.
- Climate change intensifies multiple stressors, reducing coral resilience.

**PYQ REFERENCE: (2012)**

**Q. The acidification of oceans is increasing. Why is this phenomenon a cause of concern?**

1. The growth and survival of calcareous phytoplankton will be adversely affected.
2. The growth and survival of coral reefs will be adversely affected.
3. The survival of some animals that have phytoplanktonic larvae will be adversely affected.
4. The cloud seeding and formation of clouds will be adversely affected.

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

- (a) 1, 2 and 3 only  
(b) 2 only  
(c) 1 and 3 only  
(d) 1, 2, 3 and 4

**Source:**

<https://www.downtoearth.org.in/environment/unprecedented-heatwave-kills-nearly-two-thirds-of-corals-at-unesco-listed-ningaloo-reef>

**72. Cryopreservation of Corals**

**Q. Which of the following are the significance of cryopreservation of corals?**

- I. Protecting endangered coral species and maintaining genetic diversity
- II. Producing coral larvae to restore degraded reefs
- III. Preserving coral species threatened by climate change

**Select the correct answer using the code below**

- (a) I and II only  
(b) II and III only  
(c) I and III only  
(d) I, II and III

**Answer: (d) I, II and III**

**Explanation:**

**In NEWS:** Battle for reefs - Scientists are helping corals fight back against warming seas

**Cryobanks for corals:**

- Cryobanks for corals are specialized facilities that store coral genetic material (sperm, eggs, embryos, or larvae) at very low temperatures to preserve it for long-term conservation.
- This is done using cryopreservation techniques, which keep the cells viable for decades.

**How it Works:**

- Coral sperm or eggs are collected during spawning events, which often occur at night once a year.
- The material is frozen at ultra-low temperatures using liquid nitrogen.
- Stored samples can later be thawed and used for fertilization, larval culture, or research.

**Significance:**

- **Biodiversity Conservation:** Protects endangered coral species and maintains genetic diversity essential for resilience.
- **Restoration Support:** Enables scientists to produce coral larvae for repopulating degraded reefs.
- **Climate Change Mitigation:** Preserves coral species that might not survive in warming oceans.
- **Scientific Research:** Supports studies in coral genetics, adaptation, and resilience.

- **Global Collaboration:** Genetic material can be shared across countries for coordinated conservation efforts. **Hence option (d) is correct.**

**Examples:**

- Taronga CryoDiversity Bank in Australia stores coral sperm and larvae from the Great Barrier Reef.

**PYQ REFERENCE: (2018)**

**Q. Consider the following statements:**

1. Most of the world's coral reefs are in tropical waters.
2. More than one-third of the world's coral reefs are located in the territories of Australia, Indonesia and Philippines.
3. Coral reefs host far more number of animal phyla than those hosted by tropical rainforests.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only  
(b) 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

**Source:** <https://www.downtoearth.org.in/climate-change/battle-for-reefs>

### **73. Global Methane Status Report (GMSR) 2025**

**Q. Consider the following statements with respect to the Global Methane Status Report (GMSR) 2025:**

- I. It is a new flagship analysis by the UN Environment Programme (UNEP) and the Climate and Clean Air Coalition (CCAC).
- II. The biggest sources of methane is agriculture, especially from livestock, manure, rice cultivation and waste.
- III. The energy sector holds nearly three fourths of the cost-effective methane reduction potential.

**Which of the statements given above are correct?**

- (a) I and II only  
(b) II and III only  
(c) I and III only  
(d) I, II and III

**Answer: (d) I, II and III**

**Explanation:**

**In NEWS:** Global Methane Status Report warns of rising emissions but charts path to 2030 progress

**The Global Methane Status Report (GMSR) 2025:**

- The Global Methane Status Report (GMSR) 2025, by the UN Environment Programme (UNEP) and the Climate and Clean Air Coalition (CCAC), shows that methane emissions are still increasing. **Hence statement I is correct.**

**Hence statement I is correct.**

- The biggest sources of methane are agriculture (about 42%) — from livestock, manure, rice cultivation — and waste. **Hence statement II is correct.**

- As of June 2025, 65% of countries under the Paris Agreement have included methane-specific measures in their NDCs (Nationally Determined Contributions).

- If all the national Methane Action Plans (MAPs) are fully implemented, global methane emissions could peak this decade and decline by 8% below 2020 levels by 2030.

- But even 8% is not enough to meet the Global Methane Pledge (GMP) goal of a 30% cut by 2030.

**Where reductions can happen fastest**

**Energy Sector**

- Holds the majority of cost-effective methane reduction potential. More than 72% of the total methane reduction potential (by 2030) lies here. **Hence statement III is correct.**

- Key actions: fixing leaks, reducing venting/flaring, modernizing pipelines, and capturing gas from coal/oil/gas operations.

**Waste Sector**

- Emissions are expected to grow without new interventions.
- Solutions: landfill gas capture, composting, anaerobic digestion, and waste segregation.

**Agriculture**

- Hardest sector to reform due to social and economic dependence on livestock and rice.

- Options include improved feed, better breeding, manure management, and rice field water management.

- Adoption remains slow worldwide.

**Major gaps in data and finance**

- Methane monitoring and reporting remain inconsistent, especially in fossil fuel sectors.

- Clear uncertainties persist in national inventories.

- Methane mitigation needs sustained financing, estimated at over \$100 billion annually by 2030.

- Funds must come from public sources, private investment, and climate finance institutions.

**PYQ REFERENCE: (2017)**

**Q. Consider the following statements:**

1. Climate and Clean Air Coalition (CCAC) to Reduce Short Lived Climate Pollutants is a unique initiative of G20 group of countries.
2. The CCAC focuses on methane, black carbon and hydrofluorocarbons.

**Which of the statements given above is/are correct?**

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

**Source:** <https://www.downtoearth.org.in/climate-change/global-methane-status-report-warns-of-rising-emissions-but-charts-path-to-2030-progress>

### **74. India's methane emissions**

**Q. Consider the following statements :**

**Statement-I :** India is the world's third-largest methane emitter after China and the U.S.

**Statement-II :** According to the UNEP report, India contributes around 31 million tonnes of methane annually, accounting for nearly 9% of global methane emissions.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I  
(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I  
(c) Statement-I is correct but Statement-II is incorrect  
(d) Statement-I is incorrect but Statement-II is correct

**Answer: (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I**

**Explanation:**

**In NEWS:** Crop-residue burning turning India into global methane hotspot, UN report warns

**Crop-Residue Burning & Methane:**

- A 2025 UNEP report warns that **India has become a global methane hotspot**, mainly due to **crop-residue burning**.
- India is the **world's third-largest methane emitter** after China and the U.S.
- India contributes **around 31 million tonnes of methane annually**, accounting for **nearly 9% of global methane emissions**.
- Global methane emissions currently stand at **360 million tonnes per year**.
- The **G20 countries**, including India, are responsible for **65% of global methane emissions**.
- Major methane sources in India: **livestock (enteric fermentation + manure)**, **rice cultivation**, and **crop-residue burning**.
- Methane emissions from **waste burning in India** increased from **4.5 MT in 1995 to 7.4 MT in 2020** (a 64% rise).
- Methane from **rice cultivation in India** is projected to increase by **8% between 2020 and 2030**.
- India generated **20 MT of methane from agriculture** in 2020 and **4.5 MT from the energy sector**.

**Hence Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I**

**PYQ REFERENCE: (2019)**  
**Q. Consider the following:**  
 1. Carbon Monoxide  
 2. Methane  
 3. Ozone  
 4. Sulphur dioxide  
**Which of the above are released into atmosphere due to the burning of crop/ biomass residue?**  
 a. 1 and 2 only  
 b. 2,3 and 4 only  
 c. 1 and 4 only  
**d. 1,2,3 and 4**

**Source:** <https://www.downtoearth.org.in/climate-change/crop-residue-burning-turning-india-into-global-methane-hotspot-un-report-warns>

**75. stubble burning**

**Q. Consider the following impacts of stubble burning:**

1. Increase in PM 2.5 concentration leading to deterioration of air quality.
2. Reduction in soil organic carbon and destruction of beneficial microbes.
3. Increase in ground-level ozone formation.
4. It reduces groundwater contamination by eliminating crop residue.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

**Answer: (c) Only three**

**Explanation:**

**In NEWS:** Why has Madhya Pradesh burnt more paddy stubble for the second year in a row?

**Stubble Burning**

1. Stubble burning refers to the deliberate setting fire to crop residue left after harvesting.
  2. It is most common in Punjab, Haryana, western Uttar Pradesh, and parts of Rajasthan.
  3. It mainly occurs after harvesting paddy (kharif) to quickly clear fields for wheat (rabi) sowing.
  4. The practice is driven by short sowing windows, high labour costs, and slow residue management options.
  5. Stubble burning releases large quantities of PM2.5, PM10, carbon monoxide, nitrogen oxides, and volatile organic compounds.
  6. It significantly worsens air quality in Delhi-NCR, especially during October–November.
  7. The practice contributes to winter smog, due to low wind speed, temperature inversion, and stable atmospheric conditions.
  8. Stubble burning emits greenhouse gases such as methane and nitrous oxide, contributing to climate change.
  9. It damages soil health by killing beneficial microbes and reducing organic matter content.
  10. Open burning is prohibited under the Air (Prevention and Control of Pollution) Act, 1981 and Environment Protection Act, 1986.
  11. The National Green Tribunal (NGT) has banned stubble burning and imposes penalties on violators.
  12. The Centre launched the Crop Residue Management (CRM) scheme to provide machinery like Happy Seeder, Super Straw Management System (SMS), Reaper Binder, and Zero-till drill.
  13. The Pusa Decomposer, developed by IARI, is a microbial solution that accelerates in-situ decomposition of stubble.
  14. The Bio-CNG and Biomass Power Plants approach focuses on converting crop residue into energy.
  15. Punjab & Haryana promote in-situ management (mulching), while some districts adopt ex-situ management (collection and industrial use).
  16. Farmers often prefer burning because it is low-cost, quick, and requires no machinery.
  17. Alternatives require subsidies, timely availability of machines, and supportive policies for widespread adoption.
  18. Supreme Court periodically issues directives to curb stubble burning and hold state governments accountable.
  19. Stubble burning is linked with public health issues like asthma, bronchitis, reduced lung function, and eye irritation.
  20. Long-term solution requires diversification away from paddy, improving MSP policy, and promoting short-duration paddy varieties. Stubble burning has no role in reducing groundwater contamination;
- Hence statement 4 is incorrect.**

**PYQ REFERENCE: (2019)**  
**Q. Consider the following:**  
 1. Carbon monoxide  
 2. Methane  
 3. Ozone  
 4. Sulphur dioxide  
**Which of the above are released into atmosphere due to the burning of crop/biomass residue?**  
 (a) 1 and 2 only  
 (b) 2, 3 and 4 only  
 (c) 1 and 4 only  
**(d) 1, 2, 3 and 4**

**Source:** <https://www.downtoearth.org.in/agriculture/why-has-madhya-pradesh-burnt-more-paddy-stubble-for-the-second-year-in-a-row>

### 76. Stubble Burning Trend

**Q. Consider the following statements:**

**Statement-I :** Madhya Pradesh has recorded the highest number of farm stubble burning incidents in the country for the second consecutive year.

**Statement-II :** Many farmers have switched from traditional crops like soybean and black gram to paddy.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I
- (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I
- (c) Statement-I is correct, but Statement-II is incorrect
- (d) Statement-I is incorrect, but Statement II is correct

**Answer: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I**

**Explanation:**

**In NEWS:** Madhya Pradesh leads in farm stubble burning for second year; Uttar Pradesh and Punjab follow

- Madhya Pradesh (MP) has become the leading state in India for farm stubble-burning for the second year in a row.
- According to data from CREAMS (the Consortium for Research on Agroecosystem Monitoring and Modelling from Space, at IARI), about 14,165 out of ~28,529 crop-residue burning incidents recorded this season (across six states) happened in Madhya Pradesh — nearly half of the total.
- Among 10 worst-affected districts nationwide, 7 are in Madhya Pradesh; topping the list again is Sheopur district.
- Other states like Uttar Pradesh (UP) and Rajasthan have seen marked increases, while traditional hotspots like Punjab and Haryana have seen a substantial drop in stubble-burning incidents.

**What's driving this shift toward Madhya Pradesh**

- In districts such as Sheopur, there has been a significant increase in paddy cultivation in recent years; many farmers switched from traditional crops (like soybean, black gram) to paddy.
- Factors such as good monsoon rainfall, improved groundwater availability, and reliable electricity/pumping for irrigation have made paddy cultivation more viable — which in turn has increased the amount of paddy straw to manage post-harvest.
- As paddy area increases, so does the crop residue — and possibly lack of enough crop-residue management infrastructure or incentives may be contributing to burning becoming the easiest disposal method.

**Hence both Statement-I and Statement-II are correct and Statement-II explains Statement-I**

**PYQ REFERENCE: (2024)**

**Q. Consider the following statements :**

Statement-I: Many chewing gums found in the market are considered a source of environmental pollution.

Statement-II: Many chewing gums contain plastic as gum base.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I
- (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I
- (c) Statement-I is correct, but Statement-II is incorrect
- (d) Statement-I is incorrect, but Statement-II is correct

**Source:** <https://www.downtoearth.org.in/air/madhya-pradesh-leads-in-farm-stubble-burning-for-second-year-uttar-pradesh-and-punjab-follow>

### 77. Commission for Air Quality Management (CAQM)

**Q. With reference to the Commission for Air Quality Management (CAQM), consider the following statements:**

1. CAQM is a statutory body established under the Commission for Air Quality Management in NCR and Adjoining Areas Act, 2021.
2. It replaced the earlier Environment Pollution (Prevention & Control) Authority (EPCA)
3. The Commission is headed by a full-time Chairperson, who holds the post for a tenure of three years or until the age of 70.
4. The commission can issue binding directions to state authorities, industries, and agencies.

**Which of the statements given above is/are correct?**

- (a) 1, 2 and 3 only
- (b) 2 and 4 only
- (c) 1, 3 and 4 only
- (d) 1, 2, 3, and 4

**Answer: (d) 1, 2, 3, and 4**

**Explanation:**

**In NEWS:** SC allows CAQM to take 'proactive' measures to curb Delhi air pollution

**Commission for Air Quality Management (CAQM):**

● CAQM is a statutory body established under the **Commission for Air Quality Management in NCR and Adjoining Areas Act, 2021.**

**Hence statement 1 is correct.**

● It replaced the earlier **Environment Pollution (Prevention & Control) Authority (EPCA).** **Hence statement 2 is correct.**

**Structure**

● The Commission is a high-level body headed by a **full-time Chairperson**, an official of Secretary or Chief Secretary rank, who holds the post for a tenure of **three years** or until the **age of 70.**

**Hence statement 3 is correct.**

● It comprises a multi-member body including:

- Full-time members (technical experts and a central government official).
- Ex-officio members from the Central government and the concerned NCR state governments.
- Technical members from bodies like the CPCB, the Indian Space Research Organisation (ISRO), and NITI Aayog.
- Members from non-governmental organizations working in environment-related fields.

**Functions:**

- Plan and execute measures to **control and prevent air pollution.**
- Set **emission limits**, restrict polluting activities, and monitor compliance.
- Conduct research and investigations into air pollution sources and trends.
- Issue **binding directions** to state authorities, industries, and agencies. **Hence statement 4 is correct.**
- Impose **environmental compensation** or fines on violators.

**PYQ REFERENCE: (2017)**

**Q. Consider the following statements:**

1. Climate and Clean Air Coalition (CCAC) to Reduce Short Lived Climate Pollutants is a unique initiative of G20 group of countries.
2. The CCAC focuses on methane, black carbon and hydrofluorocarbons.

**Which of the statements given above is/are correct?**

- (a) 1 only  
**(b) 2 only**  
 (c) Both 1 and 2  
 (d) Neither 1 nor 2

**Source:** <https://www.thehindu.com/news/cities/Delhi/sc-allows-caqm-to-take-pro-active-measures-to-curb-delhi-air-pollution/article70298380.ece#:~:text=The%20Supreme%20Court%20on%20Wednesday,50%25%20office%20attendance%20in%20the>

### 78. Graded Response Action Plan

**Q. Consider the following statements.**

1. The Graded Response Action Plan works only as an emergency measure.
2. The plan is enforced by the Commission for Air Quality Management (CAQM).
3. Stage IV of GRAP is taken when the air pollution rises to the 'Severe +' category, which is more than 450.

**How many of the statements given above are correct?**

- (a) Only one  
 (b) Only two  
 (c) All three  
 (d) None

**Answer: (c) All three**

**Explanation:**

**In NEWS:** 'Perennial' GRAP is not the solution for Delhi's air pollution: Supreme Court

**Graded Response Action Plan:**

- GRAP is a set of emergency measures that kick in to prevent further deterioration of air quality once it reaches a certain threshold in the Delhi-NCR region.
- It was notified by the Ministry of Environment, Forest and Climate Change (MoEFCC) in 2017 following the directions of the Supreme Court in response to rising pollution in Delhi.
- It is enforced by the Commission for Air Quality Management (CAQM). **Hence statement 2 is correct.**
- GRAP works only as an emergency measure. **Hence statement 1 is correct.**
- **GRAP is incremental in nature and thus, when the air quality dips from 'poor' to 'very poor,' measures listed under both sections must be followed.**

**Stage I – "Poor" AQI (201–300)**

**Actions include:**

- Strict enforcement of dust control at construction sites
- Increased mechanized road sweeping
- Water sprinkling to reduce dust
- Ban on garbage burning
- Promotion of public transport

**Stage II – "Very Poor" AQI (301–400)**

**Actions include:**

- Ban on use of diesel generators (non-essential)
- Enhanced parking fees to discourage private vehicle use
- Boost public transport frequency
- Ban on coal and firewood in eateries

**Stage III – "Severe" AQI (401–450)**

**Actions include:**

- Ban on construction and demolition activities (except essential)
- Restrictions on stone crushers, mining, hot-mix plants
- Shutdown of polluting industrial units
- Ban on trucks (non-essential) entering the city

**Stage IV – "Severe+ / Emergency" AQI (450+) Hence statement 3 is correct**

**Actions include:**

- Ban on all construction activities (including essential, except defense/health)
- Ban on entry of all trucks except essential ones
- Closure of schools and colleges (as decided by authorities)
- Work-from-home advisories
- Closure of industries except those crucial for essential services

**PYQ REFERENCE: (2022)**

**Q. In the context of WHO Air Quality Guidelines, consider the following statements:**

1. The 24-hour mean of PM<sub>2.5</sub> should not exceed 15 µg/m<sup>3</sup> and annual mean of PM<sub>2.5</sub> should not exceed 5 µg/m<sup>3</sup>.
2. In a year, the highest levels of ozone pollution occur during the periods of inclement weather.
3. PM<sub>10</sub> can penetrate the lung barrier and enter the bloodstream.
4. Excessive ozone in the air can trigger asthma.

**Which of the statements given above are correct?**

- (a) 1, 3 and 4  
**(b) 1 and 4 only**  
 (c) 2, 3 and 4  
 (d) 1 and 2 only

**Source:** <https://www.thehindu.com/news/national/perennial-grap-is-not-the-solution-for-delhis-air-pollution-supreme-court/article70290579.ece>

### 79. Latest in climate science

**Q. Recent studies have found that the pace of global warming has accelerated. If this continues, what are the most possible consequences that will happen in the near future?**

1. Warm-water corals are undergoing near-irreversible die-offs due to marine heatwaves.
2. The Amazon rainforest is at risk of turning into savannah if deforestation and warming persist.
3. Greenland Ice Sheet melt could destabilize the Atlantic Meridional Overturning Circulation (AMOC).
4. Antarctic sea ice is declining, reducing phytoplankton growth and worsening carbon imbalance.

**Select the correct answer using the code below:**

- (a) Only one  
 (b) Only two  
 (c) Only three  
 (d) All four

**Answer: (d) All four**

**Explanation:**

**In NEWS:** What's the latest in climate science?

**Latest in Climate Science:**

**Accelerating Global Warming**

- Global average temperature is **rising at 0.27°C per decade**, about **50% faster** than the rate (0.2°C) seen in the 1990s–2000s.
- **2023, 2024, and parts of 2025** have recorded **new temperature highs**.
- The world has already **warmed by 1.3 – 1.4°C** since the pre-industrial period.
- The **1.5°C threshold** is likely to be crossed **around 2030**, leading to potential **irreversible climate impacts**.

**Rising Sea Levels**

- **Sea level rise** has accelerated to **4.5 mm per year** over the last decade (up from 1.85 mm/year since 1900).
- Melting glaciers and thermal expansion are major contributors.
- Threatens **coastal populations, island nations, and marine ecosystems**.

**Emerging Climate Tipping Points**

- **Warm-water corals** are undergoing near-irreversible die-offs due to **marine heatwaves** - possibly the **first major tipping point**.
- The **Amazon rainforest** is at risk of turning into **savannah** if deforestation and warming persist.
- **Greenland Ice Sheet melt** could destabilize the **Atlantic Meridional Overturning Circulation (AMOC)** which is critical for Europe's mild winters.
- **Antarctic sea ice** is declining, reducing **phytoplankton** growth and worsening **carbon imbalance**.

**Hence all the statements are correct.**

**Escalating Wildfires**

- Between **March 2024–Feb 2025**, wildfires burned **3.7 million sq. km** — roughly the size of **India + Norway combined**.
- Though slightly below the 20-year average in area, **CO<sub>2</sub> emissions** from fires were **higher than previous years**.
- Fires linked to **heatwaves, drought, and land-use change**.

**Deadly Heat and Human Impacts**

- Around **half of the global population** faces **heat-related health risks**.
- **Worker productivity** drops by 2–3% for each degree above 20°C.
- **Economic losses** exceeded **\$1 trillion in 2024** due to heat-related productivity declines.
- Heat impacts are particularly severe in **tropical and developing regions**.

Source: <https://epaper.thehindu.com/ccidist-ws/th/th-international/issues/155718/OPS/GHTF402I8.1+GU2F565LC.1.html>

**80. Soil's organic carbon**

**Q. With reference to Soil Organic Carbon (SOC) in India, consider the following statements:**

1. SOC content is generally higher in colder and high-altitude regions compared to hot plains.
2. Imbalanced use of fertilisers, especially excessive urea, has been found to reduce SOC levels.
3. SOC helps in improving the soil's water-holding capacity and nutrient availability.

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (d) 1, 2 and 3**

**Explanation:**

**In NEWS:** Climate change, imbalance in fertilizer use impacts soil's organic carbon: ICAR study

**Soil Organic Carbon (SOC):**

- **Soil Organic Carbon (SOC)** refers to the **carbon component of organic compounds** present in the soil.
- It originates from:
  - **Plant residues** (leaves, roots, crop stubble)
  - **Animal residues**
  - **Microbial biomass** and by-products
- It forms part of **Soil Organic Matter (SOM)** — which typically contains **~58% carbon**.
- SOC is a **key indicator of soil health and agricultural sustainability**.
- The ICAR study found that **colder, high-altitude regions** (like Himalayan areas) retain **more soil organic carbon (SOC)** than **hotter plains**, as low temperatures slow down decomposition. **Hence statement 1 is correct.**
- **Imbalanced fertiliser use**, particularly **excess urea and phosphorus** with inadequate potash and organic manure, **reduces SOC** by degrading soil biology and organic matter content. **Hence statement 2 is correct.**
- SOC is essential for **soil structure, water retention, nutrient cycling**, and overall **soil fertility**, making it key to sustainable agriculture. **Hence statement 3 is correct.**

**PYQ REFERENCE: (2019)**

**Q. Consider the following statements:**

1. Agricultural soils release nitrogen oxide into environment
2. Cattle release ammonia into environment
3. Poultry industry releases reactive nitrogen compounds into environment

**Which of the above given statements are the correct?**

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

Source: <https://www.thehindu.com/sci-tech/energy-and-environment/climate-change-imbalance-in-fertiliser-use-kill-soils-organic-carbon-icar-study/article70257059.ece>

**81. Protection of Plant Variety and Farmers' Rights Act (PPV&FRA Act)**

**Q. With reference to the 'Protection of Plant Variety and Farmers' Rights Act (PPV&FRA Act)' which among the following statements are correct?**

- I. Farmers cannot sell branded seeds of protected varieties under the Act.
- II. Farmers can register their own varieties, only if they are new or novel.
- III. A farmer cannot be prosecuted for infringement unless it is proven that they knowingly violated the Act.
- IV. Breeders receive exclusive rights to produce, sell, market, distribute, import and export the protected variety.

Select the correct answer using the code given below:

- (a) I, II and III
- (b) I, II and IV
- (c) I, III and IV
- (d) II, III and IV

**Answer: (c) I, III and IV**

**Explanation:**

**In NEWS:** What changes are planned for the plant variety Act?

**Protection of Plant Variety and Farmers' Rights Act (PPV&FRA Act):**

- The PPV&FRA Act, 2001 establishes a **sui generis system** of plant variety protection in India.
- The Act was enacted to comply with **TRIPS Agreement Article 27.3(b)**.
- Under the Act, **new, extant, farmers' and essentially derived varieties (EDVs)** can all be registered.
- Registration of varieties is based on the **DUS criteria** — Distinctness, Uniformity, and Stability.
- The **PPV&FR Authority** is the central body responsible for registering plant varieties and maintaining the National Register.

**Farmers' and Breeders' Rights**

- Farmers have the right to **save, use, sow, resow, exchange, share and sell** unbranded seed of protected varieties.
- Farmers **cannot sell branded seeds** of protected varieties under the Act. **Hence statement I is correct.**
- Farmers can register their **own varieties**, even if they are **not new or novel**. **Hence statement II is incorrect.**
- A farmer cannot be prosecuted for infringement unless it is proven that they **knowingly** violated the Act. **Hence statement III is correct.**
- Breeders receive exclusive rights to **produce, sell, market, distribute, import and export** the protected variety. **Hence statement IV is correct.**
- The protection period is **18 years** for trees and vines and **15 years** for other crops.

**PYQ REFERENCE: (2019)**

**Q. Consider the following statements:**

1. According to the Indian Patents Act, a biological process to create a seed can be patented in India.
2. In India, there is no Intellectual Property Appellate Board.
3. Plant varieties are not eligible to be patented in India.

**Which of the statements given above is/are correct?**

- (a) 1 and 3 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

**Source:** [https://www.thehindu.com/sci-tech/agriculture/what-changes-are-planned-for-the-plant-variety-act-explained/article70296155.ece#:~:text=There%20is%20a%20proposal%20to.and%20Stability%20\(DUS\)%20test.](https://www.thehindu.com/sci-tech/agriculture/what-changes-are-planned-for-the-plant-variety-act-explained/article70296155.ece#:~:text=There%20is%20a%20proposal%20to.and%20Stability%20(DUS)%20test.)

## **82. The Tropical Forests Forever Facility (TFFF)**

**Q. Consider the following statements:**

1. The Tropical Forests Forever Facility (TFFF) is a global financing initiative led by Brazil to support the long-term conservation of tropical forests.
2. India has joined the Tropical Forests Forever Facility (TFFF), but only as an observer.

**Which of the statements given above is/are correct?**

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

**Answer: (c) Both 1 and 2**

**Explanation:**

**In NEWS:** Ahead of COP 30, India to join new global tropical forest fund as observer

**Tropical Forests Forever Facility (TFFF):**

- The Tropical Forests Forever Facility (TFFF) is a global financing initiative led by **Brazil** to support the long-term conservation of tropical forests. **Hence statement 1 is correct.**
- It aims to provide sustainable, performance-based funding to countries that successfully preserve their forests and maintain low deforestation rates.
- The TFFF seeks to shift economic incentives, making it more financially rewarding for countries to protect forests than to exploit them.
- The Tropical Forests Forever Facility was formally launched in 2025, with endorsements from over 50 tropical forest countries and initial pledges exceeding 5.5 billion US dollars.
- At its formal launch, the TFFF secured endorsements from 53 countries, including 34 tropical-forest countries covering over 90 % of developing-country tropical forests.
- India has joined the Tropical Forests Forever Facility (TFFF), but only as an observer. **Hence statement 2 is correct.**

**Key Features:**

- **Purpose:** To create a large-scale investment fund that rewards forest-rich nations for keeping their tropical forests intact.
- **Financing Model:** The facility uses a blended finance approach, combining public funds, philanthropic contributions, and private investments. The capital is invested, and the financial returns are used to make payments to countries that meet forest protection goals.
- **Scale and Target:** The initiative seeks to mobilize around 125 billion US dollars, including about 25 billion from governments and philanthropies to attract roughly 100 billion from private investors.
- **Performance-Based Payments:** Participating countries receive payments if they keep deforestation rates below a set threshold (for example, around 0.5% annually).
- **Inclusion of Indigenous Peoples and Local Communities:** At least 20% of the benefits are directed to Indigenous peoples and local communities who play a vital role in forest conservation.
- **Monitoring and Accountability:** Eligibility is based on transparent and verifiable forest monitoring systems to ensure that payments are linked to real conservation results.

**PYQ REFERENCE: (2015)**

**Q. With reference to 'Forest Carbon Partnership Facility', which of the following statements is/are correct?**

1. It is a global partnership of governments, businesses, civil society and indigenous peoples.
2. It provides financial aid to universities, individual scientists and institutions involved in scientific forestry research to develop eco-friendly and climate adaptation technologies for sustainable forest management.
3. It assists the countries in their 'REDD+ (Reducing Emissions from Deforestation and Forest Degradation+)' efforts by providing them with financial and technical assistance.

**Select the correct answer using the code given below.**

- (a) 1 only

- (b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

Source: <https://www.thehindu.com/news/international/india-joins-brazil-led-forest-fund-as-observer-calls-for-stronger-ambition-10-years-after-paris-pact/article70255373.ece>

### 83. The Open Planetary Intelligence Network (OPIN)

Q. Consider the following statements regarding the Open Planetary Intelligence Network (OPIN):

1. It is a global, open-access platform aimed at sharing data and knowledge on planetary health and climate resilience.
2. OPIN seeks to integrate AI-driven insights with human decision-making to support environmental governance.
3. Membership in OPIN is restricted to UN member states only.

Which of the statements given above is/are correct?

- (a) 1 only  
(b) 1 and 2 only  
(c) 2 and 3 only  
(d) 1, 2 and 3

Answer: (b) 1 and 2 only

Explanation:

In NEWS: COP30: differences persist over fossil fuel phase-out roadmap

#### Open Planetary Intelligence Network (OPIN)

- OPIN is an international initiative aimed at sharing knowledge, data, and best practices on planetary health, climate resilience, and environmental governance.
- OPIN functions as a global, open-access platform enabling collaboration among governments, scientists, civil society, and AI systems for tackling planetary challenges. **Hence statement 1 is correct.**
- The network promotes evidence-based policy-making on issues such as biodiversity loss, climate change, sustainable development, and disaster management.
- OPIN seeks to integrate AI-driven insights with human governance to support better environmental planning and crisis response. **Hence statement 2 is correct.**
- OPIN is open and collaborative, not limited only to UN member states; it encourages participation from research institutions, NGOs, and other stakeholders. **Hence statement 3 is incorrect**
- The platform supports real-time data exchange, including information on weather events, planetary boundaries, pollution, and ecosystem health.
- OPIN emphasizes transparency, open science, and global cooperation, aligning with UN principles on sustainable development and planetary stewardship.
- One of the core goals is to build a shared planetary dashboard tracking global environmental indicators.
- OPIN aims to increase the capacity of developing nations by providing open tools and data for climate adaptation and mitigation.
- The initiative also focuses on community participation, ensuring indigenous and local knowledge is integrated into global environmental decision-making.
- OPIN is part of a global movement toward "planetary intelligence", which combines AI, scientific data, and decentralized governance to manage planetary-scale risks.

PYQ REFERENCE: (2022)

Q. Consider the following:

1. Aarogya Setu
2. CoWIN
3. DigiLocker
4. DIKSHA

Which of the above are built on top of open-source digital platforms?

- (a) 1 and 2 only  
(b) 2, 3 and 4 only  
(c) 1, 3 and 4 only  
(d) 1, 2, 3 and 4

Source:

<https://www.google.com/amp/s/indianexpress.com/article/ups-c-current-affairs/upsc-essentials/how-india-showcases-climate-leadership-at-cop30-10376662/lite/>

### 84. Mission LiFE (Lifestyle for Environment)

Q. With reference to 'Mission LiFE', consider the following statements:

1. It seeks to mobilise at least 1 billion people globally to adopt sustainable lifestyles.
2. It aims to make 80% of Indian villages and urban local bodies environment-friendly by 2028.

Which of the statements given above is/are correct?

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

Answer: (c) Both 1 and 2

Explanation:

In NEWS: Prime Minister shares an article on how India's Mission LiFE is reviving time-honoured conservation practices

#### Mission LiFE (Lifestyle for Environment):

- Mission LiFE was announced by the Prime Minister at COP26 (Glasgow, 2021) and launched on 20 October 2022 at the Statue of Unity, Gujarat.
- The mission promotes a shift from "use-and-dispose" to "mindful and deliberate" consumption.
- It seeks to mobilise at least 1 billion people globally to adopt sustainable lifestyles. **Hence statement 1 is correct.**
- India became the first country to include LiFE in its Nationally Determined Contribution (NDC) under the Paris Agreement.
- Mission LiFE operates in three phases — *Change in Demand* (individual behaviour), *Change in Supply* (industry alignment), and *Change in Policy* (institutional framework).
- It aims to make 80% of Indian villages and urban local bodies environment-friendly by 2028. **Hence statement 2 is correct.**
- Focus areas include reducing plastic use, conserving water, saving energy, cutting food waste, and promoting eco-friendly transport.
- It aligns with the UN's Sustainable Development Goals (SDGs) and India's climate commitments.
- It represents a people-led, planet-friendly movement focusing on individual responsibility and collective climate action.
- The mission highlights India's leadership in global climate diplomacy and sustainable lifestyle advocacy.

**PYQ REFERENCE: (2016)**

**Q. With reference to 'Agenda 21', sometimes seen in the news, consider the following statements:**

1. It is a global action plan for sustainable development.
2. It originated in the World Summit on Sustainable Development held in Johannesburg in 2002.

**Which of the statements given above is / are correct?**

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

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2186170>

### **85. Green Climate Fund (GCF)**

**Q. Consider the following statements with respect to the Green Climate Fund (GCF)**

- I. It is a climate finance fund established under the United Nations Environment Program(UNEP).
- II. It raises money through voluntary contributions from developed countries.
- III. Recipient countries themselves can propose and design projects that help turn their climate commitments into concrete, implementable actions.

**Which of the statements given above are correct?**

- (a) I and II only  
(b) II and III only  
(c) I and III only  
(d) I, II and III

**Answer: (b) II and III only**

**Explanation:**

**In NEWS:** India to spruce up mechanisms for accessing climate finance

**Green Climate Fund (GCF):**

- The GCF is a climate finance fund established under the UN Framework Convention on Climate Change (UNFCCC). **Hence statement I is incorrect.**
- It's headquartered in Songdo, Incheon, South Korea.
- Its main goal is to help developing countries fund projects for both mitigation (reducing greenhouse gas emissions) and adaptation (dealing with climate impacts).
- The GCF has a 24-member Board, with equal representation from developed and developing countries.
- GCF raises money through voluntary contributions from developed countries. **Hence statement II is correct.**
- It uses a mix of financial instruments: grants, concessional loans, equity, and guarantees.
- A core principle of GCF is "country ownership": recipient countries lead on proposing and designing projects. **Hence statement III is correct.**
- There is a "Readiness Programme" which helps countries build capacity to engage with GCF.
- GCF works through accredited entities (over 200) — these include development banks, national institutions, UN agencies, and civil society organizations.

**GCF's strategic plan (2024–2027) focuses on:**

- Helping countries convert their climate commitments (like NDCs) into real projects.

- Scaling up clean energy, especially in buildings, transport, and industry.
- Strengthening adaptation financing, particularly for local-level actions.
- Providing early-stage funding for climate startups and innovative business models.
- Making it easier for national and regional institutions (especially in developing countries) to directly access GCF funds.

**PYQ REFERENCE: (2015)**

**Q. Which of the following statements regarding 'Green Climate Fund' is/are correct?**

1. It is intended to assist the developing countries in adaptation and mitigation practices to counter climate change.
2. It is founded under the aegis of UNEP, OECD, Asian Development Bank and World Bank.

**Select the correct answer using the code given below.**

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

**Source:** <https://www.thehindu.com/sci-tech/energy-and-environment/india-to-spruce-up-mechanisms-for-accessing-climate-finance/article70287103.ece#:~:text=As%20of%20August%202024%2C%20India,enterprises%20and%20climate%20start%20Dups.>

### **86. Integrated forum on Climate Change and Trade (IFCCT)**

**Q. Consider the following statements regarding the 'Integrated forum on Climate Change and Trade (IFCCT):**

1. IFCCT was launched at COP-30 as a permanent platform on climate - trade interface.
2. It aims to negotiate trade rules and engage in non-judgmental, solution-oriented dialogue on climate and trade policies.
3. It mandates to frame binding global trade rules on carbon border taxes.
4. The Forum is open to all Parties to the United Nations Framework Convention on Climate Change (UNFCCC).

**How many of the above statements are correct?**

- (a) Only one  
(b) Only two  
(c) Only three  
(d) All four

**Answer: (b) Only two**

**Explanation:**

**In NEWS:** COP30 launches forum to navigate climate and trade tensions

**Integrated forum on Climate Change and Trade (IFCCT):**

- **IFCCT was launched at COP-30 (2025)** as a permanent platform on climate–trade interface. **Hence statement 1 is correct.**
- The objective is **not to negotiate trade rules**, but to engage in **non-judgmental, solution-oriented dialogue** on how trade measures, climate ambition, and development priorities interact. **Hence statement 2 is incorrect.**
- The Forum is **open to all Parties to the UNFCCC**. **Hence statement 4 is correct.**
- It is **co-chaired by Brazil and a developed-country partner**, ensuring balanced representation.

- IFCTT discusses **carbon border measures, green industrial policies, and trade-climate tensions**.
- It begins with **open-ended consultations (2025-26)** to define agenda and modalities.
- **TESS (Trade, Environment, Sustainable Development)** serves as the technical Secretariat.
- The Forum works on aligning **trade rules with climate ambition** while considering development needs.
- It focuses on concerns of developing countries about **green protectionism**.
- First formal consultation is scheduled for **Geneva (Dec 2025)**.
- IFCTT does **not create binding trade rules**, unlike the WTO.  
**Hence statement 3 is incorrect.**
- It promotes **One-Earth, fair-transition principles** in climate-related trade policies.
- Helps countries adapt to **CBAM-type border carbon taxes**.
- Facilitates cooperation on **green supply chains, low-carbon technologies**, and standards.
- Aims to prevent trade measures from undermining **climate justice and equity**.

**PYQ REFERENCE: (2025)**

**Q. Consider the following statements:**

**Statement I:** At the 28th United Nations Climate Change Conference (COP28), India refrained from signing the 'Declaration on Climate and Health'.

**Statement II:** The COP28 Declaration on Climate and Health is a binding declaration; and if signed, it becomes mandatory to decarbonize the health sector.

**Statement III:** If India's health sector is decarbonized, the resilience of its health-care system may be compromised.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement II and Statement III are correct and both of them explain Statement I
- (b) Both Statement II and Statement III are correct but only one of them explains Statement I
- (c) Only one of the Statements II and III is correct and that explains Statement I**
- (d) Neither Statement II nor Statement III is correct

Source: <https://www.downtoearth.org.in/climate-change/cop30-launches-forum-to-navigate-climate-and-trade-tensions>

**87. Paris Agreement**

**Q. Consider the following statements:**

**Statement I:** The Paris Agreement is a legally binding international treaty on climate change adopted under the United Nations Framework Convention on Climate Change (UNFCCC).

**Statement II:** It aims to limit global average temperature rise to well below 2°C above pre-industrial levels and to pursue efforts to limit it to 1.5°C.

**Statement III:** Under the Paris Agreement, all countries have common emission reduction targets which are legally enforceable through international sanctions.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement II and Statement III are correct and both of them explain Statement I
- (b) Both Statement II and Statement III are correct but only one of them explains Statement I
- (c) Only one of the Statements II and III is correct and that explains Statement I**
- (d) Neither Statement II nor Statement III is correct

**Answer: (c) Only one of the Statements II and III is correct and that explains Statement I**

**Explanation:**

**In NEWS:** 10 years of Paris Agreement

**Paris Agreement (2015):**

- The **Paris Agreement** is a **legally binding international treaty on climate change** adopted under the **United Nations Framework Convention on Climate Change (UNFCCC)**. **Hence, Statement I is correct**
- **Adopted:** December 12, 2015 (COP 21, Paris)
- **Entered into force:** November 4, 2016
- **India ratified:** October 2, 2016 (Gandhi Jayanti).
- It replaced the **Kyoto Protocol (1997)** as the main global climate framework.

**Objective**

To **limit global warming** to:

- **Well below 2°C** above pre-industrial levels, and
- **Pursue efforts** to limit it to **1.5°C**. **Hence, Statement II is correct and explains Statement I.**

It aims to enhance the global response to climate change by promoting **climate resilience, adaptation, and low greenhouse gas emissions development**.

**Key Provisions**

Area	Provision / Mechanism
<b>Global Temperature Goal</b>	Limit warming to <2°C, preferably 1.5°C.
<b>Nationally Determined Contributions (NDCs)</b>	Each country sets its <b>own emission reduction targets; no binding</b> targets from the UN. <b>Hence, Statement III is incorrect</b>
<b>Progressive Ambition</b>	NDCs to be <b>updated every 5 years</b> , reflecting the highest possible ambition.
<b>Transparency Framework</b>	Countries must <b>report regularly</b> on emissions and progress.
<b>Global Stocktake</b>	Conducted <b>every 5 years</b> (starting 2023) to assess collective progress.
<b>Climate Finance</b>	Developed countries to provide <b>\$100 billion annually</b> to developing nations for mitigation and adaptation.
<b>Adaptation</b>	Equal emphasis on <b>adaptation and mitigation</b> measures.
<b>Loss and Damage</b>	Recognizes the need to <b>address loss and damage</b> from climate impacts, though not a liability mechanism.

**Differentiated Responsibilities**

- Based on the principle of **Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)**.
- Developed nations must **take the lead** in reducing emissions and financing developing countries.

**India's Commitments (NDCs under Paris Agreement)**

Goal	Target by 2030
<b>Emission Intensity</b>	Reduce GDP emission intensity by <b>45% from 2005 levels</b> .
<b>Non-fossil Energy Capacity</b>	Achieve <b>50% installed capacity</b> from non-fossil fuel sources.
<b>Carbon Sink</b>	Create additional <b>2.5 - 3 billion tonnes</b> of CO <sub>2</sub> equivalent sink through forests.
<b>Renewable Energy</b>	500 GW non-fossil energy capacity.
<b>Net Zero</b>	Achieve <b>Net Zero by 2070</b> (announced at COP26, Glasgow).

**Mechanisms under Paris Agreement**

- Article 6 Mechanism:** Market and non-market approaches to support emission reductions.
  - 6.2:** Bilateral carbon trading.
  - 6.4:** Successor to Kyoto's Clean Development Mechanism (CDM).
  - 6.8:** Non-market approaches (e.g., technology transfer, capacity building).
- Global Stocktake (2023):** First assessment held at **COP28 (Dubai)**.
- Transparency Framework:** Common rules for all nations to report GHG emissions.

**Institutions & Finance**

- **Green Climate Fund (GCF):** Mobilizes climate finance.
- **Adaptation Fund & Technology Mechanism:** Support developing countries.
- **Developed nations** committed to mobilize **\$100 billion annually by 2020**, extended through 2025.

**Difference between Kyoto Protocol & Paris Agreement**

Aspect	Kyoto Protocol (1997)	Paris Agreement (2015)
Binding nature	Legally binding emission targets for developed countries only	Voluntary, self-determined targets (NDCs) for all countries
Approach	"Top-down"	"Bottom-up"
Coverage	Only Annex I (developed)	All UNFCCC parties

**Recent Developments**

- **COP26 (Glasgow, 2021):**
  - Global **Net Zero commitments** by mid-century.
  - **Glasgow Climate Pact:** Phase down of unabated coal power and end of inefficient fossil fuel subsidies.
- **COP27 (Egypt, 2022):**
  - Established a **Loss and Damage Fund** for vulnerable countries.
- **COP28 (UAE, 2023):**
  - First **Global Stocktake** held under the Paris Agreement; emphasized energy transition and tripling renewables by 2030.

**PYQ REFERENCE: (2016)**

**Q. With reference to the Agreement at the UNFCCC Meeting in Paris in 2015, which of the following statements is/are correct?**

- The Agreement was signed by all the member countries of the UN and it will go into effect in 2017.
- The Agreement aims to limit the greenhouse gas emissions so that the rise in average global temperature by the end of this century does not exceed 2°C or even 1.5°C above pre-industrial levels.
- Developed countries acknowledged their historical responsibility in global warming and committed to donate \$1000 billion a year from 2020 to help developing countries to cope with climate change.

**Select the correct answer using the code given below.**

- (a) 1 and 3 only  
**(b) 2 only**  
(c) 2 and 3 only  
(d) 1, 2 and 3

**Source:** <https://www.c2es.org/document/10-years-of-the-paris-agreement-progress-toward-achieving-key-goals/>

**88. Kunming Biodiversity Fund**

**Q. The Kunming Biodiversity Fund (KBF) is:**

- (a) A bilateral fund by China and India for biodiversity projects  
(b) A fund under the World Bank for climate finance  
(c) A UN fund exclusively for marine biodiversity  
(d) A multi-partner trust fund set up by China and UNEP

**Answer: (d) A multi-partner trust fund set up by China and UNEP**

**Explanation:**

**In NEWS:** Seven countries secure \$5.8million from Kunming Biodiversity Fund to make agriculture more nature-friendly

**Kunming Biodiversity Fund (KBF):**

- KBF is a **Multi-Partner Trust Fund (MPTF)** set up by **China and UNEP** to support global biodiversity action. **Hence option (d) is correct.**
- Initial seed funding: **≈ US\$200–230 million** contributed by China.
- Launched formally in **May 2024**, announced at **CBD COP15** in Kunming, China.
- Objective: To help **developing countries implement the Kunming-Montreal Global Biodiversity Framework (KM-GBF)** and their National Biodiversity Strategies and Action Plans (NBSAPs).
- Focus areas: policy & law reform, capacity building, multilateral cooperation, and mobilizing financial resources.
- Works mainly through **grant support** to countries, emphasizing transparency and global cooperation.
- Governance: **Executive Council** (China, UNEP, SCBD), **Interim Secretariat** hosted at UNEP, and **Independent Technical Advisory Group (ITAG)**.
- In 2025, approved **22 full-size projects** in **34 countries** and committed **US\$5.8 million** for FAO-led biodiversity projects.
- Significance: Strengthens global biodiversity finance, supports sustainable development, and offers partnership opportunities for India.

**PYQ REFERENCE: (2023)**

**Q. Invasive Species Specialist Group' (that develops Global Invasive Species Database) belongs to which one of the following organisations?**

- (a) **The International Union for Conservation of Nature**  
(b) The United Nations Environment Programme  
(c) The United Nations World Commission for Environment and Development  
(d) The World Wide Fund for Nature

Source: [https://www.downtoearth.org.in/wildlife-biodiversity/seven-countries-secure58million-fromkunming-biodiversity-fund-to-make-agriculture-more-nature-friendly#google\\_vignette](https://www.downtoearth.org.in/wildlife-biodiversity/seven-countries-secure58million-fromkunming-biodiversity-fund-to-make-agriculture-more-nature-friendly#google_vignette)

**89. Strategic Interventions for Green Hydrogen Transition (SIGHT)**

**Q. Which among the following statements correctly describes the aim of Strategic Interventions for Green Hydrogen Transition (SIGHT)?**

- (a) Funding international green hydrogen projects exclusively
- (b) Providing financial incentives for the domestic manufacturing of electrolyzers
- (c) Subsidizing fossil fuel imports to reduce costs for hydrogen production
- (d) Financing the construction of ports for hydrogen export

**Answer: (b) Providing financial incentives for the domestic manufacturing of electrolyzers**

**Explanation:**

**In NEWS:** Unlocking India's Green Hydrogen Production Potential

**Strategic Interventions for Green Hydrogen Transition (SIGHT):**

**Launched:** As part of National Green Hydrogen Mission in 2023

**Objective:** To accelerate the domestic production and use of green hydrogen by supporting manufacturing of key components, primarily electrolyzers, and creating an enabling ecosystem for green hydrogen.

**Hence option (b) is correct.**

**Key Features**

- Total outlay: ₹17,490 crore (up to FY2029-30)
- Provides subsidies/incentives for manufacturing of electrolyzers and other critical equipment required for green hydrogen production.

**Focus Areas:**

- Manufacturing of electrolyzers
- Promoting domestic green hydrogen production
- Reducing dependence on imported hydrogen equipment
- Supporting scaling-up and commercialization of green hydrogen technologies

**Strategic Goals:**

- Build a domestic supply chain for hydrogen production and equipment
- Encourage private sector participation in green hydrogen production
- Reduce costs of green hydrogen over time
- Enhance industrial competitiveness in emerging hydrogen markets

**Outcomes & Progress (as per 2025)**

- Encourages private investment and public-private partnerships in green hydrogen manufacturing.
- Supports India's goal of 125 GW of renewable energy dedicated to hydrogen production by 2030.
- Directly linked with pilot projects and industrial adoption across fertilizer, steel, and refinery sectors.

**PYQ REFERENCE: (2023)**

**Q. Consider the following heavy industries:**

1. Fertilizer plants
2. Oil refineries
3. Steel plants

**Green hydrogen is expected to play a significant role in decarbonizing how many of the above industries?**

- (a) Only one
- (b) Only two
- (c) All three**
- (d) None

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2189126>

**90. Greenhouse Gas Emissions for 2024**

**Q. Consider the following pairs:**

S.no	Greenhouse Gas (GHG)	Sources of emission
1.	Carbon dioxide (CO <sub>2</sub> )	Burning of fossil fuels, deforestation, cement production
2.	Methane (CH <sub>4</sub> )	Agriculture, landfills, fossil fuel extraction
3.	Nitrous oxide (N <sub>2</sub> O)	Fertilizer use, industrial activities, biomass burning
4.	Fluorinated gases (HFCs, PFCs, SF <sub>6</sub> , NF <sub>3</sub> )	Refrigeration, air-conditioning, industrial processes

**How many pairs given above are correctly matched?**

- (a) Only one pair
- (b) Only two pairs
- (c) Only three pairs
- (d) All four pairs**

**Answer: (d) All four pairs**

**Explanation:**

**In NEWS:** India recorded the highest greenhouse gas emissions for 2024

**Greenhouse Gas (GHG) Emissions:**

- **Greenhouse gases (GHGs)** are gases in the Earth's atmosphere that **trap heat** by absorbing and re-emitting infrared radiation.
- This process leads to the **greenhouse effect**, which warms the Earth's surface and maintains a temperature suitable for life.
- However, excessive GHG emissions cause **global warming and climate change**.

**Major Greenhouse Gases**

Gas	Share in Global Warming Potential (approx.)	Main Sources	Atmospheric Lifetime
<b>Carbon dioxide (CO<sub>2</sub>)</b>	~74%	Burning of fossil fuels, deforestation, cement production	100-200 years

<b>Methane (CH<sub>4</sub>)</b>	~17%	Agriculture (rice paddies, livestock), landfills, fossil fuel extraction	12 years
<b>Nitrous oxide (N<sub>2</sub>O)</b>	~6%	Fertilizer use, industrial activities, biomass burning	114 years
<b>Fluorinated gases (HFCs, PFCs, SF<sub>6</sub>, NF<sub>3</sub>)</b>	~3%	Refrigeration, air-conditioning, industrial processes	Hundreds to thousands of years
<b>Water vapour (H<sub>2</sub>O)</b>	Variable	Natural evaporation and transpiration	Short-lived (few days)

Hence, all four pairs are correct.

**PYQ REFERENCE: (2019)**

**Q. Consider the following:**

1. Carbon monoxide
2. Methane
3. Ozone
4. Sulphur dioxide

**Which of the above are released into atmosphere due to the burning of crop/biomass residue?**

- (a) 1 and 2 only  
(b) 2, 3 and 4 only  
(c) 1 and 4 only  
**(d) 1, 2, 3 and 4**

Source: [https://epaper.thehindu.com/ccidist-ws/th/th\\_international/issues/156051/OPS/GUEF49GT1.1+G60F5F297.1.html](https://epaper.thehindu.com/ccidist-ws/th/th_international/issues/156051/OPS/GUEF49GT1.1+G60F5F297.1.html)

**91. World Energy Outlook 2025**

**Q. The 'World Energy Outlook' is an annual flagship report of**

- (a) United Nations Environment Programme (UNEP)  
(b) International Energy Agency (IEA)  
(c) World Energy Council (WEC)  
(d) Organisation of Petroleum Exporting Countries (OPEC)

**Answer: (b) International Energy Agency (IEA)**

**Explanation:**

**In NEWS:** World Energy Outlook 2025: IEA warns of mounting security risks in 'Age of Electricity'

**World Energy Outlook:**

- It is the International Energy Agency (IEA)'s annual flagship report providing medium- to long-term projections of global energy supply, demand, investment, trade and emissions. **Hence option (b) is correct.**
- It uses a scenario-based approach, comparing different futures such as: current policy settings, announced pledges, and pathways aligned with climate objectives (e.g., net-zero).
- It covers the entire energy system—fossil fuels, renewables, electricity, end-use sectors, infrastructure, and regional dynamics.

**World Energy Outlook 2025:**

- The world is entering an "Age of Electricity", with electricity demand growing faster than overall energy use.
- Advanced economies are increasingly driving this demand, due in part to data centres and AI facilities.
- Critical minerals pose a new risk: for 19 out of 20 key energy-related minerals, a single country dominates refining, with about 70% market share on average.
- Supply chain vulnerabilities are rising due to export controls and geopolitical tensions.
- While oil and gas supply seems adequate in the near term, markets remain exposed to geopolitical risks, and weaker climate policies may reduce supply buffers.
- About 730 million people still lack electricity, and nearly 2 billion rely on polluting cooking fuels. Meeting electricity access by 2035 and clean cooking by 2040 is possible but not guaranteed.
- Even with rapid emissions reductions, global warming above 1.5°C remains likely.

**PYQ REFERENCE: (2022)**

**Q. Consider the following statements:**

1. "The Climate Group" is an international non-profit organization that drives climate action by building large networks and runs them.
2. The International Energy Agency in partnership with the Climate Group launched a global initiative "EP100".
3. EP100 brings together leading companies committed to driving innovation in energy efficiency and increasing competitiveness while delivering on emission reduction goals.
4. Some Indian companies are members of EP100.
5. The International Energy Agency is the Secretariat to the 'Under2 Coalition'.

**Which of the statements given above are correct?**

- (a) 1, 2, 4 and 5  
**(b) 1, 3 and 4 only**  
(c) 2, 3 and 5 only  
(d) 1, 2, 3, 4 and 5

Source: <https://www.downtoearth.org.in/energy/world-energy-outlook-2025-iea-warns-of-mounting-security-risks-in-age-of-electricity>

**92. Global Climate Risk Index 2025**

**Q. With reference to the Global Climate Risk Index, which of the following statements is/are correct?**

- I. The Global Climate Risk Index is an annual report published by the United Nations Environment Programme (UNEP).  
II. Losses as a percentage of GDP is one of the indicators of the index.

**Select the correct answer using the code given below:**

- (a) I only  
(b) II only  
(c) Both I and II  
(d) Neither I nor II

**Answer: (b) II only**

**Explanation:**

**In NEWS:** India Improves Its Rank in Global Climate Risk Index 2025

**Global Climate Risk Index (CRI)?**

- The Global Climate Risk Index is an annual report published by Germanwatch, a Germany-based environmental think tank. **Hence statement I is incorrect.**

- It analyses and ranks countries according to how severely they have been affected by extreme weather events such as storms, floods, heatwaves, droughts, and cyclones.

#### Parameters Used

- Number of deaths due to extreme weather events.
- Deaths per 100,000 inhabitants.
- Economic losses (in US dollars).
- Losses as a percentage of GDP. **Hence statement II is correct.**
- A lower rank (closer to 1) means the country was more severely affected.

#### India's Performance in Global Climate Risk Index 2025

##### Long-Term Ranking (1993–2022):

- India is ranked 6th most affected country globally.
- This means India has been among the top 10 most climate-vulnerable nations for nearly three decades.

##### Recent-Year Ranking (for 2022–2024 period):

- For 2024 alone, India's rank improved to around 15th, showing moderate improvement in disaster preparedness and resilience.
- For the period **1995–2024, India stands at 9th**, indicating continued exposure to extreme weather risks.

#### Impacts:

- **Human Losses:** Over 80,000 lives lost due to extreme weather events such as cyclones, floods, and heatwaves.
- **Economic Losses:** Estimated losses of about US\$170–180 billion during the assessment period.
- **Major Disasters:** Cyclones (Amphan, Tauktae, Yaas), extreme rainfall, flash floods, and prolonged heatwaves have been key contributors.

#### PYQ REFERENCE: (2018)

Q. "Momentum for Change: Climate Neutral Now" is an initiative launched by

- The Intergovernmental Panel on Climate Change
- The UNEP Secretariat
- The UNFCCC Secretariat**
- The World Meteorological Organisation

Source: <https://currentaffairs.adda247.com/india-improves-its-rank-in-global-climate-risk-index-2025/>

#### ECONOMY

#### 93. 100% FDI in India

Q. Which of the following sectors allow 100% FDI under the automatic route?

- Telecom
- Defence manufacturing
- Railway infrastructure
- E-commerce marketplace model

Select the correct answer using the code given below.

- 1, 2 and 3
- 1, 2 and 4
- 1, 3 and 4
- 2, 3 and 4

**Answer: (c) 1, 3, and 4**

**Explanation:**

**In NEWS:** Insurance Bill Proposes 100% FDI to Boost Sector Growth

#### Sectors Allowing 100% FDI Through Automatic Route

- Agriculture & allied sectors (except plantations like tea/coffee require specific norms).
- Mining and exploration of metal & non-metal ores.
- Petroleum & natural gas (exploration activities).
- Manufacturing sector.
- Construction development projects.
- Railway infrastructure (excluding operations).
- E-commerce marketplace model (not inventory model).
- Single Brand Retail Trading (SBRT).
- White-label ATM operations.
- Telecom services.
- Power including renewable energy.
- Civil aviation (greenfield airports).

#### Sectors Allowing 100% FDI But Through Government Route

- Defence industry (up to 74% automatic; 100% via govt route in cases of access to modern tech). **Hence 2 is incorrect**
- Satellites – establishment and operation.
- Print media (non-news, specialty journals).
- Food products retail trading (manufactured & produced in India).
- Banking (Private sector)—technically 74% automatic + 100% for NRIs; some sub-categories reach 100% with approvals.

#### Sectors With FDI Restrictions (Not 100%)

- Insurance sector → 74%
- Digital media → 26%
- News media → 26%
- Defence automatic limit → 74%
- Private security agencies → 74%

#### Prohibited Sectors (0% FDI)

- Lottery business
- Gambling & betting
- Tobacco manufacturing (cigarettes, cigars, etc.)
- Atomic energy
- Railway operations
- Real estate business (other than construction)

#### PYQ REFERENCE: (2011)

Q. Both Foreign Direct Investment (FDI) and Foreign Institutional Investor (FII) are related to investment in a country. Which one of the following statements best represents an important difference between the two?

- FII helps bring better management skills and technology, while FDI only brings in capital
- FII helps in increasing capital availability in general, while FDI only targets specific sectors**
- FDI flows only into the secondary market, while FII targets primary market.
- FII is considered to be more stable than FDI

Source:

<https://m.economictimes.com/news/economy/policy/bill-to-hike-fdi-in-insurance-sector-to-100-per-cent-likely-to-be-tabled-in-winter-session-of-parliament/articleshow/125507177.cms>

#### 94. The Labour Codes

Q. Which of the following are the outcomes of the implementation of the four labour codes in India, effective from 21st November 2025?

- 'Gig work', 'Platform work', and 'Aggregators' have been defined for the first time.
- Textile workers are entitled to double wages for overtime work.
- For IT & ITES Workers, release of Salary is mandatory by the 7th of every month.

IV. Women workers are permitted to work in night shifts across all establishments, subject to their consent and safety measures.  
V. Fixed-term employees receive gratuity only after completing five years of service.

Select the correct answer using the code given below.

- (a) I, II and V only
- (b) II, III and IV
- (c) I, III, IV and V
- (d) I, II, III and IV

**Answer: (d) I, II, III and IV**

**Explanation:**

**In NEWS:** The four Labour Codes - the Code on Wages, 2019, the Industrial Relations Code, 2020, the Code on Social Security, 2020 and the Occupational Safety, Health and Working Conditions Code, 2020 are being made effective from 21st November 2025

**Benefits of Labour Reforms Across Key Sectors:**

**1. Fixed-Term Employees (FTE):**

- FTEs to receive **all benefits equal to permanent workers**, including leave, medical, and social security.
- **Gratuity eligibility after just one year**, instead of five. **Hence statement V is incorrect.**
- **Equal wages** as permanent staff, increasing income and protection.
- Promotes direct hiring and reduces excessive contractualisation.

**2. Gig & Platform Workers:**

- 'Gig work', 'Platform work', and 'Aggregators' **have been defined for the first time. Hence statement I is correct.**
- Aggregators must contribute **1-2% of the annual turnover**, capped at 5% of the amount paid/payable to gig and platform workers.
- Aadhaar-linked Universal Account Number will make welfare benefits easy to access, fully portable, and available across states, regardless of migration.

**3. Contract Workers:**

- **Fixed-term employees (FTE) will increase employability and ensure social security, legal protection like benefits equal to permanent employees.**
- Fixed-term employees will become eligible for gratuity after one year of continuous service.
- **Principal employer will provide health benefits and social security benefits to contract workers.**
- **Workers to get free annual health check-up.**

**4. Women Workers:**

- **Gender discrimination legally prohibited.**
- **Equal pay for equal work** ensured.
- Women are **permitted to work night shifts and in all types of work** (including underground mining and heavy machinery), **subject to their consent** and mandatory safety measures. **Hence statement IV is correct.**
- Mandatory women's representation in grievance redressal committees
- Provision to add parents-in-law in Family Definition of Female employees, expanding dependent coverage and ensuring inclusivity.

**5. Youth Workers:**

- **Minimum wage is guaranteed for all workers.**
- All workers to get **appointment letters**, - promoting social security, employment history and formal employment.
- Worker exploitation by employers is prohibited—payment of wages during leave has been made mandatory.
- To ensure a decent standard of living, workers will receive wages as per the **floor wage** determined by the Central Government.

**6. MSME Workers:**

- All MSME workers covered under the **Social Security Code, 2020**, eligibility based on employee count.
- **Minimum wage guaranteed for all workers.**
- **Workers will have access to facilities such as canteens, drinking water, and rest areas.**
- **Provisions for standard working hours, double overtime wages, and paid leave.**
- Timely wage payment ensured.

**7. Beedi & Cigar Workers:**

- **Minimum wages** guaranteed for all.
- Working hours capped at **8 -12 hours per day, 48 hours per week has been capped.**
- Overtime Work beyond prescribed hours, to be consent based and pay at least double the normal wage rate.
- Timely payment of wages ensured.
- **Workers eligible for Bonus** after completing 30 days of work in a year.

**8. Plantation Workers:**

- **Plantation workers are now brought under the OSHWC Code and the Social Security Code.**
- Labour Codes apply to plantations with more than 10 workers or 5 or more hectares.
- **Mandatory safety training on handling, storing, and using chemicals.**
- **Protective equipment mandatory** to prevent accidents and chemical exposure.
- Workers and their families **to get full ESI medical facilities; Education facilities** for their children are also guaranteed.

**9. Audio-Visual & Digital Media Workers:**

- **Digital and audio-visual workers, including journalists in electronic media, dubbing artists, and stunt persons will now receive full benefits.**
- **Mandatory appointment letter for all workers** - clearly stating their designation, wages, and social security entitlements.
- **Timely payment of wages** ensured.
- **Overtime Work beyond prescribed hours, to be consent based and pay at least double the normal wage rate.**

**10. Mine Workers:**

- **The Social Security Code treats certain commuting accidents as employment-related, subject to conditions of time, and place of employment.**
- Central Government notified standards to **standardize workplace occupational safety and health conditions.**
- **Health safety for all workers will be ensured.** Free annual health check-up will be provided.
- **Limit on working hours** set to 8 to 12 hours per day, 48 hours per week to ensure health and work-life balance.

**11. Hazardous Industry Workers:**

- All workers will receive **free annual health check-ups.**
- **Central Government will frame national standards** for better safety of workers.
- **Women can work in all establishments**, including underground mining, heavy machinery, and hazardous jobs, ensuring equal job opportunities for all.
- Mandatory safety committee at each site for on-site safety monitoring, and safe handling of hazardous chemicals ensured.

**12. Textile Workers:**

- All **Migrant Workers** (direct, contractor-based and self-migrated) to get **Equal wages, welfare benefits** and PDS portability benefits.
- Workers can raise claims for upto 3 years for settlement of pending dues, facilitating flexible and easy resolution.
- Provision for **double wages for workers for overtime work.**

**Hence statement II is correct.**

**13. IT & ITES Workers:**

- **Release of Salary mandatory by the 7th of every month.** Transparency and trust ensured. **Hence statement III is correct.**

- Equal pay for equal work made mandatory, women's participation is strengthened.
- Facility for women to work night shifts in all establishments – women to get opportunity to earn higher wages.
- Timely resolution of harassment, discrimination, and wage related disputes.
- Guarantee of social security benefits through fixed-term employment and mandatory appointment letters.

#### 14. Dock Workers:

- All Dock workers to get formal recognition, Legal Protection.
- Mandatory appointment letters to guarantee social security benefits.
- Provident fund, pension, and insurance benefits ensured for all, whether contract or temporary dock workers.
- Employer-funded annual health check-ups mandatory.
- Dock workers to get mandatory medical facilities, first aid, sanitary and washing areas, etc., to ensure decent work conditions and safety.

#### 15. Export Sector Workers:

- Export sector fixed term workers to receive gratuity, provident fund (PF), and other social security benefits.
- Every worker to have the option of availing annual leaves after 180 days of work in a year.
- Every worker to get right to timely wage payment and no unauthorized wage deductions and no wage ceiling restrictions.
- Women allowed to work in night shifts with consent, ensuring opportunity to earn higher income.
- Safety and welfare measures include mandatory written consent, double wages for overtime, safe transportation, CCTV surveillance, and security arrangements.

#### PYQ REFERENCE: (2021)

Q. With reference to casual workers employed in India, consider the following statements:

1. All casual workers are entitled for Employees Provident Fund coverage.
2. All casual workers are entitled for regular working hours and overtime payment.
3. The government can by a notification specify that an establishment or industry shall pay wages only through its bank account.

Which of the above statements are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only**
- (c) 1 and 3 only
- (d) 1, 2 and 3

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2192463>

#### 95. Foreign Portfolio Investment

Q. With reference to Foreign Portfolio Investment (FPI), consider the following statements:

1. FPIs can invest in Indian securities such as shares, debentures, and government bonds.
2. FPI investors are allowed to hold more than 10% of the paid-up capital in an Indian company.
3. FPI is regulated under SEBI (Foreign Portfolio Investors) Regulations, 2019.

Which of the statements given above are not correct?

- (a) 1 and 3 only
- (b) 2 only**
- (c) 1 and 2 only
- (d) 1, 2 and 3

Answer: (b) 2 only

Explanation:

In NEWS: 'Highest' FPI sell-off signals waning confidence in India

#### Foreign Portfolio Investment (FPI):

● FPI refers to investment by foreign investors in financial assets of another country, such as shares, bonds, mutual funds, and derivatives, without control or management rights. **Hence statement 1 is correct.**

#### ● Nature:

- Considered short-term and volatile capital flow.
- Made through foreign institutional investors (FIIs), qualified foreign investors (QFIs), or foreign institutional entities.

● Regulator: SEBI (Securities and Exchange Board of India) regulates FPIs under the SEBI (Foreign Portfolio Investors) Regulations, 2019. **Hence statement 3 is correct.**

#### ● Difference from FDI:

- FDI implies a long-term investment with ownership and control ( $\geq 10\%$  equity).
- FPI implies passive investment ( $< 10\%$  equity). **Hence statement 2 is incorrect.**

#### ● Impact on Economy:

- Increases liquidity in capital markets.
- Sensitive to interest rate differentials, exchange rate stability, and global risk sentiment.
- Can lead to capital flight and currency depreciation during global shocks.

#### PYQ REFERENCE: (2020)

Q. With reference to the "Foreign Portfolio Investment (FPI)" in India, consider the following statements:

1. It is a component of India's capital account.
2. It is regulated by the Reserve Bank of India.

Which of the statements given above is/are correct?

- (a) 1 only**
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Source: <https://www.thehindu.com/business/highest-fpi-sell-off-signals-waning-confidence-in-india/article70245047.ece#:~:text=Foreign%20investors%20have%20sold%20%E2%82%B9,off%20in%20about%2020%20years.>

#### 96. Impact of Rupee Depreciation

Q. When the Indian rupee depreciates against the US dollar, which of the following is most likely to occur?

- (a) Indians studying abroad spend less in rupee terms.
- (b) Imports of crude oil become cheaper.
- (c) Export-oriented firms earn more in rupee terms.
- (d) Foreign portfolio investors increase inflows automatically.

Answer: (c) Export-oriented firms earn more in rupee terms.

Explanation:

In NEWS: At a sharp depreciation of 4.3% against the U.S. Dollar (USD) in this calendar year (January-December 2025), the Indian Rupee (INR) has become the worst performing currency in Asia, forex analysts said. It may further slide to 90 against the USD if the trade deal with the U.S. does not happen in near future, they cautioned.

**Impact of Rupee Depreciation:**

**1. Positive Impacts**

- (a) Boosts Exports
- Indian goods become **cheaper** in global markets.
  - Beneficial for **textiles, IT services, pharmaceuticals, agriculture. Hence option (c) is correct.**
- (b) Increase in Remittances (NRI)
- NRIs sending money home get **more rupees per dollar**, boosting household income.
- (c) Tourism Competitiveness
- Foreign tourists find India **cheaper**, supporting hospitality and tourism sectors.
- (d) Inflows into Certain Sectors
- Outsourcing and IT services may see **higher earnings** in rupee terms.

**2. Negative Impacts**

- (a) Higher Import Bill
- Imports become **costlier** (e.g., crude oil, gold, electronics).
  - Worsens **Current Account Deficit (CAD)**.
- (b) Fuel Inflation
- Costlier crude oil - higher petrol, diesel, transport costs - overall **inflation**.
- (c) Pressure on Forex Reserves
- RBI may intervene using forex reserves to stabilize the rupee - reserves decline.
- (d) Increases External Debt Burden
- India's external debt (especially **commercial borrowings**) becomes **more expensive to service** in rupees.
- (e) Corporate Pressure
- Companies dependent on imported raw materials face higher costs → reduced margins.
- (f) Outflow of Foreign Investment
- Foreign investors may pull out fearing instability → **FPI outflows**, stock market correction.
- (g) Negative for Outbound Tourism & Foreign Education
- Indians travelling abroad or studying overseas face **higher expenses**.

**PYQ REFERENCE: (2022)**

**Q. With reference to the Indian economy, consider the following statements:**

1. If the inflation is too high, Reserve Bank of India (RBI) is likely to buy government securities.
2. If the rupee is rapidly depreciating, RBI is likely to sell dollars in the market.
3. If interest rates in the USA or European Union were to fall, that is likely to induce RBI to buy dollars.

**Which of the statements given above are correct?**

- (a) 1 and 2 only  
**(b) 2 and 3 only**  
 (c) 1 and 3 only  
 (d) 1, 2 and 3

**Source:** <https://www.thehindu.com/business/with-sharp-fall-rupee-is-asias-worst-performing-currency-may-slide-to-90-say-analysts/article70322595.ece>

**97. Bitcoin**

**Q. With reference to Bitcoin, consider the following statements:**

1. Bitcoin is a centralised digital currency that operates with a central authority using blockchain technology for secure peer-to-peer transactions.
2. In India, it is not a legal tender, but not explicitly banned.

**Which of the statements given above are correct?**

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

**Answer: (c) Both 1 and 2**

**Explanation:**

**In NEWS:** Bitcoin shaken by long-term holders dumping \$45 billion

**Bitcoin:**

- Bitcoin is a **decentralised digital currency** that operates **without a central authority or intermediary**, using **blockchain technology** for secure peer-to-peer transactions.
- **Origin:** Introduced in **2009** by an unknown person/group under the pseudonym **Satoshi Nakamoto**.
- **Technology:**
  - Based on **Blockchain**, a **distributed ledger** that records all transactions transparently.
  - Uses **cryptography** for security and verification.
- **Control and Supply:**
  - Not issued or controlled by any **central bank or government**.
  - Total supply is **capped at 21 million bitcoins**, ensuring scarcity.
- **Mining:** New bitcoins are generated through **mining**, which involves solving complex mathematical problems using computing power.
- **In India:**
  - **Not a legal tender**, but **not explicitly banned**.
  - Regulated indirectly under laws like **Prevention of Money Laundering Act (PMLA)** for crypto exchanges.
  - The government imposes **30% tax** on virtual digital asset gains and **1% TDS** on transactions (Union Budget 2022-23).

**PYQ REFERENCE: (2020)**

**Q. With reference to the "Virtual Currencies", consider the following statements:**

1. They are issued by the central banks.
2. They can be used as a medium of exchange.
3. They can be used for making payments and remittances.

**Which of the statements given above are correct?**

- (a) 1 and 2 only  
**(b) 2 and 3 only**  
 (c) 1 and 3 only  
 (d) 1, 2 and 3

**Source:**

<https://economictimes.indiatimes.com/markets/cryptocurrency/bitcoin-shaken-by-long-term-holders-dumping-45-billion/articleshow/125121141.cms?from=mdr>

**98. Currency and Coins in India**

**Q. Consider the following statements regarding the issuance of currency and coins in India:**

1. The Reserve Bank of India (RBI) is the sole authority to issue banknotes in all denominations.
2. The government produces coins at its four mints in Mumbai, Kolkata, Hyderabad, and Delhi.
3. The Government of India under the RBI Act, 1934 is authorized to issue coins, as it is responsible for designing and minting them.

**How many of the above statements are correct?**

- (a) Only one  
 (b) Only two  
 (c) All three  
 (d) None

**Answer: (d) None**

**Explanation:**

**In NEWS:** Modi releases ₹100 coin and postal stamps in Puttaparthi

**Authority for Issuing Currency**

● **Reserve Bank of India (RBI):** Sole authority to issue **banknotes** in India, **except the ₹1 note.**

● **Government of India:** Issues the **one rupee note** and all **coins.**

**Legal Framework**

● **RBI Act, 1934:** Governs issuance of **banknotes.**

● **Coinage Act, 2011:** Governs minting and circulation of **coins.**

**Hence statement 3 is incorrect.**

● **Finance Ministry:** Coordinates issuance of ₹1 note, coins, and **commemorative coins.**

**Types of Currency**

● **Banknotes:** All denominations except ₹1, issued by RBI. **Hence statement 1 is incorrect.**

● **Coins:** Issued by Government of India; denominations include ₹1, ₹2, ₹5, ₹10, and commemorative coins.

● **Commemorative Coins:** Legal tender, issued to mark **special events, personalities, or milestones**, usually in limited circulation.

**Minting of Coins**

● **Mints:** Located at Mumbai, Kolkata, Hyderabad, and **Noida.**

**Hence statement 2 is incorrect.**

● **Function:** Manufacture coins and supply them to RBI for circulation.

**Roles & Responsibilities**

● **RBI:** Manages circulation, denomination, and design of banknotes (except ₹1).

● **Finance Ministry / Government of India:** Issues ₹1 notes and coins; approves commemorative coins.

**PYQ REFERENCE: (2023)**

**Q. With reference to Central Bank digital currencies, consider the following statements:**

1. It is possible to make payments in a digital currency without using the US dollar or SWIFT system.

2. A digital currency can be distributed with a condition programmed into it such as a time-frame for spending it.

**Which of the statements given above is/are correct?**

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

**Source:** <https://www.thehindu.com/news/national/andhra-pradesh/pm-releases-100-coin-postal-stamps-at-sathya-sai-baba-centenary-in-puttaparthi/article70298246.ece#:~:text=Prime%20Minister%20Narendra%20Modi%20on,Baba%20in%20Prasanthi%20Nilayam%20here.>

**99. BRICS Cross-Border Payments Initiative, or BRICS Pay**

**Q. The BRICS Pay initiative, often discussed in global economic forums, primarily seeks to:**

(a) To facilitate cross-border digital payments among BRICS nations using local currencies.

(b) To promote dollar-denominated settlements among BRICS members.

(c) To create a unified BRICS digital currency for trade settlements.

(d) To regulate cryptocurrency transactions within BRICS countries.

**Answer: (a) To facilitate cross-border digital payments among BRICS nations using local currencies.**

**Explanation:**

**In NEWS:** How BRICS is challenging SWIFT

**BRICS Cross-Border Payments Initiative (BRICS Pay):**

● The **BRICS Cross-Border Payments Initiative (BCBPI)**, commonly called **BRICS Pay**, is a proposed mechanism to enable **cross-border payments using local currencies** among BRICS member countries — Brazil, Russia, India, China, and South Africa.

**Hence option (a) is correct.**

● **Aim:** To **reduce dependence on the US Dollar and SWIFT network** and promote **financial sovereignty** among emerging economies.

**Objectives**

1. To facilitate **settlements in national currencies** among BRICS nations.

2. To build **interoperability** between the domestic payment systems of member countries (like India's UPI, Brazil's PIX, etc.).

3. To **reduce transaction costs and sanctions risks** in international trade.

4. To strengthen **South-South financial cooperation** and move toward a **multipolar financial order.**

**Features**

● Envisions a **digital payments platform** linking national payment systems.

● **Not a common BRICS currency;** rather, it is a **technical framework** for clearing and settlement.

● Operates through **national currencies**, avoiding reliance on the US dollar or euro.

● Discussions held under the **BRICS Finance Ministers and Central Bank Governors** meetings.

**Current Status**

● Still in **conceptual or exploratory stage;** no formal launch.

● **Russia and China** have been key proponents.

● India supports the idea of **interoperable digital payments** but remains cautious about full monetary integration.

**Significance for India**

● Aligns with India's **UPI internationalisation goals** and **digital public infrastructure diplomacy.**

● Promotes **de-dollarisation** and resilience against **geopolitical financial disruptions.**

● Enhances India's **role in shaping alternative global financial systems.**

**PYQ REFERENCE: (2017)**

**Q. Which of the following is a most likely consequence of implementing the Unified Payments Interface (UPI)?**

(a) **Mobile wallets will not be necessary for online payments.**

(b) Digital currency will totally replace the physical currency in about two decades.

(c) FDI inflows will drastically increase.

(d) Direct transfer of subsidies to poor people will become very effective.

**Source:** <https://www.thehindu.com/news/international/how-brics-is-challenging-swift-explained/article70241519.ece#:~:text=The%20BRICS%20Cross%20Border%20Payments,international%20money%20transfer%20and%20which>

**100. Digital gold**

Q. Which of the following statements is/are correct with respect to the “Digital Gold” in the Indian context?

1. It is a government-issued electronic bond denominated in gold value.
2. It represents a fractional ownership of physical gold held by a private platform on behalf of the investor.
3. It is a SEBI-regulated gold-backed mutual fund listed on stock exchanges.

Select the correct answer using the code given below:

- (a) 1 and 2 only  
(b) 2 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

**Answer: (b) 2 only**

**Explanation:**

**In NEWS:** Sebi warns against digital gold: What is it and the risks involved

**Digital Gold:**

- Digital gold is an online investment product allowing investors to buy gold in small quantities, stored in vaults by service providers. Ownership is represented digitally, not physically.

- Digital gold represents **fractional ownership of physical gold** stored in secure vaults by **private platforms** (not government or SEBI-regulated entities). **Hence, Statement 2 is correct**

**Regulatory Gap:** SEBI has warned that **digital gold is not a “security” or a “commodity derivative”**, hence lies **outside SEBI’s regulatory ambit**, leaving investors unprotected under existing laws.

**Risks:**

- Counter-party default (provider or custodian failure)
- Absence of legal framework for ownership & redemption
- Misleading marketing claims of “safe” or “regulated” product

**SEBI Advisory (2024–25):**

- SEBI cautioned investors against unregulated digital gold platforms and advised them to prefer **regulated alternatives** like **Gold ETFs, Sovereign Gold Bonds (SGBs), or Electronic Gold Receipts (EGRs)**.

**Note:**

- The government-issued electronic bond linked to gold is the **Sovereign Gold Bond (SGB)**, not “digital gold.” **Hence, Statement 1 is Incorrect**

- Gold-backed mutual funds or **Gold ETFs** are SEBI-regulated instruments, but **digital gold is not**. **Hence, Statement 3 is Incorrect**

**PYQ REFERENCE: (2022)**

Q. With reference to Non-Fungible Token (NFTs), consider the following statements:

1. They enable the digital representation of physical assets.
2. They are unique cryptographic tokens that exist on a blockchain.
3. They can be traded or exchanged at equivalency and therefore can be used as a medium of commercial transactions.

Which of the statements given above are correct?

- (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

Source: <https://indianexpress.com/article/business/sebi-warns-against-digital-gold-risks-involved-10358517/>

**101. The “Shram Shakti Niti 2025”**

Q. The “Shram Shakti Niti 2025” recently seen in news is primarily associated with:

- (a) India’s policy framework for labour welfare and social security reform.
- (b) A new national policy on renewable energy skill development.
- (c) The government’s AI framework for green manufacturing.
- (d) A scheme for formalising micro-enterprises through digital credit.

**Answer: (a) India’s policy framework for labour welfare and social security reform.**

**Explanation:**

**In NEWS:** Exploited workers, a labour policy’s empty promises - The draft Shram Shakti Niti 2025 further exposes the gaps in India’s labour landscape

**The “Shram Shakti Niti 2025”:**

- **Released by:** Ministry of Labour & Employment (MoLE), 2025 (Draft for public consultation).

- **Vision:** Build a “Fair, Inclusive and Future-Ready Labour Ecosystem” aligned with **Viksit Bharat @ 2047**.

- **Nature:** India’s **first integrated National Labour & Employment Policy**.

- **Approach:** Shifts focus from *regulation* → *facilitation* → *empowerment*.

**Hence option (a) is correct.**

**Key Objectives / Pillars**

- **Universal Social Security**

- Coverage for all workers — formal, informal, gig, migrant.
- Proposes *portable, lifelong* social-security accounts.
- Integration with **e-Shram, ESIC, and EPFO** frameworks.

- **Employment Generation & Future-Readiness**

- Skill-matching through a *Digital Employment Stack*.
- Promote *green jobs, digital jobs*, and lifelong skilling.
- Transform **National Career Service (NCS)** into *Digital Public Infrastructure (DPI)* for employment.

- **Women & Youth Empowerment**

- Target: **35% female labour-force participation by 2030**.
- Incentives for flexible work, childcare support, and safe workplaces.

- **Ease of Compliance & Labour Governance Reform**

- Simplify inspections via *risk-based digital systems*.
- Encourage self-certification, single-window compliance.
- Labour Ministry’s role redefined from **regulator** → **job facilitator**.

- **Occupational Safety, Health & Working Conditions**

- Strengthen safety audits, OSH codes, and data-driven monitoring.

- **Institutional & Governance Framework**

- **National Labour & Employment Policy Implementation Council (NLPI)** at Centre.

- **State Labour Missions** and **District Labour & Employment Resource Centres (DLERCs)**.

- Promotes **cooperative federalism** and convergence across ministries.

- **Digital and Green Transition**

- Leverage AI, data analytics, and digital worker identity.
- Support green enterprises, circular economy jobs.

**PYQ REFERENCE: (2022)**

**Q. In India, which one of the following compiles information on industrial disputes, closures, retrenchments and lay-offs in factories employing workers ?**

- (a) Central Statistics Office
- (b) Department for Promotion of Industry and Internal Trade
- (c) Labour Bureau**
- (d) National Technical Manpower Information System

Source: <https://www.thehindu.com/opinion/op-ed/exploited-workers-a-labour-policys-empty-promises/article70267861.ece>

### 102. Daughter Funds

**Q. Which one of the following best describes the term "Daughter Fund" sometimes seen in news?**

- (a) A government-owned fund that directly provides grants and subsidies to startups.
- (b) A professionally managed Alternative Investment Fund (AIF) that receives capital from a larger Fund of Funds and invests it in startups and technology enterprises.
- (c) A fund created by State governments to finance higher education institutions.
- (d) A special purpose vehicle (SPV) under the Companies Act used for disinvestment of public sector units.

**Answer: (b) A professionally managed Alternative Investment Fund (AIF) that receives capital from a larger Fund of Funds and invests it in startups and technology enterprises.**

**Explanation:**

**In NEWS:** Electronics Development Fund - With ₹257.77 crore invested, the Fund has supported 128 startups nationwide

**Daughter Funds:**

- **Daughter Funds are professionally managed venture or angel funds** that receive capital from a larger "Parent Fund" (Fund of Funds) and invest in early-stage startups or high-technology ventures. **Hence option (b) is correct.**
- They act as **intermediary financial vehicles** that channel both public and private investment into innovation-driven enterprises.
- This model helps **de-risk public capital** while leveraging private sector expertise and co-investment.
- The **Parent Fund (e.g., Electronics Development Fund – EDF)** acts as a **Fund of Funds**.
- It contributes to selected **Daughter Funds**, which are registered under **SEBI AIF Category I or II**.
- **Daughter Funds then invest in startups**, MSMEs, and technology ventures aligned with national priorities.

**PYQ REFERENCE: (2018)**

**Q. Which one of the following best describes the term "Merchant Discount Rate" sometimes seen in news?**

- (a) The incentive given by a bank to a merchant for accepting payments through debit cards pertaining to that bank.
- (b) The amount paid back by banks to their customers when they use debit cards for financial transactions for purchasing goods or services.
- (c) The charge to a merchant by a bank for accepting payments from his customers through the bank's debit cards.**
- (d) The incentive given by the Government to merchants for promoting digital payments by their customers through Point of Sale (PoS) machines and debit cards.

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2190256>

### 103. Export Promotion Mission

**Q. Which of the following statements regarding the Export Promotion Mission (EPM) is/are correct?**

1. The Mission aims to strengthen India's export competitiveness, particularly for MSMEs, first-time exporters, and labour-intensive sectors.
2. It is implemented under the Department of Commerce in collaboration with the Ministry of MSME and the Ministry of Finance.
3. It consolidates existing schemes such as the Interest Equalisation Scheme (IES) and the Market Access Initiative (MAI).

**Select the correct answer using the code given below:**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (d) 1, 2 and 3**

**Explanation:**

**In NEWS:** Cabinet approves Export Promotion Mission to strengthen India's export ecosystem with an outlay of Rs.25,060 crore

**Export Promotion Mission (EPM):**

- The **Export Promotion Mission (EPM)** was approved by the **Union Cabinet in 2025** as a flagship initiative from the **Union Budget 2025-26**.
- The total financial **outlay is ₹25,060 crore** for the period **FY 2025-26 to FY 2030-31**.
- **Objective:** To strengthen India's export competitiveness, especially for **MSMEs, first-time exporters, and labour-intensive sectors. Hence statement 1 is correct.**
- The Mission replaces **multiple fragmented export schemes** with a **single, outcome-based and adaptive mechanism**.
- **Nodal Ministry:** Department of Commerce, in collaboration with the **Ministry of MSME and Ministry of Finance. Hence statement 2 is correct.**
- The Mission operates under a **collaborative framework** involving **Financial Institutions, Export Promotion Councils, Commodity Boards, and State Governments**.
- **Implementing Agency:** Directorate General of Foreign Trade (DGFT).
- All processes — from **application to disbursement** — will be managed through a **dedicated digital platform** integrated with existing trade systems.
- The Mission consists of **two integrated sub-schemes**:
  - **NIRYAT PROTSAHAN:** Focus on affordable **trade finance** (interest subvention, export factoring, collateral guarantees, credit enhancement, etc.)
  - **NIRYAT DISHA:** Focus on **non-financial enablers** (export quality support, branding, packaging, trade fairs, logistics, and capacity building).
- The EPM **consolidates** existing schemes such as the **Interest Equalisation Scheme (IES) and Market Access Initiative (MAI). Hence statement 3 is correct.**

**PYQ REFERENCE: (2023)**

**Q. Consider the following statements:**

Statement-I: India accounts for 32% of global export of goods.

Statement-II: Many local companies and some foreign companies operating in India have taken advantage of India's Production-linked Incentive' scheme.

Which one of the following is correct in respect of the above statements?

- [a] Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I.  
 [b] Both Statement-I and Statement-II are correct and Statement-I is not the correct explanation for Statement-I.  
 [c] Statement-I is correct but Statement-II is incorrect.  
 [d] **Statement-I is incorrect but Statement-II is correct.**

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2189381>

#### 104. India's Textile Sector

Q. Consider the following statements:

- I. India is the second-largest producer of textiles and garments after China.  
 II. India is the largest producer of cotton globally.  
 III. India is the largest producer of jute in the world.  
 IV. India is the second-largest producer of silk.  
 IV. India has one of the largest installed spinning capacities in the world.

How many of the above statements are correct?

- (a) Only two  
 (b) Only three  
 (c) Only four  
 (d) All five

Answer: (d) All five

Explanation:

In NEWS: Textile, apparel export see sharp decline in October; government rescinds QCO on viscose fibres

#### Textile Sector in India

- The textile and apparel industry contributes around **2.3% to India's GDP**.
- It accounts for **11–12% of India's total exports**.
- India's textile sector is the **second-largest employer** after agriculture.
- The sector provides direct employment to **~45 million people** and indirect employment to **~100 million**.
- India's share in the **global textile trade** is around **4–5%**.

#### India's Global Position

- India is the **second-largest producer of textiles and garments** after China.
- India is the **largest producer of cotton** globally.
- India is the **largest producer of jute** in the world.
- India is the **second-largest producer of silk**.
- India has one of the **largest installed spinning capacities** in the world.

Hence all the statements are correct.

Source: <https://www.thehindu.com/business/Industry/textile-apparel-export-see-sharp-decline-in-oct-government-rescinds-qco-on-viscose-fibres/article70295928.ece>

#### 105. World's first 'Cashless Society'

Q. Which of the following countries is widely regarded as being closest to becoming the world's first cashless society?

- (a) Japan  
 (b) Switzerland  
 (c) Singapore  
 (d) Sweden

Answer: (d) Sweden

Explanation:

In NEWS: Which country has become the world's first 'Cashless Society'?

#### World's First 'Cashless Society':

- Sweden is often regarded as the **world's first cashless society**, where **digital payments dominate over cash transactions**. Hence **option (d) is correct**.
- **Less than 5%** of total transactions in Sweden are made using cash.
- Major digital payment systems: **Swish, BankID, and mobile banking apps** integrated across retailers and public services.
- Many banks in Sweden **no longer handle cash**, and even small shops, buses, and churches accept only **digital payments**.
- The **Riksbank** (Sweden's central bank) is developing the **e-Krona, a Central Bank Digital Currency (CBDC)**, to maintain financial inclusion and state control in a nearly cashless economy.
- Challenges include **data privacy, cybersecurity**, and ensuring **access for the elderly and rural populations**.

#### PYQ REFERENCE: (2018)

Q. Which of the following is the most likely consequence of implementing the 'Unified Payments Interface (UPI)'?

- (a) **Mobile wallets will not be necessary for online payments.**  
 (b) Digital currency will completely replace physical currency in India.  
 (c) FDI inflows will substantially increase.  
 (d) Direct transfer of subsidies to poor people will be discontinued.

Source: [https://timesofindia.indiatimes.com/life-style/travel/destinations/which-country-has-become-the-worlds-first-cashless-society/amp\\_articleshow/125106312.cms](https://timesofindia.indiatimes.com/life-style/travel/destinations/which-country-has-become-the-worlds-first-cashless-society/amp_articleshow/125106312.cms)

#### 106. Special Economic Zone

Q. What is/are the benefit(s) to India of establishing 'Special Economic Zones'?

1. They help in promotion of exports of goods and services.
2. They help in creation of employment opportunities.
3. They help in attracting investment from foreign sources.

Select the correct answer using the code given below:

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

Answer: (c) 1, 2 and 3

Explanation:

In NEWS: Govt panel working on new SEZ norms for exporters to access domestic market

#### Special Economic Zone (SEZ):

- SEZs are **geographically designated areas** where **economic laws are more liberal** than in the rest of the country to promote exports, FDI, and industrial growth.
- **Legal Basis:** Governed by the **Special Economic Zones Act, 2005** and **SEZ Rules, 2006**.
- **Nodal Ministry:** **Ministry of Commerce and Industry**.
- **Objectives:**
  - Promote exports of goods and services.
  - Attract foreign and domestic investment.

- Generate employment and infrastructure development.

**Hence all the statements are correct.**

● **Incentives:**

- Tax holidays and duty-free imports.
- Exemption from customs/excise duties.
- Simplified labour and land-use norms.
- Single-window clearance.

● **Types of SEZs:**

- **Free Trade and Warehousing Zones (FTWZ)**
- **IT/ITeS SEZs**
- **Multi-product SEZs**
- **Sector-specific SEZs**

● **Recent Developments:**

- Government plans to **replace SEZ Act, 2005 with the Development of Enterprise and Service Hubs (DESH) Bill**, to make zones compliant with WTO rules and boost domestic integration.
- **SEZ exports** contribute over **40% of India's total merchandise exports** (as per recent data).

**PYQ REFERENCE: (2016)**

**Q. With reference to an initiative called "The Economics of Ecosystems and Biodiversity (TEEB)" which of the following statements is/are correct?**

1. It is an initiative hosted by UNEP, IMF and World Economic Forum.
2. It is a global initiative that focuses on drawing attention to the economic benefits of biodiversity.
3. It presents an approach that can help decision-makers recognize, demonstrate and capture the value of ecosystems and biodiversity.

**Select the correct answer using the code given below.**

- (a) 1 and 2 only
- (b) 3 only
- (c) 2 and 3 only**
- (d) 1, 2 and 3

**Source:**

<https://indianexpress.com/article/business/economy/govt-panel-working-on-new-sez-norms-for-exporters-to-access-domestic-market-10348649/lite/>

**107. Basic Animal Husbandry Statistics 2025**

**Q. Consider the following statements about India's livestock production:**

1. India is the largest producer of milk in the world.
2. India is the second-largest producer of eggs globally.
3. India ranks first in global meat production

**Which of the statements given above is/are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only**
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Answer: (a) 1 and 2 only**

**Explanation:**

**In NEWS:** Release of Basic Animal Husbandry Statistics 2025 on the Occasion of National Milk Day 2025

**Basic Animal Husbandry Statistics 2025**

- The Department of Animal Husbandry and Dairying (DAHD) released the Basic Animal Husbandry Statistics 2025 on National Milk Day (26 November 2025).

- The report is based on the Integrated Sample Survey (ISS) conducted between March 2024 and February 2025, covering summer, rainy, and winter seasons.

- BAHS 2025 provides estimates of milk, egg, meat, and wool production, along with state-wise data, per capita availability, and infrastructure statistics.

- Milk production in India reached 247.87 million tonnes in 2024–25, registering a 3.58% growth over 2023–24.

- India continues to remain the world's largest milk producer.

**Hence statement 1 is correct.**

- The top five milk-producing states contribute nearly 54% of total national milk output.

- Milk production increased across indigenous cattle, crossbred cattle, and buffalo categories.

- Per capita availability of milk increased to around 485 g/day in 2024–25, up from 319 g/day in 2014–15.

- Egg production rose to 149.11 billion eggs in 2024–25, recording 4.44% growth.

- Egg production is dominated by commercial poultry, which contributes a major share. India is second in egg production. **Hence statement 2 is correct.**

- Meat production increased to 10.50 million tonnes, a 2.46% rise from the previous year.

- Poultry contributes almost half of India's total meat output.

- India ranks 3rd globally in total meat production (after China and the USA). **Hence statement 3 is incorrect.**

- Wool production increased to 34.57 million kg, registering 2.63% growth over 2023–24.

- BAHS includes statistics on veterinary infrastructure, artificial insemination services, and livestock health facilities.

- The report serves as a key evidence-based input for livestock-sector policymaking, investment planning, and programme design.

- Rising production of milk, eggs, and meat indicates improved rural livelihood opportunities and better nutritional availability.

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2195049>

**INTERNATIONAL RELATIONS**

**108. G20 Summit**

**Q. Consider the following statements with respect to G-20:**

- I. It is a permanent intergovernmental body with a headquarters in Geneva
- II. It originally began as a meeting of finance ministers and central bank governors.
- III. The 2025 summit was the first G20 Summit to be hosted by Africa.

**Which of the statements given above is/are correct?**

- (a) I and II
- (b) II and III
- (c) I and III
- (d) I only

**Answer: (b) II and III**

**Explanation:**

**In NEWS:** PM proposes new growth initiatives at G-20

**The G20 2025 Summit:**

- The G20 2025 Summit was hosted in Johannesburg, South Africa — the first G20 summit on African soil. **Hence statement III is correct.**

- The summit's theme centered on "Solidarity, Equality, and Sustainability."

- Important issues for this summit included global equity, debt sustainability for low/middle-income countries, just transition in climate finance, and reform of global governance institutions.

**New growth initiatives proposed by India at G-20:**

- **G20 Initiative on Countering the Drug-Terror Nexus:** The focus is on synthetic drugs like fentanyl, which pose a major threat to security, public health, and social stability.

- **Global Traditional Knowledge Repository:** It would document and share traditional wisdom (medical, ecological, cultural) from communities around the world, to preserve and propagate sustainable practices.

- **G20-Africa Skills Multiplier Initiative:** A "train-the-trainer" model to develop 1 million certified trainers in Africa over the next decade. These trainers would then skill millions more, boosting human capital in Africa.

- **G20 Global Healthcare Response Team:** Creating a G20 Global Healthcare Response Team: a pool of trained medical experts from member countries who can be rapidly deployed during health emergencies or natural disasters

**G 20:**

- The Group of Twenty (G20) is an international forum of major advanced and emerging economies that meets to discuss global economic, financial, developmental, and geopolitical issues.

- It is not a treaty-based organization, it is an informal forum.

**Hence statement I is incorrect.**

- Initially, the G20 was a meeting of finance ministers and central bank governors. **Hence statement II is correct.**

- After the global financial crisis of 2008, the G20 was elevated to a Leaders' Summit.

- Since then, G20 leaders (Presidents/Prime Ministers) meet annually.

- G20 members include Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, United Kingdom, United States, European Union.

**PYQ REFERENCE: (2023)**

**Q. Consider the following statements about G-20:**

1. The G-20 group was originally established as a platform for the Finance Ministers and Central Bank Governors to discuss international economic and financial issues.

2. Digital public infrastructure is one of India's G-20 priorities.

**Which of the statements given above is/are correct?**

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Source: <https://www.thehindu.com/news/national/pm-modi-proposes-three-initiatives-at-g20-including-one-to-counter-drug-terror-nexus/article70311148.ece>

**109. IBSA**

**Q. The IBSA Dialogue Forum was established primarily to:**

(a) Promote South-South cooperation among developing democracies

(b) Create a free trade area in the southern hemisphere

(c) Counter NATO influence in the Indo-Pacific region

(d) Establish a common currency among its members

**Answer: (a) Promote South-South cooperation among developing democracies**

**Explanation:**

**In NEWS:** India-Brazil-South Africa grouping: At IBSA meet, Modi calls for unified push on terror, UNSC reform

**IBSA:**

- IBSA (India-Brazil-South Africa Dialogue Forum) was formed in 2003 through the adoption of the Brasilia Declaration.

- It is a trilateral cooperation initiative bringing together India, Brazil, and South Africa.

- The grouping was formed to strengthen political coordination among the three countries on global issues.

- It seeks to provide a platform for policy dialogue among countries of the Global South. **Hence option (a) is correct.**

**IBSA: Objectives**

- The primary objective of IBSA is to promote cooperation among developing countries through joint initiatives.

- IBSA aims to strengthen coordination on global issues, including UN reforms, security, trade, and development.

- It works to amplify the voice of the Global South in international governance structures.

- The forum intends to promote inclusive development, particularly through programmes funded by the IBSA Fund for Poverty and Hunger Alleviation.

- IBSA seeks to enhance sectoral cooperation in areas such as science & technology, education, agriculture, energy, and health.

- IBSA strives to promote democracy, multilateralism, and respect for international law.

- The grouping also aims to facilitate trade and investment flows among India, Brazil, and South Africa.

**IBSA Fund:**

- The IBSA Fund (India-Brazil-South Africa Facility for Poverty and Hunger Alleviation) was established in 2004.

- It is a development cooperation fund created by India, Brazil, and South Africa under the IBSA Dialogue Forum.

- The fund aims to support poverty reduction, sustainable development, and capacity-building in developing countries.

- The IBSA Fund finances small-scale, replicable, and high-impact development projects in least-developed and developing countries.

- Projects focus on sectors such as education, health, women's empowerment, agriculture, renewable energy, and water and sanitation.

- The Fund is managed by the United Nations Office for South-South Cooperation (UNOSSC), ensuring transparency and implementation support.

- IBSA countries contribute equally to the Fund's financial resources.

**PYQ REFERENCE: (2025)**

**Q. Consider the following statements with regard to BRICS:**

I. The 16th BRICS Summit was held under the Chairship of Russia in Kazan.

II. Indonesia has become a full member of BRICS.

III. The theme of the 16th BRICS Summit was Strengthening Multiculturalism for Just Global Development and Security.

**Which of the statements given above is/are correct?**

(a) I and II

(b) II and III

(c) I and III

(d) I only

Source: <https://indianexpress.com/article/india/india-brazil-south-africa-grouping-ibsa-meet-modi-terror-uns-c-reform-10382123/>

### 110. India - Angola Relations

Q. With reference to India-Angola relations, consider the following statements:

1. Angola is India's second-largest trading partner in Africa after Nigeria.
2. Both India and Angola are members of the Non-Aligned Movement (NAM) and cooperate within the Global South framework.

Which of the statements given above is/are not correct?

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

Answer: (d) Neither 1 nor 2

Explanation:

In NEWS: Energy cooperation foundation of India-Angola trade ties, says President

#### India-Angola Relations:

##### Historical Background

- India supported Angola's liberation movement from Portuguese colonial rule (1970s).
- Diplomatic relations established: 1985. 40 years of diplomatic ties celebrated in 2025.
- Both countries are members of the Non-Aligned Movement (NAM) and cooperate in the Global South framework. Hence statement 2 is correct.

##### Key Agreements & MoUs (2025)

1. Energy cooperation - Expansion in oil, gas, and renewable energy sectors.
2. Angola joined the International Solar Alliance (ISA) → 123rd member nation.
3. Defence LoC of US \$200 million by India for defence procurement and capacity building.
4. MoUs in:
  - Traditional medicine (Ayurveda)
  - Agriculture and food processing
  - Culture and education exchange (2025-2029)

##### Economic & Trade Relations

- Bilateral trade: ~US \$4.2 billion (2022-23)
- India's exports: Pharmaceuticals, rice, machinery, textiles.
- Imports from Angola: Crude oil, LNG, diamonds.
- Angola = India's 2nd largest trading partner in Africa (after Nigeria). Hence statement 1 is correct.
- Indian companies active in oil exploration, diamonds, telecom, and pharmaceuticals.

##### Strategic Importance

- Energy security: Angola is a reliable crude oil source for India.
- Critical minerals: Opportunity for Indian investment in diamond and mineral mining.
- Defence cooperation: Training, supply, and joint manufacturing potential.
- Part of India's "Focus Africa" and "Vision for Global South" initiatives.

##### Multilateral Cooperation

- Collaboration in UN, AU, NAM, G-77, and ISA.
- Supports India's reform of UNSC and African representation in global governance.

- India's engagement aligns with "India-Africa Forum Summit (IAFS)" vision.

#### PYQ REFERENCE: (2023)

Q. Consider the following statements :

Statement-I :

Israel has established diplomatic relations with some Arab States.

Statement-II :

The 'Arab Peace Initiative' mediated by Saudi Arabia was signed by Israel and Arab League.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- (c) Statement-I is correct but Statement-II is incorrect
- (d) Statement-I is incorrect but Statement-II is correct

Source: <https://indianexpress.com/article/india/energy-cooperation-foundation-of-india-angola-trade-ties-says-president-10356005/>

### 111. UN Convention on the Law of the Sea (UNCLOS)

Q. Consider the following pairs:

S.no	Zone	Breadth from Baseline	Sovereign Rights / Jurisdiction
1.	Territorial Sea	Up to 12 nautical miles (nm)	Full sovereignty of the coastal state; foreign ships enjoy <i>innocent passage</i> .
2.	Contiguous Zone	12-24 nm	State can enforce laws on customs, taxation, immigration, and pollution.
3.	Exclusive Economic Zone (EEZ)	Up to 200 nm	Sovereign rights for exploring and exploiting natural resources in water, seabed, and subsoil.
4.	High Seas	Beyond EEZ	Open to all states; governed by international law.

How many of the Pairs given above are correctly matched?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (d) All four

Explanation:

In NEWS: What are the challenges with the High Seas Treaty?

#### United Nations Convention on the Law of the Sea (UNCLOS)

- The United Nations Convention on the Law of the Sea (UNCLOS) is often called the "Constitution of the Oceans."
- It establishes the legal framework for all activities in oceans and seas, balancing freedom of navigation, sovereign rights, and environmental protection.
- Adopted: 1982 (Montego Bay, Jamaica)
- Came into force: 1994

- **India ratified:** 1995

#### Objectives

- To define maritime zones and jurisdictional rights of coastal states.
- To regulate navigation, resource exploitation, marine environment protection, and dispute resolution.
- To promote the **peaceful use of oceans**, equitable utilization of marine resources, and scientific research.

#### Major Maritime Zones under UNCLOS

Zone	Breadth from Baseline	Sovereign Rights / Jurisdiction
<b>Territorial Sea</b>	Up to <b>12 nautical miles (nm)</b>	Full sovereignty of the coastal state; foreign ships enjoy <i>innocent passage</i> .
<b>Contiguous Zone</b>	<b>12-24 nm</b>	State can enforce laws on customs, taxation, immigration, and pollution.
<b>Exclusive Economic Zone (EEZ)</b>	Up to <b>200 nm</b>	Sovereign rights for exploring and exploiting natural resources (living and non-living) in water, seabed, and subsoil.
<b>Continental Shelf</b>	Up to <b>200 nm</b> (can extend up to <b>350 nm</b> if proven)	Rights to exploit seabed and subsoil resources.
<b>High Seas</b>	Beyond EEZ	Open to all states; governed by international law.

**Hence all pairs are correct.**

#### Institutional Mechanisms under UNCLOS

1. **International Tribunal for the Law of the Sea (ITLOS)** – settles disputes (based in Hamburg, Germany).
2. **International Seabed Authority (ISA)** – regulates deep seabed mining beyond national jurisdiction.
3. **Commission on the Limits of the Continental Shelf (CLCS)** – examines claims for extending continental shelves.

#### Importance for India

- Defines India's maritime rights over its **Exclusive Economic Zone (~2.02 million sq km)**.
- Guides India's **Blue Economy**, deep-sea mining (Polymetallic nodules in the Central Indian Ocean), and fisheries.
- Basis for **maritime boundary agreements** with neighboring countries.
- Provides a legal framework for **freedom of navigation** in the Indo-Pacific, crucial for India's trade and naval strategy.

#### PYQ REFERENCE: (2022)

**Q. With reference to the United Nations Convention on the Law of Sea, consider the following statements:**

1. A coastal state has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baseline determined in accordance with the convention.
2. Ships of all states, whether coastal or land-locked, enjoy the right of innocent passage through the territorial sea.
3. The Exclusive Economic Zone shall not extend beyond 200

nautical miles from the baseline from which the breadth of the territorial sea is measured.

**Which of the statements given above are correct?**

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3**

**Source:** <https://www.thehindu.com/news/international/what-are-the-challenges-with-the-high-seas-treaty-explained/article70237531.ece>

#### 112. Floating Nuclear-Resistant Artificial Island

**Q. The world's first floating nuclear-resistant artificial island is being developed by:**

- (a) United States
- (b) Japan
- (c) China
- (d) Russia**

**Answer: (c) China**

**Explanation:**

**In NEWS:** China's Nuclear-Resistant Floating Artificial Island

#### Nuclear-Resistant Floating Artificial Island:

- China is developing a floating artificial island that can survive a nuclear attack.
- Hence option (c) is correct.**
- It is not fixed to the seabed; it can move from one place to another.
- Made with strong, radiation-resistant materials.
- Designed to withstand blast waves, heat, and EMP effects of nuclear weapons.
- Has underground-style shelters and backup systems to keep working after an attack.
- Can be used as a military base — for radars, drones, missiles, and surveillance.
- Can also be shown as a civilian platform (weather monitoring, research).
- Helps China increase its presence and power in the Indo-Pacific and South China Sea.
- Harder to target because it can move, unlike China's fixed islands.
- Raises security concerns for India and other neighbouring countries.

#### PYQ REFERENCE: (2019)

**Q. Recently, India signed a deal known as 'Action Plan for Prioritization and Implementation of Cooperation Areas in the Nuclear Field' with which of the following countries?**

- (a) Japan
- (b) Russia**
- (c) The United Kingdom
- (d) The United States of America

**Source:** <https://indianexpress.com/article/world/china-building-worlds-first-floating-artificial-island-designed-to-withstand-nuclear-blasts-report-10380547/>

### 113. CTBTO

**Q. Which of the following statements about the Comprehensive Nuclear-Test-Ban Treaty (CTBT) is/are correct?**

1. The Comprehensive Nuclear-Test-Ban Treaty (CTBT) prohibits all nuclear explosions, whether for military or peaceful purposes.
2. India is a signatory of the treaty to support the goal of a nuclear test ban and continues to maintain a voluntary moratorium on testing.
3. The Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) successfully made the Comprehensive Nuclear-Test-Ban Treaty (CTBT) come into force.

Select the correct answer using the code below:

- (a) 1 only
- (b) 2 only
- (c) 1 and 3
- (d) 2 and 3

**Answer: (a) 1 only**

**Explanation:**

**In NEWS:** CTBTO: Global watchtower

#### Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)

- The **CTBTO Preparatory Commission** was established in 1997 to prepare for the treaty's entry into force.
- It is **headquartered in Vienna, Austria**.
- The CTBTO's main function is to **build and operate the verification regime**, including monitoring and inspection mechanisms.
- The CTBTO also maintains an **International Data Centre (IDC)** to collect, analyze, and share data from global monitoring stations.
- CTBTO monitoring data also helps in **civil applications**, including **tsunami warnings, climate research, and nuclear accident tracking**.
- The CTBTO works closely with the **UN Security Council** and other disarmament bodies to support global non-proliferation efforts.
- **India**, though a **non-signatory**, supports the **goal of a nuclear test ban** and continues to maintain a **voluntary moratorium on testing**. **Hence statement 2 is incorrect.**

#### Comprehensive Nuclear-Test-Ban Treaty (CTBT):

- The **CTBT** aims to **ban all nuclear explosions** — for both military and peaceful purposes — in all environments (underground, underwater, atmosphere, and outer space). **Hence statement 1 is correct.**
- The Treaty was **adopted by the UN General Assembly on 10 September 1996 and opened for signature on 24 September 1996**.
- The **CTBT has not yet entered into force**, as several key "Annex 2 States" (including India, China, the U.S., Pakistan, North Korea, Israel, Iran, and Egypt) have not signed or ratified it. **Hence statement 3 is incorrect.**
  - **Annex 2 States** are those countries that had nuclear reactors or research facilities at the time the treaty was negotiated — all must ratify the treaty for it to take effect.
- The CTBT is designed to **constrain the development and qualitative improvement of nuclear weapons** and end the arms race.
- India has **not signed the CTBT**, citing its discriminatory nature and the linkage of treaty entry into force to specific countries' ratification.
- Despite not being in force, the CTBT has created a **strong international norm against nuclear testing**, and most countries have observed a **de facto moratorium** on nuclear explosions.

**PYQ REFERENCE: (2018)**

**Q. What is/are the consequence/consequences of a country becoming the member of the 'Nuclear Suppliers Group'?**

1. It will have access to the latest and most efficient nuclear technologies.
2. It automatically becomes a member of "The Treaty on the Non-Proliferation of Nuclear Weapons (NPT)".

**Which of the statements given above is/are correct?**

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

**Source:**

<https://www.thehindu.com/news/international/comprehensive-nuclear-test-ban-treaty-organisation/article70251861.ece>

### 114. Abraham Accords

**Q. Consider the following countries:**

1. United Arab Emirates
2. Morocco
3. Iran
4. Bahrain
5. Jordan

**Which of the above are the signatories of the Abraham Accords?**

- (a) 1, 2 and 4
- (b) 1 and 3
- (c) 2 and 5
- (d) 3, 4 and 5

**Answer: (a) 1, 2 and 4**

**Explanation:**

**In NEWS:** Kazakhstan to join Abraham Accords as Trump pushes Mideast peace

#### Abraham Accords

- The **Abraham Accords** are a series of **U.S.-brokered agreements to normalize relations between Israel and several Arab countries**.
- They were **signed in September 2020** at the **White House, Washington D.C.**
- The accords were mediated by the **United States**, under the **Trump administration**.
- The first signatories were **Israel, United Arab Emirates (UAE), and Bahrain**.
- Later, **Sudan and Morocco** also joined the agreement framework. **Hence option (a) 1, 2 and 4 is correct.**
- The term "Abraham" symbolizes the **common patriarch** of Judaism, Christianity, and Islam — highlighting interfaith peace.

#### Objectives

1. To establish **formal diplomatic, economic, and security relations** between Israel and Arab states.
2. To **promote regional peace, stability, and cooperation** in the Middle East.
3. To counter the influence of **Iran and extremist groups** in the region.
4. To strengthen **trade, investment, technology, and defence partnerships**.

#### Key Provisions

- Establishment of **embassies** and **direct flights** between Israel and partner nations.
- Cooperation in areas like **tourism, healthcare, energy, and technology**.
- U.S. commitment to **regional security and arms agreements** (e.g., sale of F-35 jets to UAE).
- Promotion of **religious tolerance and interfaith dialogue**.

#### Significance

- Marked the **first Arab-Israeli peace agreement in 26 years**, after Jordan (1994).
- Led to **expanded trade and investment** between Israel and Gulf nations.
- Strengthened the **U.S. strategic presence** in the Middle East.
- Created a new **strategic bloc** countering Iran's regional influence.
- Encouraged **technological and defence cooperation** between Israel and Arab states.

#### Criticism & Challenges

1. The accords **sidestep the Palestinian issue**, offering no concrete progress toward a two-state solution.
2. They are seen by critics as **politically motivated** to isolate Iran.
3. Some Arab nations, including **Saudi Arabia**, have not yet joined due to **domestic and religious sensitivities**.
4. The **Gaza conflict (2023-25)** has strained relations between Israel and Arab signatories.

#### PYQ REFERENCE:

**Q. Consider the following countries :**

1. Armenia
2. Azerbaijan
3. Croatia
4. Romania
5. Uzbekistan

**Which of the above are members of the Organization of Turkic States?**

- (a) 1, 2 and 4
- (b) 1 and 3
- (c) 2 and 5**
- (d) 3, 4 and 5

#### Source:

<https://economictimes.indiatimes.com/news/international/world-news/kazakhstan-to-join-abraham-accords-as-trump-pushes-mideast-peace/articleshow/125147194.cms?from=mdr>

#### 115. 'Trishul 2025'

**Q. Consider the following statements:**

**Statement I:** Exercise Trishul 2025 is a tri-service military exercise conducted along western India.

**Statement II:** It is named 'Trishul' because the exercise is conducted between India, Pakistan and Afghanistan.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I
- (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I
- (c) Statement-I is correct, but Statement-II is incorrect
- (d) Statement-I is incorrect, but Statement II is correct**

**Answer: (c) Statement-I is correct, but Statement-II is incorrect**

#### Explanation:

**In NEWS:** Tri-services 'Trishul 2025' to begin on November 3, set to strengthen joint combat preparedness

#### Exercise Trishul 2025:

- Exercise Trishul 2025 is a **tri-service military exercise** involving the Army, Navy, and Air Force.
- The exercise is **led by the Indian Navy**.
- It is conducted along **western India**, including Rajasthan, Gujarat coast, Sir Creek, and the northern Arabian Sea.

**Hence Statement-I is correct, but Statement-II is incorrect**

#### Objectives:

- Its main objective is to **test joint operations and multi-domain warfare**, including land, sea, air, cyber, and electronic warfare.
- It aims to **enhance inter-service coordination** and overall operational readiness.
- The exercise demonstrates **indigenous capabilities** and India's **deterrence posture**.
- It strengthens **western front defense, maritime security in the Arabian Sea, and integrated theater command preparedness**.

**Source:** <https://www.thehindu.com/news/national/tri-services-trishul-2025-to-begin-on-november-3-set-to-strengthen-joint-combat-preparedness/article70232908.ece>

#### 116. Exercise Malabar 2025

**Q. With reference to Exercise Malabar 2025, consider the following statements:**

1. It was initially a trilateral exercise between India, Japan, and the United States.
2. Australia joined the exercise as a permanent member in 2020.
3. It is a defence partnership exercise, not a military alliance.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (b) Only two**

#### Explanation:

**In NEWS:** Australia Joins India, Japan, and U.S. for Major Quad Naval Drill, Exercise Malabar 2025

#### Exercise Malabar 2025

- Exercise Malabar is a multinational naval exercise among the **Quad nations — India, Japan, Australia, and the United States**.
- The 2025 edition includes Australia as an active participant, emphasizing Indo-Pacific security cooperation.
- It aims to strengthen naval coordination, interoperability, and operational readiness among the four countries.

#### Historical Background

- Launched in 1992 as a bilateral **India-US** naval exercise. **Hence statement 1 is incorrect.**
- **Japan** became a permanent member in 2015.
- **Australia** rejoined permanently in 2020, making it a Quadrilateral exercise. **Hence statement 2 is correct.**
- It has since evolved into a core maritime initiative of the Quad framework.

### Objective

- To enhance interoperability among participating navies in complex maritime operations.
- To ensure freedom of navigation, maritime domain awareness, and a rules-based Indo-Pacific order.
- To strengthen trust, coordination, and joint capability in naval operations.

### Focus Areas in 2025

- Anti-Submarine Warfare (ASW): Training to detect and neutralize underwater threats.
- Air Defence and Electronic Warfare: Enhancing coordinated air and electronic combat operations.
- Replenishment at Sea (RAS): Mid-sea refueling and logistic coordination drills.
- Complex Tactical Maneuvers: Improving joint response to maritime threats.

### Participating Nations and Forces

- India: Indian Navy.
- United States: U.S. Navy's 7th Fleet under Indo-Pacific Command.
- Japan: Japan Maritime Self-Defense Force (JMSDF).
- Australia: Royal Australian Navy (RAN).

### Strategic Significance

- Strengthens the Quad's vision of a Free, Open, Inclusive Indo-Pacific (FOIP).
- Reinforces maritime security cooperation and collective deterrence against coercive actions in the region.
- Supports India's SAGAR vision (Security and Growth for All in the Region).
- Enhances India's role as a net security provider in the Indian Ocean Region (IOR).

### Nature of the Exercise

- It is a defence partnership exercise, not a military alliance. **Hence statement 3 is correct.**
- Focuses on capacity building and operational synergy, not on forming a formal security bloc.

### PYQ REFERENCE: (2024)

**Q. Which of the following statements about 'Exercise Mitra Shakti-2023' are correct?**

1. This was a joint military exercise between India and Bangladesh
2. It commenced in Aundh (Pune).
3. Joint response during counter-terrorism operations was a goal of this operation.
4. Indian Air Force was a part of this exercise.

**Select the answer using the code given below:**

- (a) 1, 2 and 3
- (b) 1, 2 and 4
- (c) 1, 3 and 4
- (d) 2, 3 and 4**

Source: <https://www.newsonair.gov.in/australia-joins-india-japan-and-u-s-for-major-quad-naval-drill-exercise-malabar-2025/>

### 117. Operation Chhatru

**Q. Operation Chhatru, recently seen in the news, is related to**

- (a) A joint Indo-Nepal disaster-relief exercise
- (b) An anti-terror operation in Jammu & Kashmir
- (c) A counter-narcotics drive along the India-Myanmar border
- (d) A naval operation to protect Indian fishermen in the Arabian Sea

**Answer: (b) An anti-terror operation in Jammu & Kashmir**

**Explanation:**

**In NEWS:** Op Chhatru underway in J&K's Kishtwar, 3 terrorists suspected to be hiding

### Operation Chhatru:

- Operation Chhatru is an **anti-terror operation** launched in the **Chhatru area of Kishtwar district** in the Chenab Valley region of Jammu & Kashmir. **Hence option (b) is correct.**
- It is being conducted jointly by the Indian Army's White Knight Corps and the J&K Police based on **specific intelligence inputs about terrorist presence** in the region.
- During the operation, terrorists affiliated with Pakistan-based groups were neutralised and a significant cache of **war-like stores** (including AK and M4 rifles) was recovered
- The operation underscores **India's internal security dynamics**, counter-terrorism measures and cross-border infiltration challenges.

Source: <https://www.indiatoday.in/india/story/security-forces-launch-operation-chhatru-in-jks-kishtwar-at-least-three-terrorists-suspected-to-be-hiding-2813727-2025-11-05>

### 118. AUSINDEX

**Q. With reference to AUSINDEX, consider the following statements:**

1. AUSINDEX is the only bilateral naval exercise between India and Australia that includes dedicated anti-submarine warfare (ASW) drills.
2. AUSINDEX is mandated under the India-Australia Mutual Logistics Support Agreement (MLSA).

**Which of the statements given above is/are correct?**

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

**Answer: (a) 1 only**

**Explanation:**

**In NEWS:** INS Sahyadri and HMAS Ballarat take part in AUSINDEX 2025 exercise in Northern Pacific

### AUSINDEX:

- AUSINDEX is a bilateral maritime exercise between the Indian Navy and the Royal Australian Navy.
- It is the only bilateral naval exercise between India and Australia that includes dedicated anti-submarine warfare (ASW) drills. **Hence statement 1 is correct.**
- The exercise was first conducted in 2015.
- The objective is to enhance maritime cooperation, interoperability, and security in the Indo-Pacific region.
- It focuses primarily on anti-submarine warfare (ASW), maritime surveillance, and complex naval manoeuvres.
- AUSINDEX forms part of the broader India-Australia defence cooperation framework. **Hence statement 2 is incorrect.**
- The exercise complements multilateral naval engagements like MALABAR and RIMPAC, where both countries often participate.
- Activities include naval drills, surface and air operations, helicopter operations, and coordinated patrols.
- It supports the shared vision of a free, open, and rules-based Indo-Pacific.
- AUSINDEX is usually held every two years, though schedules may vary.

- Modern platforms such as P-8I (India) and P-8A (Australia) maritime patrol aircraft often participate.

Source: <https://m.economictimes.com/news/defence/ins-sahyadri-and-hmas-ballarat-take-part-in-ausindex-2025-exercise-in-northern-pacific/articleshow/125518922.cms>

### 119. EXERCISE GARUDA 25

**Q. Exercise Garuda-25, recently in the news, is a bilateral exercise between India and which of the following countries?**

- (a) United States
- (b) Russia
- (c) France
- (d) United Kingdom

**Answer: (c) France**

**Explanation:**

**In NEWS:** EXERCISE GARUDA 25: INDIAN AIR FORCE PARTICIPATES IN 8TH EDITION OF BILATERAL AIR EXERCISE WITH FRENCH AIR AND SPACE FORCE

**Exercise GARUDA-25:**

- **Exercise Garuda-25** is the 8th edition of the bilateral air exercise held between the Indian Air Force and the **French Air & Space Force**.

**Hence option (c) is correct.**

- The exercise is being conducted **from 16–27 November 2025** at **Mont-de-Marsan Air Base in France**.
- The Indian Air Force has deployed **Su-30MKI fighter aircraft, IL-78 mid-air refuellers, and a C-17 Globemaster III** for strategic airlift.
- The exercise focuses on **air-to-air combat training, air defence missions, coordinated strike operations, and interoperability drills**.
- It aims to **strengthen operational synergy** between the two air forces through joint planning and execution of complex aerial missions.
- The deployment demonstrates the IAF's **long-range operational capability** and ability to sustain overseas exercises.
- The exercise contributes to **India–France strategic defence cooperation**, a key pillar of their long-standing Strategic Partnership.
- It enhances **professional exchange, tactical learning, and exposure to NATO-standard operational procedures**.
- The exercise serves as a platform for improving **aircrew proficiency, mission adaptability, and multilateral readiness**.
- Garuda-25 underscores the role of **defence diplomacy** in maintaining strong bilateral military relations and improving joint operational readiness.

Source: <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2190299&reg=3&lang=1>

### 120. Operation SOUTHERN SPEAR

**Q. Operation Southern Spear, recently in the news, is primarily associated with:**

- (a) Counter-narcotics and maritime interdiction operations led by the United States
- (b) Humanitarian evacuation during natural disasters in the Caribbean
- (c) Joint naval exercises between the US and Caribbean nations
- (d) Anti-piracy operations in the Gulf of Mexico

**Answer: (a) Counter-narcotics and maritime interdiction operations led by the United States**

**Explanation:**

**In NEWS:** U.S. to launch new military operation in Latin America

**Operation Southern Spear:**

- **Operation Southern Spear** is a U.S.-led maritime security and counter-narcotics operation launched in the Western Hemisphere.

**Hence option (a) is correct.**

- It is conducted under the U.S. **Southern Command (SOUTHCOM)** and supported by the U.S. Navy's 4th Fleet.
- The operation targets **drug-trafficking networks, illegal maritime smuggling routes, and transnational criminal organisations** operating in the Caribbean and Eastern Pacific.
- It involves the deployment of **manned naval vessels, unmanned surface vessels (USVs), autonomous drones, and advanced surveillance platforms**.

Source: [https://epaper.thehindu.com/ccidist-ws/th/th\\_international/issues/156477/OPS/GTIF5RSVM.1+GSFF5SCGN.1.html](https://epaper.thehindu.com/ccidist-ws/th/th_international/issues/156477/OPS/GTIF5RSVM.1+GSFF5SCGN.1.html)

### 121. The World Happiness Report 2025

**Q. With reference to the recent 'World Happiness Report 2025', consider the following statements:**

1. It is published by the United Nations Development Programme (UNDP).
2. It uses objective indicators like crime, education, and urbanisation.
3. India ranks in the bottom third, while Pakistan often ranks slightly higher despite weaker economic performance.

**How many of the above statements are correct?**

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

**Answer: (a) Only one**

**Explanation:**

**In NEWS:** Unpacking the global 'happiness' rankings

**The World Happiness Report 2025:**

- The **World Happiness Report (WHR)** is published by the **Wellbeing Research Centre at Oxford University** (earlier with SDSN). **Hence statement 1 is incorrect.**
- The WHR ranks countries according to **subjective wellbeing**, not material prosperity.
- It covers **over 130 countries**, depending on Gallup data availability.
- The Report distinguishes among **emotional wellbeing, life satisfaction, and quality of life**. **Hence statement 2 is incorrect.**
- WHR categorises happiness across **age groups**, including trends among youth and elderly.
- It highlights **institutional trust, fairness, and community strength** as key components of subjective wellbeing.

**Recent Trends**

- **Nordic countries** - Finland, Denmark, Iceland, Sweden—consistently top the rankings due to high institutional trust and strong welfare systems.

- The **United States** has fallen sharply in recent editions despite its high income levels.
- India ranks in the **bottom third**, while Pakistan often ranks slightly higher despite weaker economic performance. **Hence statement 3 is correct.**
- WHR 2025 notes that **youth globally report declining social connections**, with nearly **19%** saying they have no one to rely on.

**PYQ REFERENCE: (2019)**

- Q. The Global Competition Report is published by the**
- International Monetary Fund
  - United Nations Conference on Trade and Development
  - World Economic Forum**
  - World Bank

Source: <https://www.thehindu.com/opinion/op-ed/unpacking-the-global-happiness-rankings/article70295706.ece>

**GEOGRAPHY & MAPS**

**122. Brahmaputra, Teesta rivers**

**Q. Which of the following rivers is a tributary of the Brahmaputra?**

- Subansiri
- Lohit
- Rangpo
- Siang
- Teesta

Select the correct answer using the code given below:

- 1, 2 and 3 only
- 1, 2 and 4 only
- 2, 4 and 5 only
- 1, 3, 4 and 5 only

**Answer: (b) 1, 2 and 4 only**

**Explanation:**

**In NEWS:** Brahmaputra, Teesta rivers eroding land faster than ever in Bangladesh

**Brahmaputra River**

- Originates from the **Angsi Glacier in Tibet (China)**, where it is called **Yarlung Tsangpo**.
- Flows through **Tibet, India and Bangladesh**.
- Length in India: ~ **916 km**.
- Major Indian states it flows through: **Arunachal Pradesh, Assam**.
- Major tributaries in India: **Subansiri, Lohit, Siang, Dibang, Dhansiri**.
  - Teesta is an independent river, joins Brahmaputra in Bangladesh, but is not considered a tributary in India.
  - Rangpo is a tributary of Teesta, not Brahmaputra. **Hence option (b) 1, 2 and 4 are correct.**
- Joins **Ganga (Padma)** in Bangladesh and forms **Brahmaputra-Jamuna delta**.
- Known for **annual flooding** in Assam plains.
- Important hydropower projects: **Siang HEP, Subansiri Lower HEP (ongoing)**
- Navigation: Supports inland water transport and **fishing communities**.
- Ecosystem: **Biodiversity hotspot** – home to **Gangetic dolphin** and rich wetland fauna.

- International significance: **India-China-Bangladesh transboundary river.**

**PYQ REFERENCE:**

**Q. With reference to river Teesta, consider the following statements:**

- The source of river Teesta is the same as that of Brahmaputra but it flows through Sikkim.
- River Rangeet originates in Sikkim and it is a tributary of river Teesta.
- River Teesta flows into Bay of Bengal on the border of India and Bangladesh.

**Which of the statements given above is/are correct?**

- 1 and 3 only
- 2 only**
- 2 and 3 only
- 1, 2 and 3

Source: [https://epaper.thehindu.com/ccidist/ws/th/th\\_international/issues/155904/OPS/G94F44M4J.1+G2NF5B7UR.1.html](https://epaper.thehindu.com/ccidist/ws/th/th_international/issues/155904/OPS/G94F44M4J.1+G2NF5B7UR.1.html)

**123. Rare earth elements**

**Q. Which of the following statements about Rare Earth Elements (REEs) are correct?**

- REEs include all lanthanides along with Scandium and Yttrium.
- China dominates global production and processing of Rare Earth Elements (REEs).
- In India, Major deposits of rare earth elements are found in inland rocky regions.

Select the correct answer using the code given below:

- 1 and 2 only
- 2 only
- 1 and 3 only
- 1, 2 and 3

**Answer: (a) 1 and 2 only**

**Explanation:**

**In NEWS:** What are rare earths, why are they so vital?

**Rare Earth Elements (REEs):**

- REEs include **17 elements**: 15 lanthanides + Scandium (Sc) + Yttrium (Y). **Hence statement 1 is correct.**
- They are **not very rare**, but rarely found in economically exploitable concentrations.
- Key properties: **magnetic, luminescent, conductive**, essential for modern technology.
- Major uses: **EV & hybrid vehicles, wind turbines, smartphones, flat screens, semiconductors, defence equipment**.
- **China dominates global production and processing**, creating strategic supply risks. **Hence statement 2 is correct.**
- In India, REE deposits are mainly in **coastal beach sands** (Kerala, Tamil Nadu, Odisha, Andhra, Maharashtra, Gujarat). **Hence statement 3 is incorrect.**
- Ore minerals in India: **Monazite** (rich in light REEs), **Bastnäsite** (for medium REEs).
- India lacks significant **heavy/critical REEs** like Dysprosium, Terbium, Europium.
- Government initiative: **National Critical Minerals Mission (2025)** aims to secure supply and promote domestic processing.
- Strategic importance: REEs are vital for **clean energy transition, high-tech manufacturing, and national security**.

**PYQ REFERENCE: (2025)**

**Q. Consider the following statements:**

**Statement I:** Some rare earth elements are used in the manufacture of flat television screens and computer monitors.

**Statement II:** Some rare earth elements have phosphorescent properties.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I  
 (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I  
 (c) Statement-I is correct, but Statement-II is incorrect  
 (d) Statement-I is incorrect, but Statement II is correct

Source: [https://epaper.thehindu.com/ccidist-  
ws/th/th\\_international/issues/154125/OPS/G7HF3H5RK.1+G8TF3IOVU.1.html](https://epaper.thehindu.com/ccidist-ws/th/th_international/issues/154125/OPS/G7HF3H5RK.1+G8TF3IOVU.1.html)

#### 124. Specialty Steel

**Q. Which of the following properties are commonly associated with Specialty Steels?**

1. High corrosion resistance
2. Has both magnetic and electrical properties
3. High temperature and wear resistance
4. Lower tensile strength than mild steel

**Select the correct answer using the code below:**

- (a) 1, 2 and 3 only  
 (b) 1 and 4 only  
 (c) 2 and 4 only  
 (d) 1, 2, 3 and 4

**Answer: (a) 1, 2 and 3 Only**

**Explanation:**

**In NEWS:** Launch of the Third Round (PLI 1.2) of the Production Linked Incentive Scheme for Specialty Steel

**Specialty Steel:**

● **Specialty (or special) steel** refers to **value-added steel** produced by alloying iron with elements such as **chromium, nickel, cobalt, molybdenum, tungsten, manganese, and vanadium.**

- These alloys give steel **special properties** — such as
  - **higher** tensile strength and durability than mild steel
  - magnetic and electrical properties,
  - corrosion resistance,
  - heat resistance, and wear resistance — making it suitable for **strategic and high-end applications. Hence 1, 2, and 3 are correct.**

● India became a **net exporter** of specialty steel under the **PLI scheme's first phase**, with firms like Tata Steel, JSW, and AMNS India expanding production capacity.

● The government is exploring **"Green Specialty Steel"** initiatives to align with **Net Zero 2070 goals.**

**Applications**

- **Aerospace & Defence** – for jet engines, missiles, tanks, and naval vessels.
- **Automobile industry** – for gears, bearings, and structural parts.
- **Power sector** – for turbines and pipelines.
- **Railways** – for high-speed train components.
- **Infrastructure** – bridges, pressure vessels, and special-grade construction.

**Challenges**

- High import dependence for alloying elements.
- Technological gaps in processing advanced grades.
- Competition from cheap Chinese and Korean imports.
- Need for skilled manpower and R&D investment.

**PYQ REFERENCE: (2014)**

**Q. Which of the following are some important pollutants released by steel industry in India?**

1. Oxides of sulphur
2. Oxides of nitrogen
3. Carbon monoxide
4. Carbon dioxide

**Select the correct answer using the code given below**

- (a) 1, 3 and 4 only  
 (b) 2 and 3 only  
 (c) 1 and 4 only  
 (d) 1, 2, 3 and 4

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2186129>

#### 125. Graphite production

**Q. Consider the following statements about Graphite mining in India:**

1. India is largely self-sufficient in Graphite production as it exports more than it imports.
2. Graphite with higher fixed-carbon content attracts a lower royalty rate under the new structure.
3. The royalty for Graphite now depends on its grade, measured by fixed-carbon percentage.

**Which of the statements given above is/are correct?**

- (a) 1 only  
 (b) 2 and 3 only  
 (c) 3 only  
 (d) 1 and 2 only

**Answer: (b) 2 and 3 only**

**Explanation:**

**In NEWS:** Cabinet approves rationalization of royalty rates of Graphite, Caesium, Rubidium and Zirconium minerals critical for Green Energy

**The Cabinet approved revised royalty rates for four minerals:**

- Caesium: 2 % of Average Sale Price (ASP) of caesium metal contained in the ore.
- Rubidium: 2 % of ASP of rubidium metal contained in the ore.
- Zirconium: 1 % of ASP of zirconium metal contained in the ore.
- Graphite: For graphite with  $\geq 80$  % fixed carbon  $\rightarrow$  2 % of ASP on ad valorem basis; for less than 80 % fixed carbon  $\rightarrow$  4 % of ASP on ad valorem basis.

**Graphite in India:**

- India is not self-sufficient in graphite production. **Hence statement 1 is incorrect.**
- Around 60% of India's graphite demand is met through imports, mainly from China and other countries.
- Domestic production remains limited due to low-grade deposits and underdeveloped mining.
- The Cabinet in November 2025 approved 2% royalty for graphite with 80% or more fixed carbon, and 4% for graphite with less than 80% fixed carbon.

- Hence, higher-grade graphite (more carbon) attracts lower royalty, encouraging exploration and production of high-quality ore. **Hence statement 2 is correct.**
- The royalty for Graphite now depends on its grade, measured by fixed-carbon percentage. **Hence statement 3 is correct.**
- Earlier, royalty was charged on a per-tonne basis, regardless of grade.
- Under the new system, royalty is ad valorem (as a percentage of the average sale price) and linked to the grade of graphite, measured by fixed-carbon content.

**PYQ REFERENCE: (2023)**

**Q. Consider the following statements:**

Statement-I: India, despite having uranium deposits, depends on coal for most its electricity production.

Statement-II: Uranium, enriched to the extent at least 60%, is required for the production of electricity.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- (c) Statement-I is correct but Statement-II is incorrect**
- (d) Statement-I is incorrect but Statement-II is correct

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2189392>

### **126. Liquefied Natural Gas (LNG)**

**Q. With reference to Liquefied Natural Gas (LNG), consider the following statements:**

1. It is formed when natural gas is compressed under high pressure and high temperature subsequently.
2. It is colorless, odorless, non-toxic, and non-corrosive.
3. India is the world's fourth-largest importer of Liquefied Natural Gas (LNG).

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) 1 and 3
- (d) 2 and 3

**Answer: (b) 2 only**

**Explanation:**

**In NEWS:** Asia LNG imports slip on weak China

**Liquefied Natural Gas (LNG):**

- Liquefied Natural Gas (LNG) is **natural gas that has been cooled to around -162°C**, converting it from a gaseous to a liquid state for ease of storage and transportation. **Hence statement 1 is incorrect.**
- **Composition:** It mainly contains **methane (CH<sub>4</sub>)**, with small amounts of ethane, propane, and nitrogen.
- **Volume Reduction:** In liquid form, **natural gas volume reduces by about 600 times**, making it economical to transport over long distances where pipelines are not feasible.
- **Non-toxic and Non-corrosive:** LNG is **colorless, odorless, non-toxic, and non-corrosive.** **Hence statement 2 is correct.**
- **Production Process:** It is produced by **purifying natural gas** (removing water, CO<sub>2</sub>, sulfur, and heavy hydrocarbons) and then **liquefying** it at cryogenic temperatures.

- **Storage and Transport:** LNG is stored in **insulated cryogenic tanks** and transported mainly by **specialized LNG carriers (ships).**
- **Regasification:** At receiving terminals, LNG is **converted back into gas (regasified)** and supplied through pipelines to consumers.
- **Major Exporters:** **Qatar, Australia, United States, and Russia** are leading LNG exporters.
- **Major Importers:** **Japan, China, South Korea, and India** are among the top LNG importers.
- **Environmental Aspect:** LNG burns cleaner than coal and oil, producing **less CO<sub>2</sub>, SO<sub>2</sub>, and particulate matter**, making it a **transition fuel** toward cleaner energy.
- **In India:**
  - India, Asia's fourth-largest LNG importer. **Hence statement 3 is incorrect.**
  - LNG is a key part of India's plan to increase the **natural gas share in the energy mix to 15% by 2030.**
- **Major LNG Terminals in India:**
  - **Dahej (Gujarat)** – operated by Petronet LNG Ltd
  - **Hazira (Gujarat)** – Shell and Total
  - **Kochi (Kerala)** – Petronet LNG
  - **Ennore (Tamil Nadu)** – Indian Oil Corporation
  - **Dabhol (Maharashtra)** – GAIL
- **Policy Aspect:** The Indian government promotes **city gas distribution (CGD)** and **LNG as fuel for heavy transport** under its clean energy mission.
- **Strategic Importance:** LNG helps in **energy security diversification** and **reduces dependence on crude oil imports.**

**PYQ REFERENCE: (2014)**

**Q. With reference to two non-conventional energy sources called 'coalbed methane' and 'shale gas', consider the following statements:**

1. Coalbed methane is the pure methane gas extracted from coal seams, while shale gas is a mixture of propane and butane only that can be extracted from fine-grained sedimentary rocks.
2. In India, abundant coalbed methane sources exist, but so far no shale gas sources have been found.

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

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2**

Source: <https://epaper.thehindu.com/ccidist->

[ws/th/th\\_international/issues/154956/OPS/GOFF365MF.1+G3F4B233.1.html](https://www.thehindu.com/international/154956/OPS/GOFF365MF.1+G3F4B233.1.html)

### **127. cyclone over Bay of Bengal**

**Q. Consider the following statements:**

**Statement I:** The Bay of Bengal sees much higher frequency and intensity than the Arabian Sea.

**Statement II:** The Bay of Bengal's sea surface temperature is typically lower than the Arabian Sea, providing more heat energy.

**Statement III:** The Bay of Bengal has higher atmospheric moisture content compared to the Arabian Sea.

**Which one of the following is correct in respect of the above statements?**

- (a) Both Statement II and Statement III are correct and both of them explain Statement I
- (b) Both Statement II and Statement III are correct but only one of them explains Statement I
- (c) Only one of the Statements II and III is correct and that explains Statement I
- (d) Neither Statement II nor Statement III is correct

**Answer: (c) Only one of the Statements II and III is correct and that explains Statement I**

**Explanation:**

**In NEWS:** Fresh cyclone over Bay of Bengal likely; heavy rainfall alert for this week in Tamil Nadu

**Cyclones in the Bay of Bengal:**

- Cyclones are intense low-pressure systems characterized by strong winds spiraling towards the center (eye). In the North Indian Ocean, they occur mainly in:
  - Bay of Bengal (BoB)
  - Arabian Sea (AS)
- But the Bay of Bengal sees much higher frequency and intensity than the Arabian Sea. **Hence statement I is correct.**

**Why Bay of Bengal sees more Cyclones than Arabian Sea**

1. **Warmer Sea Surface Temperatures (SST)**

- The Bay of Bengal's sea surface temperature is typically **higher** than the Arabian Sea, providing more heat energy for cyclones to form and intensify.
- BoB has SST > 28°C — ideal for cyclone formation. **Hence statement II is incorrect.**

2. **High Humidity & Moisture Availability**

- The Bay of Bengal has higher atmospheric moisture content compared to the Arabian Sea. example: Large inflow from rivers (Ganga, Brahmaputra) warms surface waters.
- The Arabian Sea receives a significant amount of dry air from desert countries in the Arabian Peninsula, which disrupts and weakens developing cyclones. **Hence statement III is correct and explains statement I.**

3. **Favorable Wind Shear**

- Low vertical wind shear helps cyclone development.

4. **Remnants of Typhoons from the Pacific**

- Many Pacific typhoons cross over and regenerate in BoB.

5. **Geographical Shape**

- The funnel shape of Bay amplifies storm surge intensity.

6. **Low Salinity & High Evaporation**

- Enhances convection and energy buildup.

**PYQ REFERENCE:**

**Q. Consider the following statements: (2020)**

1. Jet streams occur in the Northern Hemisphere only.
2. Only some cyclones develop an eye.
3. The temperature inside the eye of a cyclone is nearly 10°C lesser than that of the surroundings.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 and 3 only
- (c) 2 only**
- (d) 1 and 3 only

**Source:** <https://www.thehindu.com/news/national/tamil-nadu/rmc-forecasts-fresh-cyclone-over-bay-of-bengal-maintains-heavy-rainfall-alert-this-week-for-tamil-nadu/article70329000.ece>

**128. Fujiwhara interaction**

**Q. Which one of the following statements best describes 'Fujiwhara interaction', recently seen in the news?**

- (a) The interaction between warm and cold ocean currents leading to rapid cyclogenesis.
- (b) The phenomenon in which two nearby cyclonic systems rotate around a common centre and influence each other's movement.
- (c) The sudden intensification of a tropical cyclone due to a burst of deep convection near the eyewall.
- (d) The reversal of wind patterns in the equatorial Pacific associated with El Niño events.

**Answer: (b) The phenomenon in which two nearby cyclonic systems rotate around a common centre and influence each other's movement.**

**Explanation:**

**In NEWS:** Multiple cyclonic storms with rare Fujiwhara interaction likely in Bay of Bengal

- Two cyclonic systems are forecast to form in the Bay of Bengal within a short time of each other, raising the possibility of a Fujiwhara-type interaction.
- This interaction could increase uncertainty around their future track and intensity, making forecasting more difficult.
- The India Meteorological Department (IMD) is closely monitoring both systems:
  - One system is expected to develop from a low-pressure area over the Straits of Malacca and intensify into a cyclone in the south Bay of Bengal by around November 27.
  - s linked to an upper-air cyclonic circulation over the Comorin area, which may lead to another depression forming over the southwest Bay of Bengal or near Sri Lanka.

**Fujiwhara Interaction:**

- The Fujiwhara interaction is a phenomenon in which two nearby cyclonic systems come close enough that their circulations begin to influence each other. When this happens, the storms may:
  - Rotate around a common centre,
  - Alter each other's tracks,
  - Move closer and merge, or
  - Weaken or intensify depending on their relative strengths.
- This interaction usually occurs when two cyclones are within about 1,000 km of each other. It makes forecasting more difficult because the storms' movements become more unpredictable.

**Hence option (b) is correct.**

**PYQ REFERENCE: (2017)**

**Q. With reference to 'Indian Ocean Dipole (IOD)' sometimes mentioned in the news while forecasting Indian monsoon, which of the following statements is/are correct?**

1. IOD phenomenon is characterised by a difference in sea surface temperature between tropical Western Indian Ocean and tropical Eastern Pacific Ocean.
2. An IOD phenomenon can influence an El Niño's impact on the monsoon.

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 only**
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Source:** <https://www.downtoearth.org.in/natural-disasters/multiple-cyclonic-storms-with-rare-fujiwhara-interaction-likely-in-bay-of-bengal>

**129. Hayli Gubbi volcano**

**Q. The 'Hayli Gubbi' volcano, recently seen in the news is a**

- (a) Shield volcano
- (b) Composite volcano
- (c) Caldera
- (d) Cinder cone volcano

**Answer: (a) Shield volcano**

**Explanation:**

**In NEWS:** India braces for disruption of air travel after Ethiopia's Hayli Gubbi volcano erupts

#### Hayli Gubbi Volcano:

- It is located in the Afar Region of northeastern Ethiopia, part of the tectonically active Erta Ale Range.
- It is a shield volcano, characterized by gentle slopes formed by low-viscosity lava flows. **Hence option (a) is correct.**
- The summit of the volcano is approximately 493 meters above sea level.
- Before 2025, the volcano had been dormant for roughly 10,000–12,000 years, with no recorded eruptions in the Holocene.
- The volcano erupted on 23 November 2025, marking its first activity in millennia.
- The eruption was explosive, producing an ash plume that reached 10–15 km into the atmosphere.
- A significant sulfur-dioxide (SO<sub>2</sub>) plume was also emitted during the eruption.
- High-altitude winds carried the volcanic ash across the Red Sea toward Yemen, Oman, and as far as India.
- The eruption is considered rare and significant because of the long dormancy and potential hazards for aviation and the environment.

#### Causes of Volcanic Eruptions

- Tectonic Plate Movements**
  - **Divergent boundaries:** Plates move apart → magma rises (e.g., Mid-Atlantic Ridge).
  - **Convergent boundaries:** Subduction zones cause melting → volcanic activity (e.g., Pacific Ring of Fire).
- Hotspots / Mantle Plumes**
  - Magma rises through the crust away from plate boundaries (e.g., Hawaii, Iceland).
- Pressure in Magma Chambers**
  - Accumulation of magma and gas increases pressure → eruption occurs.
- Weak Zones in the Crust**
  - Fissures or fractures allow magma to escape.

#### Consequences / Impacts of Volcanic Eruptions

##### A. Environmental Impacts

- Destruction of forests, farmland, and natural habitats
- Air pollution due to ash and gases (SO<sub>2</sub>, CO<sub>2</sub>)
- Climate effects: short-term cooling from ash and SO<sub>2</sub>

##### B. Human / Social Impacts

- Loss of life and injuries from lava flows, pyroclastic flows, and ashfall
- Displacement of populations and destruction of homes

##### C. Economic Impacts

- Damage to infrastructure (roads, bridges, airports)
- Disruption of trade, tourism, and agriculture

##### D. Health Impacts

- Respiratory problems and diseases from inhaling ash and toxic gases

##### E. Positive / Beneficial Impacts

- Formation of fertile soils for agriculture
- Creation of new land and volcanic islands
- Potential for geothermal energy

#### PYQ REFERENCE: (2024)

##### Q. Consider the following :

1. Pyroclastic debris
2. Ash and dust
3. Nitrogen compounds
4. Sulphur compounds

##### How many of the above are products of volcanic eruptions?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four**

Source: <https://www.thehindu.com/business/Industry/india-braces-for-impact-on-air-travel-as-ethiopian-volcano-spews-ash/article70317792.ece>

#### ART AND CULTURE

#### 130. UNESCO 'Creative City of Gastronomy'

Q. Consider the following pairs:

S.no	UNESCO's designated Creative City	Field
1.	Jaipur	Crafts & Folk Art
2.	Chennai	Film
3.	Mumbai	Music
4.	Lucknow	Gastronomy

How many of the Pairs given above are correctly matched?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Answer: (b) Only two

Explanation:

In NEWS: Lucknow declared UNESCO 'Creative City of Gastronomy'

#### Lucknow – UNESCO Creative City of Gastronomy (2025)

- Lucknow has been designated as a UNESCO Creative City of Gastronomy in October 2025.
- The recognition was announced at the 43rd UNESCO General Conference in Samarkand, Uzbekistan.
- Lucknow is the **second Indian city** to receive this title — after **Hyderabad** (recognized in 2019).
- The nomination was submitted by the **Uttar Pradesh Directorate of Tourism** through the **Union Ministry of Culture**.
- The city joins the **UNESCO Creative Cities Network (UCCN)**, which promotes culture-based sustainable urban development.

#### Why Lucknow Was Selected

- Lucknow is historically known as the **City of Nawabs** and the **heart of Awadhi cuisine**.
- It represents a **blend of royal culinary traditions** and **inclusive street food culture**.
- Signature dishes include **Galouti Kebabs, Awadhi Biryani, Tokri Chaat, Makhn Malai, Sheermal, and Nihari**.
- The cuisine reflects **cultural harmony**, combining **Hindu and Mughal culinary practices**.
- The city maintains a **living food ecosystem** — from heritage royal kitchens to small vendors and family-run eateries.

#### About the UNESCO Creative Cities Network (UCCN)

- Established by UNESCO in 2004 to promote cooperation among cities using **culture and creativity** as drivers of sustainable development.
- Covers **7 fields**: Literature, Music, Crafts & Folk Art, Design, Media Arts, Film, and Gastronomy.
- As of 2025, **350+ cities** are part of the UCCN.
- In India, member cities include:
  - **Jaipur** – Crafts & Folk Art
  - **Varanasi** – Music
  - **Chennai** – Music
  - **Hyderabad** – Gastronomy

- **Mumbai** – Film
- **Srinagar** – Crafts & Folk Art
- **Gwalior** – Music
- **Kozhikode** - Literature
- **Lucknow** – Gastronomy (2025 addition)

**Hence 1 and 4 are correctly matched.**

#### Significance of the Recognition

- Promotes **cultural diplomacy** and **soft power** through cuisine and heritage.
- Enhances **food tourism** and **local economic development**.
- Encourages **sustainable urban development** through culinary heritage preservation.
- Supports **women entrepreneurs** and **small-scale food vendors** in the local food ecosystem.
- Highlights **Awadhi cuisine** on the **global culinary map**.
- Aligns with India's initiatives under **Azadi Ka Amrit Mahotsav** and **Dekho Apna Desh**.

#### PYQ REFERENCE: (2024)

**Q. Consider the following properties included in the World Heritage List released by UNESCO:**

1. Shantiniketan.
2. Rani-ki-Vav
3. Sacred Ensembles of the Hoysalas
4. Mahabodhi Temple Complex at Bodhgaya

**How many of the above properties were included in 2023?**

- (a) Only one
- (b) Only two**
- (c) Only three
- (d) All four

Source: <https://www.thehindu.com/news/national/uttar-pradesh/lucknow-enters-unesco-list-as-creative-city-of-gastronomy/article70229854.ece#:~:text=Lucknow%20has%20officially%20been%20declared.traditions%20and%20inclusive%20cultural%20heritage.>

#### 131. Recent GI Tag Recognitions in India

**Q. With reference to recent Geographical Indication (GI) recognitions in India, consider the following:**

1. Meerut Bugle
2. Ambaji Marble
3. Panna Diamonds
4. Hyderabad Pearls

**Which of the above mentioned products have given Geographical Indication (GI) recognitions in India?**

- (a) 1 and 2 only
- (b) 2, 3 and 4 only
- (c) 1, 2 and 3 only
- (d) 1, 2, 3 and 4**

**Answer: (d) 1, 2, 3 and 4**

**Explanation:**

#### Recent

India has recently seen a surge in geographical indication (GI) recognitions across diverse traditional products, strengthening cultural identity and boosting local economies.

- **Meerut's 140-year-old brass bugles** have secured the GI tag, preserving their long-standing association with military bands and giving traditional artisans global visibility.

- **Ambaji Marble from Gujarat**, known for its fine grain and aesthetic appeal, has also been granted a GI tag, enhancing its export potential and safeguarding its authenticity.

- In Madhya Pradesh, **Panna Diamonds**—celebrated for their natural brilliance and sourced from one of the country's oldest diamond belts—have earned GI recognition, providing brand protection and market advantage to local miners.

- Additionally, **Hyderabad Pearls**, synonymous with the historic "City of Pearls," have moved closer to securing a GI tag, reinforcing their reputation for handcrafted quality and unique luster.

**Hence option (d) 1, 2, 3 and 4 are correct.**

#### PYQ REFERENCE:

**Q. Which of the following has/have been accorded 'Geographical Indication' status?**

1. Banaras Brocades and Sarees
2. Rajasthani Daal-Bati-Churma
3. Tirupathi Laddu

**Select the correct answer using the code given below:**

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only**
- (d) 1, 2 and 3

#### 132. Swadesh Darshan and PRASHAD

**Q. Consider the following statements:**

- I. The Swadesh Darshan aims to develop theme-based tourist circuits, while PRASHAD Scheme aims to develop pilgrimage and heritage destinations in India.
- II. Both the Swadesh Darshan and PRASHAD schemes are the Central Sector Scheme.
- III. Both the Swadesh Darshan and PRASHAD schemes are implemented by the Ministry of Tourism.

**How many of the statements given above are correct?**

- (a) Only one
- (b) Only two
- (c) All the three
- (d) None

**Answer: (c) All the three**

**Explanation:**

**In NEWS:** Sardar Patel's vision and the meaning of national unity today

#### Swadesh Darshan Scheme

- **Type:** Central Sector Scheme.
- **Objective:** Promote **integrated development of theme-based tourist circuits** in India to boost tourism and local economy.
- **Launch Year:** 2014.
- **Implementing Ministry:** Ministry of Tourism.
- **Key Features:**
  - Focus on **theme-based circuits** like Spiritual, Buddhist, Eco, Coastal, Wildlife, Heritage, Desert, Himalayan, Tribal, North-East, and Rural circuits.
  - Funding: **Central share up to 60%** of project cost in general areas, 90% in North-Eastern and hilly states.
  - Includes **infrastructure development**, tourism facilities, and skill development.

**PRASHAD Scheme**

- Full Form: Pilgrimage Rejuvenation and Spiritual, Heritage Augmentation Drive
- Type: Central Sector Scheme.
- Objective: Integrated development of pilgrimage and heritage destinations in India.
- Launch Year: 2014.
- Implementing Ministry: Ministry of Tourism.
- Key Features:
  - Focus on infrastructure development, amenities, and beautification of pilgrimage sites.
  - Promote heritage conservation and cultural tourism.
  - Funding pattern similar to Swadesh Darshan.

Hence all the statements are correct.

**PYQ REFERENCE: (UPPSC 2017)**

Q. Swadesh Darshan Scheme launched by Government of India does not include development of which of the following tourist circuits?

- (a) Heritage circuit
- (b) Sufi circuit
- (c) Ramayan circuit
- (d) All of the above are part of the tourism circuit**

Source: <https://www.thehindu.com/news/national/sardar-patels-vision-and-the-meaning-of-national-unity-today/article70221709.ece>

**133. Asia's tallest statue**

Q. In which among the following cities is Asia's tallest Lord Ram statue located?

- (a) Ayodhya
- (b) Kanpur
- (c) Canacona
- (d) Jaipur

Answer: (c) Canacona

Explanation:

In NEWS: PM to unveil Asia's tallest statue of Lord Ram tomorrow

**Asia's Tallest Lord Ram Statue**

- The statue is a 77-feet bronze idol of Lord Ram.
- It is located at Shree Samsthan Gokarn Partagali Jeevottam Mutt, Canacona, South Goa. **Hence option c is correct.**
- The unveiling is scheduled for 28 November 2025 by Prime Minister Narendra Modi.
- The statue has been designed by Ram Sutar, the sculptor behind the Statue of Unity.
- It is being described as Asia's tallest statue of Lord Ram.
- The unveiling coincides with the 550-year celebrations of the Partagali Mutt.
- The Mutt plans to develop a Ram-theme park and museum alongside the statue.
- The project aims to promote pilgrimage tourism, cultural heritage, and religious significance.
- The statue is constructed using bronze over a supportive structural frame.
- This statue reflects India's continuing tradition of constructing large monumental religious statues, similar to the Statue of Unity and other tall idols.

**PYQ REFERENCE: (2022)**

Q. The world's second tallest statue in sitting pose of Ramanuja was inaugurated by the Prime Minister of India at Hyderabad recently. Which one of the following statements correctly represents the teachings of Ramanuja?

- (a) The best means of salvation was devotion.**
- (b) Vedas are eternal, self-existent and wholly authoritative.
- (c) Logical arguments were essential means for the highest bliss
- (d) Salvation was to be obtained through meditation.

Source: <https://timesofindia.indiatimes.com/city/goa/pm-to-unveil-asias-tallest-statue-of-lord-ram-tomorrow/articleshow/125598456.cms>

**134. Coinage of the Vijayanagara Empire**

Q. With reference to the coinage of the Vijayanagara Empire, consider the following statements:

- I. The coins were mainly produced using the punch-marking technique.
- II. Gold, silver, and copper were the principal metals used.
- III. The Varaha or Pagoda was the standard gold coin of the empire.
- IV. The coins were known for their purity and wide circulation even beyond South India.

Which of the statements given above is/are correct?

- (a) I and II only
- (b) II, III and IV
- (c) I, II, III and IV
- (d) II and IV

Answer: (b) II, III and IV

Explanation:

In NEWS: Punch-marked gold coins dating back to Vijayanagara-era unearthed in Tiruvannamalai.

**Coinage in the Vijayanagara period:**

- The empire developed a sophisticated, die-struck coinage system. **Hence statement I is incorrect.**
- Coins were struck using engraved dies; each carried uniform designs and legends.
- **Materials:** Gold, silver, and copper. **Hence statement II is correct.**
- **Shapes:** Mostly circular or square, well-minted using dies.
- **Designs:** The boar (varaha) or Gandabherunda (two-headed eagle) was a common royal symbol.
- The Varaha (also called Pagoda by Europeans) was the standard gold coin. **Hence statement III is correct.**
- **Weight:** Approximately 3.4 to 3.6 grams of high-purity gold.
- Inscriptions were typically in Nagari, Kannada, or Telugu scripts.
- Some coins carried names of rulers, such as Harihara, Bukka Raya, Krishna Deva Raya, etc.
- Gold varahas (pagodas) were famous for their purity and wide circulation, even beyond South India. **Hence statement IV is correct.**

**Notable Rulers and Their Coinage:**

Ruler	Period
<b>Harihara I &amp; Bukka Raya I (1336-1377)</b>	Early gold and copper issues with simple deity symbols; some bilingual legends (Nagari-Kannada).
<b>Deva Raya I &amp; II (1406-1446)</b>	Refinement of gold coinage; increased use of Lakshmi and Vishnu motifs.
<b>Krishna Deva Raya (1509-1529)</b>	Peak of numismatic art; coins show Balakrishna, Vishnu, and his own name "Sri Krishnadevaraya." His gold pagodas became standard currency across South India.
<b>Achyuta Deva Raya &amp; successors</b>	Introduced double-headed eagle emblem; gradual diversification of regional mints.

**PYQ REFERENCE: (2022)**

**Q. In medieval India, the term "Fanam" referred to:**

- (a) Clothing  
(b) Coins  
(c) Ornaments  
(d) Weapons

Source: <https://www.thehindu.com/news/national/tamil-nadu/punch-marked-gold-coins-dating-back-to-vijayanagara-era-unearthed-in-tiruvannamalai/article70240206.ece>

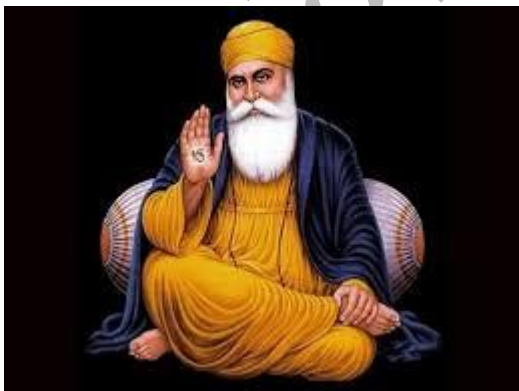
**135. Guru Nanak**

**Q. He was the founder of Sikhism, preached the oneness of God and equality by rejecting caste, ritualism, and idol worship. Identify the spiritual reformer.**

- (a) Guru Nanak Dev  
(b) Guru Gobind Singh  
(c) Guru Angad Dev  
(d) Guru Arjan Dev

**Answer: (a) Guru Nanak Dev**  
**Explanation:**

**In NEWS: PRESIDENT'S GREETINGS ON THE EVE OF BIRTHDAY OF GURU NANAK DEV JI**


**Guru Nanak:**

- **Guru Nanak Dev Ji (1469-1539)** was the **founder of Sikhism** and the **first of the ten Sikh Gurus**.
- He was born at **Talwandi (now Nankana Sahib, Pakistan)** in **1469** during the reign of the Lodis.
- His father was **Kalyan Chand (Mehta Kalu)**, an accountant; his mother was **Mata Tripta**.
- His spiritual teacher and lifelong companion was **Bhai Mardana**, a Muslim musician.

- Guru Nanak's teachings emphasized the **oneness of God, equality of all human beings**, and rejection of **caste distinctions, idol worship, and ritualism**.

- His core message: "*Tk Onkar*" — "There is only one God."

- He believed in achieving salvation through **Naam Japna (meditation on God's name)**, **Kirat Karni (honest living)**, and **Vand Chakna (sharing with others)**.

- He undertook **four major Udasis (spiritual journeys)** across India, Tibet, Arabia, and Sri Lanka to spread his message.

- He established the town of **Kartarpur (in present-day Pakistan)** in **1522**, where he spent the later part of his life.

- His compositions are included in the **Guru Granth Sahib**, the holy scripture of the Sikhs.

- Guru Nanak promoted the idea of **universal brotherhood and harmony between Hindus and Muslims**.

- His teachings laid the foundation for a **monotheistic and egalitarian** religious order — **Sikhism**.

- He appointed **Bhai Lehna** as his successor, who became **Guru Angad Dev Ji (2nd Guru)**.

- The birth anniversary of Guru Nanak is celebrated as **Guru Nanak Jayanti or Gurpurab** on the **full moon day of Kartik month**.

**Hence option (a) is correct.**

**PYQ REFERENCE: (2013)**

**Q. Consider the following Bhakti Saints:**

1. Dadu Dayal
2. Guru Nanak
3. Tyagaraja

**Who among the above was/were preaching when the Lodi dynasty fell and Babur took over?**

- (a) 1 and 3  
(b) 2 only  
(c) 2 and 3  
(d) 1 and 2

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2186272>

**136. GURU TEG BAHADUR**

**Q. Which among the following statements are correct with respect to Guru Tegh Bahadur?**

1. He was the 11th Sikh Guru, succeeding Guru Gobind Singh
2. He composed 115 hymns included in the Guru Granth Sahib, highlighting detachment, meditation, and moral courage.
3. He opposed the forced religious conversions carried out by Mughal Emperor Jahangir.

**Select the correct answer using the code given below.**

- (a) 1 and 3  
(b) 2 only  
(c) 2 and 3  
(d) 1 and 2

**Answer: (b) 2 only**

**Explanation:**

**In NEWS: PRESIDENT OF INDIA'S MESSAGE ON THE EVE OF 'MARTYRDOM DAY' OF GURU TEG BAHADUR JI**

**Guru Tegh Bahadur**

- Guru Tegh Bahadur Ji was the 9th Sikh Guru, succeeding Guru Har Krishan Ji in 1664. **Hence statement 1 is incorrect.**

- He was born in 1621 at Amritsar as the youngest son of Guru Hargobind Ji, the 6th Sikh Guru.

- His early name was Tyag Mal, later titled 'Tegh Bahadur' (Brave of the Sword) for his martial skills.
- He emphasized the principles of freedom of religion, human rights, and protection of the oppressed.
- Guru Tegh Bahadur Ji extensively travelled across northern India to spread Sikh teachings, including Assam, Bengal, Bihar, and the Malwa region.
- He founded the town of Anandpur Sahib (originally Chak Nanaki) in 1665.
- He composed 115 hymns included in the Guru Granth Sahib, highlighting detachment, meditation, and moral courage. **Hence statement 2 is correct.**
- His teachings advocate spiritual liberation through Naam Simran and living a truthful, disciplined life.
- He opposed the forced religious conversions carried out by Mughal Emperor Aurangzeb. **Hence statement 3 is incorrect.**
- He defended the religious freedom of Kashmiri Pandits who sought his protection.
- Guru Tegh Bahadur Ji was arrested under Aurangzeb's orders and taken to Delhi.
- He was tortured and executed publicly at Chandni Chowk on 11 November 1675 for refusing to convert to Islam.
- His martyrdom is considered a defining moment in India's religious freedom and rights history.
- Gurdwara Sis Ganj Sahib in Delhi marks the site of his martyrdom, and Gurdwara Rakab Ganj Sahib marks his cremation place.
- His son, Guru Gobind Singh Ji, succeeded him as the 10th Sikh Guru.

**PYQ REFERENCE: (2013)**

**Q. Consider the following Bhakti Saints:**

1. Dadu Dayal
2. Guru Nanak
3. Tyagaraja

**Who among the above was/were preaching when the Lodi dynasty fell and Babur took over?**

- (a) 1 and 3  
(b) 2 only  
(c) 2 and 3  
(d) 1 and 2

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2193161>

**137. 150 Years of "Vande Mataram"**

**Q. With reference to Vande Mataram, consider the following statements:**

1. It was originally written in Hindi and appeared in the novel Anandamath.
2. Only its first two stanzas have been given the status of the National Song of India.
3. It was first sung in 1947 during India's Independence celebrations.

**Which of the statements given above are correct?**

- (a) 1 and 2  
(b) 2 only  
(c) 1 and 3  
(d) 3 only

**Answer: (b) 2 only**

**Explanation:**

**In NEWS:** Prime Minister Shri Narendra Modi to inaugurate the year-long Commemoration of 150 Years of the National Song "Vande Mataram" on 7th November 2025

**150 Years of "Vande Mataram":**

- **Year:** 2025 marks 150 years since "Vande Mataram" was composed (1875) by Bankim Chandra Chattopadhyay.
- **Origin:** Written in Sanskrit and Bengali, it first appeared in Bankim's novel *Anandamath* (published in 1882). **Hence statement 1 is incorrect.**
- **Meaning:** "Vande Mataram" translates to "I bow to thee, Mother"—a salutation to the motherland.
- **Cultural Significance:** Became a symbol of national unity and freedom during India's independence movement. Inspired freedom fighters during Partition of Bengal (1905) and other movements.
- **Official Recognition:**
  - The first two stanzas were adopted as the National Song of India in January 1950. **Hence statement 2 is correct.**
  - Distinguished from the National Anthem (*Jana Gana Mana*) but holds equal national reverence.
- **Composer & Music:** Music composed by Rabindranath Tagore, first sung at the Indian National Congress session (1896). **Hence statement 3 is incorrect.**
- **Themes:** Depicts India as a divine mother—rich in natural beauty, fertility, and strength—personified through Durga imagery.
- **Commemoration:** 2025 celebrations emphasize its legacy of patriotism, linguistic harmony, and cultural revival.

**PYQ REFERENCE: (2020)**

**Q. With reference to the book "Desher Katha" written by Sakharam Ganesh Deuskar during the freedom struggle, consider the following statements:**

1. It warned against the Colonial State's hypnotic conquest of the mind.
2. It inspired the performance of swadeshi street plays and folk songs.
3. The use of 'desh' by Deuskar was in the specific context of the region of Bengal.

**Which of the statements given above are correct?**

- (a) 1 and 2 only  
(b) 2 and 3 only  
(c) 1 and 3 only  
(d) 1, 2 and 3

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2186757>

**138. Janjatiya Gaurav Divas**

**Q. Consider the following pairs:**

S.no	Tribal Freedom Fighters	Associated Movement
1.	Veer Narayan Singh	Sonakhan Uprising (1856-57)
2.	Birsa Munda	Ulgulan Movement (1899-1900)
3.	Badal Bhoi	Chhindwara Protest (1923)
4.	Raja Shankar Shah and Raghunath Shah	Revolt of 1857

**Which of the above pairs are correctly matched?**

- (a) 1 and 2 only  
(b) 2, 3 and 4 only  
(c) 1, 2 and 4 only  
(d) 1, 2, 3 and 4

Answer: (d) 1, 2, 3 and 4

Explanation:

**In NEWS: Honouring India's Tribal Freedom Fighters**

● November 15 is celebrated as Janjatiya Gaurav Divas (Tribal Pride Day) to commemorate the birth anniversary of tribal freedom fighter Birsa Munda.

● The Ministry of Tribal Affairs is establishing 11 museums to commemorate various tribal movements and uprisings against British rule and promote their cultures and histories.

● The Ministry of Tribal Affairs promotes tribal art, language, and traditions through other digital initiatives such as Adi Sanskriti and Adi Vaani.

**The unsung heroes of India's tribal heritage**

**1. Veer Narayan Singh – Sonakhan Uprising (1856–57)**

● Revolt triggered by British grain hoarding during the 1856 famine.

● Veer Narayan Singh broke British granaries to feed starving villagers.

● Formed a local militia after escaping prison and fought British forces.

● Considered an early precursor to the 1857 revolt in Chhattisgarh.

Hence pair 1 is correctly matched.

**2. Birsa Munda – Ulgulan Movement ("Great Tumult", 1899–1900)**

● Revolt against British land revenue policies, exploitation by zamindars and missionaries.

● Sought restoration of Khuntkatti (traditional Munda community land rights).

● Demanded Munda Raj—a self-governed tribal polity.

● Led to significant reforms, influencing laws like the Chotanagpur Tenancy Act (1908).

Hence pair 2 is correctly matched.

**3. Badal Bhoi – Chhindwara Tribal Protest (1923)**

● Mass mobilisation of Adivasis against British administrative excesses; met with lathi charge.

Forest Law Resistance (1930)

● Protested against colonial forest policies restricting tribal access to forests.

● Arrested for breaking unjust forest regulations.

● Represents broader tribal participation in the Forest Satyagraha during the freedom struggle.

Hence pair 3 is correctly matched.

**4. Raja Shankar Shah – Revolt of 1857 (Central India Tribal Participation)**

● Mobilised Gond communities during the 1857 uprising.

● Inspired resistance through patriotic poems and songs.

● Arrested and executed for allegedly plotting rebellion.

**5. Kunwar Raghunath Shah – Revolt of 1857 (Cultural Resistance)**

● Supported his father Raja Shankar Shah in the Central India tribal uprising.

● Used poetic compositions to rally people against British rule.

● Executed in 1858 for involvement in the uprising.

Hence pair 4 is correctly matched.

**PYQ REFERENCE: (2020)**

**Q. With reference to the history of India, "Ulgulan" or the Great Tumult is the description of which of the following events?**

(a) The Revolt of 1857

(b) The Mappila Rebellion of 1921

(c) The Indigo Revolt of 1859-60

(d) Birsa Munda's Revolt of 1899-1900

Source:

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2189915>

**139. Formation of the First INA**

**Q. Who among the following formed the first Indian National Army (INA) in 1942 with support from the Japanese Army?**

(a) Rash Behari Bose

(b) Captain Mohan Singh

(c) Subhas Chandra Bose

(d) Major Fujiwara Iwaichi

Answer: (b) Captain Mohan Singh

Explanation:

**In NEWS:** INA not founded by Subhas Bose, he took up the reins only later, claims new book

**Formation of the First INA (1942)**

● After Japan's victories in Malaya and Singapore (1942), around 70,000 Indian soldiers of the British Indian Army were taken as Prisoners of War (POWs).

● Captain Mohan Singh of the 14th Punjab Regiment emerged as a leader among these POWs. Hence option (b) is correct.

● With Japanese encouragement, he organized the first Indian National Army (INA) in 1942, aiming to:

○ Liberate India from British rule with Japanese assistance.

○ Build an armed force of Indians abroad.

However, differences with Japanese officers over control and treatment of Indian soldiers led to the disbandment of this first INA by the end of 1942.

**Subhas Chandra Bose and the Second INA (1943–45)**

● Netaji Subhas Chandra Bose arrived in Singapore in July 1943.

● He reorganized the INA into a disciplined, nationalist army under the slogan "Chalo Dilli" (March to Delhi).

● He established the Provisional Government of Free India (Azad Hind Government) in October 1943, recognized by several Axis powers (Japan, Germany, Italy).

**PYQ REFERENCE: (2021)**

**Q. In the context of Colonial India, Shah Nawaz Khan, Prem Kumar Sehgal and Gurbaksh Singh Dhillon are remembered as**

(a) Leaders of Swadeshi and Boycott Movement

(b) Members of the Interim Government in 1946

(c) Members of the Drafting Committee in the Constituent Assembly

(d) Officers of the Indian National Army

Source: <https://www.thehindu.com/news/national/west-bengal/ina-was-not-founded-by-netaji-he-took-up-the-reins-only-later-says-new-book/article70266727.ece#:~:text=According%20to%20the%20book%2C%20The.as%20a%20force%20against%20Britain.>

[book/article70266727.ece#:~:text=According%20to%20the%20book%2C%20The.as%20a%20force%20against%20Britain.](https://www.thehindu.com/news/national/west-bengal/ina-was-not-founded-by-netaji-he-took-up-the-reins-only-later-says-new-book/article70266727.ece#:~:text=According%20to%20the%20book%2C%20The.as%20a%20force%20against%20Britain.)

[book%2C%20The.as%20a%20force%20against%20Britain.](https://www.thehindu.com/news/national/west-bengal/ina-was-not-founded-by-netaji-he-took-up-the-reins-only-later-says-new-book/article70266727.ece#:~:text=According%20to%20the%20book%2C%20The.as%20a%20force%20against%20Britain.)

**140. National Education Day 2025**

**Q. Consider the following statements:**

**Statement-I:** National Education Day is celebrated every year on 11th November across India.

**Statement-II:** It commemorates the birth anniversary of Maulana Abul Kalam Azad, who served as independent India's first Education Minister and laid the foundation for institutions like IITs and UGC.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I
- (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I
- (c) Statement-I is correct, but Statement-II is incorrect
- (d) Statement-I is incorrect, but Statement-II is correct

**Answer: (a) Both Statement-I and Statement-II are correct and Statement-II explains Statement-I**

**Explanation:**

**In NEWS:** National Education Day 2025 Today: Why is it celebrated on Nov 11? History and significance

#### National Education Day 2025

- **Date of observance:** 11 November every year
- **Purpose:** Commemorate the birth anniversary of **Maulana Abul Kalam Azad**, India's first Education Minister.
- **Official declaration:** 2008, by the Ministry of Human Resource Development (now Ministry of Education).

#### Maulana Abul Kalam Azad – Legacy

- **Born:** 1888
- **Roles:** Freedom fighter, scholar, first Education Minister of independent India (1947–1958)
- **Vision:** Education must be **inclusive, promote critical thinking, civic responsibility, and confidence**, not just academic achievement.
- **Contributions:**
  - Established key institutions: **Indian Institutes of Technology (IITs), University Grants Commission (UGC), Council of Scientific and Industrial Research (CSIR)**
  - Laid the foundation of India's **modern educational and research infrastructure**

**Hence, Both Statement-I and Statement-II are correct and Statement-II explains Statement-I**

#### PYQ REFERENCE: (2021)

**Q. Consider the following statements:**

1. 21st February is declared to be the International Mother Language Day by UNICEF.
2. The demand that Bangla has to be one of the national languages was raised in the Constituent Assembly of Pakistan.

**Which of the above statements is/are correct?**

- (a) 1 only
- (b) 2 only**
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Source:** <https://indianexpress.com/article/education/national-education-day-2025-date-why-is-it-celebrated-on-november-11-history-significance-maulana-abul-kalam-azad-10356419>

#### PLACES IN NEWS

##### 141. Tel Aviv

**Q. Tel Aviv recently seen in the news is located in**

- (a) Yemen
- (b) Israel
- (c) Ukraine
- (d) Egypt

**Answer: (b) Israel**

**Explanation:**

**In NEWS:** 17th India-Israel Joint Working Group meeting on defence cooperation held in Tel Aviv

#### **India-Israel Joint Working Group (JWG) on Defence Cooperation:**

- The **17th meeting of the India-Israel JWG on Defence Cooperation** was held in **Tel Aviv, Israel, on November 4, 2025. Hence option (b) is correct.**
- A **Memorandum of Understanding (MoU) on Defence Cooperation** was signed to:
  - Provide a **unified vision and policy direction** for bilateral defence ties.
  - Enable **sharing of advanced technology**.
  - Promote **co-development and co-production** of defence systems.
- Areas of cooperation identified include:
  - Strategic dialogues & training,
  - Defence industrial cooperation,
  - Science & Technology, R&D,
  - Artificial Intelligence (AI) and Cybersecurity.
- The meeting also covered **counter-terrorism cooperation and operational capability enhancement**.
- The India - Israel defence relationship is **long-standing**, built on **mutual trust and shared security interests**.

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2186384>

##### 142. Guam

**Q. Guam is an island territory of the United States located in the**

- (a) West Pacific Ocean
- (b) South Atlantic Ocean
- (c) North Atlantic Ocean
- (d) East Pacific Ocean

**Answer: (a) West Pacific Ocean**

**Explanation:**

**In NEWS:** Indian Naval Ship (INS) Sahyadri is at Guam in the Northern Pacific for participation in the multilateral Exercise Malabar-2025.

#### **Exercise Malabar-2025:**

- The Harbour Phase of Exercise Malabar-2025 will feature operational planning and discussions, alignment on communication protocols, familiarisation visits between participating nations, and sports fixtures.
- Following the harbour phase, all participating units will proceed for the Sea Phase, wherein ships and aircraft will take part in naval drills, focusing on joint fleet operations, anti-submarine warfare, gunnery serials and flying operations.

#### **INS Sahyadri:**

- The participation of INS Sahyadri in Exercise Malabar-2025 reaffirms India's enduring partnership and its commitment to strengthening coordination, enhancing interoperability, and demonstrating a collective resolve to safeguard regional security.
- Indigenously designed and constructed, INS Sahyadri is a Guided Missile Stealth Frigate.
- The ship is a shining example of the 'Aatmanirbhar Bharat' vision and has participated in several bilateral and multilateral exercises, as well as operational deployments.

#### **Guam:**

- Guam is an island territory of the United States located in the western Pacific Ocean, about 2,500 km south of Japan and 6,000 km west of Hawaii. **Hence option (a) is correct.**

- It is the largest and southernmost island in the Mariana Islands archipelago and plays a significant strategic, cultural, and economic role in the Pacific region.
- Guam is a U.S. territory, meaning it is under U.S. sovereignty but not a state.
- Residents are U.S. citizens, but cannot vote in presidential elections.
- Guam elects a non-voting delegate to the U.S. House of Representatives.
- It has its own local government with a governor and legislature.
- Guam is a volcanic island surrounded by coral reefs, with tropical forests and limestone plateaus.
- It has a tropical climate, with warm temperatures year-round and a rainy season from July to November.

**PYQ REFERENCE: (2014)**

**Q. Turkey is located between**

- Black Sea and Caspian Sea
- Black Sea and Mediterranean Sea**
- Gulf of Suez and Mediterranean Sea
- Gulf of Aqaba and Dead Sea

**Source:**

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=2188052>

#### 143. Chabahar port

**Q. Which of the following statements about Chabahar Port is/are correct?**

- It is located in Iran on the Gulf of Oman.
- It provides India direct access to Afghanistan and Central Asia bypassing Pakistan.
- It is part of the China-Pakistan Economic Corridor (CPEC).

**Select the correct answer using the codes below:**

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1, 2 and 3

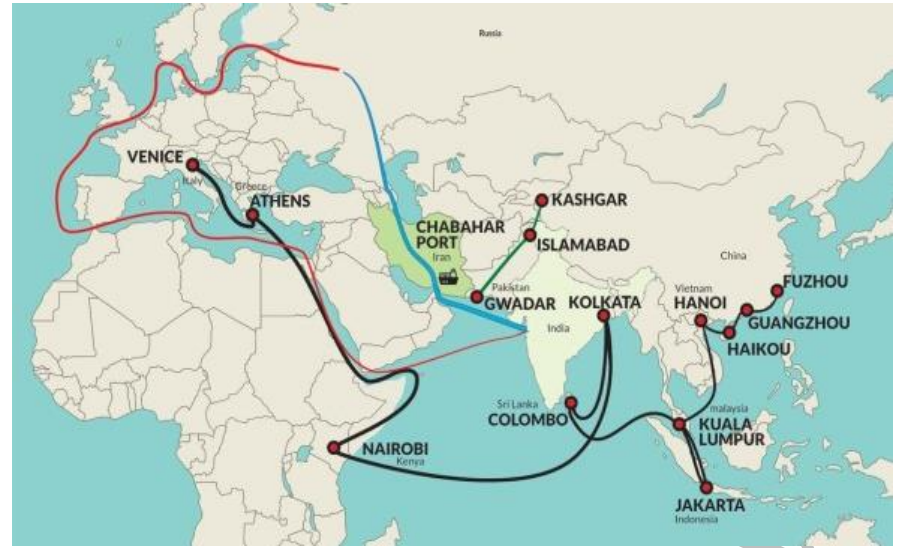
**Answer: (a) 1 and 2 only**

**Explanation:**

**In NEWS:** India gets six-month waiver on U.S. sanctions against Chabahar: MEA

#### **Chabahar Port**

- **Location:** Southeastern Iran, on the Gulf of Oman, near the Iranian-Indian border with Pakistan. **Hence statement 1 is correct.**
- **Type:** Deep-sea port, free-trade and transit hub.
- **Strategic Importance:**
  - Provides India direct access to Afghanistan and Central Asia bypassing Pakistan. **Hence statement 2 is correct.**
  - Counterbalances China-Pakistan Economic Corridor (CPEC).
  - Enhances trade in the International North-South Transport Corridor (INSTC). **Hence statement 3 is incorrect.**
- **Development:** India and Iran signed agreements to develop and operate two berths at Chabahar. India has invested in terminal construction, connectivity infrastructure, and port equipment.
- **Connectivity:** Linked to Zaranj in Afghanistan via road; can connect to Central Asia for trade.
- **Geopolitical Aspect:** Strengthens India-Iran ties, reduces dependence on Pakistani ports, and provides access to energy and mineral resources in Afghanistan and Central Asia.



**PYQ REFERENCE: (2023)**

**Q. Consider the following pairs :**

- | Port              | Well known as                                      |
|-------------------|--|
| 1. Kamarajar Port | —First major port in India registered as a company |
| 2. Mundra Port    | —Largest privately owned port in India             |
| 3. Visakhapatnam  | —Largest container port in India                   |
- How many of the Pairs given above are correctly matched?**
- Only one pair
  - Only two pairs**
  - All three pairs
  - None of the pairs

**Source:** <https://www.thehindu.com/news/national/india-six-month-waiver-us-sanctions-on-chabahar-port/article70220724.ece>

#### 144. Siliguri Corridor

**Q. The strategic Siliguri Corridor is a part of which among the following states?**

- Assam
- Sikkim
- West Bengal
- Bihar

**Answer: (c) West Bengal**

**Explanation:**

**In NEWS:**

- Army sets up three new garrisons near the strategic Siliguri Corridor
- India has established three new military garrisons close to the Bangladesh border in the eastern region. These are located at:
  - Bamuni in Assam
  - Kishanganj in Bihar
  - Chopra in West Bengal
- These garrisons reinforce the larger military framework defending the Siliguri Corridor, also known as the Chicken's Neck, the narrow land strip that connects mainland India to the entire Northeast.

**Siliguri Corridor:**

- The Siliguri Corridor is a narrow stretch of land in the Indian state of West Bengal. **Hence option (c) is correct.**
- It connects mainland India to all eight northeastern states (like Assam, Arunachal Pradesh, Tripura, Meghalaya, etc.).
- At its narrowest point, it is only about 20–22 km wide.
- On one side is Nepal, and on the other side is Bangladesh.
- To the north is Bhutan, and further north is China (Tibet).
- This makes it one of the most strategically sensitive corridors in the world.



**Significance of the corridor:**

**1. Lifeline to the Northeast:** Almost all Road transport, Rail transport, Military movement and Supply routes between the rest of India and the Northeast must pass through this narrow corridor.

**2. High Strategic Vulnerability:** Because the corridor is so narrow, it is a chokepoint. If disrupted in any conflict or crisis, the Northeast could become cut off from the rest of India.

**3. Surrounded by Multiple Countries:** This makes it a high-pressure geopolitical area.

**PYQ REFERENCE: (2018)**

**Q. In which one of the following States is Pakhui Wildlife Sanctuary located?**

- (a) Arunachal Pradesh
- (b) Manipur
- (c) Meghalaya
- (d) Nagaland

**Source:**

<https://www.thehindu.com/news/national/assam/india-strengthens-eastern-defences-with-three-new-garrisons-near-siliguri-chickens-neck/article70287683.ece>