

DAILY MCQs COMPILATION with EXPLANATIONS

May 2024

NEXT IAS

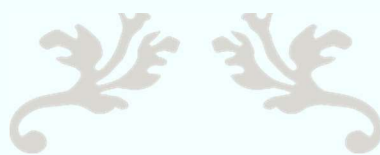


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History, Art & Culture

1. Ajrakh, a traditional textile craft of Gujarat, is known for its intricate designs made using:
 - (a) Tie-and-dye techniques
 - (b) Embroidery with colorful threads
 - (c) Hand-block printing with natural dyes
 - (d) Painting on pre-treated fabric
2. Consider the following statements about Rabindranath Tagore:
 1. Rabindranath Tagore received the Nobel Prize in Literature for his contributions to Bengali literature, including the famous collection of poems, "Gitanjali."
 2. He is credited with composing the national anthems of both India and Sri Lanka.
 3. Visva-Bharati University, established by Tagore, aimed to promote traditional education methods.

Which of the given above statements is/are correct?

- (a) 1 and 2 only
 - (b) 1 and 3 only
 - (c) 2 and 3 only
 - (d) 1 only
3. Which of the following statements about the Padma Awards is/are correct?
 - (a) The Padma Awards are conferred by the President of India on the advice of the Padma Awards Committee.
 - (b) Only Indian citizens are eligible to receive Padma Awards.
 - (c) A recipient of a Padma Award cannot be awarded a higher category of Padma Award in subsequent years.
 - (d) Both (b) and (c)
4. With reference to the *Sahitya Academy Fellowship*, one of the highest literary honours in India, consider the following statements:
 1. It is bestowed upon writers for their contributions only in languages mentioned in the eighth schedule of Indian constitution.
 2. It is limited to twenty-one recipients at any given time.

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
5. He participated in the individual Satyagraha and Quit India Movement. His presidency is notable for proclaiming a state of emergency by the advice of the then Prime Minister, Indira Gandhi, in 1975. Who among the following personalities is described above?

- (a) Neelam Sanjiva Reddy
(b) Zakir Husain
(c) Sarvepalli Radhakrishnan
(d) Fakhruddin Ali Ahmed
6. Recently which one of the following has not been included in the 'UNESCO's Memory of the World Asia-Pacific Regional Register'?
- (a) Sahṛdayaloka-Locana
(b) Panchatantra
(c) Rajatarangini
(d) Ramcharitmanas
7. With reference to Panchatantra, which of the following statements is/are correct?
1. It is a collection of interrelated animal fables in Sanskrit verse and prose.
 2. It was authored by Vishnu Sharma.
- 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
8. Which of the following cultural artifacts have been included in UNESCO's Memory of the World Register?
- (a) Ramcharitmanas
(b) Panchatantra
(c) Sahṛdayāloka-Locana
(d) All of the above
9. With reference to the given literary work, Consider the following pairs :
- | Literary work | : | Author |
|------------------------|----------|----------------------|
| 1. Ramcharitmanas | : | Vishnu Sharma |
| 2. Panchatantra | : | Acharya Anandvardhan |
| 3. Sahṛdayāloka-Locana | : | Tulsidas |
- How many of the above pairs are correctly matched?
- (a) Only one pair
(b) Only two pairs
(c) All three pairs
(d) None of the pairs
10. With reference to the Ganga Jatara, which of the following statements is/are correct?
1. It is an annual folk festival celebrated in Tirupati, Andhra Pradesh.
 2. It venerates Thathayagunta Gangamma, the folk goddess of the region.
- 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

11. With reference to the history of ancient India, the terms like *Raksha*, *Vridhhi*, *Palana*, and *Yogakshema* were related to:
- (a) Agricultural Produce
 - (b) Treasury and Finance
 - (c) Military Affairs
 - (d) Corporate Governance
12. Consider the following statements regarding Virupaksha Temple, Hampi:
1. It is dedicated to Lord Vishnu, a principal deity in Hinduism.
 2. The temple's architecture showcases a blend of Nagara and Dravidian styles.
 3. It is one of the oldest functioning temples in India, with continuous worship since the 7th century CE.
 4. The temple complex houses a monolithic Nandi statue, the largest of its kind in India.
- Which of the above statements are correct?
- (a) 1 and 2 only
 - (b) 2 and 3 only
 - (c) 3 only
 - (d) 1, 3 and 4 only
13. With reference to the Archaeological Survey of India (ASI), consider the following statements:
1. Maintenance of ancient monuments and archaeological sites and remains of national importance is the prime concern of the ASI.
 2. It regulates all archaeological activities in the country as per the provisions of the Antiquities and Art Treasure Act, 1972.
- 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

EXPLANATIONS (History, Art & Culture)

1. (c)

About Ajrakh

- The term "**Ajrakh**" is derived from the word 'Azrak,' which means indigo, a primary dye used in the printing process.
- Ajrakh is a traditional textile craft originating from Gujarat, particularly in **areas like Sindh, Barmer, and Kutch**.
- This art form involves intricate **hand-block printing on specially treated cotton fabric**, creating elaborate designs that are steeped in symbolism and historical significance.
- Introduced more than **400 years ago by Sind Muslims**, **Ajrakh** is a popular attire among nomadic pastoralist and agricultural communities such as the Rabaris, Maldharis, and Ahirs.

2. (d)

Statement 1 is correct: In 1913 he was awarded the Nobel Prize in Literature for his work on Gitanjali. He was the first non-European to receive the Nobel Prize. In 1915 he was awarded knighthood by the British King George V. In 1919, following the Jallianwalla Bagh massacre, he renounced his Knighthood.

Statement 2 is not correct: While Tagore inspired the Sri Lankan national anthem, he directly composed the anthems for India and Bangladesh.

Statement 3 is not correct: Visva-Bharati University was known for its innovative approach, challenging conventional education methods.

3. (a)

The Padma Awards are conferred on the recommendations made by the Padma Awards Committee, which is constituted by the Prime Minister every year. **Statement (a) is correct**

While the majority of awardees are Indian citizens, people of exceptional achievement residing outside India can also be honoured with Padma Awards (provided by the Persons of Indian Origin (PIO) and Overseas Citizen of India (OCI) category). **Statement (b) is not correct.**

An individual can be awarded a higher category of Padma Award in subsequent years. For example, someone who receives a Padma Shri initially can be awarded a Padma Bhushan or Padma Vibhushan later. **Statement (c) is not correct.**

4. (b)

In News: Recently, Ruskin Bond, an author, has been awarded the ‘Sahitya Akademi Fellowship’, the highest honour given by the literary organisation.

Statement 1 is not correct

- **Sahitya Akademi Fellowship** It is an honour bestowed upon writers who have made outstanding and lasting contributions to Indian literature in **all languages** mentioned in the eighth schedule of Indian constitution along with **English and Rajasthani**.

Statement 2 is correct

- It is one of the highest literary honours in India, conferred by the **Sahitya Akademi** (*India's National Academy of Letters*) New Delhi.
- It is reserved for ‘**the immortals of literature**’ and is **limited to twenty-one recipients at any given time**.

5. (d)

News: The President of India paid floral tributes to Shri Fakhruddin Ali Ahmed, former President of India on his birth anniversary.

Fakhruddin Ali Ahmed served as the fifth President of India, holding the office from August 24, 1974, until his death on February 11, 1977.

He joined the Indian National Congress and was a loyal follower of Mahatma Gandhi, participating in the **individual Satyagraha and Quit India Movement for which he was arrested in 1942**.

His presidency is notable for his decision to proclaim a **state of emergency** by the advice of the then Prime Minister, Indira Gandhi, in 1975.

6. (c)

Rajatarangini

Context

- The Ramcharitmanas, Panchatantra and Sahṛdayāloka-Locana have been included in 'UNESCO's Memory of the World Asia-Pacific Regional Register'.
- Sahṛdayaloka-Locana', 'Panchatantra', and 'Ramcharitmanas' were authored by Acharya Anandvardhan, Pt. Vishnu Sharma, and Goswami Tulsidas, respectively.

7. (c)

Both the Statements are correct.

Panchatantra

- The Panchatantra is an ancient Indian collection of interrelated **animal fables in Sanskrit** verse and prose, arranged within a frame story.
- It was authored by **Pt. Vishnu Sharma**.

8. (d)

Option d is correct: The Memory of the World Register, established by UNESCO, aims to preserve and digitize humanity's documentary heritage of universal value. It includes cultural artifacts such as the Ramcharitmanas, an epic poem by Tulsidas; the Panchatantra, a collection of ancient Indian fables; and the Sahṛdayāloka-Locana, a significant literary work by Acharya Anandvardhan. These artifacts reflect the diversity of languages, people, and cultures, and have been recognized for their historical and cultural significance by being included in the Memory of the World Register.

9. (d)

All the Pairs are incorrectly matched.

Context

- The Ramcharitmanas, Panchatantra and Sahṛdayāloka-Locana have been included in 'UNESCO's Memory of the World Asia-Pacific Regional Register'.

Ramcharitmanas

- **Tulsidas**, a prominent poet-saint of the **16th century**, wrote Ramcharitmanas in the **Awadhi language**. Ramcharitmanas is composed of seven chapters.
- The seven Kands written by Tulsidas are Baal Kand, Ayodhya Kand, Aranya Kand, Kishkindakand, Sundar Kand, Lanka Kand and Uttar Kanda.

Panchatantra

- The Panchatantra is an ancient Indian collection of interrelated **animal fables in Sanskrit** verse and prose, arranged within a frame story.
- It was authored by **Pt. Vishnu Sharma**.

Sahṛdayāloka-Locana

- 'Sahṛdayāloka-Locana', authored by Kashmiri poet **Acharya Anandvardhan**, is a significant literary work in aesthetics and literary criticism.
- It analyzes several aspects of literary composition and provides insights into the principles of Sanskrit poetics.

10. (c)

Both the Statements are correct.

About

- It venerates **Thathayagunta Gangamma**, the folk goddess of Tirupati, believed to be Lord Venkateswara's younger sister.

- **Ganga Jatara** is an annual folk festival celebrated for nine days in Tirupati, Andhra Pradesh.
- It is an ancient practice at this centuries-old temple for devotees to offer prayers by **dressing up in different costumes** and smearing sandalwood, chalk and charcoal powder all over their bodies.

11. (d)

In News: Recently, the **Insurance Regulatory and Development Authority of India (IRDAI)** has **introduced new corporate governance rules** to prevent conflicts of interest in key management roles and to ensure that no individual holds multiple significant positions.

- **Historical Context of Corporate Governance:** Corporate governance is not a new concept in India.
- As far back as the **3rd century BC, Chanakya** elaborated on the **duties of a king**, which align with **modern corporate governance principles**.
- These duties included:
 - **Raksha:** Protecting shareholders' wealth.
 - **Vridhhi:** Increasing income through proper asset utilisation.
 - **Palana:** Maintaining profitability.
 - **Yogakshema:** Safeguarding shareholders' interests.

12. (c)

Statement 1 is not correct: The Virupaksha Temple is dedicated to Lord Virupaksha, a form of Lord Shiva.

Statement 2 is not correct: The temple's architecture is predominantly Dravidian, characterized by its pyramidal gopurams and intricately carved pillars.

Statement 3 is correct: The temple is indeed one of the oldest functioning temples in India, with continuous worship since the 7th century CE.

Statement 4 is not correct: While the temple complex does have a Nandi statue, it is not the largest monolithic Nandi in India.

13. (a)

Statement 1 is correct: ASI is the premier organization for the **archaeological research and protection of the cultural heritage** of the nation under the **Ministry of Culture**.

- **Maintenance of ancient monuments and archaeological sites and remains of national importance** is the prime concern of the ASI.

Statement 2 is not correct: It regulates all archaeological activities in the country as per the provisions of the **Ancient Monuments and Archaeological Sites and Remains Act, 1958**. It also regulates the **Antiquities and Art Treasure Act, 1972**.

Economy

1. Consider the following statements regarding Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER):
 1. An increase in NEER indicates an appreciation of the domestic currency relative to a basket of foreign currencies.
 2. REER is calculated by adjusting NEER for inflation differentials between the home country and its trading partners.
 3. A higher REER compared to NEER suggests that the domestic currency is undervalued in terms of purchasing power.

Which of the above given statements is/are correct?

- (a) 1 and 2 only
 - (b) 1 and 3 only
 - (c) 2 and 3 only
 - (d) 1, 2 and 3
2. With reference to the 'Navratna Status' given to Central Public Sector Enterprises (CPSEs) in India, consider the following statements:
 1. They can invest up to ₹10000 crore of their net worth in a single project without government approval.
 2. They have the liberty to form joint ventures and establish subsidiaries overseas.

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
3. Consider the following statements regarding coffee production in India:
 1. India is the world's leading producer of coffee.
 2. Arabica is the only coffee variety commercially grown in India.
 3. The majority of coffee cultivation in India happens under direct sunlight.
 4. Kerala is the leading producer of coffee in India.

Which of the following statements are correct?

- (a) 1 and 2 only
 - (b) 2 and 3 only
 - (c) 3 and 4 only
 - (d) None of the above
4. The terms like 'blood minerals' or 'conflict minerals' appeared in the news, is generally related to:
 - (a) Gold, Copper, Titanium, and Silicon
 - (b) Tin, Tantalum, Tungsten, and Gold
 - (c) Gold, Lithium, Titanium, and Silicon
 - (d) Copper, Graphite, Gold and Cadmium

5. With reference to the International Monetary Fund (IMF), consider the following statements:
1. It was established in 1944 with the primary goal of promoting global monetary cooperation, exchange rate stability, balanced trade growth, and financial stability.
 2. World Economic Outlook is released by the IMF.
- 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
6. With reference to the eligibility to be Startups in India, consider the following statements:
1. An entity shall be considered as a startup up to 10 years from the date of its incorporation.
 2. Its turnover for any previous year shall exceed 100 crore rupees.
- 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
7. Front running refers to a situation where a stockbroker uses their knowledge of a client's upcoming large order to:
- (a) Recommend alternative investments to the client.
 - (b) Place a smaller order on the client's behalf to test market liquidity.
 - (c) Advise the client to delay the order to avoid market volatility.
 - (d) Buy or sell the same security themselves before executing the client's order.
8. Consider the following statements:
1. The world's largest hydroelectric power plant is located in Russia.
 2. In India, the oldest Hydropower power plant is located in Darjeeling in West Bengal.
- 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
9. Consider the following statements about the Goods and Services Tax (GST) in India:
1. GST is a single indirect tax levied on the manufacture, sale, and consumption of goods and services throughout India.
 2. The GST Council is headed by the Union Finance Minister.
 3. The current GST structure has one tax rate applicable to all goods and services.
 4. The Input Tax Credit (ITC) mechanism under GST allows businesses to claim credit for taxes paid on purchases for further production or sale.
 5. Implementation of GST has significantly reduced the cascading effect of taxes on goods and services.

Which of the above given statements are correct?

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

10. Consider the following statements:

- 1. Shrinkflation occurs when a product downsizes its quantity along with the increase in its price.
- 2. During Stagflation an economy faces both high inflation and low growth at the same time.

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

11. With reference to the GST Appellate Tribunal (GSTAT), consider the following statements:

- 1. It is the Appellate Authority established under the Central Goods and Services Tax Act, 2017.
- 2. The Tribunal will ensure swift, fair, judicious and effective resolution to GST disputes.

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

12. Which one of the following best describes the term '*drip pricing*'?

- (a) It is a method of pricing which recovers all costs.
- (b) It is a pricing technique where only a part of an item's price is advertised.
- (c) It is setting a different price for the same product in different segments of the market.
- (d) It is a practice of setting the price lower than what it is offered by other competitors.

13. With reference to the Confederation of Indian Industry (CII), which of the following statements is/are correct?

- 1. It is a non-government, industry-led and industry-managed organization Founded in 1985.
- 2. CII has members from the private and public sectors.

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

14. With reference to the '*Market Economy*' status, consider the following statements:

- 1. The economic decisions are guided by the interactions of a country's individual citizens and businesses.
- 2. The government controls the allocation of resources, price and output decisions.
- 3. It follows the principle of demand and supply.

How many of the statements given above is / are correct?

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

15. Regarding the governance of public sector banking in India, consider the following statements:

1. The Government of India's capital infusion into public sector banks has seen a consistent rise over the past decade.
2. The consolidation of associate banks with the main State Bank of India has been implemented to streamline public sector banks.

Which of the statements given above is/are correct?

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

16. Which of the following statements regarding wilful defaulters is correct?

- (a) A wilful defaulter is a borrower who defaults on a loan due to genuine financial hardship.
- (b) To be classified as a wilful defaulter, the outstanding loan amount must be less than ₹1 crore.
- (c) Wilful defaulters face legal repercussions and restrictions on accessing credit in the future.
- (d) Both (b) and (c)

17. With reference to the World Trade Organization (WTO), which of the following statements is/are correct?

1. It was founded in 1944 by the Marrakesh Agreement.
2. More than 160 countries are members of the WTO.

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

18. Which one of the following has become the first trading-cum-clearing member at the India International Bullion Exchange (IIBX)?

- (a) Indian Overseas Bank
- (b) Indian Bank
- (c) State Bank of India
- (d) Punjab National Bank

19. With reference to the Economic Capital Framework (ECF), which of the following statements is/are correct?

1. It provides a methodology for determining the appropriate level of risk provisions and profit distribution to be made under RBI Act, 1934.
2. It was adopted by the RBI in 2019 as per recommendations of the Bimal Jalan committee.

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

20. Consider the following:

1. Labour Force Participation Rate
2. Worker Population Ratio
3. Unemployment Rate

How many of the above is / are key indicators for the *Periodic Labour Force Survey (PLFS)*?

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

21. With reference to the RuPay card, which of the following statements is/are correct?

1. It is India's first global card payment network.
2. RuPay cards do not support transaction reversal.

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

22. Which of the following steps can curb the trade deficit?

- (a) Enhancing domestic capacity.
- (b) Development of import monitoring systems.
- (c) Adoption of mandatory technical standards.
- (d) All of the above.

23. With reference to the World Intellectual Property Organization (WIPO), which of the following statements is/are correct?

1. It is a self-funding agency of the United Nations, with 193 member states.
2. It is Headquartered in Geneva, Switzerland.

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

24. Which of the following statements correctly describes the relationship between bond yield and bond price?

- (a) Bond yield and bond price move independently of each other.
- (b) Bond yield is directly proportional to bond price.
- (c) Bond yield and bond price are inversely related.
- (d) Bond yield is unaffected by changes in bond price.

25. With reference to the Government Security, which of the following statements is/are correct?

1. It is a tradable instrument issued by the Central Government or the State Governments.
2. Government Security are called risk-free gilt-edged instruments.

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

26. Which of the following statements about Golden Rice is correct?

- (a) Golden Rice requires special cultivation practices and has a different taste compared to regular rice.
- (b) Golden Rice is genetically engineered to contain beta carotene, which gives it a yellow-orange color.
- (c) Unlike ordinary rice, Golden Rice has a significantly lower yield.
- (d) Golden Rice's beta carotene is different from that found in vegetables and fruits.

EXPLANATIONS (Economy)

1. (d)

All three statements are correct:

NEER (Nominal Effective Exchange Rate): It is a weighted average of the exchange rate of a country's currency with a basket of currencies of its major trading partners. An increase in NEER signifies that the domestic currency has appreciated relative to the basket of foreign currencies, meaning it takes fewer units of the domestic currency to buy a unit of foreign currency.

REER (Real Effective Exchange Rate): It takes NEER one step further by adjusting it for inflation differentials between the home country and its trading partners. If inflation is higher in the home country compared to its trading partners, the REER will be lower than NEER, indicating that the domestic currency's purchasing power has declined even if its nominal exchange rate has appreciated.

REER vs. NEER: A higher REER compared to NEER suggests that the domestic currency is undervalued in terms of purchasing power. This means that even though the nominal exchange rate might have appreciated (NEER), inflation has eroded some of that gain, making imported goods relatively cheaper and exported goods relatively more expensive.

2. (b)

In News: Recently, Indian Renewable Energy Development Agency (IREDA) was granted 'Navratna Status' by the Department of Public Enterprises, allowing it to operate more independently and efficiently.

- **Navratna Status:** It is a recognition given to **Central Public Sector Enterprises (CPSEs) in India**, providing them with greater autonomy to compete in the global market.
 - It was first introduced in 1997, with the aim of empowering CPSEs to compete globally.

Statement 1 is not correct: Financial Autonomy: Navratna companies **can invest up to ₹1,000 crore or 15% of their net worth** in a single project without government approval.

Statement 2 is correct: Operational Freedom: These companies have the liberty to form joint ventures, establish subsidiaries overseas, and make strategic decisions in areas such as capital expenditure and human resources management.

3. (d)

Statement 1 is not correct: Brazil is the world's leading producer of coffee.

Statement 2 is not correct: India grows two main coffee varieties - Arabica and Robusta.

Statement 3 is not correct: Indian coffee is known for being shade-grown, contributing to its unique flavor.

Statement 4 is not correct: Karnataka is the leading producer of coffee in India, followed by Kerala and Tamil Nadu.

4. (b)

In News: Recently, the **Democratic Republic of the Congo (DRC)** has accused Apple of using 'blood minerals' (illegally exploited minerals) extracted from the eastern region of the country.

- **Blood Minerals**, also known as conflict minerals, refer to **tin, tantalum, tungsten, and gold (collectively known as 3T or 3TG)**, which are mined in conditions of armed conflict and human rights abuses.
- These minerals are **essential components** in the manufacturing of a wide range of products, from **smartphones and laptops to cars and aircraft**.

5. (c)

Both the statements are correct: IMF is an **international financial institution and major financial agency of the United Nations** established in **1944** with the primary goal of promoting global monetary cooperation, exchange rate stability, balanced trade growth, and financial stability.

- The IMF is headquartered in **Washington, D.C.**, and it currently has **190 member countries**.
- **Publications:** World Economic Outlook, Global Financial Stability Report, Fiscal Monitor, Global Policy Agenda.

6. (a)

Statement 1 is correct: An entity shall be considered as a startup up to 10 years from the date of its incorporation.

Statement 2 is not correct: Turnover should be **less than INR 100 Crores** in any of the previous financial years.

7. (d)

Front running is an unethical practice where someone with advanced knowledge of a large trade exploits that information for personal gain. Option D accurately describes this scenario. Options A, B, and C are legitimate brokerage activities that do not involve taking advantage of insider information.

8. (b)

Statement 1 is not correct: **Three Gorges Dam in China on Yangtze River** is the largest hydro power station in the world.

Statement 2 is correct: In India, the oldest Hydropower power plant is in **Darjeeling District in West Bengal**. Its installed capacity is 130KW and was commissioned in the year **1897**.

9. (a)

Goods and Services Tax is an **indirect tax** used in India on the **supply of goods and services**.

- It is a **value-added tax** levied on most goods and services sold for domestic consumption.
- It was **launched in India in 2017** as a comprehensive indirect tax for the entire country.
- It is a **comprehensive, multistage, destination-based tax**-
 - Comprehensive because it has subsumed almost all the indirect taxes except a few state taxes.
- It is **paid by the consumers** and is **remitted to the government** by the businesses selling the goods and services.
- **It is of three types i.e.**
 - **CGST** to be levied by the Centre,
 - **SGST** to be levied by the States and
 - **IGST** a tax levied on all Inter-State supplies of goods and/or services.
 - All these taxes are levied at rates mutually agreed upon by the Centre and the States.
- The Input Tax Credit (ITC) mechanism under GST allows businesses to claim credit for taxes paid on purchases for further production or sale.
- The GST Council headed by the Union Finance Minister is the governing and key decision-making body for GST.

10. (b)

News: South Korea to impose fines on food suppliers for 'Shrinkflation'.

What is 'shrinkflation'?

- Shrinkflation is when a product downsizes its quantity while keeping the price the same.
- For example, reducing the scoops of ice cream in a container or reducing the number of chips in a packet would count as shrinkflation.

What is stagflation?

- Stagflation is an economic scenario where an economy faces both high inflation and low growth (and high unemployment) at the same time.

11. (c)

Both the statements are correct: The GSTAT is the Appellate Authority established under the **Central Goods and Services Tax Act, 2017**, to hear various appeals under the said Act.

- It represents a specialised authority formed **to resolve GST-related disputes** at the appellate level.
 - It will be the forum of **second appeal under GST laws** and is the **first common forum of dispute resolution between the Centre and the states**.
 - The Tribunal will ensure **swift, fair, judicious and effective resolution to GST disputes**, besides significantly reducing the burden on higher courts.

12. (b)

In News: Recently, the **Department of Consumer Affairs** warned about '**drip pricing**' saying it can surprise consumers with '**hidden charges**'.

Drip Pricing

- It is a **pricing strategy and a technique** where only a part of an item's price is advertised, with the total amount revealed at the end of the buying process.
- It refers to the practice of **advertising a basic price** at the outset and then **incrementally disclosing additional costs** associated with the product or service.
 - It is commonly used in the **hospitality and travel markets**.

13. (b)

Statements 1 is not correct and Statement 2 is correct.

Confederation of Indian Industry (CII)

- It is a **non-government, not-for-profit, industry-led and industry-managed business association organization** playing a proactive role in India's development process.
- Founded in **1895**, CII has members from the private and public sectors.
- CII suggests change by working closely with governments and thought leaders and enhancing efficiency, competitiveness and business opportunities for industry.

14. (b)

Statement 1 and 3 are correct

- **'Market Economy' Status** is an economic system in which **economic decisions** and the pricing of goods and services are guided by the interactions of a **country's individual citizens and businesses**.
- In a market economy, the **laws of supply and demand dictate the production of goods and services**, and the prices are determined using the same principle.
- Market economies work using the **driving principle that supply and demand** are the best determinants of what is right for a nation's well-being.
 - It leads to **competition**, which allows for **innovation and diversity**.

Statement 2 is not correct

- **'Non-Market Economy' Status:** A non-market economy is a type of economic system where the **government controls the allocation of resources, price and output decisions**.

15. (b)

Statement 1 is not correct: Capital infusion by the Indian government into public sector banks (PSBs) has not steadily increased over the last decade. There have been periods of higher infusion followed by periods with less or no infusion depending on the financial health of the PSBs.

Statement 2 is correct: In 2017, the government undertook a major reform by merging associate banks with their parent State Bank of India (SBI). This aimed to strengthen the public banking system by creating fewer, but larger and more financially sound banks.

16. (c)

Wilful defaulters are borrowers who deliberately avoid repaying loans despite having the capacity to do so, so **statement (a) is not correct**.

There is a minimum threshold amount for wilful defaulter classification, but it's currently ₹25 lakh and above, not ₹1 crore. **Statement (b) is not correct**.

Wilful defaulters face serious consequences, including being barred from future credit and potentially facing criminal charges. **Statement (c) is correct**.

17. (b)

Statement 1 is not correct and Statement 2 is correct.

World Trade Organization (WTO)

- **WTO** is the international organization that deals with the rules of trade between countries.
- **History:** **WTO** is the successor to the General Agreement on Tariffs and Trade (GATT) established in the wake of the Second World War.

- **The Marrakesh Agreement** establishing the World Trade Organization was signed by 123 countries in 1994, leading to the birth of the WTO on 1 January **1995**.
- **Headquarters:** Geneva, Switzerland
- **Member:** The WTO is run by its 164 members.
- **Mandate:** Its aim is to promote free trade, which is done through trade agreements that are discussed and signed by the member states.
- **The preamble** of the Marrakesh Agreement accords primacy to the developmental objectives of this organization.

18. (c)

State Bank of India

Context

- **State Bank of India (SBI)** has become the first trading-cum-clearing member at the India International Bullion Exchange (IIBX).

What is India's International Bullion Exchange?

- IIBX will facilitate efficient price discovery with the assurance of responsible sourcing and quality, apart from giving impetus to the financialisation of gold in India.
- IIBX is the country's first bullion exchange in **GIFT City Gandhinagar**.

19. (c)

Both the Statements are correct.

Economic Capital Framework (ECF)

- **The Economic Capital Framework (ECF)** adopted by the RBI in 2019 as per recommendations of the **Bimal Jalan committee**.
- The economic capital framework provides a methodology for determining the appropriate level of risk provisions and profit distribution to be made under **Section 47 of the RBI Act, 1934**.
- As per this provision, the central bank is required to pay the balance of its profits to the central government after making provision for bad and doubtful debts, depreciation in assets, and contributions to staff.

20. (c)

In News: Recently, the Ministry of Statistics and Programme Implementation (MOSPI) released the Periodic Labour Force Survey (PLFS) for the first quarter (Q1) of 2024.

- **Conceptual Framework of Key Employment and Unemployment Indicators:** The **Periodic Labour Force Survey (PLFS)** gives estimates of key employment and unemployment Indicators like the **Labour Force Participation Rate (LFPR)**, **Worker Population Ratio (WPR)**, **Unemployment Rate (UR)**, etc.
 - **Labour Force Participation Rate (LFPR):** LFPR is defined as the percentage of persons in the labour force (i.e. working or seeking or available for work) in the population.
 - **Worker Population Ratio (WPR):** WPR is defined as the percentage of employed persons in the population.
 - **Unemployment Rate (UR):** UR is defined as the percentage of persons unemployed among the persons in the labour force.

21. (a)

Context: Maldives to launch India's RuPay service.

About

- RuPay is developed by the national payments corporation of India (NPCI).
- It is **India's first global card payment network**, widely accepted at ATMs, POS devices, and e-commerce platforms throughout the country.

Transaction types supported

1. **Purchase:** RuPay cards are accepted as a payment tool by retail outlets and ecommerce merchants across India.
2. Cash withdrawal at a Point of Sale (PoS): RuPay cards can be used to withdraw cash from RuPay ATMs and other bank ATMs in India, as per account and issuing bank applicable cash withdrawal limits.
3. **Reversal:** RuPay cards support transaction reversal in cases where a transaction is disputed within an applicable banking/ business time-frame.

National Payments Corporation of India

- It is an umbrella organization for operating retail payments and settlement systems in India, established by Reserve Bank of India (RBI) and Indian Banks Association (IBA) in 2008 under the provisions of the Payment and Settlement Systems Act, 2007.

22. (d)

Context: India has recorded a trade deficit with nine of its top 10 trading partners, including China, Russia, Singapore, and Korea, in 2023-24.

What is the trade deficit ?

- A trade deficit occurs when a country imports more than it exports. In other words, when a country buys more than it sells, it has a trade deficit.

Steps to curb the trade deficit

- These include creating/**enhancing domestic capacity**, incentivizing domestic manufacturing, phased manufacturing plans, timely use of trade remedy options, **adoption of mandatory technical standards**, enforcement of FTA Rules of Origin (RoO) and **development of import monitoring systems**.

23. (c)

Both the Statements are correct.

World Intellectual Property Organization (WIPO)

- It is a **self-funding agency of the United Nations**, that serves the world's innovators and creators, ensuring that their ideas travel safely to the market and improve lives everywhere.
- **Members:** The organization has **193** member states including both developing and developed nations like India, Italy, Israel, Austria, Bhutan, Brazil, China, Cuba, Egypt, Pakistan, the U.S. and the U.K.
- **Headquarters:** Geneva, Switzerland

24. (c)

Bond yield represents the return on the capital invested in a specific bond. It has an inverse relationship with the bond price, meaning that as the price of a bond rises, its yield falls, and vice versa. This relationship is essential in the bond market, as changes in yield affect the appeal of bonds to investors.

25. (c)

Both the Statements are correct.

Government Security (G-Sec)

- It is a tradable instrument issued by the **Central Government or the State Governments**.
- It acknowledges the Government's debt obligation.
 - **Short Term: Treasury Bills**, with original maturities of **less than one year**;
 - **Long Term: Government Bonds or Dated securities** with original **maturity of one year or more**.
- In India, the **Central Government issues both**, treasury bills and bonds or dated securities while the **State Governments issue only bonds or dated securities**, which are called the **State Development Loans (SDLs)**.
- **G-Secs** carry practically **no risk of default** and, hence, are called **risk-free gilt-edged instruments**.

26. (b)

Golden Rice, approved for commercial production in 2021, is genetically modified to contain beta carotene, giving it a distinctive yellow-orange color. Unlike ordinary rice, which does not have beta carotene in its grain, Golden Rice includes beta carotene identical to that found in vegetables and fruits. It does not need special cultivation practices and retains the same yield and taste as regular rice. This rice is an important tool in combating Vitamin A deficiency, which is vital for growth, immune health, and vision.

Indian Polity & Constitution

1. 'Article 136' of the Indian constitution is related to which of the following?
 - (a) Language to be used in the Parliament.
 - (b) Special leave to appeal by the Supreme Court.
 - (c) Appointment of the Governor.
 - (d) Seat of the Supreme Court.
2. With reference to the Indian Council of Arbitration, consider the following statements:
 1. It was established in 1965 as a specialized arbitral body at the national level.
 2. Its objective is to promote amicable, quick and inexpensive settlement of commercial disputes.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
3. With reference to the Model Code of Conduct (MCC), consider the following statements:
 1. These are a set of statutory norms laid under the Representation of the People Act, 1951.
 2. The MCC is operational from the date the election schedule is announced until the last day of polling.
 3. Certain provisions of MCC can be enforced by invoking certain corresponding provisions in other statutes.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
4. With reference to the 'Article 361 of Indian Constitution', consider the following statements:
 1. No criminal proceedings shall be initiated against the President, or the Governor of a State, in any court during the term of his office.
 2. It essentially grants the President and the Governors immunity from legal proceedings during their term of office.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

5. With reference to Panchayati Raj System in India, consider the following statements:
1. Balwant Rai Mehta Committee report recommended the formation of a democratic system of governance at the grassroot level.
 2. In 1993, by the 73rd Constitutional Amendment Act, the Panchayat system came to be implemented in the rural areas.
- 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
6. Article 324 of the constitution of India is related to which of the following?
- (a) Provisions to safeguard Independent and impartial functioning of the Election Commission.
 - (b) Functions of Public Service Commissions.
 - (c) Appointment of Judges to the Supreme Court.
 - (d) Tenure of President of India.
7. With reference to the Child Labour in India, which of the following statements is/are correct?
1. Article 24 prohibits the employment of children below the age of 14 years in any factory, mine or other hazardous activities.
 2. India has ratified ILO Conventions No. 138 and 182 on the Child Labour.
- 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
8. With reference to the Central Bureau of Investigation (CBI), which of the following statements is/are correct?
1. It functions under the Ministry of Personnel, Pension & Public Grievances, Government of India.
 2. The Santhanam Committee on Prevention of Corruption recommended the establishment of the CBI.
- 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
9. With reference to the floor test, consider the following statements:
1. It is conducted only when more than one person stakes a claim to form the government.
 2. The primary goal of this exercise is to see if the executive enjoys the confidence of the legislature.

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

10. With reference to the Bail Provisions in India, consider the following statements:

1. The Code of Criminal Procedure (CrPC), 1973 defines 'bail' and its conditions.
2. Interim bail is basically the release of an accused from custody to ensure his presence at the trial.

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

11. Which of the following statements about Indian Citizenship is/are correct?

- (a) A child born to an Indian parent outside India automatically acquires Indian citizenship.
- (b) A person who is ordinarily resident in India for 12 years can apply for Indian citizenship by naturalization.
- (c) Overseas Citizen of India (OCI) cardholders are Indian citizens with some limitations on rights.
- (d) Both (b) and (c)

12. With reference to the Legal Status of Live-in relationships in India, consider the following statements:

1. The concept of live-in relationships was legally recognized for the first time in 2010.
2. India does not have any laws that directly address a live-in partnership.

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

13. With reference to the Tea Board of India, consider the following statements:

1. It was set up as a statutory body in 1954 under the Tea Act, 1953.
2. All teas produced in the tea growing areas of India are administered by the Tea Board.

Which of the statements given above is/are correct?

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

- 14.** Right to property in India is a
- Fundamental Right
 - Constitutional Right
 - Natural Right
 - None of the above
- 15.** With reference to the Right to Property in India, consider the following statements:
- Since the Constitution of India came into force, the right to property was given fundamental status.
 - By the 42nd Constitutional Amendment Act 1978, it was changed from the fundamental right to constitutional right.
- Which of the statements given above is/are correct?
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
- 16.** With reference to Directorate of Enforcement (ED), which of the following statements is/are correct?
- It was established under the Government of India Act 1935.
 - It functions under the Department of Revenue of the Ministry of Finance.
- Select the correct answer using the code given below:
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
- 17.** *Article 22* of the Indian Constitution deals with which of the following?
- Freedom to manage religious affairs.
 - Protection against arrest and detention in certain cases.
 - Abolition of titles.
 - Right to Education.
- 18.** With reference to Members of Parliament Local Area Development Scheme (MPLADS), Consider the following statements:
- Under this scheme, the funds are released in the form of grants-in-aid directly to the district authorities.
 - The funds released under the scheme are lapsable if not spent in a particular year.
 - The implementation and monitoring of the scheme are done by the Ministry of Finance.
- Which of the statements given above is/are correct?
- 1 only
 - 1 and 2 only
 - 1 and 3 only
 - 2 only

19. Consider the following statements regarding the Schedule Tribes of India:

1. The President through a public notification can declare the tribes or tribal communities as Schedule Tribes.
2. The Constitution is silent about the criteria for the specification of a community as a Scheduled Tribe.

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

20. With reference to the Personality Rights, consider the following statements:

1. Personality rights refer to the right of a person to protect his/her personality under the right to privacy or property.
2. Personality rights are available to all people who want to preserve their unique personality.

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

21. Consider the following statements regarding the Juvenile Justice Board (JJB):

1. The JJB was established after the enactment of the Juvenile Justice (Care and Protection of Children) Act, 2000.
2. As per the Juvenile Justice Act, 2015, the JJB must consist of a metropolitan magistrate or a judicial magistrate of the first class with at least five years of experience.
3. The State Government is responsible for constituting JJBs for each district to handle matters related to children in conflict with the law.
4. The Juvenile Justice Act, 2015, mandates that the JJB must include two social workers, one of whom must be a woman.

Which of the statements given above are correct?

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

22. With reference to the 'De-notified Tribes' in India, consider the following statements:

1. They were once notified under the Criminal Tribes Acts, enforced by the British Raj between 1871 and 1947.
2. The Idate Commission was constituted in 2014 for De-notified and Nomadic and Semi-Nomadic Tribes (NCDNT).

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

23. What does Article 329(a) of the Indian Constitution prohibit?

- (a) Judicial interference in the election process
- (b) Courts from challenging laws related to electoral district boundaries or seat allocation
- (c) The Election Commission from conducting elections
- (d) Legislative amendments to electoral laws

24. With reference to the bar against contesting elections in India for Convicted Politicians, consider the following statements:

1. The disqualification is not more than 4 years post the expiry of the jail term.
2. This disqualification only applies once a person has been convicted and does not apply if they have only been charged with criminal offenses.

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

EXPLANATIONS (Indian Polity & Constitution)

1. (b)

Article 136 deals with Special leave to appeal by the Supreme Court.

- Article 136 allows citizens to file so-called **special leave petitions (SLPs)** to appeal before the Supreme Court **against any "judgement, decree, determination, sentence or order** in any cause or matter passed or made by any court or tribunal in the territory of India".
- It is up to the apex court to decide whether it wants to hear an appeal or not.

2. (c)

Both the statements are correct: The Indian Council of Arbitration, India's premier arbitral institution, is a **registered society under the Societies Registration Act, 1860**, operating on a not-for-profit basis.

- The ICA was established in **1965** as a specialized arbitral body at the **national level**.
- The main objective of ICA is to promote **amicable, quick and inexpensive settlement of commercial disputes** by means of arbitration, conciliation, regardless of location.
- ICA has a distinguished **panel of arbitrators** that comprise of Former Chief Justices of India, Former Judges of Supreme Court, High Courts, District Judges, Chairman of Tribunals, Senior Advocates, Advocates, Former Bureaucrats, Chartered Accountants and other experts.

3. (b)

Statement 1 is not correct: The model code refers to a set of norms laid down by the Election Commission of India, with the consensus of political parties. It is not statutory. The purpose of these guidelines is to regulate political parties and candidates prior to elections, to ensure free and fair elections.

Statement 2 is not correct: The MCC is operational from the date that the election schedule is announced till the date that results are announced.

Statement 3 is correct: The MCC is not enforceable by law. However, certain provisions of the MCC may be enforced through invoking corresponding provisions in other statutes such as the Indian Penal Code, 1860, Code of Criminal Procedure, 1973, and Representation of the People Act, 1951.

4. (c)

In News : Recently, Article 361 of Indian Constitution was in news amid sexual harassment complaint against a Governor of a State.

- **Article 361** states that the **President, or the Governor of a State**, shall not be answerable to any court for the exercise and performance of the powers and duties of his office or for any act done or purporting to be done by him in the exercise and performance of those powers and duties.

Statement 1 is correct:

- It has two crucial **sub-clauses**:
 - **No criminal proceedings** whatsoever shall be initiated or continued against the President, or the Governor of a State, in any court during the term of his office.
 - **No process for the arrest or imprisonment** of the President, or the Governor of a State, shall be issued from any court during his term of office.

Statement 2 is correct

- It **essentially** grants the President and the Governors **immunity from legal proceedings** during their term of office.

5. (c)

In the early 1950s, **the first National Development Council (Balwant Rai Mehta Committee report)** recommended the **formation of a democratic system of governance** at the **grassroot level**.

- **In 1993**, by the **73rd Constitutional Amendment Act**, the Panchayat system came to be implemented in the rural areas to allow for development to happen at grassroot level.
- **There are three levels**:
 - **Gram Panchayat**: This is the village council, the most basic level.
 - **Block Panchayat**: This council looks after a group of villages.
 - **Zila Panchayat**: This is the district council, overseeing a larger area.

6. (a)

Article 324 of The Constitution of India mentions the **provisions to safeguard and ensure the independent and impartial functioning of the Election Commission**.

- The chief election commissioner is provided with **security of tenure**.
 - He cannot be removed from his office except in the **same manner and on the same grounds as a judge of the Supreme Court**.

- In other words, he can be removed by the President on the basis of a resolution passed to that effect by both the Houses of Parliament with a special majority, either on the ground of proved misbehaviour or incapacity.
- Any other election commissioner or a regional commissioner cannot be removed from office except on the recommendation of the chief election commissioner.

7. (c)

Both the Statements are correct.

Context

- An Australian parliamentary committee in its report has raised concerns over child labour in India referring to Australia-India Economic Cooperation and Trade Agreement.

Constitutional Provisions against Child Labour

- **Article 23** prohibits traffic in human beings, begar (forced labor) and other similar forms of forced labor.
- **Article 24** prohibits the employment of children below the age of 14 years in any factory, mine or other hazardous activities.
- **Article 21-A** provides free and compulsory education for all children in the age group of six to fourteen years.

Steps taken by government

- **Child Labour Act (Prohibition and Regulation) 1986:** It prohibits children under the age of 14 years to be working in hazardous industries and processes.
- **National Child Labour Project (NCLP) Scheme:** Under the scheme children in the age group of 9-14 years are rescued from work and provided with education, vocational training, mid-day meal, stipend, health care, etc.
- **PENCIL (Platform for Effective Enforcement of No Child Labour) Portal:** It is an electronic platform that aims at involving Centre, State, District, Governments, civil society and the general public in achieving the target of child labour free society.
- **ILO conventions on child labour:** In 2017 India ratified ILO Conventions **No. 138** on Minimum Age to Employment and **No. 182** on the Worst Forms of Child Labour.

8. (c)

Both the Statements are correct.

Central Bureau of Investigation (CBI)

- CBI, functioning under the **Ministry of Personnel, Pension & Public Grievances**, Government of India, is the premier investigating police agency in India.
- **History:** The CBI came into being during World War II, when the colonial government felt the need to probe cases of corruption in the War and Supply Department. A law came in 1941. It became the DSPE Act in 1946.
 - It was established by a resolution of the **Ministry of Home Affairs**, Government of India, in **1963**.
 - **The Santhanam Committee** on Prevention of Corruption recommended the establishment of the CBI.

9. (b)

News: Former Haryana Deputy Chief Minister has written to the Governor, demanding a floor test in the state assembly.

About floor test

- A floor test, also referred to as trust vote is usually conducted when a new government swears in.
- The primary goal of the exercise is to see if the executive enjoys the confidence of the legislature.

What is a composite floor test?

- There is another test, Composite Floor Test, which is conducted only when more than one person stakes claim to form the government.
- When the majority is not clear, the governor might call for a special session to see who has the majority. The majority is counted based on those present and voting.

10. (d)

In News: Recently, the Supreme Court of India granted Delhi Chief Minister Arvind Kejriwal interim bail in the liquor policy case till June 1, 2024.

Statement 1 is not correct: Bail Provisions in India: The Code of Criminal Procedure (CrPC), 1973 governs the terms of the 'Bail in India'.

- Though the Act **does not define 'bail'**, it expressly mentions phrases '**bailable offence**' and '**non-bailable offence**'.

Statement 2 is not correct: Interim Bail is a **temporary bail** granted for a **shorter time period** during which the court can call the documents to make a final decision on the regular or anticipatory bail application.

- It is granted **based on the individual facts of each case**.
- However, the **Regular Bail** is basically the release of an accused from custody to ensure his presence at the trial.

11. (b)

Statement (a) is not correct: While there are provisions for children born abroad to Indian parents to acquire citizenship, it's not automatic in all cases. The specific requirements depend on factors like the parents' citizenship status and duration of stay in India.

Statement (b) is correct: The Citizenship Act, of 1955, allows a person who is ordinarily resident in India for twelve years (along with other qualifications) to apply for Indian citizenship by naturalization.

Statement (c) is not correct: Overseas Citizen of India (OCI) is a status distinct from Indian citizenship. OCI cardholders are not Indian citizens but enjoy certain privileges like multiple entry visas and business/employment opportunities in India.

12. (c)

Both the statements are correct: The concept of live-in relationships was **legally recognized for the first time in 2010** while discussing the safety of women and said that women who were in live-in relationships are **protected under the domestic violence law**.

- Twelve years later, the Supreme Court strengthened the legitimacy of live-in partnerships by **recognizing that children born out of such situations** are entitled to rights under a co-parenting agreement and have a **right to inherit property**.

- India does not have **any laws that directly address a live-in partnership**.
- As per the top Court, for a man and a woman to live together is part of **‘the right to life’**; therefore, a live-in relationship is no longer an offence.

13. (c)

Both the statements are correct: The Tea Board was set up as a **statutory body in 1954** under the **Tea Act, 1953**.

- It was established for the purposes of **regulating the Indian tea industry and protecting the interests of tea producers in India**.
- All teas produced in the tea growing areas of India are **administered by the Tea Board**.
 - Among the Indian teas administered by the Tea Board are the world famous **Darjeeling, Assam and Nilgiri**.

14. (b)

News: The Supreme Court ruled that the State cannot acquire private property without following the proper procedure.

About

- Originally, the right to property was one of the seven fundamental rights under Part III of the Constitution. It was dealt by Article 19(1) (f) and Article 31.
- However, in 1978, the 44th Amendment Act significantly altered the right to property by removing it as a fundamental right and placing it under **Article 300A as a constitutional right**.

Judgment

- The SC said there are seven basic procedural rights that Article 300A confers on a landowner and which need to be complied with before a valid acquisition.
- They are: “right to notice, right to be heard, right to a reasoned decision, acquisition only for public purpose, right to fair compensation, right to an efficient conduct, and the right of conclusion”.

15. (a)

Statement 1 is correct: Since the Constitution of India came into force, **the right to property was given fundamental status**.

- Article 31 and Article 19(1)(f) ensured that any person's right against his property remains protected.

Statement 2 is not correct: By the **Constitutional 44th Amendment act 1978**, these two above-mentioned articles were deleted and **were added in Part XII, containing only one article 300A**.

- The legal status of the Right to Property was changed from the fundamental right to **constitutional right**.

16. (b)

Statement 1 is not correct and Statement 2 is correct.

Directorate of Enforcement (ED)

- The Directorate of Enforcement is a multi-disciplinary organization mandated with investigation of offenses of money laundering and violations of foreign exchange laws.
- It functions under the **Department of Revenue of the Ministry of Finance**.
- The origin of this Directorate goes back to 1st May, 1956, when an **‘Enforcement Unit’** was formed in the **Department of Economic Affairs for handling Exchange Control Laws** violations under Foreign Exchange Regulation Act, 1947 (FERA '47).

- In 1957, this Unit was renamed as '**Enforcement Directorate**', and another branch was opened at Madras (now Chennai).
- In 1960, the administrative control of the Directorate was transferred from the **Department of Economic Affairs to the Department of Revenue.**

17. (b)

Article 22 of the Constitution of India primarily deals with the **protection against arrest and detention in certain cases.**

- Article 22 (1) states that a person who is arrested must be **informed of the grounds of arrest**, and they have the right to consult and be defended by a legal practitioner of their choice.
- Article 22 (2) ensures that a person who is arrested and detained in custody must be **produced before the nearest magistrate within a period of 24 hours**, excluding the time necessary for the journey from the place of arrest to the court of the magistrate.
- Article 22 (3) safeguards against preventive detention laws.

18. (a)

Statement 1 is correct: MPLADS is a Central Sector Scheme, fully funded by the government of India. Under this scheme, the funds are released in the form of grants in aids directly to the district authorities. Under the scheme, each MP has the choice to suggest to the District Collector for works to the tune of Rs.5 Crores per annum to be taken up in his/her constituency.

Statement 2 is not correct: The funds released under the scheme are non-lapsable. This means that if the funds for a particular is not spent in that year, it will be carried forward rule.

Statement 3 is not correct: The Ministry of Statistics and Programme has issued the guidelines on MPLADS Scheme including implementation and monitoring of the scheme. The Department has initiated all necessary steps to ensure that the scheme is successfully implemented in the field.

19. (c)

Both the Statements are correct.

- As per Article 342 of the Constitution, the President through a public notification can declare the tribes or tribal communities or part of or groups within these tribes and tribal communities as Schedule Tribes. **Hence statement 1 is correct.**
- The Constitution is silent about the criteria for the specification of a community as a Scheduled Tribe. **Hence statement 2 is correct.**

20. (a)

Statement 1 is correct: Personality rights refer to the **right of a person to protect his/her personality** under the right to privacy or property.

- These could include a pose, a mannerism or any aspect of their personality.
- These rights are important to celebrities as their names, photographs or even voices can easily be misused in various advertisements by different companies to boost their sales.

Statement 2 is not correct: In 2015, the Madras High Court, in a case involving actor Rajnikanth had observed that "**personality right vests on those persons, who have attained the status of celebrity**".

21. (b)

Statement 1 is correct: The JJB was established after the enactment of the Juvenile Justice (Care and Protection of Children) Act, 2000.

Statement 2 is not correct: As per the Juvenile Justice Act, 2015, the JJB must consist of a metropolitan magistrate or a judicial magistrate of the first class with at least three years of experience, not five.

Statement 3 is correct: The State Government is responsible for constituting JJBs for each district to handle matters related to children in conflict with the law.

Statement 4 is correct: The Juvenile Justice Act, 2015, mandates that the JJB must include two social workers, one of whom must be a woman.

22. (c)

Both the statements are correct: The term 'De-notified Tribes' stands for all those communities which were once notified under the **Criminal Tribes Acts**, enforced by the **British Raj between 1871 and 1947**.

- In **2014**, a National Commission for Denotified, Nomadic and Semi Nomadic Tribes was constituted under the Chairmanship of **Bhiku Ramji Idate** for a period of three years called **Idate Commission**.

23. (b)

Article 329(b) of the Indian Constitution, in Part XV alongside Articles 324-329, pertains to electoral matters. Article 324 empowers the Election Commission to supervise elections, while **Article 329 limits judicial intervention. Article 329(a) bars courts from questioning laws on electoral district boundaries or seat allocation.** Amended by the Constitution (19th Amendment) Act, 1966, Article 329(b) stipulates that elections can **only be challenged through election petitions as per laws established by the appropriate Legislature.** The Representation of the People Act, 1951, grants high courts authority to hear election petitions, with possible review by the Supreme Court. The Supreme Court has ruled that "election" in Article 329(b) covers the entire process from notification to result declaration, preventing judicial interference during intermediary stages.

24. (b)

Statement 1 is not correct: Section 8 of the Representation of People Act, 1951 (RP Act) is titled "Disqualification on conviction for certain offenses".

- No one is barred from contesting elections unless convicted. Even for convicted politicians, the disqualification is **not more than 6 years post the expiry of the jail term.**

Statement 2 is correct: This disqualification only kicks in **once a person has been convicted** and does not apply if they have only been charged with criminal offenses.

Geography

1. Humboldt glacier, recently seen in the news, is related to which of the following countries?
 - (a) Venezuela
 - (b) Indonesia
 - (c) Mexico
 - (d) Slovenia
2. With reference to the Earth's rotation, which of the following statements is/are correct?
 1. Global warming has slightly slowed the Earth's rotation.
 2. The melting of glaciers increases the moment of inertia of Earth and eventually decreases its angular velocity.

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
3. Consider the following statements
 1. India shares the longest international boundary with China.
 2. All states except Madhya Pradesh and Haryana have an international border or a coast line.

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

- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2
4. Aravalli Mountain Range passes through which of the following states in India?
 1. Madhya Pradesh
 2. Gujarat
 3. Rajasthan
 4. Haryana

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only
 - (b) 2, 3 and 4 only
 - (c) 1, 3 and 4 only
 - (d) 1, 2, 3 and 4
5. Which of the following options is correct regarding Shaksgam Valley?
 - (a) It was ceded by Pakistan to China through a boundary agreement of 1963.
 - (b) It borders Xinjiang Province of the People's Republic of China (PRC) to the east.
 - (c) It borders the Siachen Glacier region to the north.
 - (d) All of the above.

6. Consider the following statements:
1. The Eta Aquariid meteor shower is formed when Earth passes through the orbital plane of Halley's Comet.
 2. The Eta Aquarids peak during early January each year.
 3. The Eta Aquarids are viewable only in the Northern hemisphere
- How many of the statements given above are correct?
- (a) Only one
 - (b) Only two
 - (c) All three
 - (d) None
7. Consider the following statements:
1. Swell Waves are high sea waves that are formed by an ocean swell.
 2. Unlike swell waves, a tsunami is a series of enormous waves created by an underwater disturbance.
- 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
8. Consider the following statements:
1. The Spices Board of India is an independent regulatory body with the authority to set minimum export prices for Indian spices.
 2. India is the world's largest producer, consumer, and exporter of spices.
 3. The Spices Board promotes the adoption of Good Agricultural Practices (GAP) among Indian spice farmers to ensure quality and sustainability.
- Which of the above given statements are correct?
- (a) 1 and 2 only
 - (b) 2 and 3 only
 - (c) 1 and 3 only
 - (d) 1, 2, and 3
9. Which one of the following places is known as the lightning capital of the world?
- (a) Lake Victoria, Africa
 - (b) Lake Michigan, USA
 - (c) Lake Maracaibo, Venezuela
 - (d) Lake Baikal, Russia
10. Terms like *Hasa*, *Rashi* and *Gorabalu*, sometimes appeared in the news, are related to:
- (a) Coffee
 - (b) Areca Nut
 - (c) Sugarcane
 - (d) Cotton

11. Recently, the 4th session of the India-Ghana Joint Trade Committee was held in Accra.
In context of the above statement, which of the following countries shares borders with Ghana?

1. Togo
2. Benin
3. Burkina Faso
4. Côte d'Ivoire

Select the correct answer using the code given below:

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

12. Which of the following states of India shares borders with Nepal?

1. Sikkim
2. Bihar
3. West Bengal
4. Uttarakhand

Select the correct answer using the code given below:

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

13. Which of the following statements is correct regarding the Indian Ocean Dipole (IOD)?

- (a) It is rapidly-rotating storm systems that rotate counter-clockwise in the Northern Hemisphere
- (b) It is a flood resulting from the sudden and rapid release of water from a glacial lake.
- (c) It is a climate pattern that results in irregular oscillations of sea surface temperatures.
- (d) It is an area that acts as a boundary or a transition between two ecosystems.

14. Which of the following countries shares borders with Serbia ?

1. Hungary
2. Romania
3. Bulgaria
4. Slovakia
5. Croatia

Select the correct answer using the code given below:

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

15. With reference to Moldova, which of the following statements is/are correct?

1. It is a landlocked country bordered by Ukraine and Romania.
2. It lies to the east of the great arc of the Carpathian Mountains.

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

16. Consider the following statements:

Statement 1: The Aravallis are one of the oldest fold mountain ranges of the world, significantly influencing the biogeographic distribution of flora and fauna in peninsular India.

Statement 2: The Aravallis act as a barrier against the westward expansion of the Thar Desert and contribute significantly to the monsoonal rainfall patterns in Rajasthan.

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

- (a) Both Statement 1 and Statement 2 are correct.
- (b) Both Statement 1 and Statement 2 are incorrect.
- (c) Statement 1 is correct, but Statement 2 is incorrect.
- (d) Statement 1 is incorrect, but Statement 2 is correct.

17. With reference to the Aravalli Range, consider the following statements:

1. It is one of the oldest block mountains formed during the PreCambrian period.
2. It prevents the fertile plains of North India from desertification.

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

18. Recently, the Indian Naval Ship Kiltan arrived at Cam Ranh Bay, Vietnam.

In context of the above statement, which of the following countries shares borders with Vietnam?

1. Thailand
2. Laos
3. Cambodia
4. China

Select the correct answer using the codes given below.

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

19. With reference to rat-hole coal mining, which of the following statements is/are correct?

1. The National Green Tribunal (NGT) banned the practice of rat-hole coal mining in 2014.
2. The Brojendra Prasad Katakey committee was appointed to recommend measures regarding rat hole mining.

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

20. With reference to clouds, consider the following statements:

1. Stratus clouds are layered clouds covering large portions of the sky.
2. Cirrus clouds are always black or dark gray in colour.
3. Cumulus clouds look like cotton wool.
4. Nimbus clouds are extremely dense and opaque to the rays of the sun.

Which of the statements given above is/are correct?

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

21. With reference to the La Nina, consider the following statements:

1. The trade winds become stronger than usual, pushing more warmer waters towards the Indonesian coast.
2. Regions such as Southeast Asia, northern Australia, and parts of South America often experience below-average rainfall during La Niña events.

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

22. Recently, India has signed a 10-year Chabahar Port pact with Iran.

In context of the above statement, which of the following countries shares land borders with Iran?

1. Armenia
2. Saudi Arabia
3. Turkmenistan
4. Pakistan

Select the correct answer using the codes given below.

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

23. Consider the followings statements with reference to Kanwar lake

1. It is located in Lakhimpur Kheri district of Uttar Pradesh.
2. It is Asia's largest freshwater oxbow lake.
3. It was declared a Ramsar site in 2020.

How many of the statements given above are correct?

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

24. With reference to the Chabahar Port, which of the following statements is/are correct?
1. It is the only deep-sea Iranian port with direct access to the Indian Ocean.
 2. This port is located in the northeastern part of Iran.
- 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
25. 'New Caledonia' recently seen in the news, is a part of which of the following countries?
- (a) United Kingdom
 - (b) United States of America
 - (c) Portugal
 - (d) France
26. With reference to the 'Nor'westers (aka Kalbaisakhi)' in India, consider the following statements:
1. It is useful for cultivation of Kharif crops like tea, jute and rice.
 2. It is known as 'Bardoli Chheerha' In Assam.
- 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
27. Which of the following rivers is associated with the *Ahramat (an extinct river branch)*?
- (a) River Mississippi
 - (b) River Nile
 - (c) Parana River
 - (d) River Tigris
28. With reference to the Panama Canal, consider the following statements:
1. One third of all global maritime commerce passes through it.
 2. The Gatun Lake, formed by the Gatun Dam, is a major feature of the Panama Canal and provides a significant portion of the water used in the lock system.
 3. The canal is administered by the United States.
- Which of the statements given above is/are correct?
- (a) 1 and 2 only
 - (b) 2 only
 - (c) 1 only
 - (d) 2 and 3 only
29. With reference to *Panama Canal*, consider the following:
1. It connects the Atlantic Ocean with the Indian Ocean through the Isthmus of Panama.
 2. The operation of the canal's locks depends on water from artificial Gatun Lake.

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

30. Which of the following statements regarding the impact of El Niño on India's climate and agriculture are correct?

- 1. El Niño phases of the ENSO are likely to affect the southwest monsoon.
- 2. El Niño has been associated with heavy rainfall events in the northeast monsoon.
- 3. El Niño generally leads to a decline in monsoon precipitation and an increase in the frequency of intense rain events.

Select the correct answer using the codes given below:

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

31. The Amazon rainforest does not cover

- (a) Brazil
- (b) Argentina
- (c) Guyana
- (d) Peru

32. Which of the following countries shares borders with Moldova?

- 1. Slovakia
- 2. Romania
- 3. Ukraine
- 4. Poland

Select the correct answer using the code given below:

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

33. Which among the following countries are surrounding the Baltic Sea?

- 1. Finland
- 2. Norway
- 3. Sweden
- 4. Latvia

Select the correct answer using the code given below:

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

34. Which among the following countries share a border with Spain?

1. France
2. Germany
3. Portugal
4. Poland

Select the correct answer using the code given below:

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

35. Taam Ja' Blue Hole (TJBH) , the world's deepest Blue Hole, was discovered in which of the following countries?

- (a) Japan
- (b) South Korea
- (c) Mexico
- (d) Australia

36. Cyclone 'Remal', recently seen in the news, was named by

- (a) Bangladesh
- (b) Oman
- (c) India
- (d) Pakistan

37. With reference to Critical Minerals, consider the following statements:

1. Critical minerals are essential for economic development and national security but have high supply risks due to geological scarcity or geopolitical issues.
2. India has recently identified and notified 30 minerals as 'critical', including rare earth elements, lithium, and cobalt.
3. The primary aim behind designating critical minerals is to ensure their sustainable supply for domestic industries and reduce import dependence.

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

38. With reference to the pulses, which of the following statements is/are correct?

1. India is the second-largest producer of pulses in the world.
2. Though pulses are grown in both Kharif and Rabi seasons, Rabi pulses contribute more than 60 percent of the total production.

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

39. Which among the following countries share a border with Zimbabwe?

1. Botswana
2. Mozambique
3. Zambia
4. Angola

Select the correct answer using the code given below:

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

40. The *Sif Mons* and *Niobe Planitia*, sometimes in the news, were in context of:

- (a) Asteroids
- (b) Volcanoes
- (c) Dwarf planet
- (d) Exoplanet

41. With reference to Haiti, which of the following statements is/are correct?

1. It is a country on the island of Hispaniola in the Caribbean Sea.
2. India launched Operation Indravati to evacuate its nationals from Haiti.

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

EXPLANATIONS (Geography)

1. (a)

Context: News: According to the International Cryosphere Climate Initiative (ICCI), **Venezuela's** only remaining glacier — the **Humboldt, or La Corona**, in the Andes has become "too small to be classed as a glacier".

About

- ICCI is a think tank that aims to preserve the Earth's cryosphere. Cryosphere includes snow and ice on land, glaciers, permafrost, and sea ice.

What are Glaciers?

- A glacier is an accumulation of ice and snow that slowly flows over the land. Glaciers hold around 70 percent of the Earth's freshwater.
- Since the industrial revolution, carbon dioxide and other greenhouse gas emissions have raised temperatures, forcing glaciers to melt rapidly.

Impacts of glacier loss

- Melting glaciers would raise the global sea level which will further increase coastal erosion and storm surges.

- Glacial ecosystems support unique biodiversity adapted to extreme cold conditions. As glaciers shrink, these ecosystems are threatened, leading to habitat loss and potential extinction of specialized species.

2. (c)

Both the Statements are correct.

Context

- A study found that Global warming has slightly slowed the Earth's rotation — and it could affect how we measure time.

How climate change is affecting Earth's rotation?

- Human-induced global warming has caused the melting of polar ice, which has caused the **Earth to spin less quickly** than it would otherwise.
- Due to the movement of water from the pole to the equator, Earth has become slightly less spherical and more flattened.
- As a result, the **moment of inertia of Earth**, which is a measure of how spread its mass is, has increased.
- The **angular momentum** of a spinning body, which is the **product of its moment of inertia and angular velocity**, is conserved unless acted upon by an external torque.
- **Earth's angular velocity**, which is how fast it is spinning, must therefore decrease if the moment of inertia increases.

3. (d)

In News: A huge cache of military grade arms, ammunition and other war-like stores were seized by Assam Rifles in Mon district of Nagaland, close to the Myanmar border.

Statements 1 and 2 are not correct :

- India has a land boundary of about 15,200 km and the total length of the coastline of the mainland, including Andaman and Nicobar and Lakshadweep, is 7,516.6 km.



- India shares its land boundaries with **Pakistan, Afghanistan, China, Nepal, Bhutan, Myanmar** and Bangladesh in the east. All states except **Madhya Pradesh, Chattisgarh, Jharkhand, and Haryana** have an international border or a coast line.

4. (b)

The Aravalli Range, stretching over approximately 692 kilometres (430 miles) in a **northeastern direction**, traverses the Indian states of **Gujarat, Rajasthan, and Haryana** before culminating in Delhi, is one of the **oldest mountain ranges in India**.

- The mountain range is characterised by **rugged hills, rocky outcrops, and sparse vegetation**, and it plays a crucial role in the region's ecology and hydrology.

5. (a)

News: India has strongly protested against China's construction activities in the **Shaksgam valley**.

Shaksgam Valley

- Shaksgam Valley, also known as the Trans Karakoram Tract, is a strategically key region that lies in the Pakistan-occupied Kashmir (PoK).
- It **borders Xinjiang Province** of the People's Republic of China (PRC) to the **north** and the **Siachen Glacier** region to the **east**.
- It was ceded by Pakistan to China through a **boundary agreement of 1963**.
- India has never accepted this agreement and it still considers Shaksgam Valley to be its territory.

6. (a)

The Eta Aquariid meteor shower, which has been active since April 15, will peak on May 5 and 6.

Statement 1 is correct: Eta Aquariid meteors are **known for their speed**, with the meteors travelling at about 148,000 mph (66 km/s) into Earth's atmosphere.

- Fast meteors can leave glowing "trains" (incandescent bits of debris in the wake of the meteor) which last for several seconds to minutes.
- The Eta Aquariid meteor shower is formed when **Earth passes** through the orbital plane of the **famous Halley's Comet**.
 - **Comet Halley takes about 76 years** to orbit the Sun once.

Statements 2 and 3 are not correct: The Eta Aquarids peak during early May each year.

- The Eta Aquarids are viewable in both the **Northern and Southern hemispheres during the pre-dawn hours**.
 - The Southern Hemisphere is preferable for viewing the Eta Aquarids.
 - The Northern Hemisphere has an hourly rate of only about 10 meteors.
 - This is due to the viewing location of the radiant from different latitudes.

7. (c)

Context: The Indian National Centre for Ocean Information Services (INCOIS) has forecasted that swell waves might hit several Indian coastal areas in the upcoming days.

What are Swell Waves?

- They are **high sea waves** that are formed by an ocean swell.
- Ocean swells occur due to distant storms like hurricanes and not due to the local winds.
- During such storms, huge energy transfer takes place from the air into the water, leading to the formation of very high waves.
- Such waves can travel thousands of kilometres from the storm centre until they strike shore.

What is the difference between swell waves and tsunamis?

- Unlike swell waves, a tsunami is a series of enormous waves created by an underwater disturbance usually associated with earthquakes occurring below or near the ocean.
- Tsunamis are around 10 times faster than swell waves. Although both swell waves and tsunamis slow down near the coast, the latter hit land at 30–50 km/h.

8. (b)

Statement 1 is not correct: The Spices Board of India is the flagship organization for the development and worldwide promotion of Indian spices. It was established by the Spices Board Act, 1986. It acts as a link between Indian exporters and importers abroad. The Spices Board doesn't have the authority to set minimum export prices. It focuses on promotion, quality control, and development.

Statement 2 is correct: India is the world's largest spice producer. It is also the largest consumer and exporter of spices. The most produced and exported spices are pepper, cardamom, chilli, ginger, turmeric, coriander, cumin, celery, fennel, fenugreek, garlic, nutmeg & mace, curry powder, spice oils and oleoresins. Out of these spices, chilli, cumin, turmeric, ginger and coriander make up about 76% of the total production.

While India is a major producer of cardamom, other spices like chili peppers hold the top spot in terms of production, consumption, and export.

Statement 3 is correct: The Spices Board promotes Good Agricultural Practices (GAP) to ensure sustainable farming methods and enhance spice quality.

9. (c)

Lake Maracaibo, Venezuela

Context

- Lake Maracaibo's status as the world's most lightning-struck location is a testament to the intricate interplay of geographical, meteorological, and environmental factors.

What is Catatumbo Lightning?

- Catatumbo lightning is a natural phenomenon that occurs over the Catatumbo River in Venezuela.
- This phenomenon primarily happens at the mouth of the **Catatumbo River**, where it meets **Lake Maracaibo**, the largest lake in Venezuela.
- Catatumbo lightning is distinguished by its frequency and duration: the strikes occur for up to **160 nights in a year**, with an average of **28 lightning strikes per minute** at its peak.
- The area has earned the title of “**the lightning capital of the world**”.

10. (b)

In News : Recently, the **Areca Research Centre at Shivamogga** found that the areca nut grown in the **Tirthahalli region** as the best quality areca among the varieties grown in **Karnataka**.

- **Areca Nut (aka Betel Nut or Supari)** is the seed of the **Areca palm (*Areca catechu L.*)**, and an important cash crop of India.

Varieties

- The areca nut grown in the **Tirthahalli region** emerged as the **best quality** areca among the varieties grown in Karnataka.
- Areca nuts are graded into **Nuli, Hasa, Rashi, Bette and Gorabalu** considering their value in the market.
 - **Nuli and Hasa** nuts fetch a higher price than **Rashi, Bette, Gorabalu**.
 - Tirthahalli is a traditionally growing Nuli and Hasa areca variety.

11. (c)

News: Recently, the 4th session of the India-Ghana Joint Trade Committee was held in Accra.

About Ghana

- It is a West African country and borders Côte d'Ivoire (Ivory Coast) to the west, Burkina Faso to the north, Togo to the east, and the Gulf of Guinea to the south.
- Accra is the capital and largest city of Ghana.

India - Ghana Relations

- Ghana is an important trading partner of India in the Africa region. Bilateral trade between India and Ghana stood at USD 2.87 billion in 2022-23.
- India stands as a leading investor in Ghana and emerged as the third-largest investor.
- These investments traverse diverse sectors, encompassing pharmaceuticals, construction, manufacturing, trade services, agriculture, tourism, and more.



12. (d)

Context

- Nepal has announced the printing of a new Rs 100 currency note that features Indian territories of Lipulekh, Limpiyadhura, and Kalapani, a move that has been contested by India.

Background

- Nepal shares a border of over **1,850 km** with five Indian States — **Sikkim, West Bengal, Bihar, Uttar Pradesh and Uttarakhand**.
- In **2019**, Lipulekh, Kalapani, and Limpiyadhura had been included in India's map.
- Tensions between both the nations emerged after Nepal issued a political map in **2020**, which included the same territories.

Where is Kalapani located?

- Kalapani is a region located in the easternmost corner of Uttarakhand's **Pithoragarh district**.
- It shares a border on the north with the **Tibet Autonomous Region of China** and **Nepal** in the east and south.
- The area is in India's control but Nepal claims the region as part of **Dharchula** district, because of historical and cartographic reasons.
- The area is the largest territorial dispute between Nepal and India consisting of at least **37,000 hectares** of land in the High Himalayas.

13. (c)

Positive Indian Ocean Dipole (IOD) or Indian Nino may re-emerge for the second consecutive year in the latter half of 2024

Indian Ocean Dipole (IOD) is a climate pattern affecting the Indian Ocean and it results in irregular oscillations of sea surface temperatures .

- During a positive phase, **warm waters are pushed to the Western part** of the Indian Ocean, while cold deep waters are brought up to the surface in the Eastern Indian Ocean.
- This pattern is reversed during the negative phase of the IOD.

14. (a)

Archaeologists have recently discovered a 7000-year-old pre-historic settlement in northeastern Serbia.

Serbia

- It is a landlocked country situated at the crossroads of **Central and Southeast Europe**.



- **Capital:** Belgrade
- **Bordering countries:** Hungary, Romania, Bulgaria, North Macedonia, Montenegro, Bosnia and Herzegovina, Croatia.

15. (c)

Both the Statements are correct.

Moldova

- Moldova, is a **landlocked country** lying in the northeastern corner of the **Balkan region of Europe**. It is bordered by **Ukraine and Romania**.
- **Rivers:** Prut river, Dniester river, Danube River etc.
- It lies to the east of the great arc of the **Carpathian Mountains**.

16. (a)

Both Statement 1 and Statement 2 are correct

The Aravallis are considered one of the oldest fold mountain ranges in the world, estimated to be over 600 million years old. They have played a crucial role in shaping the geological history of the Indian subcontinent and influencing the distribution of plant and animal life across the region.

The Aravallis act as a natural barrier, effectively hindering the eastward expansion of the Thar Desert. They influence the monsoonal rainfall patterns in Rajasthan by causing orographic uplift, leading to condensation and precipitation on the windward side of the mountains.

17. (b)

News: Recently, the Supreme Court has banned Delhi and 3 other states from granting new mining leases in the Aravalli hills.

Aravalli hills

- Formed during the **Precambrian period**, it is one of the oldest **fold mountains** of the world.
- It traverses the Indian states of Gujarat, Rajasthan, and Haryana before culminating in Delhi.

Why are they important?

- They are home to a variety of flora and fauna and play a vital role in water and food security.
- It serves as a natural barrier against **desertification** and acts as a watershed for several rivers, including the Sabarmati, Luni, and Banas.
- Without the protection of the Aravallis, the **deserts of Rajasthan could encroach** into the fertile plains of North India.

18. (b)

News: Recently, the Indian Naval Ship Kiltan arrived at Cam Ranh Bay, Vietnam.

About Vietnam

- Vietnam is located on the Indochina peninsula in Southeast Asia.
- It has a long land border of 4,550 km, bordering **China** to the North, **Laos** and **Cambodia** to the West, and the Eastern Sea (South China Sea) of Pacific Ocean to the East.



19. (c)

Both the Statements are correct.

Context

- **Justice Katakey committee** has flagged the lack of progress in restoring the environment damaged by rat-hole coal mining in the northeastern State.

Background

- The **National Green Tribunal (NGT)** banned the practice of rat-hole coal mining in **2014** as it causes environmental degradation and is a threat to the life of miners.
- The Meghalaya High Court appointed a single-member committee under justice **Brojendra Prasad Katakey** in 2022 to recommend measures to the state government in compliance with the directions issued by NGT.

What is rat-hole mining?

- The term “rat hole” refers to the narrow pits (3-4 feet high) dug into the ground, typically just large enough for one person to descend and extract coal.
- Once the pits are dug, miners descend using ropes or bamboo ladders to reach the coal seams.
- The coal is then manually extracted using primitive tools such as pickaxes, shovels, and baskets.

20. (d)

Statement 1 is correct: Stratus clouds are layered clouds covering large portions of the sky. These clouds are generally formed either due to loss of heat or mixing of air masses with different temperatures.

Statement 2 is not correct: Cirrus clouds are always white in color. They are thin and detached clouds formed at high altitudes(8km-12km).

Statement 3 is correct: Cumulus clouds look like cotton wool. They are scattered having flat base. They are formed at a height of 4km-7km

Statement 4 is correct: Nimbus clouds are black or dark gray in color. They form at middle levels or very near to the surface of the earth. They are extremely dense and opaque to the rays of the sun.

21. (a)

Statement 1 is correct: La Niña is a weather phenomenon that occurs in the **Pacific Ocean**. It is the counterpart of El Niño, and both are part of the **larger El Niño-Southern Oscillation (ENSO) cycle**.

- The **trade winds become stronger than usual**, pushing more **warmer waters towards the Indonesian coast**, and making the **eastern Pacific Ocean colder than normal**.

Statement 2 is not correct: Increased rainfall: Regions such as Southeast Asia, northern Australia, and parts of South America often experience **above-average rainfall during La Niña events**.

22. (b)

News: Recently, India has signed a 10-year Chabahar Port pact with Iran.

Chabahar Port

- Iran's Chabahar port is located on the **Gulf of Oman** and is the **only oceanic port of the country**.
- It is situated in the city of Chabahar in Sistan and Baluchestan Province.
- Chabahar has two ports; **Shahid Kalantari** and **Shahid Beheshti**.

Iran's bordering countries & coastlines

- Located in southwestern Asia, Iran shares its entire northern border with the Republics of **Armenia**, **Azerbaijan**, **Turkmenistan**.
- Iran's western borders are shared with Turkey in the north and Iraq in the south.
- Afghanistan and **Pakistan** are Iran's neighbors from the East.
- To the south, Iran's border is the long coastline of the Persian Gulf and Oman Sea.



23. (b)

In News :The condition of the Kanwar Lake has been deteriorating and the drying area has been increasing.

Statement 1 is not correct : Kanwar lake is located in Begusarai district of Bihar.

- It is locally known as ‘Kabartal’

Statements 2 and 3 are correct : Kanwar lake is Asia’s largest freshwater oxbow lake.

- It draws water from the confluence of the Gandak, the Bia and the Kareh river .
- It is the first and only wetland in the state of international importance under the Ramsar Convention.
 - It was declared a Ramsar site in 2020.

24. (a)

Context: India has signed a 10-year deal to develop the strategically important Chabahar port in Iran.

Chabahar Port

- The Port is located on the Makran Coast in the **southeastern part of Iran**, next to the Gulf of Oman and at the mouth of the Strait of Hormuz.
- The Port comprises two terminals i.e. Shahid Kalantari and Shahid Beheshti.
- It is the **only deep-sea Iranian port** with direct access to the Indian Ocean.
- Chabahar Port offers an alternative maritime route to the Strait of Hormuz.
- It is a part of the International North-South Transport Corridor (INSTC), a multi-modal transportation project linking the Indian Ocean to northern Europe.

25. (d)

France declared a **state of emergency in New Caledonia** amid recent protests over the bill passed on voting rights granted to French Residents of the Island.

- It is a French overseas island territory in the Pacific Ocean.
- Location: New Caledonia is located around 1,500 km to the east of Australia.

26. (c)

In News: India aims to launch its first research testbed dedicated to studying Nor’westers (aka Kalbaisakhi).

- **Nor’westers (aka Kalbaisakhi)** are severe thunderstorms that originate over **Eastern and north Eastern parts of India**, southern **Nepal**, adjoining **Bhutan and Bangladesh** during the **pre-monsoon season**.

Statement 1 is correct

- The Norwesters produce heavy showers, lightning, thunder, hailstorms, dust storms, squalls, downbursts and sometimes even tornadoes.
- These are **useful for Kharif crops** like tea, jute and rice cultivation.

Statement 2 is correct

- They travel preferentially in a general **northwest to southeast direction** and sometimes in southwest to northeast direction.
 - They are **locally known as Kalbaisakhis**.
 - In Assam, these storms are known as **‘Bardoli Chheerha’**.

27. (b)

In News: Recently, researchers found that the **discovery of the ‘long-lost’ tributary of river Nile** fits perfectly into the earlier anticipations about the **high pyramid density between Giza and Lisht**.

- **River Nile** is the **longest river in the world**, and has been the lifeline of civilizations since ancient times.
- **Flowing from south to north** through eastern Africa, it begins in the rivers that flow into **Lake Victoria**, located in modern-day **Uganda, Tanzania, and Kenya**, and finally empties into the **Mediterranean Sea**.
- The **high pyramid density** in this region can be explained by the **proximity of the Ahramat Branch, an extinct branch of the Nile**, that was likely used **to transport heavy construction materials**, fits perfectly into the earlier anticipations about the high pyramid density between Giza and Lisht.

28. (b)

Statement 1 is not correct: The Panama Canal has a length of approximately 80 kilometers that connects the Atlantic Ocean with the Pacific Ocean. Around six percent of all global maritime commerce passes through the Panama Canal, with the United States, China and Japan being the leading users.

Statement 2 is correct: The Gatun Lake, formed by the Gatun Dam, is a major feature of the Panama Canal and provides a significant portion of the water used in the lock system.

Statement 3 is not correct: The canal was completed in 1914 by the United States.

The US continued to control the canal and surrounding Panama Canal Zone until the Torrijos–Carter Treaties provided for its handover to Panama in 1977. After a period of joint American–Panamanian control, the canal was taken over by the Panamanian government in 1999. It is now managed and operated by the Panamanian government-owned Panama Canal Authority.

29. (b)

In News: Recently, the Panama Canal Authority informed that the **Panama Canal** is slowly returning to normal to help ships transit, after **severe droughts** linked to El Niño, which have drastically **lowered the water levels in Gatun Lake**.

Statement 1 is not correct

- Panama Canal, formally inaugurated in 1914, is the 82-km waterways connecting the **Atlantic Ocean with the Pacific Ocean** by providing a shortcut through the **Isthmus of Panama**.
 - It is a critical route between Europe and the US.

Statement 2 is correct

- The Panama Canal locks at each end lift ships up to **Gatun Lake**, an artificial freshwater lake 26 m above sea level created by damming up the **Chagres River** and **Lake Alajuela** to reduce the amount of excavation work required for the canal, and then lower the ships at the other end.
 - The operation of the **canal's locks** — which use gates to **raise or lower water levels** in different sections of the canal — depends on water from **Gatun Lake**.

30. (d)

Statement 1 is correct: El Niño, a phase of the El Niño Southern Oscillation (ENSO), influences the global climate system and is known to affect the **southwest monsoon in India**. Typically, El Niño conditions are associated with weaker monsoon rains in India.

Statement 2 is correct: Studies have shown a correlation between El Niño events and increased rainfall during the **northeast monsoon season**. For example, the 2015 Chennai floods coincided with an El Niño event, illustrating this association.

Statement 3 is correct: While El Niño typically **reduces overall monsoon rainfall**, it can also lead to an **increased frequency** of intense rainfall events. This paradoxical effect is due to the complex interactions between the warming of the ocean and atmospheric dynamics.

31. (b)

News: Brazil's Amazon rainforest has experienced its largest blazes on record in the first four months of 2024.

Amazon rainforest

- The Amazon covers a huge area (6.7 million sq km) of South America.
- Nearly 60% of the rainforest is in **Brazil**, while the rest is shared among eight other countries—Bolivia, Colombia, Ecuador, **Guyana**, **Peru**, Suriname, Venezuela and French Guiana, an overseas territory of France.



32. (b)

- India and Moldova signed an agreement on visa waiver for diplomatic and official passports. Moldova, is a **landlocked country** lying in the northeastern corner of the **Balkan region of Europe**.



- It is bordered by **Ukraine** and **Romania**.
- Chisinau – the Capital

33. (c)

The Baltic Sea is the **youngest sea on the planet**, emerging some 10,000-15,000 years ago as the glaciers retreated at the end of the last Ice Age.

- It is located in **Northern Europe**, enclosed by **Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, and Sweden**.



34. (b)

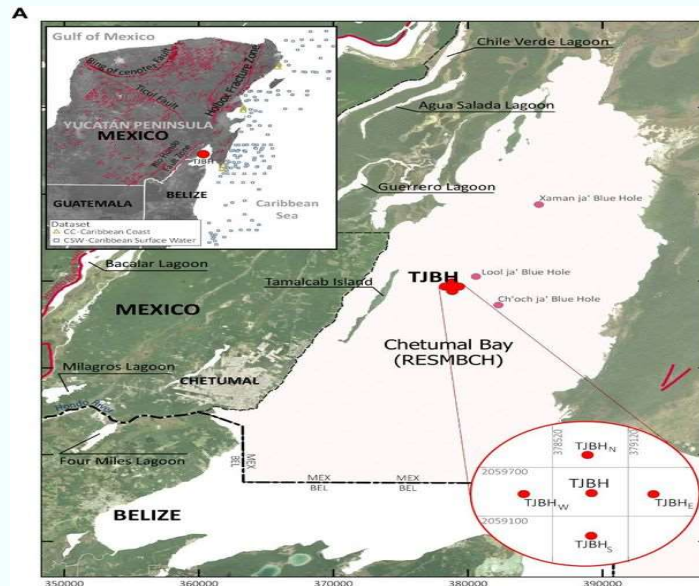
France and Portugal

Spain

- It is bordered to the north by **France**, Andorra, and the Bay of Biscay; to the east and south by the Mediterranean Sea and Gibraltar; and to the west by **Portugal** and the Atlantic Ocean.
- Spain is situated in Europe's Iberian Peninsula.
- **Capital:** Madrid

35. (c)

- Researchers have discovered the world's deepest Blue Hole in **Mexico** named Taam Ja' Blue Hole (TJBH) The site named Taam Ja' Blue Hole (TJBH) is now the deepest known underwater sinkhole in the world.



- The measurements show TJBH extends at least 1,380 feet (420 metres) below sea level.
- The newly found deepest blue hole, situated in Chetumal Bay off the southeast coast of the Yucatan Peninsula.

36. (b)

News: A deep depression over the Bay of Bengal intensified into a cyclonic storm, named Remal causing heavy rain and strong winds in West Bengal and adjacent states.

About

- The name "Remal", meaning 'sand' in Arabic, was chosen by Oman according to the standard convention of naming tropical cyclones in the region.

What are Cyclones?

- Cyclones are caused by atmospheric disturbances around a low-pressure area.
- The air circulates inward in an anticlockwise direction in the Northern hemisphere and clockwise in the Southern hemisphere.

How are the cyclones named?

- Weather forecasters assign names to each tropical cyclone to prevent confusion. These names are given according to regional guidelines.
- In the Atlantic and Southern Hemisphere (Indian Ocean and South Pacific), tropical cyclones are named in **alphabetical order**, alternating between female and male names. Since 2000, countries in the Northern Indian Ocean have adopted a new naming system where the names are listed alphabetically by country and are gender-neutral.

37. (d)

Statement 1 is correct: Critical minerals are indeed essential for economic development, especially for high-tech and green technologies, but their supply can be disrupted due to geological scarcity or concentration in a few countries.

Statement 2 is correct: India has notified 30 minerals as 'critical' in 2023 to streamline their exploration and production. These minerals are Antimony, Beryllium, Bismuth, **Cobalt**, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, **Lithium**, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium and Cadmium.

Statement 3 is correct: The identification and focus on critical minerals aim to secure a stable supply for India's growing industrial needs and reduce reliance on imports, thus enhancing self-reliance and strategic autonomy.

38. (b)

Context: In April 2024, the annual retail inflation for pulses was 16.84% and the imports hit a seven-year high.

Production of Pulses in India

- India is the **largest producer** (25% of global production), **consumer** (27% of world consumption) and **importer** (14%) of pulses in the world.
- Pulses account for around **20 percent** of the area under food grains and contribute around **7-10 percent** of the total foodgrains production in the country.
- Though pulses are grown in both Kharif and Rabi seasons, **Rabi pulses** contribute more than **60 percent** of the total production.
- **Gram** is the most dominant pulse having a share of around 40 percent in the total production followed by Tur/Arhar at 15 to 20 percent and Urad/Black Matpe and Moong at around 8-10 percent each.
- **The regions with high productivity** are Punjab, Haryana, Western Uttar Pradesh, West Bengal delta region, coastal Andhra Pradesh, Tamil Nadu, Kerala, coastal and eastern Karnataka and some parts of Maharashtra.

39. (a)

Context: Recently, Zimbabwe has introduced the **ZiG (Zimbabwe Gold)**, a gold-backed currency amid its monetary crisis marked by hyperinflation and currency collapses.

ZiG: A Brief Overview

- **Background:** The ZiG is Zimbabwe's sixth national currency in the last 15 years.
- It follows the spectacular collapse of the Zimbabwe dollar in 2009 due to hyperinflation, which reached a staggering 5 billion per cent—the world's worst currency crash.
- **Gold-Backed:** Unlike its predecessors, the ZiG stands out as a currency backed by physical gold reserves.
 - It ensures that its value is supported by the actual gold held by the government.
- **Denominations:** ZiG notes and coins are available in various denominations: 1ZiG, 2ZiG, 5ZiG, 10ZiG, 20ZiG, 50ZiG, 100ZiG, and 200ZiG.



40. (b)

In News: Recently, researchers detected evidence of **volcanic eruption on Venus’ surface** using data from **NASA’s Magellan mission** provided by **NASA’s Jet Propulsion Laboratory**.

Specific Sites of Volcanism on Venus

- **Sif Mons:** A volcano approximately 200 miles (300 km) wide **located in the Eistla Regio region**. It exhibited signs of eruption during the early 1990s.
- **Niobe Planitia:** A large volcanic plain where approximately 17 square miles (45 square kilometres) of rock were produced by lava flow.
- **Maat Mons:** In 2023, Magellan’s Radar images captured changes near the volcano Maat Mons.
 - These changes indicated a recent eruption, **providing direct geological evidence** of volcanic activity on Venus.

41. (c)

Both the Statements are correct.

Haiti

- Haiti has been witnessing violence for over two years since the July 2021 assassination of President Jovenel Moise.
- India launched ‘**Operation Indravati**’ to evacuate its nationals from Haiti.
- Haiti, is a country on the island of Hispaniola in the Caribbean Sea, east of Cuba and Jamaica, and south of The Bahamas.
- **Capital:** Port-au-Prince

GOVERNMENT SCHEMES/INITIATIVES

1. With reference to the Ayushman Bharat – Pradhan Mantri Jan Aarogya Yojana (AB-PMJAY), consider the following statements:
 1. It is the world's largest Government funded health assurance scheme.
 2. It provides a cover of Rs. 2 lakhs per family per year for secondary and tertiary care hospitalization.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
2. With reference to the PM Surya Ghar Bijli Yojana, which of the following statements is/are correct?
 1. The households will be able to get 300 units of electricity free every month.
 2. It provides for a subsidy of 80 percent of the solar unit cost for systems up to 2 kW.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
3. What is Digital Public Infrastructure (DPI) primarily aimed at achieving?
 - (a) Providing high-speed internet access to rural areas
 - (b) Enhancing government surveillance capabilities
 - (c) Facilitating digital services delivery to citizens
 - (d) Regulating social media platforms
4. Which one of the following is *related to the 'PAHAL'* scheme?
 - (a) LPG Subsidy
 - (b) Digital Literacy
 - (c) Women Participation in the Armed Forces
 - (d) Ban on Single Use Plastics
5. Which of the following statements about the Vibrant Village Programme is/are **correct**?
 - (a) The programme focuses on developing infrastructure and creating livelihood opportunities in border villages along the Line of Actual Control (LAC).
 - (b) It is a Centrally Sector Scheme.
 - (c) The Vibrant Village Programme replaced the Border Area Development Programme (BADP).
 - (d) None of the above
6. With reference to the Smart Cities Mission, consider the following statements:
 1. It is an initiative of the Union Housing and Urban Affairs Ministry, launched in 2015.
 2. 150 cities have been selected to be developed as Smart Cities through a two-stage competition for five years.
 3. The Mission is operated as a Central Sector Scheme.

How many of the statements given above are correct?

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

7. The 'Project UDBHAV' sometimes seen in the news, is in context of:

- (a) Land Reform and Poverty Alleviation
- (b) Exploring India's Military Heritage
- (c) Growing Forest in Desert Region
- (d) Exploring Ancient Water Channel

8. With reference to the Agnipath scheme, consider the following statements:

- 1. It is also called the Tour of Duty scheme and is a short-term recruitment scheme for the Indian Army.
- 2. Agniveers' are recruited for four years, at the end of which 50 percent of recruits from a batch are retained for regular service.

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

9. With reference to the status and characteristics of startups in India, consider the following statements:

- 1. A startup is defined as an entity working towards innovation, development, or improvement of products, processes, or services, or with a scalable business model.
- 2. A startup is an entity that must be less than 10 years old and have an annual turnover not exceeding Rs 100 crore.
- 3. As of March 2024, India has the largest startup ecosystem in the world with over 100 unicorns.

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

10. With reference to the AMRUT (Atal Mission for Rejuvenation and Urban Transformation) scheme, consider the following statements:

- 1. It was launched to ensure that every household has access to a tap with assured supply of water and a sewerage connection.
- 2. AMRUT 2.0 is aimed at making cities 'water secure' and providing functional water tap connections to all households in all statutory towns.

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

EXPLANATIONS (Government Schemes/Initiatives)

1. (a)

News: An analysis of the effectiveness of the Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) in Chhattisgarh shows that the scheme has not increased utilisation of hospital care.

About (AB-PMJAY)

- It is the world's largest Government funded health assurance scheme.
- It provides health assurance of up to **Rs.5 Lakh per family per year** for secondary and tertiary healthcare hospitalizations.
- Over 12 crore poor and vulnerable entitled families (approximately 55 crore beneficiaries) are eligible for these benefits.
- The beneficiary families AB-PMJAY have been identified from the Socio Economic Caste Census (SECC) of 2011 on the basis of select deprivation and occupational criteria across rural and urban areas.

2. (a)

Statements 1 is correct and Statement 2 is not correct.

PM Surya Ghar Muft Bijlee Yojana

- **PM Surya Ghar Muft Bijlee Yojana** aims to provide free electricity to one crore households in India, who opt to install roof top solar electricity units.
- The households will be able to get **300 units** of electricity free every month.
- The scheme provides for a subsidy of **60 percent** of the solar unit cost for systems up to **2 kW** capacity and **40 percent** of additional system cost for systems between **2 to 3 kW** capacity.
 - The subsidy has been capped at 3 kW capacity.

3. (c)

Digital Public Infrastructure (DPI) is focused on creating and improving the digital infrastructure necessary for delivering various government services to citizens efficiently and effectively. It aims to leverage technology to enhance accessibility, transparency, and responsiveness in public service delivery.

4. (a)

Context: According to the data available with the **Council on Energy, Environment and Water (CEEW)**, cost of LPG is the foremost barrier to its adoption and use in rural poor households.

PAHAL (Pratyaksh Hastantarit Labh) scheme

- It was launched in 2014 for selected districts in India and later extended to the rest of the country in 2015.
- Under the Scheme, LPG cylinders are being **sold at non-subsidised price** and **subsidy**, if eligible, is being **directly transferred** to the consumers' bank account.

5. (a)

Option a is correct: The Vibrant Village Programme aims to improve living conditions in villages located along the northern borders, including areas near the Line of Actual Control (LAC) with China.

Option b is not correct: It is a Centrally Sponsored Scheme.

Option c is not correct: The Vibrant Village Programme is designed to complement, not replace, the Border Area Development Programme (BADP). While both programs focus on border development, they might have distinct areas of focus or target different border regions.

6. (a)

Statement 1 is correct: Smart cities were defined by urban practitioners as new Silicon Valleys built with a strong integration of a network of airports, highways, and other types of communications, a so-called intellectual city with advanced ICT.

- Smart Cities Mission is an initiative of the **Union Housing and Urban Affairs Ministry**, launched in **2015**.

Statement 2 and 3 are not correct: **100 cities** have been selected to be developed as Smart Cities through a two-stage competition for five years.

- The Mission is operated as a **Centrally Sponsored Scheme**.
- **Objective:** To promote cities that provide core infrastructure, clean and sustainable environment and give a decent quality of life to their citizens through the application of 'smart solutions'.

7. (b)

In News: Recently, the Indian Army said that it is **exploring India's military heritage under 'Project UDBHAV'**.

- Project UDBHAV (*translates as 'origin' or 'genesis'*) is a collaboration between the **Indian Army** and the **United Service Institution of India (USI)**, which aims to **revisit the roots of India's ancient military thoughts**.

Objectives

- To synthesise ancient wisdom with contemporary military practices;
- Forging a unique and holistic approach to address modern security challenges;
- To integrate age-old wisdom with contemporary military pedagogy through interdisciplinary research, workshops and leadership seminars;
- To facilitate in-depth understanding of our knowledge systems and philosophies.

8. (a)

Statement 1 is correct: Introduced in **2022**, the Agnipath scheme — also called the **Tour of Duty scheme** is a **short-term recruitment scheme for the Indian Army**.

Statement 2 is not correct: Under the policy, soldiers — called '**Agniveers**' — are recruited for **four years**, at the end of which **only 25 percent** of recruits from a batch are retained for regular service.

9. (a)

Statement 1 is correct: A startup is defined as an entity working towards innovation, development, or improvement of products, processes, or services, or with a scalable business model.

Statement 2 is correct: To be recognized as a startup by the Department for Promotion of Industry and Internal Trade (DPIIT), an entity must be less than 10 years old and have an annual turnover not exceeding Rs 100 crore.

Statement 3 is not correct: As of March 2024, India has the third-largest startup ecosystem in the world with over 100 unicorns.

10. (c)

Both the Statements are correct: The mission was drawn to **cover 500 cities and towns** with a population of over one lakh with notified municipalities.

- The purpose of the AMRUT mission was to:
 - ensure that every household has access to a tap with assured supply of water and a sewerage connection;

- increase the value of cities by developing greenery and well-maintained open spaces such as parks and;
- reduce pollution by switching to public transport or constructing facilities for non-motorised transport.
- **AMRUT 2.0:** Aimed at making cities '**water secure**' and providing functional water tap connections to all households in all statutory towns.
 - Ambitious targets were set up such as providing 100% sewage management in 500 AMRUT cities.

DEFENSE/ INTERNAL SECURITY

1. The Opposing Forces (OPFOR) concept is primarily used in which of the following contexts?
 - (a) Counter-terrorism operations in urban environments.
 - (b) Training exercises for military personnel to simulate real-world combat scenarios.
 - (c) International peacekeeping missions under the UN flag.
 - (d) Disaster relief operations coordinated by civilian authorities.
2. Exercise SHAKTI, recently seen in the news, was held between which of the following countries?
 - (a) India and France
 - (b) India and USA
 - (c) India and Bangladesh
 - (d) India and Maldives
3. Operation Smiling Buddha, recently seen in the news is related to
 - (a) Left Wing Extremism
 - (b) Nuclear Test
 - (c) Buddhist Tourism
 - (d) Refugee Crisis
4. With reference to the Department of Military Affairs, consider the following statements:
 1. It is headed by the Defence Minister.
 2. It was created to facilitate optimal utilization of resources and promote jointness among the three Services.

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
5. With reference to the Indian Coast Guard (ICG), which of the following statements is/are correct?
 1. It was established in 1977 by the Coast Guard Act, 1978 of the Parliament of India.
 2. The Ministry of Defence is the parent agency of ICG

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
6. Which among the following are part of the Central Armed Police Forces (CAPF)?
 1. Assam Rifles (AR)
 2. National Security Guard (NSG)
 3. Indo-Tibetan Border Police (ITBP)
 4. Central Industrial Security Force (CISF)

Select the correct answer using the code given below:

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

7. Exercise Red Flag, an international aerial combat training event, is hosted by which of the following entities?
- (a) United Nations
 - (b) North Atlantic Treaty Organization (NATO)
 - (c) United States Air Force
 - (d) European Union Military Staff

EXPLANATIONS (Defense/ Internal Security)

1. (b)
The Indian Army is working on creating a new unit that can simulate the role of an adversary during military exercises and wargame training called Opposing Forces (OPFOR). OPFOR is a military training concept to simulate an opposing force during exercises.

2. (a)
India and France

Context

- The 7th edition of India- France Joint Military Exercise SHAKTI commenced at Umroi, in Meghalaya.

About

- Exercise “Shakti” is a **biennial** event conducted alternatively in India and France.
 - The last edition took place in France in **2021**.
- Indian contingent comprising **90 personnel** is being represented primarily by a Battalion of the RAJPUT Regiment besides personnel from other arms and services.

3. (b)
Context: Fifty years ago on May 18th 1974, India conducted its **first nuclear test**, code-named **Operation Smiling Buddha**, at the Pokhran test range in Rajasthan.

About

- With Smiling Buddha, India became the first nation to conduct a nuclear test apart from the five permanent members of the United Nations Security Council.

What is the Pokhran-II test?

- In 1998, under the leadership of Prime Minister Atal Bihari Vajpayee, India conducted a series of nuclear tests in Pokhran once again, code-named Operation Shakti.

Difference

- The nuclear test of 1974 was a peaceful nuclear explosion, on the other hand, the nuclear tests of May 1998, were undertaken as part of the nuclear weaponization process.
- And with Operation Shakti, India declared itself a full-fledged nuclear state.

What is India’s Nuclear Doctrine?

- India follows the "No First Use" doctrine which means nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere.

4. (b)
Statement 1 is not correct.

- The Department of Military Affairs was created in 2019.

- DMA is headed by **Chief of Defence Staff (CDS)** as Secretary and was created to facilitate **optimal utilization of resources** and promote jointness among the three Services. Hence, **Statement 2 is correct.**

5. (c)

Both the Statements are correct.

- The Indian Coast Guard is a maritime law enforcement and search and rescue agency of India with jurisdiction over its territorial waters including its contiguous zone and exclusive economic zone.
- It was formally established in 1977 by the **Coast Guard Act, 1978** of the Parliament of India.
- **Parent Agency:** Ministry of Defence
- **Headquarters:** New Delhi

6. (d)

Central Armed Police Forces (CAPF)

- The Central Armed Police Forces (CAPF) is the collective name of **central police organizations** under the **Ministry of Home Affairs** of India.
- These forces are responsible for internal security and guarding the borders. CAPF is classified as;
 - **Assam Rifles (AR):** It is a central police and paramilitary organization responsible for border security, counter-insurgency, and law and order in Northeast India.
 - **Border Security Force (BSF):** It is primarily deployed along the Pakistan and Bangladesh borders, since 2009 it is also posted in Left Wing Extremism (LWE) affected areas.
 - **Indo-Tibetan Border Police (ITBP):** It is deployed for guarding duties on the Indo-China border
 - **Sashastra Seema Bal (SSB):** It guards the Indo-Nepal and Indo-Bhutan borders.
 - **National Security Guard (NSG):** It is a counter-terrorism unit under the Ministry of Home Affairs. All personnel are deputed from other CAPFs and the Indian Army.
 - **Central Reserve Police Force (CRPF):** It is deployed for internal security duties and has a large presence in North East, LWE theater and Jammu and Kashmir.
 - **Central Industrial Security Force (CISF):** It provides security to various Public Sector Undertakings (PSUs) and other critical infrastructure installations, major airports across the country and provides security during elections and other internal security duties and VVIP protection.

7. (c)

Exercise Red Flag is a renowned international aerial combat training event organized by the United States Air Force. It brings together air forces from various nations to engage in advanced aerial combat training, enhancing interoperability and sharing expertise among participating countries. And, India's participation in Exercise Red Flag signifies the strengthening of the US-India strategic partnership. The exercise allows both nations to share expertise, test tactics, and enhance interoperability.

INTERNATIONAL RELATIONS

1. With reference to the International Criminal Court (ICC), which of the following statements is/are correct?
 1. The Rome Statute laid the foundation for the establishment of the International Criminal Court.
 2. India is not a member of the ICC.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
2. Consider the following statements about Interpol:
 1. Interpol maintains its own international police force with the authority to conduct arrests worldwide.
 2. A Red Notice issued by Interpol is a legally binding international arrest warrant.
 3. CBI acts as the National Central Bureau for Interpol in India.Which of the given above statements is/are correct?
 - (a) 1 and 2 only
 - (b) 2 and 3 only
 - (c) 3 only
 - (d) 1 only
3. With reference to the Treaty of Sugauli of 1816, consider the following statements:
 1. It was signed between the East India Company and Guru Gajraj Mishra.
 2. The Kali River was marked as Nepal's western boundary with 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
4. Recently, Hamas has accepted a cease-fire proposal to halt the seven-month-long war with Israel. This cease-fire was proposed by:
 - (a) Qatar and Egypt
 - (b) Türkiye and Qatar
 - (c) Iran and Egypt
 - (d) USA and Türkiye
5. Which of the following countries are members of the European Free Trade Association (EFTA)?
 1. France
 2. Liechtenstein
 3. Germany
 4. Switzerland

Select the correct answer using the code given below:

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

6. Which among the following countries are part of the India-Middle East EU Economic Corridor (IMEC) Project?

- 1. France
- 2. Jordan
- 3. Afghanistan
- 4. Germany

Select the correct answer using the code given below:

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

7. With reference to the '*Global Alliance of National Human Rights Institutions (GANHRI)*', consider the following statements:

- 1. It is the only non-UN body whose internal accreditation system grants access to UN committees.
- 2. It ensures compliance with the Paris Principles of 1993.

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

8. With reference to Codex Alimentarius Commission (CAC), which of the following statements is/are correct?

- 1. It was set up in 1963 to protect consumer's health and ensure fair practices in the food trade.
- 2. It is Headquartered in Rome, Italy.

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

9. With respect to the Indian Ocean Rim Association (IORA), consider the following statements:

- 1. IORA is an intergovernmental organization aimed at strengthening regional cooperation and sustainable development within the Indian Ocean region.
- 2. The IORA Charter, adopted in 2017, outlines six priority areas for cooperation among member states.

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

10. With reference to South Asian Association for Regional Cooperation (SAARC), which of the following statements is/are correct?

- 1. SAARC was established in 1985 to accelerate the process of economic and social development in its member states.
- 2. The Secretariat of SAARC is located in Kathmandu, Nepal.

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

11. With reference to the India-Middle East-Europe Economic Corridor (IMEC), which of the following statements is/are correct?

- 1. It aims to foster economic integration between Asia, the Arabian Gulf, and Europe.
- 2. IMEC will boost India's National Logistics Policy 2022.

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

12. With reference to the *International Criminal Court (ICC)*, consider the following statements:

- 1. It serves as a civil court and aims to resolve legal disputes between states.
- 2. It settles disputes related to territorial boundaries, treaties, and other legal matters.

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

13. The Copernicus Emergency Management Service (EMS) which was recently mentioned in the news is operated by the:

- (a) United Nations
- (b) World Health Organization
- (c) European Union
- (d) North Atlantic Treaty Organization

14. Recently which one of the following has become the 99th member of the International Solar Alliance?

- (a) Panama
- (b) Italy
- (c) Spain
- (d) Portugal

15. With reference to the BIMSTEC, which of the following statements is/are correct?
1. It is a regional organization, established with the signing of the New Delhi Declaration.
 2. It is headquartered in Dhaka, Bangladesh.
- 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
16. With reference to the International Solar Alliance (ISA), consider the following statements:
1. The ISA was jointly launched by India and France in 2015 on the sidelines of COP-21 of the United Nations Framework Convention on Climate Change (UNFCCC) in Paris.
 2. The ISA was officially established in 2017.
 3. With the amendment of the ISA Framework Agreement in 2020, only the countries that lie between the Tropics of Cancer and Capricorn are eligible to join the ISA.
- 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
17. Which one of the following countries recently introduced a gold-backed currency to manage its monetary crisis?
- (a) Zimbabwe
 - (b) United Arab Emirates
 - (c) Qatar
 - (d) Angola
18. With reference to the United Nations (UN) Peacekeepers, consider the following statements:
1. Peacekeeping forces are contributed by member states on a compulsory basis.
 2. In 2007, India became the first country to deploy an all-women contingent to a UN peacekeeping mission.
- 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
19. The term “Colombo Process”, recently seen in the news, is related to:
- (a) Addressing Issues of Migrant Workers
 - (b) Mitigating Climate Change
 - (c) Regulating Shipping Industry
 - (d) Eliminating Single-Use Plastics

20. Consider the following statements:

1. India is not a signatory to the Antarctic Treaty.
2. Madrid Protocol aims to strengthen the Antarctic Treaty system and develop a comprehensive regime for the protection of the Antarctic environment.

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

21. With reference to the Colombo Process, consider the following statements:

1. India has become chair of Colombo Process for the first time since its inception in 2003.
2. Afghanistan and Bhutan are part of the Colombo Process.

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

EXPLANATIONS (International Relations)

1. (c)

Both the Statements are correct.

The International Criminal Court (ICC)

- ICC investigates and, where warranted, tries individuals charged with the gravest crimes of concern to the international community: genocide, war crimes, crimes against humanity and the crime of aggression.
 - As a court of last resort, it seeks to complement, not replace, national Courts.
- **History:** Impetus for the court came from the ad hoc international tribunals set up in the **1990s** to address the atrocity crimes committed in the former Yugoslavia and Rwanda.
- **Rome Statute:** In **1998**, 60 countries signed the Rome Statute after it was opened for signature by the United Nations.
 - The Statute laid the foundation for the establishment of the **International Criminal Court in 2002**.
- **Members:** There are **123 member** countries. However, many countries **never signed the treaty**, including China, Ethiopia, **India**, Indonesia, Iraq, North Korea, Saudi Arabia, and Turkey.

2. (c)

Statement 1 is not correct: Interpol coordinates but doesn't have its own international police force. Arrests are made by national law enforcement.

Statement 2 is not correct: Red Notices are requests for arrest and extradition, not binding warrants. Member countries decide on action based on their laws. There's no obligation; countries consider the Red Notice and their own laws for extradition.

Statement 3 is correct: CBI is India's officially designated single point of contact for liaison with Interpol.

3. (c)

News: Nepal has announced the printing of a new Rs 100 currency note that features Indian territories of Lipulekh, Limpiyadhura, and Kalapani, a move that has been contested by India.

About

- Tension had mounted between India and Nepal after the issuance of a political map by Nepal in mid-May 2020, including the Lipulekh, Kalapani and Limpiyadhura, which India earlier had included in its November 2019 map.

Controversy over Nepal-India border

- Nepal has asserted its claim based on the **Sugauli Treaty of 1816**, signed between the East India Company and Guru Gajraj Mishra.
- Under the Treaty, the **Kali River** was marked as Nepal's western boundary with India.
- The Kali River has changed direction over the years, causing confusion in defining the border.
- Also, the 1950 **Treaty of Peace and Friendship** between India and Nepal has annulled the Sugauli Treaty and India maintains Lipulekh, Kalapani and Limpiyadhura belongs to it.

4. (a)

News: Hamas has accepted an **Egyptian-Qatari cease-fire proposal** to halt the seven-month-long war with Israel.

What is the Egyptian-Qatari cease-fire proposal and Why has Hamas agreed to it?

- The agreement, proposed by Qatar and Egypt, calls for three 42-day phases of a truce, an end to hostilities, the withdrawal of Israeli forces from Palestinian land, and the rehabilitation of the Gaza Strip.
- Hamas's abrupt acceptance of the cease-fire deal came hours after Israel ordered an evacuation of some 100,000 Palestinians from eastern neighborhoods of Rafah, signaling an invasion was imminent.

Israel's Response

- Israel said the deal did not meet its "core demands" and its War Cabinet has decided to continue the Rafah operation. However, it would send negotiators to Egypt to work on a deal.

5. (b)

EFTA is an intergovernmental organisation established in 1960 by the EFTA Convention, that promotes free trade and economic integration between its members, within Europe and globally.

- EFTA currently has 4 member countries: **Iceland, Liechtenstein, Norway and Switzerland.**
- India-European Free Trade Association signed a Trade and Economic Partnership Agreement (TEPA) on 10th March 2024.

6. (b)

The IMEC, a proposed 4,800 km long route was announced in 2023 on the sidelines of the G20 Summit.

- This followed a meeting between the leaders of India, the US, the United Arab Emirates, Saudi Arabia, Italy, France, Germany, and the European Commission.
- **Members:** India, European Union, France, Germany, Italy, Saudi Arabia, UAE and US announced the India-Middle East-Europe Economic Corridor (IMEC).
- **Aim:** Integration of Asia, Europe and the Middle East.

7. (c)

In News: Recently, the Global Alliance of National Human Rights Institutions (GANHRI) has deferred the accreditation of India's National Human Rights Commission (NHRC) for the second consecutive year.

About

- GANHRI is a **global network of National Human Rights Institutions (NHRIs)** that coordinates the relationship between NHRIs and the United Nations Human Rights System.
- It is the only **non-UN** body whose internal accreditation system **grants access to UN committees**, based on compliance with the **Paris Principles of 1993**.
- GANHRI ensures individual NHRIs' compliance with **internationally recognised minimum standards – the Paris Principles** – to ensure their *independence, pluralism, and accountability*, through the **Sub-Committee on Accreditation (SCA)**.
 - **Paris Principles** lists **six criteria** that human rights bodies must adhere to – *mandate and competence, autonomy from government, independence guaranteed by a statute or Constitution, pluralism, adequate resources and adequate powers of investigation*.

8. (c)

Both the Statements are correct.

Codex Alimentarius Commission (CAC)

- It is an intergovernmental food standards body, set up in **1963**.
- It was established jointly by the **UN's Food and Agriculture Organisation (FAO)** and the **World Health Organisation (WHO)**, within the framework of the Joint Food Standards Programme.
- **Objective:** To protect consumer's health and ensure fair practices in the food trade.
- **Members:** Currently, **189** members (188 UN member countries and the European Union).
- **India** became a member in **1964**.
- **Headquarter:** Rome, Italy

9. (c)

Statement 1 is correct: IORA's primary goal is to foster cooperation among member states on various issues related to sustainable development and regional stability.

Statement 2 is correct: The IORA Charter, adopted in 2017, outlines six priority areas for cooperation among member states. These areas cover a broad range of issues relevant to the Indian Ocean region.

10. (c)

Both the Statements are correct.

South Asian Association for Regional Cooperation (SAARC)

- **SAARC was established** in 1985.
- **Secretariat:** It was set up in **Kathmandu, Nepal**, in 1987.
- It **aims** to accelerate the process of economic and social development in its member states through increased intra-regional cooperation.
- **SAARC has eight member countries:** Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri-Lanka.

11. (c)

Both the Statements are correct.

India-Middle East-Europe Economic Corridor (IMEC)

- **Participants:** During the Delhi G20 Summit, India, USA, UAE, Saudi Arabia, France, Germany, Italy and the European Union signed a Memorandum of Understanding (MoU) to establish the India-Middle East-Europe Economic Corridor.
- **Objective:** The corridor will encourage and provide impetus to economic development through enhanced connectivity and economic integration between Asia, the Arabian Gulf, and Europe.

Components of the IMEC

- The project would involve the **building of a railway line** across the Arabian Peninsula through the United Arab Emirates and Saudi Arabia and develop shipping connectivity to India and Europe on either end of this corridor.
- The corridor could be further developed to transport energy through pipelines and data through an **optical fiber link**.
- The connectivity project will boost **India's National Logistics Policy 2022**.

12. (d)

In News: Recently, the Prosecutor of the International Criminal Court (ICC) requested arrest warrants against leaders of Hamas and Israel's Prime Minister.

- **The International Criminal Court (ICC)** is primarily a **criminal court** that focuses on individual criminal responsibility for genocide, war crimes, and crimes against humanity.
 - It prosecutes individuals rather than states.
- **The International Court of Justice (ICJ)**, on the other hand, **serves as a civil court and is the main legal arm of the United Nations**.
 - It **resolves legal disputes between states**. Its role is to provide advisory opinions on international legal matters.

13. (c)

In News: The European Union (EU) activated its rapid satellite mapping service, following a request from Iran to locate the crashed chopper of the Iranian President.

About

- The rapid mapping service is one of the crucial components of the Emergency Management Service (EMS), which comes under the EU's Copernicus programme.

EU's Copernicus programme

- Launched in 1998, Copernicus programme is named after the renowned 15th-century scientist Nicolaus Copernicus.

Copernicus Emergency Management Service (EMS)

- It has been in operation since 2012, and provides geo-spatial information derived from satellite remote sensing and in situ data sources to help manage natural disasters, man-made emergencies, and humanitarian crises.
- There are two components of the service: the mapping component and the early warning component.
- The mapping component has two modules: rapid mapping (which was activated to look for the crashed helicopter); and risk and recovering mapping.

14. (c)

Spain

Context

- Spain has become the **99th member** of the International Solar Alliance.

About

- **India and France jointly launched** the International Solar Alliance (ISA) during 21st Conference of Parties (COP21) to the **United Nations Framework Convention on Climate Change (UNFCCC)** held in Paris in 2015.
- **The ISA aims** to contribute to the implementation of the Paris Climate Agreement through the rapid and massive deployment of solar energy.

15. (b)

Context: The BIMSTEC will now be open to new members and observers after a historic first charter of the grouping came into force.

BIMSTEC

- The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a regional organization that was established on 06 June 1997 with the signing of the **Bangkok Declaration**.
- Initially known as BIST-EC (Bangladesh-India-Sri Lanka-Thailand Economic Cooperation), the organisation is now known as BIMSTEC and comprises seven Member States with the admission of Myanmar on 22 December 1997, and Bhutan and Nepal in February 2004.
- It is headquartered in **Dhaka, Bangladesh**.

16. (a)

Statement 1 is correct: The ISA was jointly launched by India and France in 2015 on the sidelines of COP-21 of the UNFCCC in Paris.

Statement 2 is correct: The ISA was officially established in 2017 with the entry into force of the ISA Framework Agreement.

Statement 3 is not correct: With the amendment of the ISA Framework Agreement in 2020, all member states of the United Nations are eligible to join the ISA, not just those that lie between the Tropics of Cancer and Capricorn.

17. (a)

In News: Recently, Zimbabwe has introduced the **ZiG (Zimbabwe Gold)**, a gold-backed currency amid its monetary crisis marked by hyperinflation and currency collapses.

- The ZiG is **Zimbabwe's sixth national currency** in the last 15 years.
- It follows the spectacular **collapse of the Zimbabwe dollar in 2009** due to hyperinflation, which reached a staggering 5 billion per cent—the world's worst currency crash.
- **Gold-Backed:** Unlike its predecessors, the ZiG stands out as **a currency backed by physical gold reserves**.
 - It ensures that **its value** is supported by the **actual gold held by the government**.
- **Denominations:** ZiG notes and coins are available in various denominations: 1ZiG, 2ZiG, 5ZiG, 10ZiG, 20ZiG, 50ZiG, 100ZiG, and 200ZiG.

18. (b)

Statement 1 is not correct: The Indian Army commemorated the **76th International Day of United Nations (UN) Peacekeepers (also called Blue Berets or Blue Helmets because of their light blue berets or helmets)**.

- Peacekeeping forces are contributed by member states on a **voluntary basis**.

Statement 2 is correct: In 2007, India became the first country to deploy an all-women contingent to a UN peacekeeping mission.

19. (a)

In News: India has become chair of regional grouping Colombo Process for the first time since its inception in 2003.

About

- Colombo Process is a Regional Consultative Process of migrant worker origin countries from South and SE Asia.
- It serves as a forum for exchange of best practices on overseas employment.

20. (b)

Statement 1 is not correct: Antarctic Treaty: The Treaty covers the area south of **60°S latitude**. It was signed at **Washington D.C. in 1959** with the objective of the Demilitarisation of Antarctica.

- The signatories are supposed to bring laws so that no activity in contravention of the treaty takes place. **India signed** the treaty in **1983**.

Statement 2 is correct: Madrid Protocol: The Protocol on the Environmental Protection to the Antarctic Treaty (Madrid Protocol) was signed in **Madrid in 1991**. It aims to strengthen the Antarctic Treaty system and develop a comprehensive regime for the protection of the Antarctic environment and dependent and associated ecosystems.

- India ratified the Madrid Protocol in 1998.

21. (a)

Statement 1 is correct: India has become chair of regional grouping Colombo Process **for the first time since its inception in 2003**.

- Colombo Process is a **Regional Consultative Process** comprising 12 Member States of Asia (countries of origin of migrant workers).

Statement 2 is not correct: Member States: Afghanistan, Bangladesh, China, India, Indonesia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand, Cambodia and Vietnam.

SCIENCE & TECHNOLOGY

1. It is a rare but serious condition characterized by blood clot formation coupled with low platelet counts. It often involves unusual blood clot locations, such as in the brain or abdomen.
Which of the following medical conditions has been described above?
 - (a) Havana Syndrome (HS)
 - (b) Sickle Cell Disease (SCD)
 - (c) Lumpy Skin Disease (LSD)
 - (d) Thrombosis with Thrombocytopenia Syndrome (TTS)
2. Which of the following is correct regarding Ethylene?
 - (a) It appears as a colourless gas with a sweet odour and taste.
 - (b) It is lighter than air.
 - (c) It is used in horticulture to force the ripening of fruits.
 - (d) All of the above.
3. It is a type of cyberattack which attempts to steal sensitive information, typically in the form of usernames, passwords, credit card numbers or other important data in order to utilize or sell the stolen information.
Which of the following has been best described above?
 - (a) Nagging
 - (b) Phishing
 - (c) Spoofing
 - (d) Basket Sneaking
4. Which of the following statements about quarks is **not correct**?
 - (a) Quarks exist in six "flavors" (up, down, charm, strange, top, bottom).
 - (b) Quarks are free particles and can exist independently.
 - (c) Quarks carry fractional electric charges.
 - (d) The specific combination of quarks determines the properties of the hadron they form.
5. The presence of water ice on the Moon is most likely concentrated in:
 - (a) Large active volcanoes
 - (b) Permanently shadowed craters near the poles
 - (c) The lunar maria (seas)
 - (d) The lunar highlands
6. With reference to the *Oxytocin hormone*, consider the following statements:
 1. It is naturally secreted by the pituitary glands of mammals.
 2. India had banned the use of Oxytocin in 2018.
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

7. Which of the following Indian states has recently issued an advisory banning the use of liquid nitrogen in food?
- (a) Bihar
 - (b) Tamil Nadu
 - (c) Andhra Pradesh
 - (d) Gujarat
8. Consider the following statements
1. Chloropicrin is only used in agriculture as a soil fumigant.
 2. Chloropicrin can be manufactured in a chemical reaction involving sodium hypochlorite and nitromethane.
- Which of the following statements given above is/are correct?
- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2
9. With reference to the *Artificial General Intelligence (AGI)*, consider the following statements:
1. It possesses cognitive abilities at par with humans.
 2. It is often known as the 'Generative AI'.
- 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
10. With reference to the Boeing Starliner, which of the following statements is/are correct?
1. It is a spacecraft that transports astronauts in space.
 2. It consists of a crew capsule and a service module.
- 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
11. With reference to the Magnetic Resonance Imaging (MRI), consider the following statements:
1. It is an invasive diagnostic procedure used to obtain images of soft tissues within the body.
 2. Paul Lauterbur and Peter Mansfield were awarded the medicine Nobel Prize in 2003 for their work in MRI technique.
- 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

12. What is *Fusobacterium nucleatum*, and what role does it play in human health?
- It is a type of virus that causes respiratory infections.
 - It is a bacterium commonly found in the human gut and oral cavity.
 - It is a type of fungus responsible for skin infections.
 - It is a parasite that affects the nervous system.
13. Which of the following statements is **not correct** regarding Chloropicrin?
- It is a toxic chemical used mainly as a pesticide.
 - In appearance, it is a colourless yellow oily liquid.
 - It causes severe irritation to eyes, skin, and respiratory tract on contact.
 - It is one of the few chemicals that is authorized for military use.
14. Consider the following statements:
- Ethylene oxide is used as a fumigating agent for spices.
 - Long-term exposure to ethylene oxide in humans can cause damage to the brain and nervous system.
- Which of the statements given above is/are correct?
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
15. With reference to the West Nile Fever, consider the following statements:
- It is a viral fever propagated via the bite of infected *Culex* mosquitoes among humans and animals.
 - The symptoms can be controlled after the vaccination of West Nile virus.
- Which of the statements given above is/are correct?
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
16. Consider the following statements
- Typhoid caused by the bacterium *Salmonella Typhi* which lives only in humans.
 - Typhoid is usually spread through contaminated food or water.
 - Electroencephalogram test is used to diagnose typhoid fever.
- How many of the statements given above are correct?
- Only one
 - Only two
 - All three
 - None
17. Widal Test, recently seen in the news is related to:
- Lassa Fever
 - Typhoid Fever
 - West Nile Fever
 - Monkey Fever

18. With reference to Thalassemia, consider the following statements:
1. It is a genetic disorder in which red blood cells (RBCs) have an abnormal crescent shape.
 2. It is seen in high frequency in parts of Africa, the Mediterranean region, the Middle East, and Asia.
- 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
19. With reference to the Nitrogen dioxide, which of the following statements is/are correct?
1. It is a reddish-brown, pungent, acidic gas that is corrosive and strongly oxidizing.
 2. Acid rain is caused by the release of sulfur dioxide and nitrogen oxides into the atmosphere.
- 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
20. With reference to Foot rot disease, which of the following statements is/are correct?
1. It is a fungal disease caused by the fungus *Fusarium Verticillioides*.
 2. It affects Basmati rice crops particularly at the seedling stage.
- 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
21. With reference to National Technology Day, which of the following statements is/are correct?
1. The day is observed to mark the successful nuclear tests in Pokhran.
 2. The theme for National Technology Day 2024 is 'Indigenous Technologies for Viksit Bharat'.
- 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
22. With reference to the '*National Technology Day*' in India, consider the following statements:
1. It is celebrated by the Technology Development Board of the Department of Science and Technology (DST) annually.
 2. It was started to honour the contribution of Homi J. Bhabha for the development of atomic energy.
 3. The annual Rashtriya Vigyan Puraskar Awards are announced on this day.
- How many of the statements given above are correct?
- (a) Only one
 - (b) Only two
 - (c) All three
 - (d) None

23. With reference to the *Technology Development Board (TDB)* of India, consider the following statements:
1. It is a statutory body constituted under the Technology Development Board Act (1995).
 2. It is the first organisation of its kind within the government framework with the sole objective of commercialising the indigenous research.
- 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
24. Consider the following statements:
- Statement 1:** Auroras, also known as polar lights, are mesmerizing displays of light in the sky primarily visible in high-latitude regions.
- Statement 2:** Auroras are caused by the collision of solar wind particles with the Earth's atmosphere at the magnetic poles.
- Which of the above given statements is/are correct?
- (a) Both Statement 1 and Statement 2 are correct.
 - (b) Both Statement 1 and Statement 2 are incorrect.
 - (c) Statement 1 is correct, but Statement 2 is incorrect.
 - (d) Statement 1 is incorrect, but Statement 2 is correct.
25. What is a significant advantage of 3D printing technology?
- (a) It requires large quantities of raw materials to operate efficiently.
 - (b) It is limited to producing simple geometric shapes.
 - (c) It enables the customization of products and reduces waste in manufacturing.
 - (d) It is a slow and inefficient manufacturing process compared to traditional methods.
26. Which one of the following is **not correct** regarding the *Xenotransplantation*?
- (a) It is the transfer of living cells, tissues, and/or organs from one species to another.
 - (b) It could potentially provide an unlimited supply of cells, tissues, and organs for humans.
 - (c) Any disease that is treated by human-to-human transplantation could potentially be treated by xenotransplantation.
 - (d) There are no potential risks of xenotransplantation.
27. What is the e-DNA method primarily used for?
- (a) Detecting electronic devices in the environment
 - (b) Analyzing genetic material extracted from electronic devices
 - (c) Monitoring environmental DNA for species identification
 - (d) Assessing the impact of electromagnetic fields on DNA integrity
28. Which one of the following is **not correct** regarding Hepatitis A?
- (a) It is an inflammation of the kidneys caused by the hepatitis A virus (HAV).
 - (b) The disease is closely associated with unsafe water or food, inadequate sanitation, poor personal hygiene and oral-anal sex.
 - (c) There is no specific treatment for hepatitis A.
 - (d) None of the above.

29. With reference to the *Coronal Mass Ejections (CMEs)*, consider the following statements:
1. CMEs are produced and reach the Earth at the speed of light.
 2. These are stronger than the background solar wind interplanetary magnetic field strength.
- 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
30. With reference to the NISAR satellite, which of the following statements is/are correct?
1. It is Jointly developed by the National Aeronautics and Space Administration (NASA) and the Indian Space Research Organisation (ISRO).
 2. NISAR can measure tectonic plate movements of Earth with accuracy.
- 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
31. Consider the following statements regarding the "Sangam: Digital Twin with AI-Driven Insights Initiative":
1. The Sangam initiative aims to create a digital twin of physical assets for enhanced decision-making using AI-driven insights.
 2. This initiative is a collaboration between the Government of India and private tech companies to improve urban planning and infrastructure management.
 3. Sangam focuses exclusively on the agricultural sector to increase crop yield through predictive analytics and smart farming techniques.
 4. The initiative integrates data from various sources, including IoT sensors, satellite imagery, and historical data, to provide real-time monitoring and predictive insights.
- Which of the statements given above are correct?
- (a) 1, 2, and 4 only
 - (b) 2 and 3 only
 - (c) 1 and 4 only
 - (d) 1, 2, 3, and 4
32. Which one of the following is **not correct** regarding colorectal cancer?
- (a) Family history of colorectal cancer or certain genetic conditions can increase the risk.
 - (b) The risk of colorectal cancer decreases with age.
 - (c) Common symptoms include diarrhoea, constipation, fatigue, and low iron levels.
 - (d) None of the above.
33. With reference to Ethylene oxide (ETO), which of the following statements is/are correct?
1. It is used as a disinfectant and sterilizing agent to reduce microbial contamination in spices.
 2. Different countries have different limits for ETO usage.

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

34. The term *TAK-003*, sometimes appeared in the news, is related to:

- (a) Missile Technology
- (b) Vaccine
- (c) Supercomputer
- (d) Space Debris

35. Which one of the following is **not correct** regarding the West Nile virus?

- (a) Birds are the natural hosts.
- (b) Symptoms include fever, headache, tiredness, and body aches.
- (c) The chances of human-to-human transmission are very high.
- (d) Currently, no vaccine is available for humans.

36. Which of the following is correct regarding the Lead (Pb)?

- (a) It is a soft and ductile metal.
- (b) It is used in various industries such as paints, cosmetics, dyes, and jewelry.
- (c) Lead Contamination affects brain development in children.
- (d) All of the above.

37. With reference to the Lunar Polar Exploration Mission (LUPEX), consider the following statements:

1. It is a joint moon mission of ROSCOSMOS (Russia) and Indian Space Research Organisation (ISRO).
2. The mission's primary objective is to explore the lunar surface and search for subsurface water.

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

38. Which of the following is **not correct** regarding Parkinson's disease?

- (a) Its common symptoms include tremors, painful muscle contractions and difficulty in speaking.
- (b) The disease only occurs in older people.
- (c) There is no cure and men are affected more often than women.
- (d) None of the above.

39. With reference to the nucleosynthesis, consider the following statements:

1. During the Big Bang Nucleosynthesis light elements like hydrogen, helium, and a small amount of lithium were formed.
2. Stellar Nucleosynthesis occurs within stars through nuclear fission reactions.

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

40. With reference to the Ethylene, consider the following statements:
1. Ethylene is not a naturally occurring hormone in fruits.
 2. The Food Safety and Standards Authority of India (FSSAI) has permitted the use of ethylene gas as a safer alternative for fruit ripening in India.
- Which of the statements given above is/are correct?
- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2
41. With reference to Psychedelic drugs, which of the following statements is/are correct?
1. These drugs have the tendency to alter one's conscious perception and thinking processes.
 2. Its consumption increases blood pressure, heart rate, and dilated pupils.
- 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
42. Which of the following is correct regarding Malaria?
- (a) It is caused by a parasite and does not spread from person to person.
 - (b) Blood transfusion and contaminated needles may also transmit malaria.
 - (c) It is preventable and curable.
 - (d) All of the above.
43. With reference to Venus, which of the following statements is/are correct?
1. It is the sixth largest planet in the solar system.
 2. The Venus atmosphere is made up of mainly carbon dioxide.
- 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
44. Consider the following statements
1. Primary Amebic Meningoencephalitis (PAM) is a rare brain infection that is caused by *Naegleria fowleri*.
 2. *Naegleria fowleri* lives in soil and enters the body through the nose.
- 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
45. A police car is chasing a speeding vehicle with its siren blaring. The frequency of the siren heard by the driver of the speeding vehicle compared to the frequency emitted by the siren is:

- (a) Higher
- (b) Lower
- (c) The same
- (d) Depends on the speed of sound

46. With reference to the *cyber crime in India*, consider the following statements:

- 1. It is defined in the Information Technology Act, 2000.
- 2. Indian Cyber Crime Coordination Centre (I4C) focuses on tackling all the issues related to Cybercrime in India.

Which of the statements given above is/are correct?

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

47. Consider the following statements about radiation processing:

- 1. It involves the use of ionizing radiation, such as gamma rays or electron beams, to modify materials, sterilize medical products, and preserve food.
- 2. Radiation processing induces radioactivity in the treated materials, making them unsafe for human use or consumption.
- 3. The International Atomic Energy Agency (IAEA) establishes international standards and guidelines for the safe and effective use of radiation processing.

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

48. Which among the following are the examples of the Astronomical Transients?

- 1. Supernovae
- 2. Gamma-ray bursts (GRBs)
- 3. Active galactic nucleus (AGN)
- 4. Fast radio burst (FRB)

Select the correct answer using the code given below:

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

49. 'PREFIRE mission', recently seen in the news, will

- (a) Measure the far-infrared radiation emitted by the Earth's polar regions.
- (b) Observe the dynamics of the Sun's chromosphere and corona.
- (c) Conduct a comprehensive study of Venus.
- (d) Send astronauts to Low Earth Orbit (LEO).

50. With reference to the Electromagnetic Waves, which of the following statements is/are correct?
1. Human vision is restricted to wavelengths from 400 nm to 700 nm.
 2. Mosquitoes can access information in some wavelengths of infrared radiation.
- 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
51. With reference to Nephrotic syndrome, consider the following statements:
1. It is associated with a genetic disorder affecting the brain cells.
 2. Damage to podocytes is the main cause of nephrotic syndrome.
- 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
52. The *Magellan Mission of NASA*, sometimes appeared in the news, is in context of:
- (a) Venus
 - (b) Mars
 - (c) Sun
 - (d) Uranus
53. With reference to Malaria disease, which of the following statements is/are correct?
1. It is caused by bacteria which spreads through the bites of infected male *Anopheles* mosquitoes.
 2. Currently there is no vaccine available that can prevent the disease.
- 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
54. With reference to the Magellan mission, consider the following statements:
1. It was the first spacecraft to land on Venus.
 2. The mission revealed evidence of tectonic activity on Venus.
 3. The Magellan mission was launched by the European Space Agency (ESA).
- Which of the statements given above is/are correct?
- (a) 1 and 2 only
 - (b) 2 only
 - (c) 3 only
 - (d) 1, 2 and 3 only
55. Jumping genes, also known as transposable elements, are primarily responsible for which of the following?

- (a) Repairing damaged DNA sequences
 - (b) Activating or deactivating nearby genes
 - (c) Encoding proteins for cellular metabolism
 - (d) Regulating gene expression through epigenetic modifications
56. Consider the following statements regarding lab-grown diamonds:
- 1. Lab-grown diamonds are chemically and physically identical to mined diamonds.
 - 2. Lab-grown diamonds are significantly less expensive than mined diamonds.
 - 3. The production of lab-grown diamonds has a higher environmental impact than mining natural diamonds.
 - 4. Lab-grown diamonds can be distinguished from mined diamonds with the naked eye.
- Which of the statements given above are correct?
- (a) 1 and 2 only
 - (b) 2 and 3 only
 - (c) 1, 2, and 4 only
 - (d) 3 and 4 only
57. It is a condition in which a baby's head is much smaller than normal. Most children with this condition have poor speech, and abnormal facial features. Which of the following has been described above?
- (a) Parkinson's disease
 - (b) Schizophrenia
 - (c) Dementia
 - (d) Microcephaly
58. With reference to EarthCARE Mission, which of the following statements is/are correct?
- 1. It is a joint venture between ESA (European Space Agency) and JAXA (Japan Aerospace Exploration Agency).
 - 2. It will advance the understanding of the influence of clouds on the climate.
- 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

EXPLANATIONS (Science & Technology)

1. (d)
- **News:** Recently, AstraZeneca has admitted that its Covishield vaccine could cause **Thrombosis** with **Thrombocytopenia Syndrome (TTS)**.
- What is Thrombosis Thrombocytopenia Syndrome (TTS)?
- It is a rare but serious condition characterized by blood clot formation coupled with low platelet counts.
 - It often involves unusual blood clot locations, such as in the brain or abdomen.

Symptoms of TTS

- Symptoms of TTS may include: severe headaches, blurred vision, shortness of breath, leg swelling, persistent abdominal pain, and tiny blood spots under the skin beyond the injection site.

Treatment

- Continuous monitoring and prompt medical attention for symptoms are recommended strategies for managing the risk.

2. (d)

In News: The West Zone Task Force of the Hyderabad police seized about 4,800 kg mangoes artificially ripened with ethylene.

About Ethylene

- Ethylene appears as a colourless gas with a sweet odour and taste.
- It is lighter than air. It is easily ignited and a flame can easily flash back to the source of the leak.
- It is an important natural hormone and is used in horticulture to force the ripening of fruits.
 - It enhances the respiration rate during ripening of the fruits.
- Due to high cost and scarce availability of ethylene gas, traders often use unsafe and banned ripeners like carbide gas which can be potentially harmful to health.

3. (b)

In News: According to the 2024 Data Breach Investigations Report by Verizon Business, India is one of the key countries affected by phishing attacks.

What is a Phishing Attack?

- **Phishing is a type of cyberattack** which attempts to steal sensitive information, typically in the form of usernames, passwords, credit card numbers, bank account information or other important data in order to utilize or sell the stolen information.

4. (b)

Quarks are the fundamental building blocks of matter. They are classified as elementary particles, meaning they aren't made up of any smaller known particles.

- Quarks **never exist alone**. They bind together in groups of two or three, through the force mediated by gluons (another fundamental particle), to form composite particles called hadrons. Protons and neutrons are the most stable hadrons.
- Unlike electrons with their negative whole number charge, **quarks have fractional electric charges**.
- There are **six types of quarks**: up, down, charm, strange, top, and bottom.
- The specific combination of quarks, their types (up, down, charm, strange, top, and bottom) and their arrangement, determines the properties of the hadron they form, such as protons, neutrons, and mesons.

5. (b)

ISRO study has revealed evidence for enhanced possibility of water ice occurrence in the polar craters of the Moon.

Key Findings of the Study

- **Source of Ice:** The primary source of sub-surface water ice in the lunar poles is outgassing during volcanism in the Imbrian period.
- **Presence of Water Ice:** There is twice as much water ice in the northern polar region compared to the southern polar region.

Significance

- This study is crucial for supporting ISRO's future in-situ volatile exploration plans on the Moon and long-term human presence.
- The findings of this study also supports the earlier study of Chandrayaan-2 related to presence of water on the moon.

6. (c)

In News : Recently, the Delhi High Court has taken serious note of the continued use of the Oxytocin in dairies across the national capital.

Statement 1 is correct:

- **Oxytocin** is a hormone that is **naturally secreted by the pituitary glands of mammals** during sex, childbirth, lactation, or social bonding.
- It is being administered to cattle to force milk let-down and increase the production of milk.

Statement 2 is correct:

- The **Union government** had **banned the use of Oxytocin in 2018**, citing its misuse on milch cattle to increase yield.

7. (b)

Context

- The Tamil Nadu government issued an advisory banning the use of liquid nitrogen in food.

Liquid Nitrogen

- It is inert, colorless, odorless, non-flammable, non-corrosive and extremely cold.
- It has a very low boiling point of -196°C , and is present as a gas at room temperatures.
- **Health Impacts:** It can cause health complications including tissue damage, internal injuries from swallowing, and asphyxiation due to oxygen displacement.
 - Children, the elderly, and those with respiratory conditions are particularly vulnerable to liquid nitrogen's dangers.
- **Applications:** Liquid nitrogen is employed in culinary settings primarily for its rapid freezing capabilities and dramatic visual effect.

8. (b)

The U.S. The State Department accused Russia of having used chloropicrin as a chemical weapon against Ukrainian forces in violation of the Chemical Weapons Convention.

Statement 1 is not correct: The chemical compound chloropicrin is used both as a warfare agent and pesticide.

- If inhaled, it poses a health risk.
- It is also known as nitrochloroform and is also employed as an antimicrobial agent, and as a herbicide and nematicide.

Statement 2 is correct : It's manufactured today in a chemical reaction involving sodium hypochlorite (which in dilute form is called bleach) and nitromethane (a common industrial solvent).

- It can also be made by **combining chloroform** with **nitric acid**, which yields chloropicrin and water.
- **Instances of Usage :** It was made as a poison gas in the First World War, by both the **Allied and the Central Powers**.
 - It has also been used as a chemical warfare agent and a riot control agent. It was used in large quantities during World War I and was stockpiled during World War II.

9. (a)

In News : Recently, Sam Altman, CEO of OpenAI, expressed plans to invest billions of dollars towards the development of Artificial General Intelligence (AGI).

Statement 1 is correct:

- AGI is a concept that represents a **futuristic vision** where **machines possess cognitive abilities at par with humans**, capable of reasoning, problem-solving, perception, learning, and language comprehension.
- It is defined as AI that is at least as good as humans at nearly all of the cognitive things that humans do.

Statement 2 is not correct:

- Generative AI and AGI both are different.
- **AGI is often confused with generative AI**, which includes AI systems that generate new documents, images, and sounds.
 - However, AGI is a more **nebulous and profound concept**.

10. (c)

Both the Statements are correct.

Context

- Indian-origin astronaut Captain Sunita Williams and her colleague are set to embark on a mission to the International Space Station (ISS) Boeing Starliner spacecraft.

About

- **Starliner** is a spacecraft that **transports astronauts in space**, after being launched there by a rocket.
- It consists of a crew capsule and a service module.
- **The crew capsule** houses the astronauts and will be able to survive reentry and return to the ground.
- **The service module** consists of the equipment and systems the astronauts need to survive in space, including air and temperature control, water supply, sanitation, etc.
 - It also consists of engines and fuel required to maneuver the spacecraft. The service module won't be reusable.

11. (b)

Statement 1 is not correct: Magnetic resonance imaging (MRI) is used to obtain **images of soft tissues within the body**.

- It is a **non-invasive diagnostic procedure** widely used to image the brain, the cardiovascular system, the spinal cord and joints, various muscles, the liver, arteries, etc.

Statement 2 is correct: The technique was developed in the early 1970s; later the same decade, Paul Lauterbur and Peter Mansfield refined them for their commercial use.

- They were awarded the medicine **Nobel Prize in 2003**, speaking to the significance of the technique and its place in modern medical diagnostics.

12. (b)

Fusobacterium nucleatum is a gram-negative anaerobic bacterium that is part of the normal flora of the human oral cavity and gastrointestinal tract. While it is generally considered harmless in healthy individuals, it has been implicated in various infections and diseases, including periodontal disease, colorectal cancer, and certain systemic infections. Understanding its role in human health is crucial for disease prevention and management.

13. (d)

News: Recently, the US has condemned Russia for using Chloropicrin on Ukraine troops.

What is Chloropicrin?

- Chloropicrin is a toxic chemical used mainly as a pesticide.
- In appearance, it is a colourless to yellow oily liquid.
- Chloropicrin causes severe irritation to eyes, skin, respiratory tract, and gastrointestinal tract on contact.
- It was used in large quantities during World War I and was stockpiled during World War II. However, it is no longer authorized for military use.

14. (c)

News: Recently, Hong Kong and Singapore have banned the sale of popular Indian spice brands (MDH and Everest) for allegedly containing traces of ethylene oxide above the permissible levels.

About ethylene oxide

- The major use of ethylene oxide is as a chemical intermediate in the manufacture of ethylene glycol.
- It is also used as a sterilizing agent for medical equipment and a **fumigating agent** for spices.
- Health Impacts:
 - The acute (short-term) effects of ethylene oxide in humans consist mainly of central nervous system depression and irritation of the eyes and mucous membranes.
 - Chronic (long-term) exposure to ethylene oxide in humans can cause irritation of the eyes, skin, nose, throat, and lungs, and **damage to the brain and nervous system**.

15. (a)

Statement 1 is correct: West Nile Virus (WNV) is a member of the **flavivirus genus** and belongs to the Japanese encephalitis antigenic complex of the family **Flaviviridae**.

- The **single-stranded RNA virus originates in birds** and is propagated via the bite of infected **Culex mosquitoes among humans and animals**.
 - The chances of human-to-human transmission are low.

Statement 2 is not correct: There is no vaccine available for the infection caused by the West Nile virus.

16. (b)

In News: Recently, it has been observed in India, clinicians use the Widal test extensively to diagnose typhoid in both public and private sectors.

Statements 1 and 2 are correct: Typhoid fever is a life-threatening infection caused by the bacterium *Salmonella Typhi*.

- *Salmonella Typhi* lives only in humans.
- It is also known as enteric fever.
- It is usually spread through **contaminated food or water**.
- Urbanization and climate change have the potential to increase the global burden of typhoid. In addition, increasing resistance to antibiotic treatment is making it easier for typhoid to spread in communities that lack access to safe drinking water or adequate sanitation.

Statement 3 is not correct : Widal Test is named after its inventor, Georges-Fernand Widal,

- It is done to detect the presence of serum agglutinins or antibodies (H and O) in individuals who have typhoid and paratyphoid fever.

17. (b)

Context: The 'Widal Test' is used to diagnose typhoid fever.

Widal Test

- Developed in the late 1800s by the French physician Georges-Fernand Widal.
- It's a point-of-care test and doesn't need special skills or infrastructure.
- However, it is no longer used in many countries because of its flaws.

Typhoid fever

- It is caused by the bacterium *Salmonella Typhi*.
- Its symptoms include prolonged high fever, fatigue, headache, nausea, abdominal pain, and constipation or diarrhoea.
- Typhoid fever can be treated with antibiotics.

18. (b)

Statement 1 is not correct: Thalassemia: It is an **inherited genetic hemoglobinopathy**, a group of disorders that lead to **defective production of haemoglobin** synthesis in the body.

- This results in **low production of red blood cells** and a lack of oxygenated blood supply to the body parts.
- **Sickle Cell Anemia** is a genetic disorder in which red blood cells (RBCs) have an abnormal crescent shape.

Statement 2 is correct: Risk Group: Anybody can develop the disease, but those with a family history have a higher risk.

- It is seen in high frequency in parts of Africa, the Mediterranean region, the Middle East, and Asia. It is also found in malaria-endemic areas.

19. (c)

Both the Statements are correct.

Nitrogen dioxide (NO₂)

- Nitrogen dioxide is a **reddish-brown, pungent, acidic gas** that is corrosive and strongly oxidizing.

Effects of nitrogen dioxide (NO₂)

- **Health:** Nitrogen dioxide can decrease the lungs' defenses against bacteria making them more susceptible to infections. It can also aggravate asthma.

- **Ecosystem:** Nitrogen dioxide is toxic to plants in short-term concentrations of $120 \mu\text{g}/\text{m}^3$. It reduces plant growth.
 - Along with sulfur dioxide, nitrogen dioxide can cause **acid rain**.
 - Nitrogen dioxide can form secondary particles called nitrates that cause haze and reduce visibility.

20. (c)

Both the Statements are correct.

Foot rot disease

- **Foot rot is a fungal disease** caused by the fungus **Fusarium Verticillioides**.
- It affects **Basmati rice** crops particularly at the seedling stage. It might also cause infection after transplantation in case infected seedlings are transplanted.
- Rice is cultivated in two stages. Seeds are first sown in a nursery bed, where they sprout and grow into seedlings.
 - Then they are transplanted into a well-puddled and prepared field.
- The pathogen spreads the **infection through the root of the plant**, and eventually leads to the colonization of the stem base.

21. (a)

News: Recently, the Defence Research and Development Organisation (DRDO) celebrated the National Technology Day 2024.

About

- National Technology Day is celebrated on May 11 every year to remember the successful **nuclear test** conducted by India and recognise & honour the significant contributions of scientists and engineers who have played a crucial role in the country's technological progress.
- It also serves as a reminder of the importance of science and technology in nation-building.
- The celebration of National Technology Day was started by former Prime Minister Shri Atal Bihari Vajpayee in 1999 to honour Indian scientists, engineers and technologists, who worked for India's scientific and technological advancement and ensured the successful conduct of **Pokhran tests** in May 1998.
 - Since then, National Technology Day is observed every year on May 11.
- The theme for 2024 is **"From Schools to Startups: Igniting Young Minds to Innovate"**.

22. (b)

Statement 1 is correct: **National Technology Day** is celebrated by the **Technology Development Board (TDB)** of the Department of Science and Technology (DST).

- **Theme for 2024:** *'Promoting Clean and Green Technologies for a Sustainable Future'*.

Statement 2 is not correct: The inception of National Technology Day dates back to **May 11, 1998**, when India successfully conducted **Pokhran-II Nuclear Tests** under the codename '**Operation Shakti**'.

- The then Prime Minister, Atal Bihari Vajpayee, declared **May 11 as National Technology Day**, and since then, the day has been **celebrated annually to highlight India's technological progress**.

Statement 3 is correct: The **Rashtriya Vigyan Puraskar** Awards, akin to the prestigious Padma awards, are announced annually on National Technology Day.

- These awards, which **do not include any cash component**, bestow a **certificate and medallion** on the awardee, recognizing their contributions to their respective fields and the country's development.

23. (c)

Statement 1 is correct: Technology Development Board (TDB) was constituted in 1996 under the Technology Development Board Act, 1995, as a **statutory body**, to promote development and commercialization of indigenous technology and adaptation of imported technology for wider application.

Statement 2 is correct: It provides **equity capital or loans** (*at a simple interest rate of 5% per annum*) to industrial concerns and financial assistance to research and development institutions.

- It is the **first organisation** of its kind within the government framework with the **sole objective of commercialising the indigenous research**.

24. (a)

Statement 1 is correct: Auroras, also known as polar lights (aurora borealis in the north and aurora australis in the south), are captivating natural light displays that occur primarily in the high-latitude regions (near the Arctic and Antarctic circles).

Statement 2 is correct: This statement is also correct. Auroras are caused by the interaction of charged particles (protons and electrons) from the solar wind with the Earth's magnetosphere. The magnetosphere is a region around Earth influenced by its magnetic field. When these energetic particles collide with atoms and molecules in the upper atmosphere (mainly oxygen and nitrogen), they excite them to higher energy levels. As these excited atoms and molecules return to their ground state, they release energy in the form of light, creating the spectacular auroral displays.

25. (c)

The term 3D printing is typically used to refer to all types of additive manufacturing.

- It refers to the transformation of a **digital CAD (Computer-Aided Design) file into a three-dimensional physical solid object or part**.
- It typically does this by depositing material layer by layer in precise geometric shapes using a printhead, nozzle, or other printing technology.
 - It is an additive process, in which layers of a material like plastic, composites or bio-materials are built up to construct objects that range in shape, size, rigidity, and colour.

Benefits

- 3D printing technology, which has the potential to revolutionize the construction industry, offers unprecedented design freedom, **reduces material waste**, and significantly reduces construction time.
- It enables the creation of complex architectural forms that would be challenging to achieve with traditional methods.
- It allows for the **customization and optimization** of building components.

26. (d)

News: Recently, the first human recipient of pig kidney transplant passed away.

What is xenotransplantation?

- Xenotransplantation is the transfer of living cells, tissues, and/or organs from one species to another.

What are the potential benefits of xenotransplantation?

- Xenotransplantation could potentially provide an unlimited supply of cells, tissues, and organs for humans.
- Any disease that is treated by human-to-human transplantation could potentially be treated by xenotransplantation.

What are the potential risks of xenotransplantation?

- The most serious risk of xenotransplantation appears to be cross-species transmission of undetected or unidentified animal infectious agents to patients that could, in turn, be transmitted to the general public.
- Some of the other scientific concerns surrounding xenotransplantation include immune rejection, uncertain efficacy/viability (whether it will work), and whether high levels of immunosuppression will leave the patient vulnerable to more frequent infectious diseases or cancer.

27. (c)

Recently, the Centre for Cellular and Molecular Biology (CCMB) found that the sailfin catfish has spread to nearly 60% in the water bodies of Eastern Ghats using eDNA method.

eDNA refers to the genetic material obtained from environmental samples such as soil, water, or air. It is used to detect and identify species present in a particular environment.

28. (a)

News: Kerala is seeing its worst outbreak of the Hepatitis A virus in recent years.

About

- Hepatitis A is an inflammation of the **liver** caused by the hepatitis A virus (HAV).
- The virus is primarily spread when an uninfected (and unvaccinated) person ingests food or water that is contaminated with the faeces of an infected person.
- The disease is closely associated with **unsafe water or food, inadequate sanitation, poor personal hygiene and oral-anal sex**.
- Infection is common in low- and middle-income countries with poor sanitary conditions and hygienic practices, and most children (90%) have been infected with hepatitis.
- There is **no specific treatment** for hepatitis A. Recovery from symptoms following infection may be slow and can take several weeks or months. It is important to avoid unnecessary medications that can adversely affect the liver, e.g. acetaminophen, paracetamol.

29. (b)

Statement 1 is not correct

- Explosions that occur on the Sun (Two Main types) of:
 - Solar Flares
 - Coronal Mass Ejections (CMEs)
- Unlike the **energy and X-rays produced in a solar flare**, which can reach Earth at the **speed of light in eight minutes**, CMEs are giant clouds of solar material that take one to three days to reach Earth.

Statement 2 is correct

- The outer solar atmosphere, known as the corona, is **structured by strong magnetic fields**.
- **Coronal Mass Ejections (CMEs)** are large expulsions of **plasma and magnetic fields (frozen in flux)**

from the Sun's corona.

- These are **stronger than the background solar wind** interplanetary magnetic field strength.

30. (c)

Both the Statements are correct.

NISAR Satellite

- NISAR is an Earth-observation satellite that stands for **(NASA-ISRO Synthetic Aperture Radar)**.
- It is Jointly developed by the **National Aeronautics and Space Administration (NASA)** and the **Indian Space Research Organisation** under a partnership agreement signed in **2014**.
- It will be launched into a **polar Sun-synchronous dawn-dusk orbit**.

Objectives of the Mission

- NISAR can **measure tectonic plate movements** accurately. So a lot of geological, agricultural and water-related observations can be obtained from this satellite.
- It can study the **water-stressing, climate change-related issues, agricultural changes through patterns, yield, desertification and continental movements** precisely with respect to annual water cycle movements.
- NISAR's data can help people worldwide **better manage natural resources and hazards**, as well as providing information for scientists to better understand the effects and pace of climate change.

31. (a)

The "Sangam: Digital Twin with AI-Driven Insights Initiative" is designed to create digital twins of physical assets to enhance decision-making through AI-driven insights. It is a collaborative effort aimed at improving urban planning and infrastructure management, integrating data from various sources for real-time monitoring and predictive insights. The initiative is not exclusive to the agricultural sector, hence statement 3 is not correct.

32. (b)

Colorectal cancer is a type of cancer that affects the colon (large intestine) or rectum.

About

- The risk of colorectal cancer **increases** with age. Most cases affect people over 50 years old.
- Family history of colorectal cancer or **certain genetic conditions**, such as Lynch syndrome and familial adenomatous polyposis (FAP), can increase the risk.
- Common **symptoms include** diarrhoea, constipation, blood in the stool, abdominal pain, unexplained weight loss, fatigue, and low iron levels.
- **Treatments include:** surgery, radiotherapy (radiation), chemotherapy, targeted therapy and immunotherapy.

33. (c)

Both the Statements are correct.

Context

- India has asked CODEX committee to set limits on the use of ethylene oxide in spices, amid a sales ban on two popular Indian brands.

About

- India has taken up with the CODEX committee the need for setting up limits for ETO usage as **different countries have different limits**.
- CODEX has not prescribed a limit so far. Also, there is **no standard** for ETO testing.

Ethylene oxide (ETO)

- Ethylene oxide is generally used as a **disinfectant, sterilizing agent**, as well as an insecticide to reduce microbial contamination in spices.
- However, its use is considered carcinogenic, beyond permissible limits.

34. (b)

In News: Recently, the World Health Organisation (WHO) announced the prequalification of a TAK-003, second vaccine for dengue.

- TAK-003 is a **live-attenuated vaccine** containing weakened versions of the **four serotypes of the virus** that cause dengue, helping the body to build immunity without causing the disease.
- It is developed by the Japanese drug maker Takeda Pharmaceuticals.

Administration and Use

- TAK-003 can be administered to **children aged 6 to 16 years**, with a high dengue burden and transmission intensity.
- The vaccine should be administered in a 2-dose schedule with a 3-month interval between doses, as per the WHO.
- The UK, Brazil, Argentina, Indonesia and Thailand have approved TAK-003.

35. (c)

Context: The West Nile virus (WNV) has become a cause of concern across Kerala.

West Nile virus (WNV)

- It is a member of the **flavivirus genus** and belongs to the Japanese encephalitis antigenic complex of the family Flaviviridae.
- Birds are the **natural hosts** of West Nile virus.
- The chances of human-to-human transmission are **low**.
- **Symptoms** include fever, headache, tiredness, and body aches, nausea, vomiting, occasionally with a skin rash (on the trunk of the body) and swollen lymph glands.
- Vaccines are available for use in horses but **not yet available for people**.

36. (d)

Context: Researchers have developed a compact and inexpensive technology for detecting and measuring lead concentrations in water.

What is Lead (Pb)?

- **Bluish-white in color**, it is a **soft and ductile metal**.
- It is a **naturally occurring toxic metal** found in the Earth's crust.
- **Lead is used** in various industries such as paints, cosmetics, dyes, ammunition, and jewelry, among numerous others, but the battery sector remains the major consumer of this metal by utilizing around **85 percent** of the production.

Lead Contamination

- The World Health Organization estimates that **240 million** people worldwide are exposed to drinking water that contains unsafe amounts of toxic lead.
- It **affects** brain development in children, and produces a variety of neurological, cardiac, and other damaging effects.
- There is no known safe blood lead concentration; even blood lead concentrations as low as **3.5 µg/dL** may be associated with decreased intelligence in children, behavioral difficulties and learning problems.

37. (b)

Statement 1 is not correct: It is a joint mission of **Japan Aerospace Exploration Agency (JAXA)** and **Indian Space Research Organisation (ISRO)**.

Statement 2 is correct: The mission's primary objective is to **explore the lunar surface and search for subsurface water**.

- It will also investigate its **quantity, distribution on the lunar surface and below ground, and form**, such as the level of mixing with dry regolith, the layer of loose unconsolidated rock and dust that sits atop a layer of bedrock.

38. (b)

Context: According to a recent study, published in the **Journal of Cell Science**, balancing two forms of SNCA protein could help in managing Parkinson's disease.

What is Parkinson's disease?

- Parkinson's disease (PD) is a brain condition that causes problems with movement, mental health, sleep, pain and other health issues.
- PD gets worse over time. There is **no cure**, but therapies and medicines can reduce symptoms.
- **Common symptoms** include tremors, painful muscle contractions and difficulty speaking.
- The disease **usually** occurs in older people, but **younger people can also be affected**. Men are affected **more often** than women.

39. (a)

Statement 1 is correct: Nucleosynthesis is the **process** by which elements are formed within **stars or during cosmic events like supernovae**.

- **Big Bang Nucleosynthesis (BBN):** This occurred in the first few minutes after the Big Bang when the universe was hot and dense enough for nuclear reactions to occur. **During BBN, light elements like hydrogen, helium, and a small amount of lithium were formed.**

Statement 2 is not correct: Stellar Nucleosynthesis: This occurs within stars through **nuclear fusion reactions**. Hydrogen fuses into helium in the core of stars like our Sun.

More massive stars can continue this process, creating heavier elements up to iron through successive fusion reactions in their cores.

40. (b)

Statement 1 is not correct: Ethylene, **a naturally occurring hormone in fruits**, regulates the ripening process by initiating and controlling a series of chemical and biochemical activities.

Statement 2 is correct: FSSAI has permitted the use of ethylene gas as a safer alternative for fruit ripening in India.

- Ethylene gas can be used at concentrations up to 100 ppm (100 µl/L), depending upon the crop, variety and maturity.
- The treatment of unripe fruits with ethylene gas triggers the natural ripening process until the fruit itself starts producing ethylene in substantial quantities.

41. (c)

Both the Statements are correct.

Psychedelic drug

- **Psychedelics or psychedelic drugs**, are a subclass of a broader class of drugs commonly referred to as **hallucinogenic drugs**.
- These drugs alter one's conscious perception and thinking processes (cognition) in such a manner that the individual's conscious experience of the world is altered in a way different than other drugs alter it.

Effects of Psychedelics

- Dizziness, muscle weakness, ataxia (impaired muscle coordination), a rise in body temperature, and increased reflexes.
- Increases blood pressure, heart rate, and dilated pupils.

42. (d)

News: Recently, Serum Institute of India (SII) has shipped the first batch of its **R21/Matrix-M malaria vaccine** to Africa.

Malaria

- It is **caused by a parasite** and does not spread from person to person.
- Malaria mostly spreads to people through the bites of some infected female Anopheles mosquitoes. **Blood transfusion and contaminated needles** may also transmit malaria.
- Mostly found in tropical countries, it is **preventable** and curable.

43. (c)

Both the Statements are correct.

Venus

- Venus is the second planet from the Sun, and the sixth largest planet. It's the hottest planet in our solar system.
 - Its surface temperature is nearly **900 degrees Fahrenheit**.
- **Composition:** Venus is made up of a **central iron core** and a rocky mantle, similar in composition to Earth.
- **Atmosphere:** Venus' atmosphere is made up of mainly **carbon dioxide (96%)** and **nitrogen (3.5%)** with trace amounts of carbon monoxide, sulfur dioxide, water vapor, argon, and helium making up the other **0.5%**.

44. (c)

In News: A five-year-old girl undergoing treatment for primary amoebic meningoencephalitis (PAM) died in Kozhikode

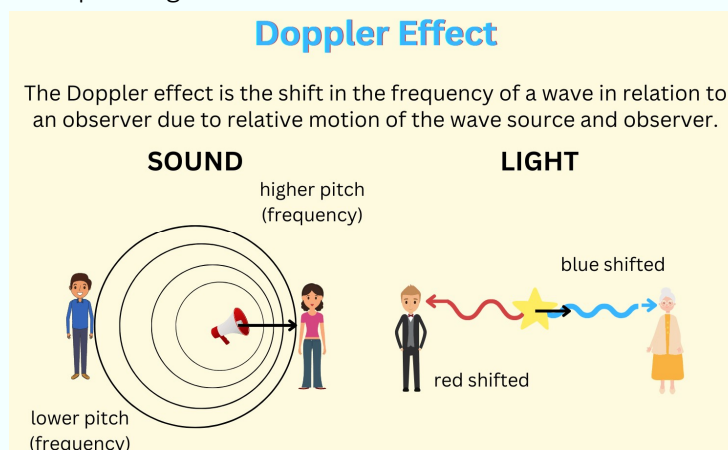
Statement 1 is correct : Primary amebic meningoencephalitis (PAM) is a rare brain infection that is caused by *Naegleria fowleri*. It is a free-living amoeba or a single-celled living organism.

Statement 2 is correct : *Naegleria fowleri* lives in soil and warm freshwater lakes, rivers, ponds, and hot springs around the world.

- *Naegleria fowleri* **enters the body through the nose**, usually when people are swimming.
- In very rare cases, *Naegleria fowleri* has been found in poorly maintained swimming pools, splash pads, and other recreational venues.

45. (a)

The Doppler effect describes the change in frequency or wavelength of a wave as the source and observer move relative to each other. In this scenario, the police car (source) is moving towards the speeding vehicle (observer). This causes the sound waves to be compressed, resulting in a higher frequency (pitch) heard by the driver of the speeding vehicle.



46. (b)

In News: Recently, the CEO of the Indian Cyber Crime Coordination Centre (I4C) highlighted that India has witnessed a sharp increase in cybercrime incidents, averaging more than 7,000 complaints daily up to May this year.

Statement 1 is not correct

- Cyber Crime is **not defined in Information Technology Act 2000** nor in the I.T. Amendment Act 2008 **nor in any other legislation in India.**
- However, the IT Act defines a computer, computer network, data, information and all other necessary ingredients that form part of a cyber crime.
- It is interpreted as **any offence or crime** in which a **computer is used is a cyber crime.**

Statement 2 is correct

- Indian Cyber Crime Coordination Centre (I4C) is an initiative of the Union Ministry of Home Affairs (MHA) to deal with cyber crime in the country in a coordinated and comprehensive manner.
- It focuses on **tackling all the issues related to Cybercrime** for the citizens, which includes improving coordination between various Law Enforcement Agencies and the stakeholders.

47. (c)

Statement 1 is correct: Radiation processing utilizes ionizing radiation to achieve various beneficial effects, including sterilization, disinfection, and material modification.

- **Statement 2 is incorrect:** Radiation processing does not induce radioactivity in the treated materials if the appropriate energy levels and dosages are used.
- **Statement 3 is correct:** The IAEA plays a crucial role in establishing safety standards and promoting the responsible use of radiation processing technology worldwide.

48. (d)

What are Astronomical Transients?

- In astronomy, a 'transient' is any **celestial object whose brightness changes in short spans of time**.
- There are many kinds of astronomical transients, all of them united by **phenomena that are violent in some measure**.
- Astronomers study transients to understand where their violence comes from and what that can tell us about non-transient events.

Examples of Astronomical Transients

- Supernovae
- Active galactic nucleus (AGN)
- Fast radio burst (FRB)
- Gamma-ray bursts (GRBs)

49. (a)

News: NASA has successfully launched the climate satellite named **"Ready, Aim, PREFIRE,"** to study heat emissions at Earth's poles.

About

- It is one of the two climate satellites that are part of the **PREFIRE mission**. The other is **"PREFIRE and ICE,"** and will be launched in the coming days.

What is PREFIRE mission?

- PREFIRE stands for **"Polar Radiant Energy in the Far-InfraRed Experiment"**.
- The mission consists of two shoebox-sized CubeSats, each equipped with a sophisticated thermal infrared spectrometer capable of **measuring the far-infrared radiation** emitted by the Earth's coldest and most remote regions.

Significance

- Its observations will help in understanding the fundamentals of Earth's heat balance, allowing us to better predict how ice, seas, and weather will change in the face of global warming.
- The mission also focuses on heat emitted as far-infrared radiation by the Arctic and Antarctica, which is currently not measured in detail.

50. (c)

Both the Statements are correct.

What is colour?

- **Colour is a type of information** our eyes receive and process based on electromagnetic radiation.
- An object by itself can't be said to have a colour — but based on which frequencies of visible-light radiation it absorbs, reflects, and/or scatters, we can perceive the object to have a particular colour.

How do human eyes perceive colours?

- In the human eye, the **rod and the cone cells** receive information in the light that strikes the eye.
- The rod cells record brightness while the cone cells record the wavelengths, which the human brain interprets as colour.
 - Humans possess three types of cone cells and are called **trichromats**.
- Human vision is restricted to wavelengths from **400 nm to 700 nm**.
 - **Honeybees** can also see **ultraviolet light** and **mosquitoes** and some beetles can access information in some **wavelengths of infrared radiation**.

51. (b)

Statement 1 is not correct: Nephrotic syndrome is defined by **increased urine protein levels** associated with **kidney disorders**, including membranous nephropathy (MN), primary focal segmental glomerulosclerosis (FSGS), and minimal change disease (MCD).

Statement 2 is correct: Damage to **podocytes**, the kidney's filtering cells, is the main cause of nephrotic syndrome because **it permits protein to seep into the urine**.

52. (a)

The **Magellan Mission of NASA**, launched in 1989, provided **crucial insights into Venus geology**. The spacecraft used **Synthetic Aperture Radar to map 98% of Venus' surface** between 1990 and 1992 that revealed features that hinted at a **tumultuous volcanic past**.

53. (d)

Both the statements are not correct.

- **Malaria** is a life-threatening disease spread to humans by some types of mosquitoes. It is mostly found in tropical countries.
- **Transmission:** It is caused by **plasmodium protozoa**. The **plasmodium parasites** spread through the bites of infected **female Anopheles** mosquitoes.
 - Blood transfusion and contaminated needles may also transmit malaria.
- The **R21/Matrix-M malaria vaccine** has been recommended for use by the World Health Organisation (WHO) after meeting required safety, quality and effectiveness standards.
- **Types of parasites:** There are 5 Plasmodium parasite species that cause malaria in humans and 2 of these species – **P. falciparum** and **P. vivax** – pose the greatest threat. The other malaria species which can infect humans are **P. malariae, P. ovale** and **P. knowlesi**.
- The vaccine has been developed by the **University of Oxford and the Serum Institute of India**, leveraging Novavax's adjuvant technology.

54. (b)

Statement 1 is not correct: Magellan did not land on Venus; it orbited the planet and used radar to map the surface. Magellan was designed to use SAR, a technique that allowed for high-resolution imaging of Venus's surface despite the planet's thick atmosphere.

Statement 2 is correct: The mission revealed evidence of volcanism, tectonic activity (though not plate tectonics as we know it on Earth), and turbulent surface winds.

Statement 3 is not correct: The Magellan mission was launched by NASA, not ESA.

55. (b)

Jumping genes, or transposable elements, have the ability to move within the genome and can activate or deactivate nearby genes. This movement and activity can lead to genetic mutations and contribute to genome evolution.

56. (a)

Statement 1 is correct: Lab-grown diamonds have the same chemical composition, crystal structure, and physical properties as mined diamonds. They are essentially identical except for their origin.

Statement 2 is correct: Lab-grown diamonds are generally less expensive than mined diamonds due to differences in production methods and costs.

Statement 3 is not correct: Lab-grown diamonds typically have a lower environmental impact than mined diamonds, as they do not require the extensive excavation and energy consumption associated with mining.

Statement 4 is not correct: Lab-grown diamonds are indistinguishable from mined diamonds to the naked eye and require specialized equipment for identification.

57. (d)

Context: Researchers from China confirmed the pivotal role of a gene called SASS6 in microcephaly pathogenesis.

About

- Microcephaly is a condition in which a **baby's head is much smaller than normal**.
- Most children with microcephaly also have a **small brain, poor motor function, poor speech, and abnormal facial features**, and are intellectually disabled.
- The roots of the condition lie in the peak phase of brain development in the embryo — when the cells that eventually become neurons fail to divide normally.

58. (c)

Both the Statements are correct.

Context

- Recently the EarthCARE Mission was launched to measure the influence of clouds on the climate.

About

- **EarthCARE (Cloud, Aerosol and Radiation Explorer) mission** will advance the understanding of the role that clouds and aerosols play in reflecting incident solar radiation back into space and trapping infrared radiation emitted from Earth's surface.
- It is a joint venture between **ESA (European Space Agency)** and **JAXA (Japan Aerospace Exploration Agency)**.

EarthCARE Instruments

- The Atmospheric Lidar (ATLID)
- The Cloud Profiling Radar (CPR)
- The Multi-Spectral Imager (MSI)
- The Broad-Band Radiometer (BBR)

ENVIRONMENT & ECOLOGY

1. Consider the following statements

1. The world's first floating solar plant was built in Japan in 2007.
2. India's largest floating solar power project has been operational in Kerala since 2015.

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

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

2. With reference to the Methane Gas, which of the following statements is/are correct?

1. It is a colorless, odorless and highly flammable gas.
2. It is a short-lived greenhouse gas, with a lifetime of about a decade.

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

3. Consider the following pairs

Species In News	:	IUCN Red List status
1. Walrus	:	Vulnerable
2. Nilgiri Tahr	:	Endangered
3. Blackbucks	:	Least Concern

How many of the above pairs are correctly matched?

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

4. With reference to the Blackbuck, consider the following statements:

1. It is considered to be the fastest animal in the world next to Cheetah.
2. It is found only in the Indian subcontinent.

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

5. Sahyadri Tiger Reserve is located in which of the following states in India?

- (a) Maharashtra
- (b) Goa
- (c) Karnataka
- (d) Kerala

6. Consider the followings statements with reference to Orangutans
1. They are the world's largest tree-climbing mammals
 2. They are only found on the islands of Borneo and Sumatra.
 3. They are categorised as Vulnerable in IUCN Red Lists of Threatened species.
- How many of the statements given above are correct?
- (a) Only one
 - (b) Only two
 - (c) All three
 - (d) None
7. With reference to the Urban Heat Islands, consider the following statements:
1. An Urban Heat Island (UHI) is an area in which the temperature is higher than in surrounding rural areas.
 2. The materials used in urban construction is one of the reasons for the urban heat islands.
- 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
8. With reference to the Orangutan, which of the following statements is/are correct?
1. They are the closest living relatives of humans and share 96.4% of Human genes.
 2. They are only found in the North Eastern states of India.
- 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
9. With reference to the Sperm whale, consider the following statements:
1. Sperm whale got its name because the semi-liquid, waxy substance in their head was first believed to be sperm.
 2. It is listed as Endangered under the IUCN Red List of Threatened Species.
- 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
10. With reference to the Constructed Wetlands, consider the following statements:
1. Constructed wetlands are engineered structures designed to replicate the functions of natural wetlands.
 2. The Kolkata East Wetlands in West Bengal, designated as a Ramsar site, feature a vast network of natural and constructed wetlands.

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

11. With reference to the Direct Air Capture (DAC) Facility, consider the following statements:

- 1. DAC technologies extract CO₂ directly from the atmosphere at any location.
- 2. The World's largest DAC facility is operational in Japan.

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

12. With reference to the Ambergris, consider the following statements:

- 1. It is a waxy substance that originates from the digestive system of sperm whales.
- 2. Due to its high value in the market, it is often called the 'floating gold' and 'treasure of the sea'.

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

13. Consider the following statements:

- 1. Oleander is a flowering shrub native to India, known for its attractive blooms and poisonous properties.
- 2. Due to its toxicity, Oleander cultivation is banned in India.

Which of the given above statements is/are correct?

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

14. Which one of the following is **not correct** regarding the *oleander flowers*?

- (a) It is cultivated in the tropical, subtropical, and temperate regions.
- (b) In Kerala, it is locally known by names such as arali and kanaveeram.
- (c) It is known for its drought tolerance.
- (d) It is listed as Critically Endangered on the IUCN Red List of Threatened Species.

15. With reference to the Sailfin Catfish, which of the following statements is/are correct?

- 1. It is a native fish species of South America, known for its ability to clean algal growth.
- 2. It is listed as Vulnerable on the IUCN Red List of Threatened Species.

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

16. Which of the following statements about sea anemones is/are correct?

- (a) Sea anemones are closely related to jellyfish and move freely in the water column.
- (b) Sea anemones are sedentary animals that attach themselves to rocks or coral reefs.
- (c) Sea anemones are herbivorous in nature.
- (d) None of the above

17. Which of the following statements about Semal trees is/are correct?

- (a) The wood of the Semal tree is a valuable source of timber for furniture making due to its high density.
- (b) The bark of the Semal tree is used in traditional medicine for its medicinal properties.
- (c) It flowers spectacularly in the winter season.
- (d) None of the above

18. Which of the following statements about the Madagascar Baobab (*Adansonia madagascariensis*) is mostly correct?

- (a) It is one of the eight baobab species native to Madagascar.
- (b) The Madagascar Baobab is primarily found in the Toliara province of Madagascar.
- (c) It grows in dense rainforests on limestone and granite soil.
- (d) It can live for over a thousand years.

19. Consider the following pairs

Species In News : ***IUCN Red List status***

- 1. Asiatic Black Bear : Vulnerable
- 2. Orangutan : Endangered
- 3. Common Myna : Least Concern

How many of the above pairs are correctly matched?

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

20. Consider the following statements regarding the Graded Response Action Plan (GRAP):

- 1. GRAP is a set of emergency measures to be implemented when the air quality in a region deteriorates beyond a certain threshold.
- 2. The Environment Pollution (Prevention and Control) Authority (EPCA) is the primary body responsible for implementing GRAP in India.
- 3. GRAP categorizes air quality into six levels, ranging from 'Good' to 'Severe+'.
- 4. GRAP primarily focuses on reducing emissions from industries and vehicular traffic to improve air quality.

Which of the above statements are correct?

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

21. Consider the followings statements

1. The Sea Otter is the smallest marine mammal.
2. The IUCN Red List of Threatened species classifies Sea Otters as Vulnerable .

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

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

22. Which of the following is **not** a primary objective of the Minamata Convention?

- (a) Reduction of mercury supply and trade
- (b) Phase-out of mercury-added products
- (c) Regulation of artisanal and small-scale gold mining (ASGM)
- (d) Elimination of all mercury emissions by 2030

23. Which of the following statements is/are correct regarding Eco-Sensitive Zones in India?

1. ESZs are notified under the Environment (Protection) Act, 1986.
2. The primary aim of declaring ESZs is to prohibit all human activities within these zones.
3. The extent of an ESZ may go up to 10 kilometers around a protected area.

Select the correct answer using the code given below:

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

24. With reference to Iberian lynx, which of the following statements is/are correct?

1. It is a medium-sized nocturnal cat with a short tail.
2. It is classified as Vulnerable under the International Union for Conservation of Nature's Red List of Threatened Species.

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

25. The Term "Manipuri Pony" or "Meitei Sagol" sometimes seen in the news, it is related to

- (a) Tribal Community
- (b) Horse breed

- (c) Classical dance form
 - (d) Harvest Festival
26. Consider the following statements with reference to Orcas (Killer Whales).
- 1. It is found only in Pacific and Atlantic Oceans
 - 2. It is highly social, and most live in social groups called pods.
 - 3. IUCN Red List Status listed it as Critically Endangered Species .
- How many of the statements given above are correct?
- (a) Only one
 - (b) Only two
 - (c) All three
 - (d) None
27. Which of the following statements about Yellowstone National Park is **not true**?
- (a) It is home to the largest concentration of geysers in the world.
 - (b) It was the first national park established in the United States.
 - (c) It is a designated UNESCO biosphere reserve.
 - (d) None of the above
28. With reference to the Convention on Biological Diversity (CBD), consider the following statements:
- 1. It was signed by 150 government leaders at the 1992 Rio Earth Summit.
 - 2. The CBD's governing body is the Conference of the Parties (COP).
 - 3. All parties that have ratified the treaty meets every two years to review progress, set priorities and commit to work plans.
- How many of the statements given above are correct?
- (a) Only one
 - (b) Only two
 - (c) All three
 - (d) None
29. Consider the following statements:
- 1. The honey bee is the only insect that produces food for humans.
 - 2. The waggle dance is exhibited by honeybees to communicate information about the location of food sources.
 - 3. Karl von Frisch was awarded the Nobel Prize in Medicine for understanding the honeybee's communication system.
- How many of the statements given above are correct?
- (a) Only one
 - (b) Only two
 - (c) All three
 - (d) None
30. It is a one-of-a-kind Protected Area that sustains South Asia's only breeding ground for Greater Flamingos, and is known globally as the "Flamingo City." It is

- (a) Kutch Desert Wildlife Sanctuary
 - (b) Okhla Bird Sanctuary
 - (c) Karaivetti Bird Sanctuary
 - (d) Pulicat Bird Sanctuary
31. The word *Phtheirospermum lushaiorum* is sometimes mentioned in news in reference to:
- (a) A rare hemi-parasitic terrestrial plant
 - (b) an early human species
 - (c) Species of a Frog
 - (d) Fossils of a kind of early species of Elephant
32. Which of the following mangrove species is native to India?
- (a) *Rhizophora mucronata*
 - (b) *Avicennia alba*
 - (c) *Bruguiera cylindrica*
 - (d) All of the above
33. Which of the following is correct regarding mangrove forests?
- (a) It grows in areas with low-oxygen soil.
 - (b) It only grows at tropical and subtropical latitudes near the equator.
 - (c) It cannot withstand freezing temperatures.
 - (d) All of the above.
34. With reference to the *Kendu Leaf (Diospyros Melanoxylon)*, consider the following:
1. Odisha is the largest producer in India.
 2. It is a 'minor forest produce' under the Forest Rights Act (2006).
- 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
35. The Manama Declaration, often mentioned in news, pertains to which of the following aspects?
- (a) Establishing a free trade zone in the Gulf region.
 - (b) Promoting interfaith dialogue and peaceful coexistence.
 - (c) Enhancing cybersecurity measures among GCC countries.
 - (d) Addressing climate change impacts in Middle Eastern countries.
36. Which of the following statements best describes the Global Species Action Plan (GSAP) SKILLS platform?
- (a) A global initiative focused on establishing protected marine areas.
 - (b) An online platform that provides real-time updates and resources for species conservation.
 - (c) A project by UNESCO to preserve cultural heritage sites.
 - (d) A collaboration between the World Bank and WWF for reforestation efforts.

37. With reference to the Global Environment Facility (GEF), consider the following statements:

1. It was established during the Kyoto Protocol negotiations.
2. It primarily focuses on funding large-scale industrial projects in developed countries.
3. The World Bank serves as its trustee, managing the GEF Trust Fund.
4. India is not a member of the GEF.

Which of the statements given above is/are correct?

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

36. With reference to the L'Hoest's Monkey (*Allochrocebus lhoesti*), consider the following statements:

1. They mostly live in mountainous forest areas in small, female-dominated groups.
2. It is listed as critically endangered on the IUCN Red List of Threatened Species.

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

37. With reference to the Urban Heat Islands (UHIs), consider the following statements:

1. UHIs are characterized by significantly higher temperatures in urban areas compared to surrounding rural areas.
2. The primary cause of UHIs is the abundance of vegetation and water bodies in urban areas.
3. Dark-colored surfaces like asphalt and concrete contribute to the UHI effect by absorbing and retaining heat.
4. UHIs can exacerbate air pollution.

Which of the statements given above are correct?

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

38. Consider the following pairs

Species In News : **IUCN Red List status**

1. Killer whale : Vulnerable
2. Sea otters : Endangered
3. Iberian lynx : Least Concern

How many of the above pairs are correctly matched?

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

39. The word *Oedocladium sahyadricum* is sometimes mentioned in news in reference to:
- Fossils of a kind of dinosaur
 - An early human species
 - Species of a Frog
 - An algal species

EXPLANATIONS (Environment & Ecology)

1. (a)

In News: NHPC Limited, the largest organization for hydropower development in India, has signed a Memorandum of Understanding with a Norwegian company operating as a technology provider to the floating solar industry.

Statement 1 is correct : The first floating solar plant was established in Japan in 2007.

- Almost all the large countries in the world now have modest floating solar installed capacity.
- In the South Asia region, floating solar projects are operational in India, the Maldives and Bangladesh, while Pakistan and Sri Lanka are in the early stages of exploration.

Statement 2 is not correct : India's largest floating Solar Power Project is fully operational. NTPC declared Commercial Operation of the final part capacity of 20 MW out of 100 MW Ramagundam Floating Solar PV Project at Ramagundam, Telangana with effect from July 01, 2022.

2. (c)

Both the Statements are correct

Methane Gas

- Methane (CH₄) is a colorless, odorless and highly flammable gas.
- Methane is a powerful and short-lived greenhouse gas, with a lifetime of about a decade and Global Warming Potential about 80 times greater than that of carbon dioxide (CO₂) during the 20 years after it is released into the atmosphere.

3. (c)

All the pairs are correctly matched

- Walrus** are listed on **Appendix III** of the Convention on International Trade in Endangered Species of Wild Fauna and Flora which allows for control of global trade in Walrus ivory.
 - The IUCN Red List of Threatened Species listed them as Vulnerable.
- Nilgiri Tahr** is listed as an **endangered** species by the International Union for Conservation of Nature (IUCN) and protected under Schedule-I of the Wildlife (Protection) Act, 1972.
- Blackbuck** is included in the Schedule-I of Wildlife (Protection) Act, 1972.
 - They are categorised as **least concern** in the Red List of Threatened Species maintained by the International Union for Conservation of Nature.

4. (c)

Both the statements are correct.

About Blackbucks (Antelope cervicapra)

- It is also called Indian Antelope and is found only in the Indian subcontinent.

- It is considered to be the **fastest animal** in the world **next to Cheetah**.
- **Habitat** : The species inhabits open grassland, dry thorn scrub, scrubland and lightly-wooded country as well as agricultural margins.
- **Distribution** : It is native to India and Nepal.
 - In India the species is widespread in Rajasthan, Gujarat, Madhya Pradesh, Tamil Nadu and other areas throughout peninsular India.
- **Protection status** : They are categorised as **least concern** in the Red List of Threatened Species maintained by the International Union for Conservation of Nature.

5. (a)

The Sahyadri Tiger Reserve (STR) is located in the Sahyadri Ranges of Western Ghats in Maharashtra.

- These ranges form a common boundary between **Maharashtra, Karnataka and Goa**, and consist of rich evergreen, semi-evergreen and moist deciduous forests.
- It is the **first Tiger Reserve of Western Maharashtra** and the **fourth Tiger Reserve of the State** spreading over two Protected Areas of Koyana Sanctuary (KWLS) and Chandoli National Park (CNP).

6. (b)

In News : Orangutan named Rakus in Indonesia used a medicinal plant to treat a wound.

Statements 1 and 2 are correct : They are the largest arboreal mammal, spending most of their time in trees.

- They are the closest living relatives of humans and they share 96.4% of Human genes and are highly intelligent creatures.
- There are three species of Orangutan - the Bornean, Sumatran and Tapanuli - which differ a little in appearance and behaviour.
- These great apes are **only found in the wild on the islands of Borneo and Sumatra**.

Statement 3 is not correct : IUCN Red List status :All three orangutan species are critically endangered.

7. (c)

Both the statements are correct: An Urban Heat Island (UHI) is an area in which the temperature is higher than in surrounding rural areas due to human activities and infrastructure.

Factors Responsible for Urban Heat Islands

- **Built Environment:** The materials used in urban construction, such as concrete and asphalt, absorb and retain heat, raising local temperatures.
- **Reduced Vegetation:** Urban areas typically have fewer trees and green spaces compared to rural areas, which reduces the cooling effect of shade and transpiration.
- **Human Activities:** Activities like transportation, industry, and energy consumption release heat into the environment, further elevating temperatures.
- **Altered Surface Characteristics:** Urbanization often involves replacing natural surfaces with artificial ones, which alters the surface reflectivity (albedo) and thermal properties, contributing to increased heat absorption.
- **Ecological Factors:** According to a 2014 Indian Institute of Science report, the ideal tree-human ratio should be seven trees for every person. The lack of trees increases the risk of exposure to higher temperatures.

- In Indian cities there are places with such poor density of trees as one tree for 50 people.
- Also the lack of water bodies can add to the heat effect.

8. (a)

Statement 1 is correct and Statement 2 is not correct.

Orangutan

- **Characteristics:** Orangutans are the **largest arboreal mammal**, spending most of their time in trees.
 - They are the closest living relatives of humans and they share **96.4%** of Human genes and are highly intelligent creatures.
- **There are three species of Orangutan** – the Bornean, Sumatran and Tapanuli – which differ a little in appearance and behavior.
- **Eating habitats :** Orangutans mainly eat fruits, such as mangoes, lychees and figs, but they also feed on young leaves, flowers, insects, and even small mammals.
- **Habitat and Distribution:** They can occur up to **1,500m** above sea level, most are found in lowland areas and prefer forests in river valleys or floodplains.
 - These great apes are only found in the wild on the islands of Borneo and Sumatra.
- IUCN status: All three orangutan species are critically endangered.

9. (a)

Statement 1 is correct: Sperm whales got their name because the semi-liquid, waxy substance in their head was first believed to be sperm.

Statement 2 is not correct: Conservation Status: IUCN Vulnerable.

- They are protected **under Schedule 2 of the Wildlife Protection Act** and possession or trade of any of its by-products, including Ambergris is **illegal**.
- They are listed in **Appendix I of the CITES** (Convention on International Trade in Endangered Species of Wild Fauna and Flora).

10. (c)

Both the statements are correct.

Constructed wetlands are engineered structures designed to **replicate the functions of natural wetlands**.

- They are composed of meticulously chosen vegetation, soil and water, orchestrated to **facilitate a seamless process of purification**.
- **The Kolkata East Wetlands in West Bengal**, designated as a **Ramsar site**, feature a vast network of natural and constructed wetlands.

11. (a)

Statement 1 is correct: DAC technologies **extract CO₂ directly from the atmosphere** at any location, unlike carbon capture which is generally carried out at the point of emissions, such as a steel plant.

- The CO₂ can be permanently stored in **deep geological formations** or used for a variety of applications.

Statement 2 is not correct: The **World's largest facility** designed to remove carbon dioxide from the atmosphere started operations in **Iceland**.

- It is named **Mammoth** and it is the second commercial direct air capture (DAC) facility in the nation and is significantly larger than its predecessor, **Orca**, which began in **2021**.

12. (c)

Both the statements are correct: Ambergris means grey amber in French, is a **waxy substance that originates from the digestive system of sperm whales**.

- Due to its high value in the market, ambergris is often called the '**floating gold**' and '**treasure of the sea**'.
- Ambergris is a rare substance, which contributes to its high demand and high price in the international market.

13. (a)

Statement 1 is correct: Oleander is indeed a flowering shrub native to tropical and subtropical regions, including parts of India. It's known for its beautiful flowers but also for its toxic properties.

Statement 2 is not correct: Oleander cultivation is not banned in India. However, due to its toxicity, it's important to be aware of the risks and keep it out of reach of children and pets.

14. (d)

News: Recently, Kerala temples have banned the use of oleander flowers in temple offerings following the death of a woman who accidentally chewed some oleander leaves.

What is oleander?

- Nerium oleander, commonly known as oleander or desertrose, is a plant cultivated worldwide in **tropical, subtropical, and temperate regions**.
- In Kerala, it is locally known by names such as **arali and kanaveeram**.
- Known for its **drought tolerance**, the shrub is often used for **ornamental and landscaping purposes**.
- It is listed as **Least Concern** on the IUCN Red List of Threatened Species.
- As per the US National Institutes of Health, oleanders can also be used against asthma, epilepsy, painful menstrual periods, malaria, skin problems, and indigestion.

Oleander's Toxicity

- The plant's flowers, leaves, stem and roots contain poisonous substances known as **olendrin, a cardiac glycoside**.
- Ingesting these compounds can lead to severe health complications such as nausea, vomiting, abdominal pain, irregular heartbeat, and in extreme instances, death.

15. (a)

Context: Recently, the CSIR-Centre for Cellular and Molecular Biology (CCMB) scientists have found out that the invasive armoured sailfin catfish has spread to 60% in the water bodies of Eastern Ghats, damaging the fishing nets and the eco-system also.

About Sailfin Catfish

- It is **native fish species of South America**, and has established stable populations in various freshwater ecosystems outside their native range due to its **invasive nature**.
- It was once introduced in Eastern Ghats of India for its unique appearance and **its ability to clean algal growth** in tanks and aquaria, but its population has grown exponentially.
- IUCN Red List: **Least Concern**

16. (b)

About Sea Anemones

- They are a group of predatory marine invertebrates of the order Actiniaria. They are an aquatic animal marked by soft bodies and an ability to sting.
- They are named after the Anemone, a terrestrial flowering plant because of their colourful appearance.
- They are usually brightly coloured, adopting shades of white, green, blue, orange, red or mauve, often contributing to the spectacular walls of invertebrates populating reefs.
- **Behaviour:** These animals fix themselves to reefs and other structures by the muscular disc at the base of the body.
- They are **carnivores**.
- **Habitat:** Anemones usually **attach themselves to rocks** and underwater structures, although some species burrow into mud or sand.
- **Threats:** Bleaching is making sea anemone more susceptible to diseases and increases mortality.
 - The loss of symbiotic algae deprives sea anemones of their primary energy source, compromising their long-term survival.

17. (b)

Semal trees (Sal trees) are fast-growing deciduous trees found throughout India.

Statement (a) is not correct: Semal wood is not considered high-density timber and is not a primary choice for furniture making. It has some specific uses due to its lightweight properties.

Statement (b) is correct: The bark of the Semal tree has been used in traditional medicine for various purposes. While scientific validation may be needed for some claims, its medicinal properties are recognized in traditional practices.

Statement (c) is not correct: It flowers spectacularly in spring.

18. (d)

About the Madagascar Baobab (Adansonia Madagascariensis)

- Madagascar Baobab is a small to large tree species (*six of the world's eight baobab species are indigenous to Madagascar*) known for their **giant trunks and long lifespan**.
 - It occurs in **Mahajanga and Antsiranana provinces of Madagascar**, an island nation off the southeast coast of Africa.
- It grows in **dense dry deciduous forests** on limestone, sandstone and gneiss and in sub or coastal moist forests on sandy or chalky soil.
- It **can live for over a thousand years** and has historically grown in vast forests across the island.
- IUCN Red List of Threatened Species: **Least Concern**

19. (b)

Asiatic Black Bear (*Ursus Thibetanus*) also known as the Moon Bear or White-chested Bear is a medium-sized species of bear. IUCN Red List of Threatened Species classified as **Vulnerable**

The name orangutan means "man of the forest" in the Malay language. There are three species of Orangutan - the Bornean, Sumatran and Tapanuli - which differ a little in appearance and behaviour. All three orangutan species are **critically endangered**.

Common Myna (Acridotheres Tristis) is a bird species which is native to South and Southeast Asia.

- According to the IUCN, it is listed as '**Least Concern**'.

20. (b)

Statement 1 is correct: GRAP is designed as an emergency response plan to be activated when air quality falls below specific standards.

Statement 2 is not correct: While EPCA was initially responsible for GRAP, it is now overseen by the Commission for Air Quality Management (CAQM) in the National Capital Region (NCR) and adjoining areas.

Statement 3 is not correct: GRAP categorizes air quality into four levels: Moderate, Poor, Very Poor, and Severe.

Statement 4 is correct: GRAP measures primarily target industrial and vehicular emissions, which are major contributors to air pollution.

21. (a)

Statement 1 is correct : The **Sea Otter is the smallest marine mammal**

It is a very social animal, and floats in single-sex groups known as 'rafts. Sea Otters live in coastal areas with shallow water. They find their food on the ocean floor.**Geographical range:** Canada; Japan; Mexico; Russian Federation; United States.

Statement 2 is not correct : Sea otters are key players in the health of the kelp forests they inhabit. **IUCN Red List status : Endangered**

22. (d)

The Minamata Convention aims to protect human health and the environment from the adverse effects of mercury. While it seeks to significantly reduce mercury emissions, it **does not mandate** the complete elimination of all emissions by 2030. The convention focuses on:

- Reduction of mercury supply and trade: Controlling the supply of mercury and restricting its trade to essential uses.
- Phase-out of mercury-added products: Gradually phasing out the production and use of products containing mercury.
- Regulation of artisanal and small-scale gold mining (ASGM): Introducing measures to reduce and, where feasible, eliminate the use of mercury in ASGM.

23. (b)

Statement 1 is correct: ESZs are indeed notified under the Environment (Protection) Act, 1986.

Statement 2 is not correct: While ESZs regulate and manage certain activities, they do not prohibit all human activities. Permitted activities often include agriculture, sustainable tourism, and other livelihoods that do not harm the ecosystem.

Statement 3 is correct: The extent of an ESZ can vary but may go up to 10 kilometers around a protected area like a national park or wildlife sanctuary.

Key Points about ESZs:

ESZs act as a buffer zone or transition zone around protected areas.

They aim to regulate activities to minimize the negative impact on the fragile ecosystems of protected areas.

Prohibited activities in ESZs usually include commercial mining, polluting industries, and large-scale infrastructure projects.

24. (a)

Statement 1 is correct and Statement 2 is not correct.

About

- Scientific Designation: *Lynx pardinus*
- Characteristics: The Iberian lynx is a medium-sized nocturnal cat with a short tail, a short body, long legs, tufted ears, and a relatively small head.
 - It has bright yellowish to tawny coloured spotted fur.
- **Distribution:** Once distributed throughout the Iberian Peninsula, the species is now sparsely distributed in Spain and Portugal.
- **Threats:** It is threatened by habitat loss, road accidents, and illegal hunting. In 2007, several individuals died of **feline leukemia**.

Conservation Status

- **IUCN status:** Endangered
- It is protected under **appendix II** of the **Convention on International Trade in Endangered Species (CITES)**.

25. (b)

The Government of Manipur has recently joined hands with various organisations and associations to save the **Manipuri Pony or Meitei Sagol**.

Manipuri Pony is known for its unique stamina, agility, intelligence, speed, manoeuvrability and great adaptability to harsh geo climatic conditions.

- It is regarded as the original polo pony as modern polo is derived from the traditional Sagol Kangjei sport of Manipur.
- It is one of the seven recognised horse and pony breeds of India.
 - The others include the Marwari Horse, the Kathiawari Horse, the Zanskari Pony, the Spiti Pony, the Bhutia Pony and the Kachhi-Sindhi Horse

26. (a)

In News: a group of Orcas sank a 15-metre-long sailing yacht in the Strait of Gibraltar, 22.5 kilometres off the coast of Morocco.

Statements 1 and 3 are not correct : **Orcas (Killer Whales)** is the ocean's top predator. It is the largest member of the Delphinidae family, or dolphins.

- They are one of the most recognizable marine mammals, with their distinctive black and white bodies. **Found in every ocean in the world**, they are the most widely distributed of all cetaceans (whales and dolphins).
- IUCN Red List Status : *Orcinus orca* is listed as **Data Deficient**.

Statement 2 is correct : Killer whales are highly social, and most live in social groups called pods

- Killer whales rely on underwater sound to feed, communicate, and navigate.

27. (d)

In News: Giant viruses found in Yellowstone National Park's hot springs. The term "giant" refers to their exceptionally large genomes compared to more common viruses. They do not pose any risk to humans. Instead, these giant viruses provide valuable insights into a period when single-cell organisms were starting to emerge on Earth.

About Yellowstone National Park

- Yellowstone is known for its unique geothermal features and has the largest concentration of geysers in the world.
- It was the first national park in the United States and is often considered the first national park in the world.
- These hot springs are a product of the park's geothermal activity, which stems from the **Yellowstone Caldera**, one of the world's largest volcanic systems.



- Yellowstone's hot springs come in various colors, ranging from vibrant blues and greens to deep oranges and reds.
- These colors are caused by **different types of thermophilic (heat-loving) bacteria and algae** that thrive in the extreme conditions created by the hot water.
- One of the most famous hot springs in Yellowstone is the **Grand Prismatic Spring**, which is the largest hot spring in the United States and the third-largest in the world.
- Yellowstone was designated a UNESCO biosphere reserve in 1976 and a World Heritage site in 1978.

28. (c)

All three statements are correct: CBD is the **international legal instrument** for "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources".

- It was signed by 150 government leaders at the 1992 Rio Earth Summit, it has been ratified by 196 nations.
- The CBD's governing body is the Conference of the Parties (COP).
- All parties that have ratified the treaty meets every two years to review progress, set priorities and commit to work plans.
- The Secretariat of the CBD is based in Montreal, Canada.

29. (c)

All the statements are correct: The honey bee is the only insect that produces food for humans.

- The **waggle dance** is a fascinating behavior exhibited by honeybees to communicate information about the location of food sources, such as nectar and pollen, to other members of the hive.
- This dance was first studied and described by **Austrian ethologist Karl von Frisch**, who was awarded the **Nobel Prize in Physiology or Medicine in 1973** for his contributions to the understanding of the honeybee's communication system.

30. (a)

News: Over 30 flamingos killed after being hit on a flight landing path in Mumbai.

About

- The flamingos migrate from Siberia to Mumbai via the Rann of Kutch in Gujarat.

Kutch Desert Wildlife Sanctuary

- It is a one-of-a-kind Protected Area that sustains South Asia's only breeding ground for Greater Flamingos, and is known globally as the "Flamingo City."

31. (a)

A rare hemi-parasitic terrestrial plant

Context

- A rare hemi-parasitic terrestrial plant *Phtheirospermum lushaiorum* found in Phawngpui National Park of Mizoram has been named after the Lushai tribe of the state.

32. (d)

Mangroves are salt tolerant plant communities found in tropical and sub-tropical intertidal regions of the world. These unique ecosystems are crucial for biodiversity conservation, offer livelihoods to local communities and reduce the impact of climate change.

Important species of Mangrove ecosystems in India include *Avicennia officinalis*, ***Rhizophora mucronata***, *Sonneratia alba*, ***Avicennia alba***, ***Bruguiera cylindrica***, *Heritiera littoralis*, *Phoenix paludosa*, *Morinda citrifolia* & *Ceripostagal*. These species play a significant role in maintaining the ecological balance of coastal regions.

Mangrove ecosystems cover an area of 150,000 square kilometres, primarily on tropical, subtropical, and warm temperate coasts around the world. Approximately 15 percent of the world's coastlines have a mangrove presence.

33. (d)

Context: According to a recent global assessment by the International Union for Conservation of Nature (IUCN), over half of the world's mangrove forests face collapse due to human actions and climate change.

What is a mangrove forest?

- Mangroves are a group of trees and shrubs that live in the coastal intertidal zone.
- There are about 80 different species of mangrove trees. All of these trees grow in areas with **low-oxygen soil**, where slow-moving waters allow fine sediments to accumulate.
- Mangrove forests **only grow at tropical and subtropical latitudes** near the equator because they cannot withstand **freezing temperatures**.

Significance

- Mangrove forests stabilize the coastline, reducing erosion from storm surges, currents, waves, and tides.
- The intricate root system of mangroves also makes these forests attractive to fish and other organisms seeking food and shelter from predators.

34. (b)

In News: The indigenous communities of Odisha are eagerly waiting for the forest department's approval to sell Kendu leaves.

- Kendu Leaf (*Tendu Leaf* or *Diospyros Melanoxylon*) is a nationalised product like Bamboo and Sal seed, and one of the most important non-wood forest products of Odisha.
- Due to its unique characteristics, viz. *Matching aroma with Tobacco*, Hygroscopic nature of dry leaves to withstand crack, Thinness and pliability, gradual combustion, resistance to fungus attack etc. these valuable leaves are used for wrapping Bidis.

Statement 1 is not correct

- Odisha is the third largest producer of Kendu Leaf next to Madhya Pradesh and Chhattisgarh.

Statement 2 is correct

- The Scheduled Tribe and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (*aka Forest Rights Act, 2006*), defines 'minor forest produce' as any non-timber forest product of plant origin.
- It includes various items such as *bamboo, brush wood, stumps, cane, tussar, cocoons, honey, wax, lac, Kendu leaves, medicinal plants, herbs, roots, tubers and similar items*.

35. (b)

The Manama Declaration (Manama is the capital and largest city of Bahrain), issued by Bahrain. It focuses on fighting intolerance and promoting peaceful coexistence and inclusive societies. It urges parliamentarians to fight inequality and implement sustainable development goals. The Declaration urged international protection and UN peacekeeping forces in the occupied Palestinian territories until a two-state solution is achieved.

36. (b)

The GSAP SKILLS platform is designed to facilitate global collaboration and partnerships by connecting decision-makers, species conservation practitioners, and experts. It provides real-time updates on technical resources and information on species conservation interventions and actions for each Global Biodiversity Framework target. Managed by IUCN, the platform supports species conservation efforts with backing from the Ministry of Environment, Republic of Korea, and the Tech4Nature Initiative by IUCN and Huawei.

37. (b)

Statement 1 is not correct: The GEF was established in 1992 during the Rio Earth Summit, not the Kyoto Protocol negotiations.

Statement 2 is not correct: The GEF primarily funds projects in developing countries that address global environmental issues.

Statement 3 is correct: The World Bank serves as the trustee of the GEF Trust Fund, managing its financial resources.

Statement 4 is not correct: India is a member of the GEF, along with 183 other countries.

36. (a)

Context: A pair of L'Hoest's monkeys were recently rescued from animal traffickers in Srikakulam.

L'Hoest's Monkey (*Allochrocebus lhoesti*)

- They are native to the DRC (Democratic Republic of Congo), Rwanda, Burundi, and Uganda.
- They mostly live in **mountainous forest** areas in small, female-dominated groups.
- They have a dark coat and can be distinguished by a characteristic white beard.
- It is listed as **Vulnerable** on the IUCN Red List and is listed on **Appendix II** of CITES.

37. (b)

Statement 1 is correct: UHIs are indeed characterized by higher temperatures in urban areas due to the modification of land surfaces and heat generated by human activities.

Statement 2 is not correct: The lack of vegetation and water bodies in urban areas, along with the abundance of heat-absorbing materials, is a major contributor to UHIs.

Statement 3 is correct: Dark-colored surfaces absorb and retain more heat than lighter-colored surfaces, intensifying the UHI effect.

Statement 4 is correct: UHIs can worsen air quality due to increased energy consumption for cooling.

38. (a)

The killer whale, also known as orca, is the ocean's top predator. **IUCN Red List Status :** *Orcinus orca* is listed as **Data Deficient**.

Sea otters is the smallest marine mammal and is the largest member of the weasel family (the Mustelidae). **IUCN Red List status :** **Endangered**

The Iberian lynx is the world's most endangered cat. The Iberian lynx is a medium-sized nocturnal cat with a short tail, a short body, long legs, tufted ears, and a relatively small head. **IUCN status:** **Endangered**.

39. (d)

An algal species

In News

- New algal species "*Oedocladium sahyadricum*" discovered in Western Ghats.

About *Oedocladium sahyadricum*

- The name 'sahyadricum' refers to the Western Ghats, also known as Sahyadri, which is rich in plant diversity and provides ideal conditions for the growth of terrestrial microalgae.
- This is the first time a species in the *Oedocladium* category has been recorded in Kerala.
- It was identified by its **unique features**, such as being dioecious and terrestrial, having a superior operculum, and possessing ellipsoid oogonium and oospore.
- It looks like moss protonema, is velvety green but turns yellowish-green as it matures.
- Rainy weather is likely needed for its abundant growth.
- **Utility :** Species of *Oedocladium* have potential practical applications in medicine, agriculture, and in the production of a natural pigment, astaxanthin, which is well-documented for its unique biological activities and health benefits.

MISCELLANEOUS

1. The terms like *Krish and Bhoomi* sometimes appeared in the news, are related to:
 - (a) Soil Enrichment Methods
 - (b) Virtual News Anchors
 - (c) Water Harvesting Techniques
 - (d) Weather Forecasting Initiatives
2. With reference to the Para Athletics World Championship, consider the following statements:
 1. It is the world's premier para athletics event established by the International Paralympic Committee.
 2. The first Championship was held in Berlin, Germany in 1994.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
3. With reference to the World Bee Day, consider the following statements:
 1. Globally, May 20 is celebrated as World Bee Day.
 2. 20 May was chosen as it is the birth date of Anton Janša, a pioneer of modern apiculture.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
4. Consider the following statements:
 1. The theme for World No Tobacco Day 2024 is "Protecting children from tobacco industry interference".
 2. India is the second largest tobacco producer behind Brazil.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
5. The term '*shamlat deh*', recently seen in the news, is
 - (a) A piece of land
 - (b) A religious tax
 - (c) A memoir
 - (d) None of the above

6. The recent initiative by the White House to establish Coordinated Lunar Time (LTC) is primarily driven by the need for:
- Standardizing time zones across different countries on Earth.
 - Precise timekeeping for missions and operations on the Moon.
 - Facilitating communication between space agencies worldwide.
 - Coordinating global efforts in space exploration and resource extraction.
7. 'Regional Economic Outlook for Asia and Pacific' report, recently seen in the news is released by:
- World Economic Forum (WEF)
 - International Monetary Fund (IMF)
 - World Trade Organization (WTO)
 - World Bank (WB)
8. With reference to the Booker Prize, consider the following statements:
- Founded in 1969, it is open to anyone regardless of origin.
 - Arundhati Roy and Aravind Adiga are the only Indian-origin writers who have won this prize in the past.
- Which of the statements given above is/are correct?
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2
9. Consider the following statements about Antarctic Treaty:
- The Antarctic Treaty was signed in 1959 and entered into force in 1961.
 - The Antarctic Treaty allows for the exploitation of natural resources such as minerals and oil in Antarctica.
 - India became a party to the Treaty in 1983.
- Which of the given above statements is/are correct?
- 1 and 2 only
 - 2 and 3 only
 - 1 and 3 only
 - 1, 2 and 3
10. With reference to the recently released 'World Press Freedom Index', consider the following statements:
- It has been published by Reporters Without Borders annually since 1972.
 - India improved its rank in 2024 in comparison to 2023.
- Which of the statements given above is/are correct?
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2

11. Which one of the following international organisations recently suggested that Earth Observation (EO) data could add up to \$3.8 trillion to the Global GDP by 2030?
- (a) National Aeronautics and Space Administration (NASA)
 - (b) United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)
 - (c) World Economic Forum (WEF)
 - (d) Indian Space Research Organisation (ISRO)
12. The term 'Fujian', recently seen in the news is related to:
- (a) Tropical Cyclone
 - (b) China's Aircraft Carrier
 - (c) Philippines' Most Active Volcano
 - (d) Japan's New Space Mission
13. Which of the following best describes the recent "Bletchley Declaration" seen in the news?
- (a) Formulating a strategy to accelerate the achievement of Sustainable Development Goals
 - (b) Implementing regulations for Artificial Intelligence
 - (c) Creating a framework for restructuring the United Nations Security Council
 - (d) Proposing a recovery plan for the European Union
14. Consider the following statements:
1. The National Building Code, published by the Bureau of Indian Standards, serves as the central standard for fire safety in India.
 2. Fire service is a State subject.
- 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

EXPLANATIONS (Miscellaneous)

1. (b)
- In News:** Recently, **DD Kisan** launched two AI anchors, namely **AI Krish** and **AI Bhoomi**, that can speak in fifty languages.
- DD Kisan is the first government TV channel in India to feature **AI anchors**.
 - These AI anchors are **designed to provide essential information to farmers** across the country, from Kashmir to Tamil Nadu and Gujarat to Arunachal Pradesh.
 - **AI Krish** and **AI Bhoomi** are the virtual news anchors who can work tirelessly, 24/7, without fatigue.
2. (c)
- Both the statements are correct:** The Para Athletics World Championships is the world's premier para athletics event established by the **International Paralympic Committee**.
- The first Championships was held in **Berlin, Germany in 1994**, it has been held **every two years**.

3. (c)

Both the statements are correct: Globally, **May 20** is celebrated as **World Bee Day**.

- The theme for World Bee Day 2024 is "**Bee Engaged with Youth**." The theme highlights that the youth can play in protecting bees and other pollinators.
- The Day was founded by the United Nations in **2017** following a proposal by Slovenia, which has a long tradition of beekeeping.
- 20 May was chosen as it is the **birth date of Anton Janša, a pioneer of modern apiculture**.

4. (a)

Context: Every year on May 31, the World No Tobacco Day (WNTD) is observed.

About

- The theme for World No Tobacco Day 2024 is "**Protecting children from tobacco industry interference**".

Tobacco

- It is the most widely recognised preventable cause of disease and death in the world.
- It causes a wide range of diseases and affects those consuming it as well as those cultivating it.
- India is the **second largest tobacco producer behind China**.
- India is one of the 168 signatories of the WHO's Framework Convention on Tobacco Control (FCTC), entered into force in 2005. It aims to reduce tobacco usage worldwide by helping countries develop demand and supply reduction strategies.

5. (a)

News: Recently, the Supreme Court allowed a review of a 2022 judgment where a Bench of Justices Hemant Gupta and V Ramasubramanian allowed gram panchayats to acquire **shamlat deh land**.

About

- Shamlat deh is essentially **village common land**, created by multiple landowners contributing an equal portion of their individual land holdings to serve the "common purposes" of village's people.
- The apex court in 2022 had upheld a 1992 amendment to the Punjab Village Common Lands (Regulation) Act, 1961 which allows gram panchayats to manage and control shamlat deh land as "lands reserved for the common purposes of a village".

6. (b)

Due to the Moon's different gravitational pull compared to Earth, clocks there run slightly faster. LTC aims to address this by establishing a unified time standard for lunar missions.

7. (b)

Context: 'Regional Economic Outlook for Asia and Pacific' report is released by the International Monetary Fund (IMF).

About IMF

- The IMF was established in 1944 in the aftermath of the Great Depression of the 1930s.
- The organization is currently composed of 190 member countries.
- Each member has representation on the IMF's executive board in proportion to its financial importance.

8. (a)

Context

- The Booker Prize, one of the most prestigious awards in the literary world, has recently come under fire for the historical links to slavery of its original sponsor, Booker Group.

Booker Prize

- The Booker Prize, is a prestigious literary award conferred each year for the best single work of sustained fiction written in the English language, which was published in the United Kingdom and/or Ireland.
- The Booker Prize was founded in **1969**, initially just for writers from the Commonwealth, but later **opened to writers globally**.
- **Past Indian recipients:** Arundhati Roy (God of Small Things), Kiran Desai (Inheritance of Loss), Aravind Adiga (White Tiger).

9. (c)

Statement 1 is correct: The Antarctic Treaty was indeed signed in 1959 and entered into force in 1961. The Antarctic Treaty prohibits military activities and the establishment of military bases in Antarctica.

Statement 2 is not correct: The Antarctic Treaty specifically prohibits the exploitation of natural resources such as minerals and oil in Antarctica. The Antarctic Treaty promotes international scientific cooperation and research in Antarctica.

Statement 3 is correct: India became a party to the Treaty in 1983. Recently, India enacted the **Indian Antarctic Act, 2022** reaffirming its commitment to the Antarctic Treaty.

10. (b)

In News: Recently, the Reporters Without Borders (RSF) released its latest edition of World Press Freedom Index.

Statement 1 is not correct:

- **World Press Freedom Index:** It is released annually by **Reporters Without Borders (RSF)** that ranks 180 countries and regions according to the level of freedom available to journalists.
 - It has been published **every year since 2002**.
- **Norway, Denmark, and Sweden** occupied the top positions in press freedom, while **Afghanistan, Syria and Eritrea** constituted the bottom three.

Statement 2 is correct:

- India's Standing in the Index:
 - In 2022, India was ranked 150th out of 180 countries.
 - However, in 2023, India's ranking slipped further to 161st.
 - **In 2024**, India's score in the World Press Freedom Index **fell from 36.62 to 31.28**, but its **rank improved** from 161 in 2023 to **159 in 2024**.

11. (c)

In News : A new **World Economic Forum (WEF) report** suggested that Earth Observation (EO) data could add **up to \$3.8 trillion to the global GDP by 2030**, while advancing a wide range of climate and nature solutions.

- **Economic and Environmental Impact:** The global value of EO data is projected to increase from \$266 billion to over \$700 billion by 2030.
 - EO has the potential to reduce greenhouse gas emissions by up to 2.2 gigatonnes annually, equivalent to the emissions of 476 million cars.

- The report identifies the convergence of EO with artificial intelligence, digital twins, and climate technology as a vital component of the Fourth Industrial Revolution.

12. (b)

News: China's third aircraft carrier, Fujian, has successfully completed its eight-day maiden sea trials.

About Fujian

- It is an 80,000-tonne supercarrier with electromagnetic catapults for launching aircraft, making China the second country after the U.S. to field a supercarrier with this technology.
- Named after East China's Fujian Province, the carrier was launched in June 2022.
 - China's first aircraft carrier Liaoning, a refurbished Soviet carrier, was commissioned in 2012 and the second carrier Shadong was launched in 2017.

13. (b)

The Bletchley Declaration is an international agreement focused on ensuring the safe and responsible development of Artificial Intelligence (AI). The declaration was signed in 2023 at a global summit on AI safety held at Bletchley Park, UK (the historic site where Allied codebreakers worked during World War II). Signatories included 28 major countries (including India, the US, China, and members of the European Union) and the European Union itself. The declaration aims to establish a shared global understanding of the potential risks and opportunities associated with advanced AI technologies, particularly those with significant capabilities

14. (c)

Both the statements are correct.

News

- The recent fire tragedies in **Gujarat's Rajkot** and a **children's hospital in Delhi** have brought focus on fire safety regulations in India.

Frequency of fire accidents

- As per the latest **Accidental Deaths and Suicides in India (ADSI) report**, around 7,000 people were killed in over 7,500 fire accidents in 2022.

India's Fire Safety Rules

- The **National Building Code (NBC)**, published by the Bureau of Indian Standards (BIS), serves as the central standard for fire safety in the country.
- **Model Building Bye Laws 2016** provide guidelines for state governments to enforce fire safety regulations.
- Fire service is a **State subject**, included in the XII schedule of the Constitution. Many states have established Fire & Emergency Services through statutory Acts.

