NEXT IAS

AANKLAN-1-25

Open Mock Test | General Studies-I

Answer Key

1. (b)	26. (d)	51. (b)	76. (b)	101.(d)	126.(c)
2. (d)	27. (a)	52. (c)	77. (a)	102.(c)	127.(c)
3. (c)	28. (a)	53. (c)	78. (a)	103.(b)	128.(d)
4. (c)	29. (a)	54. (c)	79. (d)	104.(a)	129.(d)
5. (c)	30. (b)	55. (d)	80. (d)	105.(c)	130.(a)
6. (b)	31. (d)	56. (d)	81. (d)	106.(d)	131.(d)
7. (a)	32. (b)	57. (d)	82. (b)	107.(d)	132.(a)
8. (c)	33. (d)	58. (c)	83. (c)	108.(a)	133.(b)
9. (c)	34. (d)	59. (c)	84. (c)	109.(d)	134.(b)
10. (a)	35. (a)	60. (b)	85. (a)	110.(c)	135.(c)
11. (c)	36. (d)	61. (b)	86. (c)	111.(b)	136.(c)
12. (b)	37. (a)	62. (c)	87. (d)	112.(a)	137.(a)
13. (a)	38. (a)	63. (c)	88. (b)	113.(c)	138.(b)
14. (d)	39. (d)	64. (c)	89. (a)	114.(c)	139.(a)
15. (b)	40. (c)	65. (d)	90. (b)	115.(d)	140.(b)
16. (b)	41. (c)	66. (d)	91. (b)	116.(a)	141.(d)
17. (a)	42. (d)	67. (d)	92. (d)	117.(a)	142.(c)
18. (a)	43. (c)	68. (d)	93. (a)	118.(b)	143.(a)
19. (a)	44. (b)	69. (c)	94. (a)	119.(b)	144.(b)
20. (a)	45. (c)	70. (b)	95. (b)	120.(d)	145.(a)
21. (b)	46. (c)	71. (b)	96. (b)	121.(b)	146.(a)
22. (a)	47. (d)	72. (c)	97. (c)	122.(b)	147.(a)
23. (a)	48. (d)	73. (c)	98. (a)	123.(c)	148.(a)
24. (a)	49. (b)	74. (c)	99. (a)	124.(c)	149.(b)
25. (b)	50. (c)	75. (b)	100.(c)	125.(b)	150.(c)

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1. (b)

- **Pradhan Mantri Dhan-Dhanya Krishi Yojana** scheme was launched in the 2025-26 budget. Its objective is to increase agricultural productivity, promote sustainable farming, and enhance farmers' income.
- **Features:**
  - This scheme integrates **36 schemes of 11 central ministries**.
  - **Objective:** To promote irrigation, storage, credit access, crop diversification, and organic farming.
  - **Monitoring:** Committees will be formed at the central, state, and district levels.
  - It is not limited only to irrigation or any one region but will be implemented for holistic agricultural development in **100 underperforming districts of the country**.

Therefore, option (b) is correct because this scheme is multidimensional and integrates the schemes of multiple ministries.

2. (d)

- Operation Black Forest was a joint operation jointly conducted by the Chhattisgarh and Telangana police, CRPF and Cobra Commandos.
- This operation was not conducted in Dantewada but in the **Bijapur-Sukma border area**, where more than 25 Naxals were killed. Hence, statement 2 is incorrect.

3. (c)

'Luminous intensity':

- Luminous intensity is the intensity of light emitted by a source in a given direction.
- It shows how much "visible light" is coming out of a light source in a particular direction.
- If a light source emits 1 lumen of light in 1 'steradian angle' in a direction, then its luminous intensity is 1 candela.

SI unit:

- Candela (cd): It is one of the seven base units of the SI system.
- Symbol: cd

4. (c)

- The increasing impacts of climate change have highlighted the need for serious efforts towards adaptation at the global level. In this context, the **Global Network for Adaptation Finance and Climate Collaboration (GNAFCC)** has been established.
- The objective of this network is to strengthen the global arrangement of financial resources to tackle the adverse effects of climate change. Through this, financial and technical assistance is provided to developing countries for climate adaptation, so that they can safeguard their societies and economies from climate disasters.
- This network does not come under any international organization such as the United Nations (UN), but rather functions as a **multilateral global collaborative partnership**. It was formed through the participation of various countries, international financial institutions, non-governmental organizations, the private sector, and development partners.

- Therefore, the second statement, that it is an initiative of the United Nations Environment Programme (UNEP), is incorrect.
- India is included in this network as a founding member, and its aim is to ensure accessibility to climate finance while protecting the interests of developing countries. India has prominently placed the need for climate finance cooperation at the international level through this platform.

5. (c)

- The theme for **World Meteorological Day 2025** is "Closing the Gap: Working Together for Early Warnings". This day is celebrated on **23 March**.
- The theme for **World Water Day 2025** is "Glacier Conservation". This day is celebrated on **22 March**.
- The theme for **International Day of Forests 2025** is "Forests and Food". This day is celebrated on **21 March**.
- The theme for **World Environment Day 2025** is "Beat Plastic Pollution". This day is celebrated on **5 June**.

6. (b)

- Wimbledon was started in **1877**, making it the oldest Grand Slam tournament. It is the only Grand Slam tournament played on **grass courts** and is held every year in **June–July**. Jannik Sinner won the men's singles title in 2025 by defeating **Carlos Alcaraz**, not Novak Djokovic. Hence, statement **1** is correct, while statement **2** is incorrect.
- **Australian Open** started in **1905**. It is held in Melbourne, Australia, played on **hard courts**, and is the first Grand Slam of the year, held every January.
- **French Open** (also called **Roland Garros**) started in **1891** (for women in 1897). It is held in Paris, France, and played on **clay courts** every year in **May–June**.
- **US Open** started in **1881**. It is held in New York, USA, and played on **hard courts**. It is the last Grand Slam of the year, held in **August–September**.

7. (a)

- Located on the Chenab River in the Reasi district of Jammu & Kashmir, this is the world's highest railway **arch bridge** and is part of the Udhampur–Srinagar–Baramulla Rail Link (USBRL) project. Hence, statements **1 and 2 are correct**, while statement **3 is incorrect**.
- This bridge is taller than the Eiffel Tower (300 meters) with a height of **359 meters**. The grand structure was constructed by Konkan Railway Corporation.
- The foundation design was prepared by the Indian Institute of Science (IISc), Bengaluru. For ensuring the bridge's safety and durability, seismic analysis was done by IIT Delhi and IIT Roorkee, while the Defence Research and Development Organisation (DRDO) provided technology to make it blast-resistant. This bridge is a marvel of engineering and holds immense strategic significance for Jammu & Kashmir.

8. (c)

The 10th Governing Council meeting of NITI Aayog is an important initiative in the direction of making India a developed nation by 2047. This meeting, chaired by Prime Minister Narendra Modi, will be held on **24 May 2025 at Bharat Mandapam, New Delhi**. The theme of the meeting is "Developed States for a Developed India @2047", aimed at making states key partners in the development process.

- States will be expected to prepare long-term and inclusive vision documents based on their geographic and demographic capabilities. These documents will emphasize human development, economic growth, governance reforms, green technology, employment generation, and data-driven project monitoring.

- The meeting will also consider the recommendations of the **Fourth National Conference of Chief Secretaries**, held in December 2024. These recommendations include:
  - Developing an ecosystem for manufacturing and services in Tier-2 and Tier-3 cities.
  - Promoting MSMEs and informal employment in rural and urban areas.
  - Opportunities in renewable energy and circular economy.
- Chief Ministers, Lieutenant Governors, Union Ministers, the Vice-Chairman and CEO of NITI Aayog will participate in this meeting. It will strengthen cooperative federalism and accelerate the goal of a developed India.

9. (c)

- Launched on **15 August 2020**, Project Dolphin aims to conserve both marine and river dolphins, along with related cetaceans, through habitat conservation, scientific research, and community awareness.
- According to a recent survey, the number of river dolphins in India is **6,327**. India's first river dolphin estimation report recorded 6,327 dolphins across **28 rivers in eight states**. The highest number of dolphins was recorded in **Uttar Pradesh (approximately 2,397)**, followed by Bihar, West Bengal, and Assam. Hence, **both statements 1 and 2 are incorrect**.

10. (a)

- On **4 November 2024**, the satellite LignoSat was launched towards the International Space Station (ISS) under the **CRS-31 mission** from the **Kennedy Space Center in the USA**. This satellite was built in Japan and constructed using wood called Hinoki, also known as Magnolia wood. It is the world's first satellite made from wood.
- Its primary purpose is to explore the potential use of wood in addressing the problem of **space debris (space junk)**. Since wood is biodegradable, it is being viewed as a sustainable and alternative solution to traditional metal-based satellites. Hence, **statements 1 and 2 are correct**, while **statement 3 is incorrect**.

11. (c)

- **Operation Midnight Hammer** was a limited military operation conducted by the United States against Iran in **July 2025**. The main objective of this operation was to halt Iran's active nuclear program.
- The U.S. targeted three major nuclear facilities in Iran:
  - **Natanz**: Iran's primary uranium enrichment plant.
  - **Isfahan**: Uranium conversion plant and nuclear research center.
  - **Fordow**: An underground uranium enrichment facility built deep within mountains for protection against airstrikes.
- The U.S. deployed **B-2 Spirit stealth bombers**, regarded as some of the most advanced secret attack aircraft in the world. They also used **GBU-57 Massive Ordnance Penetrators (bunker buster bombs)**, capable of destroying underground nuclear sites.
- Additionally, **Tomahawk cruise missiles** were launched in the attack.
- In response, Iran passed a bill in its parliament to close the **Strait of Hormuz**, which triggered a global energy supply crisis.
- The Strait of Hormuz handles approximately **20% of the world's oil transportation** and connects the **Persian Gulf** to the **Gulf of Oman**.

12. (b)

- A voltmeter is an instrument used to measure the potential difference (voltage) between two points in an electric circuit.
- It is connected in parallel with the component or section of the circuit on which the voltage is to be measured, ensuring that it does not alter the current flowing through the circuit.

- The high internal resistance of a voltmeter minimises the effect on the circuit being measured.
- Accurate voltage measurement is important for the design, troubleshooting and maintenance of electrical and electronic systems.

13. (a)

- Over the past 10 years (2015–2025), the **Digital India** initiative has brought revolutionary changes in infrastructure, e-services, and citizen empowerment.
- However, some key **bottlenecks** and challenges still persist.

Statement 1: India ranks among the top 5 countries in mobile internet speed – Incorrect

- As per **Ookla's 2024 report**, India ranks **25th globally** in mobile internet speed.
- **Low speed and uneven coverage**, especially in remote areas, are **widening the digital divide**.
- This limits the impact of schemes like **PM-WANI**, **BharatNet**, **4G saturation project**, and the **5G Bharat Mission**.

Statement 2: Data privacy breaches have significantly reduced – Incorrect

- Though the **Digital Personal Data Protection (DPDP) Act** came into force in 2023, **data privacy challenges persist**.
- A recent report highlights that **61% of companies still violate consent norms**.
- **Weak enforcement**, lack of **regulatory awareness**, and issues with **data localization** remain key barriers.

Statement 3: Delay in spectrum auction has affected 5G rollout – Correct

- India deployed **4.74 lakh 5G towers** by 2023.
- Yet, **delays in spectrum auctions**, **policy uncertainties**, and **cost challenges** have slowed implementation.
- This has impacted the momentum of the **5G Bharat scheme**, **semiconductor mission**, and **digital manufacturing initiatives**.

Statement 4: Digital literacy in rural areas is only 37% – Correct

- As of 2023, **rural digital access and literacy stood at just 37%**, sustaining a **significant digital divide**.
- To address this, the government implemented:
  - **PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan)**
  - **Common Service Centres (CSC)**
  - **Bhashini (local language services)**
  - **UMANG** and **DigiLocker** platforms for digital inclusion
- Yet, most benefits **remain confined to urban and educated segments**.

About Digital India:

- **Launched on 1st July 2015** by the Government of India, **Digital India** is an ambitious initiative aiming to transform India into a **digitally empowered society and knowledge-based economy**.

Primary Objectives:

- Building **digital infrastructure**
- Ensuring **digital delivery of services**
- Promoting **financial inclusion**

Key Achievements:

- Under **BharatNet**, 2.18 lakh gram panchayats connected via **6.92 lakh km of optical fiber**
- **5G Revolution**: 4.74 lakh 5G towers installed, covering **99.6% of districts**
- **UPI Transactions** (as of April 2025): 1,867.7 crore transactions worth ₹24.77 lakh crore — accounting for **49% of global real-time transactions**
- **Aadhaar**: 142 crore IDs issued; **₹44 lakh crore transferred** via **Direct Benefit Transfer (DBT)**
- **DigiLocker**: 53.92 crore users; **UMANG App**: 8.34 crore users
- Platforms like **ONDC** and **GeM** have connected **millions of vendors** to the government procurement ecosystem.

14. (d)

- **Statement 1 is correct** – The theme of the 17th BRICS Summit indeed focused on strengthening cooperation among Global South nations to ensure inclusive development.
- **Statement 2 is also correct** – While there was no explicit agreement on exact amounts or deadlines for climate finance or carbon pricing, the "BRICS Carbon Market Partnership" framework was adopted.

Background and Significance of the 17th BRICS Summit:

- The **17th BRICS Summit** was held on **8th July 2025** in **Rio de Janeiro, Brazil**, and was a landmark event for the **Global South**.
- Its theme, "Strengthening Global South Cooperation for More Inclusive and Sustainable Governance," underlined BRICS's goal to increase the participation of **developing and emerging economies** in global governance systems.
- **India's Prime Minister** signed the **Rio de Janeiro Declaration** during the summit.

Membership Expansion:

- **Indonesia** was officially inducted as a BRICS member during the summit.
- Countries like **Belarus, Bolivia, Kazakhstan, Cuba, Nigeria, Malaysia, Thailand, Vietnam, Uganda**, and **Uzbekistan** were granted the status of **partner nations**.
- **India will chair BRICS in 2026** and host the **18th BRICS Summit**.

Key Outcomes of the Summit:

1. Reform of Global Governance

- **UNSC Expansion** – BRICS supported adding more permanent members from Asia, Africa, and Latin America.
- **IMF & World Bank Reform** – Reiterated the demand for fair representation of **EMDCs** (Emerging Markets and Developing Countries).
- **Support for WTO** – Emphasized strengthening **rules-based international trade**.

2. Sustainable Development and Climate Cooperation

- **BRICS Carbon Market Partnership** – Agreement to promote **carbon pricing** and **emissions trading** systems.
- **Climate Finance Framework** – Commitment to mobilize finance for developing countries, though no concrete amount or timeline was fixed.

3. Peace and Security

- **Support for "African solutions to African problems"**.
- **Gaza Conflict** – Called for **ceasefire** and a **two-state solution**.
- **Terrorism** – India reiterated that terrorism **can never be justified based on convenience**.

4. Financial Cooperation

- **Cross-border Payment Initiatives** – Aim to **reduce dependence on the US dollar**.
- **BRICS Multilateral Guarantee (BMG) Pilot** – To **de-risk investment flows**.
- **Expansion of the New Development Bank (NDB)** – To support more **developmental projects**.

5. Technology and Digital Economy

- **BRICS Statement on Global AI Governance**.
- **Agreement on Data Economy Governance** – Establishing rules for **digital data sharing**.
- **Formation of BRICS Space Council** – For **joint space research and cooperation**.

6. Health and Social Development

- Launch of **partnership to eliminate tuberculosis (TB)** across member nations.

Growing Global Influence of BRICS:

- **Demographics & Economy** – BRICS now represents **45% of the world's population** and **37.3% of global GDP**, surpassing the G7.
- **Energy Security** – With **Iran, Saudi Arabia, and the UAE** joining, BRICS controls **44% of global crude oil production**.
- **Platform for Multilateral Reforms** – BRICS exerts **collective pressure for reforms in the UNSC, IMF, and WTO**.
- **Alternative to G7** – BRICS is increasingly seen as a **powerful voice for the Global South** and a **counterbalance to the G7**.

15. (b)

- NISAR (NASA-ISRO Synthetic Aperture Radar) mission is an ambitious Earth observation mission developed under an agreement between India and the United States in the year 2014. It will be launched from the Satish Dhawan Space Centre. It is a Low Earth Orbit (LEO) observatory, which will be able to map the entire Earth in 12 days.
- The primary objective of NISAR is to monitor changes in the Earth's surface, natural disasters, and ecosystems. The second statement is incorrect because the SAR radar (L-band and S-band) does not rely on visible light; it can collect data day and night regardless of cloud cover and weather conditions.
- In this, NASA has provided the L-band radar, GPS, and data recording systems, whereas ISRO has developed the S-band radar, GSLV launch system, and the spacecraft. The main feature of this mission is its dual-frequency radar system, which uses both L-band and S-band. The wavelength of the S-band radar is approximately 8–15 centimeters and frequency is 2–4 gigahertz. Due to the long wavelength and low frequency, it does not attenuate easily. This means that it can function without being affected by clouds, rain, and other weather conditions. That is why S-band radar is extremely useful for weather observation and disaster management.
- Through the NISAR mission, it will be possible to monitor in real-time events such as earthquakes, tsunamis, volcanic eruptions, and glacier melting. In addition to this, it will also provide accurate assessment of climate change, agriculture, deforestation, and changes taking place in ecosystems.

16. (b)

- ULLAS is a **centrally sponsored scheme**, implemented from **2022 to 2027**. Its objective is to provide literacy to adults aged 15 years and above who, for some reason, could not receive formal education. This scheme is aligned with the **National Education Policy 2020 (NEP 2020)** and works towards making India a fully literate nation by 2030.

- The five key components of ULLAS are:
  - Foundational literacy and numeracy
  - Critical life skills (such as financial and digital literacy)
  - Basic education (up to Class 3–8 level)
  - Vocational skills
  - Continuing education (e.g., libraries, hobby development)
- This scheme is based on the spirit of **duty consciousness and volunteerism**. Learners and volunteers can self-register through the **ULLAS app**, which is integrated with the **DIKSHA portal (NCERT)** to provide access to online study materials.
- Recently, the state of Goa achieved full literacy under this program, marking an important milestone in India's literacy journey. ULLAS empowers society and contributes to building an inclusive and self-reliant India.
- ULLAS is implemented by the **Department of School Education (Ministry of Education)** and not the Department of Social Justice. Hence, **statement 1 is incorrect**, while **statements 2 and 3 are correct**.

17. (a)

- **Tianhe-2** is one of China's leading supercomputers. With a speed of **33.86 petaflops**, it was the world's fastest supercomputer from June 2013 to November 2015.
- **Frontier** is a supercomputer in the United States with a speed of **1353 PFlop/s**, ranking second globally.
- **Jupiter Booster** is installed in Germany and has a peak performance of **793.40 PFlop/s**.
- **Airavat-PSAI** is India's fastest supercomputer, developed under the **National Program on AI** and installed at **C-DAC, Pune**.

18. (a)

- Prime Minister Narendra Modi has become the **most internationally decorated Prime Minister of India**, having received **27 international honors**.

Some key awards include:

- **Namibia**: Order of the Most Ancient Welwitschia Mirabilis
- **Brazil**: Grand Collar of the National Order of the Southern Cross
- **Trinidad and Tobago**: The Order of the Republic of Trinidad and Tobago
- **Ghana**: The Officer of the Order of the Star of Ghana
- **Cyprus**: Grand Cross of the Order of Makarios III
- **Sri Lanka**: Mitra Vibhushana
- **Mauritius**: Grand Commander of the Order of the Star and Key of the Indian Ocean
- **Kuwait**: The Order of Mubarak Al-Kabeer
- **Sudan**: The Order of Excellence
- **Barbados**: Honorary Order of Freedom of Barbados Award
- **Dominica**: The Dominica Award of Honour
- **Niger**: Grand Commander of the Order of the Niger
- **Russia**: Order of St. Andrew the Apostle
- **Bhutan**: Order of the Druk Gyalpo
- **France**: Grand Cross of the Legion of Honour
- **Greece**: Grand Cross of the Order of Honour
- **Egypt**: Order of the Nile

- **Fiji**: Companion of the Order of Fiji
- **Papua New Guinea**: Grand Companion of the Order of Logohu
- **Palau**: Abaka Award
- **Maldives**: Order of the Distinguished Rule of Nishan Izzuddin
- **USA**: Legion of Merit by the US Government
- **Bahrain**: King Hamad Order of the Renaissance
- **Afghanistan**: State Order of Ghazi Amir Amanullah Khan
- **Saudi Arabia**: The King Abdulaziz Sash
- **United Arab Emirates**: Order of Zayed Award
- **Palestine**: Grand Collar of the State of Palestine Award

19. (a)

- The **Ramsar Convention** was signed in 1971 in Ramsar, Iran, with the aim of conserving and ensuring the sustainable use of wetlands. India joined this convention in **1982**.
- On **4 June 2025**, Khichan and Menar Wetland Complex in Rajasthan were declared Ramsar sites.
- With this, the total number of Ramsar sites in India has reached **91**. Tamil Nadu (20 sites) has the highest number of Ramsar sites, while Uttar Pradesh (10 sites) is in second place. Hence, **statements 1 and 2 are correct**, but **statement 3 is incorrect**.
- Uttar Pradesh's 10 Ramsar sites include: Upper Ganga River, Nawabganj Bird Sanctuary, Parvati Arga Bird Sanctuary, Saman Bird Sanctuary, Samaspur Bird Sanctuary, Sandi Bird Sanctuary, Sarsai Nawar Lake, Sur Sarovar (Keetham Lake), Haiderpur Wetland, and Bakhira Wildlife Sanctuary.

20. (a)

- **Khaan Quest** – A multinational military exercise conducted from **14 – 28 June, 2025** in Mongolia.
- **Nomadic Elephant** – A joint military exercise between India and Mongolia, held from **31 May – 13 June, 2025**.
- **Shakti** – A joint military exercise between India and France, held from **18 June – 1 July, 2025**.
- **Indra** – A naval exercise between India and Russia, conducted from **28 March – 2 April, 2025**.

21. (b)

- **Mohammed bin Rashid Al Maktoum** — Prime Minister of the **United Arab Emirates**
- **Mark Carney** — Former Governor of Bank of Canada and Bank of England; associated with **Canada**
- **Kamla Persad-Bissessar** — Prime Minister of **Trinidad and Tobago**
- **Anthony Albanese** — Prime Minister of **Australia**

Other Appointed/Elected Individuals:

- **Claudia Sheinbaum** – **Mexico** (First woman president)
- **Prabowo Subianto** – **Indonesia**
- **Netumbo Nandi-Ndaitwah** – **Namibia** (First woman president)
- **Lawrence Wong** – **Prime Minister of Singapore**
- **Simon Harris** – **Prime Minister of Ireland**

22. (a)

- **Global Achievers Award (2025):** Sudarshana Dravid, a young social entrepreneur from Nagpur, was honored for her leadership in technology and sustainable development in India.
- **International Booker Prize (2025):** Awarded to Banu Mushtaq for her Kannada short story collection "Heart Lamp", translated into English by Deepa Bhasthi. This is the first time a Kannada book has received this prize.

- **Grammy Award (2025):** Indian musician Ricky Kej won his third Grammy Award for his album in the "New Age Album" category, continuing his global representation of Indian music.
- **Robert F. Kennedy Human Rights Award (2025):** Kailash Satyarthi, India's renowned child rights activist, was honored for his lifelong work against child labor.

23. (a)

- The **India Meteorological Department (IMD)** was established in **1875** and completed **150 years in 2025**. On this occasion, several new initiatives and programs have been launched by the Government of India, including Mission Mausam. The mission aims to modernize India's meteorological services to global standards. Hence, **statement 1 is correct**.
- However, Mission Mausam is not run by IMD. It is operated by the **Ministry of Tourism**, **Archaeological Survey of India (ASI)**, and the **Indira Gandhi National Centre for the Arts (IGNCA)**. Hence, **statement 2 is incorrect**.
- Efforts are underway to enhance climate change monitoring and disaster management using satellite-based data and high-performance computing.
- Sector-specific forecasts are being provided for agriculture, fisheries, aviation, and energy to improve productivity and safety.
- Expansion of mobile apps and digital platforms to deliver weather-related information in local languages to rural areas.
- Development of advanced weather forecasting systems utilizing Artificial Intelligence (AI) and Machine Learning (ML) for precise and faster forecasts.

24. (a)

- **Bhargavastra** is a modern anti-drone system developed in India by **Economic Explosives Limited (EEL)**, a subsidiary of the Solar Group. It was tested on **12–13 January 2025** at the **Gopalpur Firing Range in Odisha**. Hence, **statement 1 is correct**.
- This system can detect, track, and neutralize enemy drones in the air using micro-missiles. In its first trial, it successfully destroyed an airborne target at a distance of **2.5 km** and an altitude of **400 meters**. Hence, **statement 2 is incorrect**.
- The system can track drones from over **6 km away**, detect UAVs up to **10 km**, and simultaneously fire **more than 64 micro-missiles**, making it highly effective against drone threats on the battlefield.

25. (b)

- **Human Development Index (HDI):** According to UNDP's 2025 report, India ranks **130th** out of 193 countries, with its HDI score rising from **0.676 (2022)** to **0.685 (2023)**, placing it in the medium group.
- **Press Freedom Index:** India ranked **151st** in 2025, improving from **161st** in 2024.
- **Global Innovation Index:** India's rank fell to **42nd** in 2025 from **39th** in 2024, highlighting the need for continued improvements in policy and R&D.
- **World Happiness Report:** India ranked **118th** in 2025, an improvement from **126th** in 2024, attributed to social support, mental health awareness, and inclusive development initiatives.

26. (d)

- The **Buddhist Circuit** in Uttar Pradesh connects sites directly associated with the life of Lord Buddha.
- Major destinations in this circuit include:
  - **Sarnath (Varanasi)** – Site of Buddha's first sermon
  - **Kushinagar** – Site of Mahaparinirvana
  - **Shravasti** – Place where Buddha spent many monsoon retreats
  - **Kapilvastu (Pilibhit)** – Site associated with Buddha's renunciation

- **Kashi, Chitrakoot, and Prayagraj** are not directly connected with the life of Buddha:
  - **Kashi** – Center of Sanatan Dharma
  - **Chitrakoot** – Associated with Lord Rama
  - **Prayagraj** – Known for Kumbh Mela and Sangam

Hence, option (d) is incorrect.

27. (a)

- This project is located in the **Kanpur district of Uttar Pradesh**. Hence, **statement 1 is correct**.
- However, it is **not operated by NTPC**, but by **NLC India** and **UPRVUNL (Uttar Pradesh Rajya Vidyut Utpadan Nigam)** through their joint venture **NUPPL**. Hence, **statement 2 is incorrect**.
- The installed capacity of this thermal power project is **3×660 MW**.
- A Power Purchase Agreement (PPA) has been signed to allocate **75.12% (1,487.28 MW)** of the produced power to Uttar Pradesh and **24.88% (492.72 MW)** to the state of Assam.
- To comply with environmental standards, **Selective Catalytic Reduction (SCR)** technology has been adopted to reduce **Nitrogen Oxide (NOx)** emissions. This technology is a modern and effective solution for controlling air pollution.

Hence, option (a) is correct.

28. (a) Indian Rice Research Institute – Varanasi

- The **Indian Rice Research Institute** is located in **Cuttack (Odisha)**, not in Varanasi.
- **Indian Institute of Vegetable Research** – Varanasi
- **Indian Sugarcane Research Institute** – Lucknow
- **Indian Pulses Research Institute** – Kanpur

Some other imp institutes headquartered in Uttar Pradesh

Central Drug Research Institute (CDRI) – Lucknow

- Premier research institute under CSIR, working on drug discovery.

·**National Botanical Research Institute (NBRI)** – Lucknow

- Focus on plant science research and biodiversity conservation.

Indian Institute of Sugarcane Research (IISR) – Lucknow

- Works on sugarcane-related agricultural research.

·**National Bureau of Fish Genetic Resources (NBFGR)** – Lucknow

- Research on conservation of fish genetic resources.

Central Institute for Subtropical Horticulture (CISH) – Lucknow

- Research on mango, guava, and other subtropical fruits.

G.B. Pant National Institute of Himalayan Environment – Almora

- Environmental research on the Himalayan ecosystem.

Central Institute of Medicinal and Aromatic Plants (CIMAP) – Lucknow

- R&D on medicinal and aromatic plants for pharma and industries.

National Sugar Institute (NSI) – Kanpur

- Training and research in sugar technology and related fields.

29. (a)

- Prayagraj was selected for the first time as the **"Cleanest Ganga City"**, but it did **not secure first place in the ODF++ category**. Instead, **337 urban local bodies (ULBs)** were collectively granted ODF++ status. Prayagraj's recognition is mainly due to its achievements under the Ganga cleaning campaign.
- **Noida** secured the first position in the **Super Swachh League** for cities with a population between 3–10 lakh but was not awarded in the Ganga city category as it is not located on the banks of the Ganga. This award went to **Prayagraj**.
- In the **Swachh Survekshan 2024–25**, cities of Uttar Pradesh performed exceptionally well.
  - **Lucknow** secured third place and received a **7-star garbage-free rating**.
  - Prayagraj overtook Varanasi to win the **cleanest Ganga city title**.
  - **Noida** topped the Super Swachh League in the 3–10 lakh population category.
  - **Gorakhpur, Agra, Kanpur, Prayagraj, and Noida** achieved **5-star ratings**.
  - **337 ULBs** were given ODF++ status, and waste processing capacity reached **85%**.
- The key objective of **Swachh Survekshan 2025** is to promote the **3R principle (Reduce, Reuse, Recycle)** and to strengthen cleanliness and citizen participation in urban areas.

30. (b)

- The **"AI Pragya" programme** aims to train the youth of Uttar Pradesh in digital and advanced technological skills. In the first phase, 10,000 youth will be trained in areas like Artificial Intelligence (AI), Machine Learning, Data Analytics, and Cyber Security. This programme is supported by the **State Government and the World Bank**, so **statement 3 is incorrect**.
- Under this programme, the target is to train **10 lakh youth in AI**.

31. (d)

Mixed glands

- These are vascular glands. One part of them is endocrine and the other part is exocrine.
- For example, pancreas.
- The word hormone was first used by Stalling in 1906.
- Hormone is a specific compound, which is secreted by endocrine glands, which reaches different parts of the body through blood and affects the functions of that organ.
- Huxley called them 'chemical messengers'.

The first hormone to be discovered was "secretin", discovered in 1902 by W. M. Bayliss and E. H. Starling.

32. (b)

- **Statement 1 – Correct:** The Aspirational Districts Programme (ADP) was launched by Prime Minister Narendra Modi in January 2018. Its objective was to rapidly develop 112 socio-economically backward districts of the country. These districts were selected on the basis of poor conditions in health, education, nutrition, agriculture and infrastructure.
- **Statement 2 – Correct:** NITI Aayog ranks the progress of these districts based on five main themes – Health and Nutrition, Education, Agriculture and Water Resources, Financial Inclusion and Skill Development, Infrastructure – under which 49 Key Performance Indicators (KPIs) are considered.
- **Statement 3 – Incorrect:** Although NITI Aayog coordinates this programme, the states also have an active role in it. State governments are responsible for implementing the schemes, managing data, and providing the necessary resources in their respective districts
- **Statement 4 – Incorrect :** 8 districts of Uttar Pradesh – Sonbhadra, Fatehpur, Siddharthnagar, Chitrakoot, Chandauli, Balrampur, Bahraich and Shravasti – are included under this programme.

33. (d)

- Padma awards are among the highest civilian honors of India, announced every year on the occasion of Republic Day. In the year 2025, a total of 139 personalities were conferred this honor. Among these:

  ¬ 07 Padma Vibhushan ¬ 19 Padma Bhushan ¬ 113 Padma Shri

- Most awards were given in the Padma Shri category, as it is meant to recognize relatively broader contributions. From Uttar Pradesh, a total of **10 personalities** received this honor this year, reflecting outstanding contributions in various fields from the state.
- However, the statement that **"all Padma Vibhushan awards were given only for sports and arts"** is incorrect because Padma Vibhushan is also awarded for science, public service, literature, medicine, and other fields.
- Padma awards are **announced by the Ministry of Home Affairs**, Government of India, not the Ministry of Culture. These awards are conferred by the President of India. Padma awards do not carry any monetary grant; they are symbolic of honor and recognition only.
- The objective of these awards is to recognize and encourage exceptional and distinguished contributions in various fields. These honors are also seen as symbols of national unity and inspiration.

Padma awardees from Uttar Pradesh in 2025 (Total – 10 individuals):

1. **Padma Vibhushan** – None from Uttar Pradesh
2. **Padma Bhushan** – Total 2:

- Ram Bahadur Rai – Literature & Education
- Sadhvi Rithambara – Social Work

3. **Padma Shri** – Total 8:

- Hriday Narayan Dixit – Literature & Education
- Ganeshwar Shastri – Literature & Education
- Shyam Bihari Agrawal – Social Work
- Sonia Nityanand – Medicine
- Syed Anul Hasan – Literature & Education
- Bheem Singh Bhavesh – Social Work
- Hemant Kumar – Medicine
- Satyapal Singh – Sports

34. (d)

According to the Uttar Pradesh Budget 2025–26, the largest revenue source for the state is "Own Tax Revenue" (37.4%), not the state's share in central taxes. The share in central taxes is also a significant part of the total revenue, contributing 32.4%. Thus, Assertion (A) is incorrect.

- On the other hand, **Reason (R) is correct**. Under the Constitution of India, the central government shares a portion of revenues collected from taxes like income tax, corporate tax, customs duty, excise duty, and GST with the states. This share is crucial for funding developmental schemes, infrastructure projects, and welfare programs.

Hence, A is incorrect but R is correct, making option (d) the right answer.

35. (a) Only 1

- In the **Uttar Pradesh Budget 2025–26**, total revenue is estimated at **₹7.79 lakh crore**, while total expenditure is **₹8.08 lakh crore**.
- The largest source of revenue is **Own Tax Revenue (37.4%)**, reflecting the state's progress toward fiscal self-reliance. The **share in central taxes (32.4%)** is the second-largest source.
- According to the **"Where does the rupee go?" chart**, the largest expenditure is on **Salaries and Wages (12.4%)**, while the **target for Capital Expenditure (20.4%)** underscores the focus on infrastructure development.

- **Revenue Account Expenditure** is **₹5.83 lakh crore**, used for government schemes, salaries, pensions, and debt servicing.
- **Capital Expenditure** is **₹2.25 lakh crore**, allocated for roads, bridges, and industrial development.
- The state's economic growth is evident in the **27.51% GSDP growth rate**, which has doubled from ₹12.89 lakh crore in 2017–18 to 2024–25.

36. (d)

- Uttar Pradesh is the leading state in India in terms of the number of GI-tagged products. So far, more than **75 products from UP** have received GI tags. This tag provides international recognition to the geographical uniqueness, quality, and tradition of the product.
- Banaras Gulabi Meenakari (Varanasi) – This is a traditional art form on jewelry, involving fine pink enameling. It received the GI tag in 2014.
- Bhadohi Handmade Carpets (Bhadohi) – Bhadohi is known as the "Carpet City," and its handmade wool and silk carpets have received GI tags.
- Malihabadi Dasheri Mango (Lucknow) – The Dasheri mango originated in the Malihabad region, renowned worldwide for its sweetness and aroma.
- Baghpat Home Furnishing (Baghpat) – The handloom fabrics and home decorative products prepared in Baghpat have received GI recognition.

37. (a)

- Under ODOP, every district's traditional product has been given global branding.
- The Government of Uttar Pradesh launched the "One District One Product" (ODOP) scheme in 2018, aiming to promote Micro, Small, and Medium Enterprises (MSMEs) at the local level.
- Under this scheme, each district's traditional, unique, and heritage product has been identified, such as:
  - Banarasi Sarees from Varanasi
  - Carpets from Bhadohi
  - Brassware from Moradabad
  - Glassware from Firozabad
  - Perfumes (Attar) from Kannauj

38. (a)

- The **"Mini-Forest" scheme** launched by the Uttar Pradesh government is a significant initiative aimed at environmental conservation and increasing green cover in urban areas. Rapid urbanization and industrialization have led to the **Urban Heat Island Effect**, causing abnormal temperature rises in cities. To address this, small dense forests or "mini-forests" are being developed.
- These mini forests are created using techniques such as the **Miyawaki method**, which involves dense plantation for rapid tree growth and the creation of green cover in a short span.
- The primary objective of this scheme is **urban cooling**. Trees provide natural shade, absorb carbon dioxide, and release oxygen, thereby reducing temperature and improving air quality.
- Additionally, increased green cover supports biodiversity conservation, rainwater harvesting, and maintaining local climatic balance.

Thus, **Reason (R)** is a correct explanation of **Assertion (A)** because the core goal of the scheme is to achieve environmental balance and control urban heat while reducing air pollution.

39. (d)

- In 2025, the **"Uttar Pradesh Gaurav Samman"** was conferred on six distinguished individuals by the state government. This honor recognizes exceptional contributions in fields that enhance the prestige of the state.
- The recipients included:
  - **Dr. Krishnakant Shukla** (Education and Literature)
  - **Himanshu Gupta** (Ganga Aarti Organization, Vrindavan)
  - **Manish Verma** (Social Service)
  - **Krishna Yadav**
  - **Colonel Subash Deshwal**
  - **Dr. Jai Singh**
  - **Dr. Seema Sharma** was not among the awardees, and hence, she did not receive this honour in 2025.

40. (c)

- The **"Amrit Sarovar" project** is a significant initiative in Uttar Pradesh for water conservation. Its primary objective is to conserve water resources, improve groundwater levels, harvest rainwater, and maintain local environmental balance. So far, **16,630 ponds** have been constructed, demonstrating the project's success. There is however no specific target of 1 pond each district.
- Ponds and water bodies help in storing rainwater and recharging groundwater. Considering the declining water table and drought issues in several parts of Uttar Pradesh, this project was initiated.
- Additionally, the development of ponds and wetlands provides natural habitats for **migratory birds**, supporting biodiversity. These water bodies also promote fish farming and irrigation, benefiting the rural economy.

Thus, **Reason (R)** is correct and highlights the main objectives of the scheme, but **Assertion (A)** is incorrect.

41. (c)

- **Explanation: Kajri Mela – Mirzapur** The Kajri Mela of Mirzapur is especially famous for Kajri folk songs and local culture. Organized during the month of Sawan, this fair is a significant medium of cultural expression for rural women. Hence, this pair is absolutely correct.
- **Ganga Govardhan Mela – Kheri** In Kheri district, the Ganga Govardhan Mela is organized on the occasion of Govardhan Puja. This fair mainly attracts the livestock-rearing community and is centered around Govardhan worship, cattle trade, and religious rituals.
- **Kalwari Mela – Fatehpur** Kalwari Mela is actually organized in **Mahua, Ballia**, not in Fatehpur. This fair is associated with religious beliefs and local folk traditions. Associating it with Fatehpur is factually incorrect.
- Deva Sharif Mela **– Agra**: Deva Sharif Mela is held in Barabanki not in agra. Hence this pair is wrong.
- **Major Fairs of Uttar Pradesh:**
- Haridas Jayanti Mela – Vidhivan, Vrindavan (Mathura)
- Mudiya Puno Mela – Govardhan, Mathura
- Shrigirimpur Mela – Firozabad
- Saiyyad Salar Mela – Bahraich
- Daiganj Mela – Shahjahanpur
- Phalgun Mela – Rampur
- Uttarayani Mela – Bareilly
- Tigri Mela – Amroha
- Khari Jhallu Kartik Mela – Bijnor

- Chait Ramnavami Mela, Kartik or Parikrama Mela – Ayodhya Dham
- Mahakumbh Mela (world's largest fair) – Prayagraj (every 12th year)
- Parikrama Mela (in Phalgun) – Naimisharanya, Sitapur
- Kakora Mela – Budaun
- Gola Gokarnnath Mela – Kheri
- Ramnagariya Mela (on the banks of Ganga) – Farrukhabad
- Bal Sundari Devi Mela – Saharanpur
- Bateshwar Mela (cattle fair) – Agra

42. (d)

- The **Sharda River**, known as the Mahakali River in Nepal, is a major international river of northern India. It originates near the **Lipulekh Pass in Uttarakhand**, forming the India-Nepal border.
- It flows through **Sitapur district** in Uttar Pradesh, where the 2025 floods caused multiple fatalities, bringing the river back into focus.
- Due to its gradient and flow, the river descends rapidly during the monsoon, causing severe floods in adjacent areas. The **Sharda Barrage (Banbasa)** plays a critical role in supporting agriculture in the Terai region.
- The river eventually joins the Ghaghara River, which is a major tributary of the Ganga. Thus, the Sharda is indirectly considered a tributary of the Ganga.
- Flood management, environmental balance, and planning in its riparian zones are highly significant for Uttar Pradesh.

43. (c)

- **Mission Shakti (Launched on 17 October 2020):**
  - A comprehensive scheme launched in **Uttar Pradesh** to promote women's safety, empowerment, and self-reliance. So far, **five phases** have been completed.
  - To ensure the safety of women, **100 Pink Police Booths** have been established across the state.
  - The scheme has also identified and supported over **2 lakh girls** for their overall development.

Key Components & Achievements

Component	Description
Pink Police Booths & Outposts	100+ booths, pink patrol vehicles, and women beat constables enhance street safety
1090 Helpline & ITSSO Portal	Over 778,000 calls handled; cases are time-bound and tracked digitally.
One-Stop Centres	Provided support in 210,000+ cases involving violence or abuse
Child Marriage Prevention	More than 1,700 planned child marriages thwarted
Pink Toilets & Creches	1,100+ toilets and support centers in municipalities; creches opened at key police posts.
Skill Development & Entrepreneurship	Tied to self-help groups, SHG-led BC Sakhis, Revolving Funds, linking women to financial schemes.
Legal & Policing Reforms	Includes use of anti-Romeo squads, time-bound investigations, improved conviction rates, targeted patrols, and proactive policing during events like the Kanwar Yatra.

- **Phase V Highlights (2025)**: Expanded women beat constables, targeted anti-illicit drives, and increased FIRs/prosecutions for gender-related crimes
- **State-wide Reach**: The initiative has reached over **90 million women**, with 27,425 cases of crimes against women/minors prosecuted

Recognitions & Strategic Impact

- UP's SDG performance improvement attributed to Mission Shakti, particularly in gender-related targets 5 and 16.
- Showcased as a national policing best practice at Chennai's Women in Police conference in May 2025.

44. (b)

- The objective of UPSDM is to make youth employable at national and international levels by providing skill training.
- The **Uttar Pradesh Skill Development Mission (UPSDM)** was established on **13 September 2013**.
- This mission was launched with the aim of providing technical and employment-oriented training to the youth of the state to make them employable.
- It operates as a society registered under the **Societies Registration Act, 1860**.
- The mission's goal is to connect the youth to employment opportunities by enhancing their skills for both national and international markets.
- Recently, UPSDM has signed agreements with IIT institutions to provide state-of-the-art technical training to youth.

45. (c)

- **Project Alankar** is an educational reform initiative of the Uttar Pradesh government, launched on **1 October 2021**. Its main goal is to ensure **100% compliance with 35 basic facility parameters** in 2,441 government secondary schools. These parameters include safe drinking water, toilets, science laboratories, libraries, computer labs, and smart classrooms, with special focus on hygiene facilities for girls.
- The project includes the development of **Mukhyamantri Adarsh Vidyalayas (up to Class 12)** and **Mukhyamantri Abhyudaya Vidyalayas (from primary to Class 8)**, equipped with STEM (Science, Technology, Engineering, Mathematics) labs, computer labs, and modern teaching tools.
- Apart from the state government, the scheme encourages **voluntary participation** from private players under **Corporate Social Responsibility (CSR)**, but it is **not mandatory**.
- According to the **ASER 2024 report**, this initiative led to a **23% increase in enrolment rates** in government schools between 2022–23 and 2024–25, with improved proficiency in mathematics and language in Classes 6–8.

46. (c)

- **Explanation:** The **Minimum Support Price (MSP)** is the price declared by the Government of India at which crops are purchased from farmers, to protect them in case of a fall in market prices. MSP is recommended by the **Commission for Agricultural Costs and Prices (CACP)** under the Ministry of Agriculture and Farmers Welfare.
- The **objective of MSP** is to ensure that farmers receive a fair profit over the cost of cultivation. As of the year 2023–24, the government announces MSP for a total of **23 crops**, including **7 cereals, 5 pulses, 7 oilseeds, and 4 commercial crops** (such as sugarcane, cotton, jute, etc.).

- Since **2018–19**, the government has adopted the formula of **C2 (Comprehensive Cost) + 50%** for MSP determination. This C2 cost includes expenses like seeds, fertilizers, labor, land rent, and capital cost. This ensures a guaranteed return **above the total cost**, providing farmers with assured profit margins. Hence, the Reason (R) is the correct explanation for Statement (A).
- However, **procurement at MSP is not mandatory** across crops or regions. It varies significantly between crops and states. **Most procurement happens only for wheat and rice**, predominantly in **Punjab, Haryana, and Madhya Pradesh**.
- MSP offers **indirect legal assurance**, but several economists and farmer organizations have been demanding that MSP be given **statutory/legal status** so that all farmers can benefit from it uniformly.

47. (d)

- The **repo rate** is the rate at which commercial banks borrow short-term funds from the Reserve Bank of India (RBI).
- When the RBI increases the repo rate, borrowing becomes costlier for banks. As a result, banks also lend to customers at higher interest rates, reducing the demand for loans and decreasing money supply.

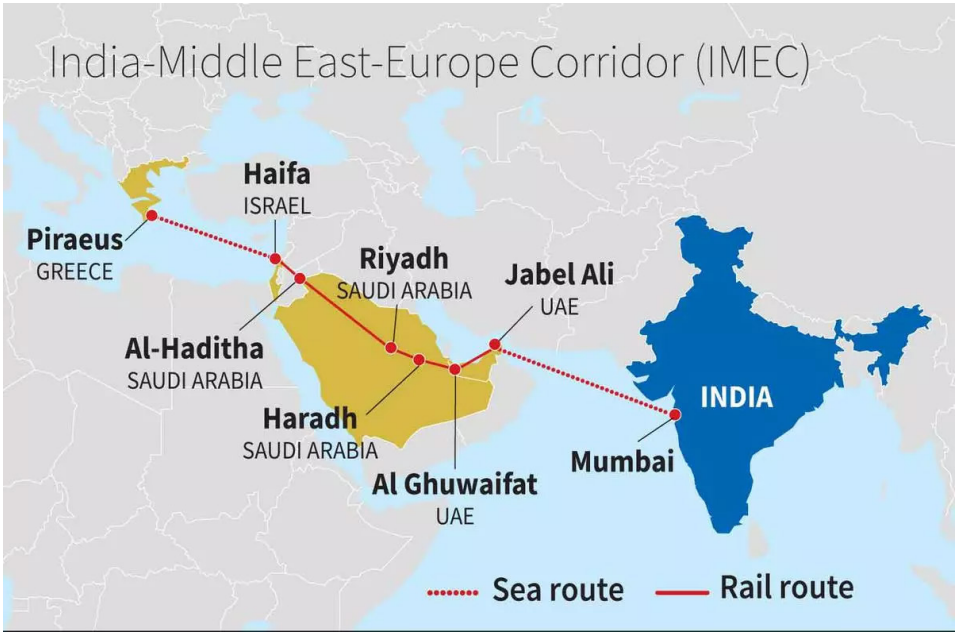
Hence, **Assertion (A)** is incorrect because an increase in the repo rate does **not increase** the money supply; instead, it reduces it.

- **Reason (R)** is correct since a higher repo rate means costlier borrowing for banks.

Therefore, option **(d)** is correct.

48. (d)

- The **India-Middle East-Europe Economic Corridor (IMEC)** was announced during the **G-20 Summit (New Delhi, 2023)**. Its objective is to enhance trade, energy, and connectivity between India, the Middle East, and Europe.
- The IMEC consists of two main corridors:
  - **Eastern Corridor (India to Middle East)**
  - **Northern Corridor (Middle East to Europe)**
- Key members of IMEC include:
  - India
  - Saudi Arabia
  - United Arab Emirates (UAE)
  - Italy
  - Germany
  - France
  - European Union (EU)
  - United States of America (USA)
- **United Kingdom (UK)** is **not a member** of this agreement.
- This initiative aims to provide an alternative to China's **Belt and Road Initiative** and establish a balanced global trade route network.



49. (b)

- **Explanation: Rangarajan Committee (2012):** The objective of this committee was to develop a new methodology for poverty measurement. This committee set new daily expenditure limits for the poor – ₹47 for urban areas and ₹32 for rural areas. It updated the methodology of the Tendulkar Committee.
- **Nachiket Mor Committee (2013):** It recommended the promotion of **financial inclusion** by suggesting the establishment of "Payments Banks" and "Small Finance Banks" to provide banking services to underserved populations.
- **M.J. Nayak Committee (2014):** Its objective was to bring **administrative reforms in banks** to improve the quality of leadership and governance.
- **R.R. Khanna Committee (1997):** This committee reviewed the structure and functioning of **cooperative banks**, which play a vital role in rural and agricultural finance.

50. (c)

- **Explanation:** DO (Dissolved Oxygen) refers to the oxygen present in water, which is essential for the survival of fish and other aquatic organisms. If its level drops below 4.0 mg/L, oxygen availability becomes very low, and such water is considered "highly polluted." BOD (Biological Oxygen Demand) measures how much oxygen is being consumed for the decomposition of organic waste in the water. A high BOD indicates that organic waste in the water is high, increasing oxygen demand, and hence the water is considered more polluted. These are scientifically accepted indicators of water quality. COD indicates the amount of oxygen required to oxidize all soluble and insoluble organic matter present in water. This test is fast, accurate, and easier to conduct in a lab, whereas BOD measurement takes around 5 days. Hence, COD is considered more practical and suitable for pollution measurement. MPN (Most Probable Number) is a microbiological technique used to detect the presence of bacteria like E. coli in water. These bacteria are responsible for water-borne diseases like diarrhea, vomiting, etc., and their presence indicates water contamination.

51. (b)

- **Explanation: Fiscal Deficit:** For the financial year 2025–26, the fiscal deficit is targeted at 4.4% of GDP, which is an improvement from the Revised Estimate of 4.8%. **Revenue Deficit:** In this budget, the revenue deficit is targeted at 1.5% of GDP, which is lower than 1.9% in 2024–25. **Capital Expenditure:** The capital expenditure is ₹11.21 lakh crore, and the effective capital expenditure (including grants) is ₹15.48 lakh crore. **Total Receipts (excluding borrowings):** Estimated at ₹34.96 lakh crore, which marks an 11.1% increase.

52. (c)

1. IUCN (International Union for Conservation of Nature)

- **Established:** 1948
- **Headquarters:** Gland, Switzerland
- **About:**
- The **world's first global environmental organization**, working as a network of governments, civil society organizations, and experts.
- Known for the **IUCN Red List of Threatened Species**, a critical tool for identifying species at risk of extinction.
- Supports global agreements like the **Convention on Biological Diversity (CBD)** and **Ramsar Convention**.
- Focuses on nature-based solutions to address climate change, biodiversity loss, and sustainable development.
- **Significance:** Bridges science, policy, and practice to create global standards for conservation.

2. WWF (World Wide Fund for Nature)

- **Established:** 1961
- **Headquarters:** Gland, Switzerland
- **About:**
- A leading international NGO, recognized globally by its **panda logo**.
- Works on wildlife protection, forest conservation, marine sustainability, climate change mitigation, and promoting renewable energy.
- Organizes global movements like **Earth Hour** and **Plastic-Free Oceans**.
- Collaborates with corporations to promote sustainable supply chains.
- **Significance:** Combines grassroots projects with global advocacy to build an environmentally conscious society.

3. UNEP (United Nations Environment Programme)

- **Established:** 1972
- **Headquarters:** Nairobi, Kenya

About:

- Set up after the historic **Stockholm Conference** to coordinate UN environmental activities.
- Works on climate change, sustainable development, ecosystem management, and disaster resilience.
- Administers key multilateral environmental agreements (MEAs), e.g., **Montreal Protocol**, **Basel Convention**, and **Minamata Convention on Mercury**.
- Publishes flagship reports like the **Emissions Gap Report** and **Global Environment Outlook**.
- **Significance:** Provides leadership and encourages partnerships for environmental protection globally.

4. IPCC (Intergovernmental Panel on Climate Change)

- **Established:** 1988
- **Headquarters:** Geneva, Switzerland

About:

- Jointly established by the **World Meteorological Organization (WMO)** and **UNEP**.
- Functions as the **scientific backbone of global climate negotiations**, providing governments with assessments about the science, risks, and impacts of climate change.
- Divided into three working groups:
- **WG I:** The Physical Science Basis (studies evidence of climate change).
- **WG II:** Impacts, Adaptation, and Vulnerability.
- **WG III:** Mitigation of Climate Change.
- Publishes **Assessment Reports (ARs)** approximately every 5–7 years. The **6th Assessment Report (AR6)** highlighted that human influence is unequivocally warming the planet.

Significance:

- Provides scientific evidence for global climate agreements like the **Paris Agreement** and **Kyoto Protocol**.
- Its reports influence policymaking, adaptation strategies, and global climate finance discussions.
- Correct sequence: **IUCN (1948) → WWF (1961) → UNEP (1972) → IPCC (1988).**

53. (c)

Biodiversity: Biodiversity refers to the variety and variability of life forms on Earth, including plants, animals, fungi, and microorganisms, the genetic differences within these species, and the ecosystems they form.

- **Dimensions of Biodiversity**:
    1. **Genetic Diversity**: Variation of genes within species (e.g., different varieties of rice in India).
    2. **Species Diversity**: Variety of species within a region (e.g., Amazon rainforest has highest species richness).
    3. **Ecosystem Diversity**: Variety of ecosystems in a given place (e.g., coral reefs, mangroves, deserts).
- **Importance of Biodiversity**:
    - Provides **ecosystem services** like pollination, nutrient cycling, climate regulation.
    - Ensures **food security** through crop variety.
    - Source of **medicines and raw materials**.
    - **Cultural and aesthetic value** in human societies.
    - Enhances ecosystem **resilience against disasters**.

Measurement of Biodiversity

Measuring biodiversity is critical for conservation and sustainable management. Scientists use several indices and methods:

1. Alpha Diversity (Within-Habitat Diversity)

- **Definition**: Species diversity within a particular area or ecosystem.
- **Measured by**:
    - **Species Richness**: Total number of species present.
    - **Shannon-Weiner Index (H'):** Considers both richness and evenness.
    - **Simpson's Index (D):** Probability that two individuals randomly selected from a sample belong to the same species.

2. **Beta Diversity (Between-Habitat Diversity)**

- **Definition**: Comparison of species diversity between ecosystems or along environmental gradients.
- **Indicates**: Species turnover from one habitat to another.
- **Measured by**:
  - **Whittaker's Beta Diversity**:

β = Species in regionMean species per site\beta = \frac{\text{Species in region}}{\text{Mean species per site}}

3. **Gamma Diversity (Landscape Diversity)**

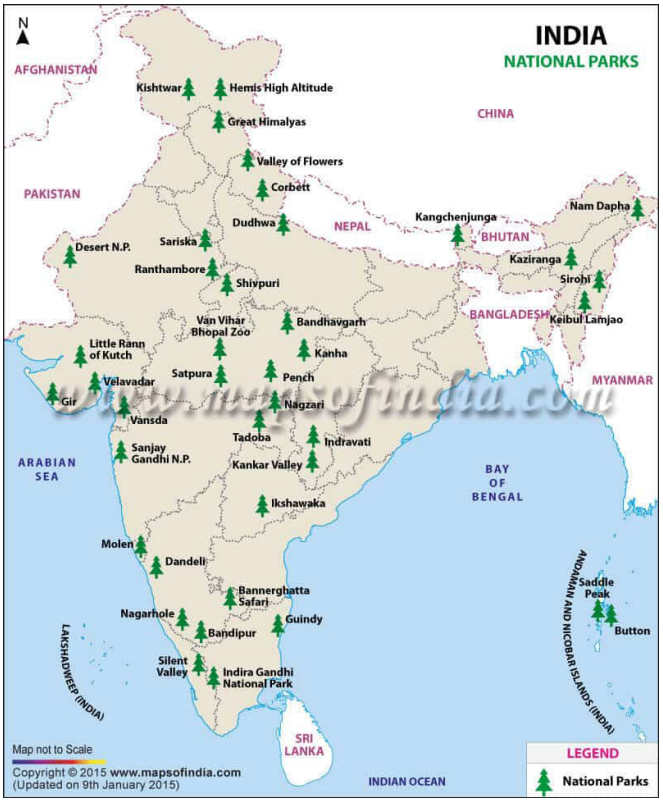
- **Definition**: Total species diversity in a landscape or geographical area combining multiple ecosystems.
- **Indicates**: Overall richness at a broader scale

54. (c)

- **Bird Sanctuaries:** Ghana Bird Sanctuary – Bharatpur (Rajasthan) Ranganathittu Bird Sanctuary – Mandya, Karnataka Vedanthangal Bird Sanctuary – Kanchipuram, Tamil Nadu Nelapattu Bird Sanctuary – Nellore, Andhra Pradesh Sultanpur Bird Sanctuary – Gurugram, Haryana Salim Ali Bird Sanctuary – Chorao, near Mandovi River, Goa Kaundinya Bird Sanctuary – Chittoor, Andhra Pradesh Chilika Lake Bird Sanctuary – near Puri, Odisha Kumarakom Bird Sanctuary or Vembanad Bird Sanctuary – Kottayam (Kerala)

55. (d)

- **Tripura**: Gumti, Sepahijala Wildlife Sanctuary
- **Tamil Nadu**: There are several wildlife sanctuaries in Tamil Nadu, including Mudumalai Wildlife Sanctuary, Satyamangalam Wildlife Sanctuary, Kalakad Mundanthurai Tiger Reserve, Indira Gandhi Wildlife Sanctuary (Annamalai), and Point Calimere Wildlife Sanctuary.
- **Bihar**: Major wildlife sanctuaries in Bihar include Kaimur Wildlife Sanctuary, Gautam Buddha Wildlife Sanctuary, Bhimbandh Wildlife Sanctuary, and Udaipur Wildlife Sanctuary.
- **Namdapha** is actually located in Arunachal Pradesh, not in Nagaland.



56. (d)

- The Constituent Assembly was formed in 1946, prior to India's independence. Among its members were **15 women**.
- Prominent names include: Ammu Swaminathan, Annie Mascarene, Dakshayani Velayudhan, Begum Aizaz Rasul, Durgabai Deshmukh, Hansa Mehta, Kamla Chaudhary, Leela Roy, Malati Choudhury, Purnima Banerjee, Rajkumari Amrit Kaur, Renuka Ray, Sarojini Naidu, Sucheta Kriplani, and Vijaya Lakshmi Pandit.
- **Sucheta Kriplani (1908–1974)**: The first woman Chief Minister of India (Uttar Pradesh, 1963). She was a Gandhian and played a significant role in underground activities during the Quit India Movement. She supported the Hindu Marriage Bill.
- **Sarojini Naidu (1879–1949)**: Popularly known as Bulbul-e-Hind (Nightingale of India). Born in Hyderabad, she was the first woman president of the Indian National Congress and later the Governor of the United Provinces. She was elected to the Constituent Assembly from Bihar.
- **Vijaya Lakshmi Pandit (1900–1990)**: Originally named Swarup Kumari, she served as India's ambassador to the Soviet Union and the USA and was also the President of the UN General Assembly.
- **Begum Qudsia Aizaz Rasul (1908–2001)**: She was the only Muslim woman in the Constituent Assembly. Despite opposition from certain religious groups, she was elected to the United Provinces Legislative Assembly in 1937.
- **Hansa Mehta (1897–1995)**: A member of the sub-committee on fundamental rights in the Constituent Assembly and an advocate for the Uniform Civil Code (UCC). She also served on UNESCO's board.
- **Kamla Chaudhary (1908–1970)**: Supported the Hindu Code Bill during Constituent Assembly debates.
- **Purnima Banerjee (1911–1951)**: Born in Barisal, East Bengal (now Bangladesh). She went to jail during the freedom movement and actively participated in debates in the Constituent Assembly.
- **Malati Choudhury (1904–1998)**: Elected to the Constituent Assembly from Odisha but resigned before independence to join Gandhi in Noakhali to assist riot-affected areas. Gandhi nicknamed her Toofani (stormy).
- **Leela Roy (1900–1970)**: The first woman to lead the executive committee of the revolutionary group Sri Sangha. Saddened by the inevitability of Partition, she resigned from the Constituent Assembly.
- **Durgabai Deshmukh (1909–1981)**: Appointed to the Steering Committee of the Constituent Assembly by Sardar Patel to review proposed amendments. She advocated for Hindustani as the national language instead of Hindi.
- **Renuka Ray (1904–1997)**: Participated in debates on the Hindu Code Bill, the Devadasi system, and the right to property.
- **Rajkumari Amrit Kaur (1889–1964)**: She participated in the Salt Satyagraha and Quit India Movement, advocating the Uniform Civil Code (UCC) in the Constituent Assembly.
- **Annie Mascarene (1902–1963)**: Represented Travancore and Cochin in the Constituent Assembly. She was a member of the committee on the Hindu Code Bill.
- **Ammu Swaminathan (1894–1978)**: Elected from Madras to the Constituent Assembly in 1946.
- **Dakshayani Velayudhan (1912–1978)**: The only Dalit woman member of the Constituent Assembly.

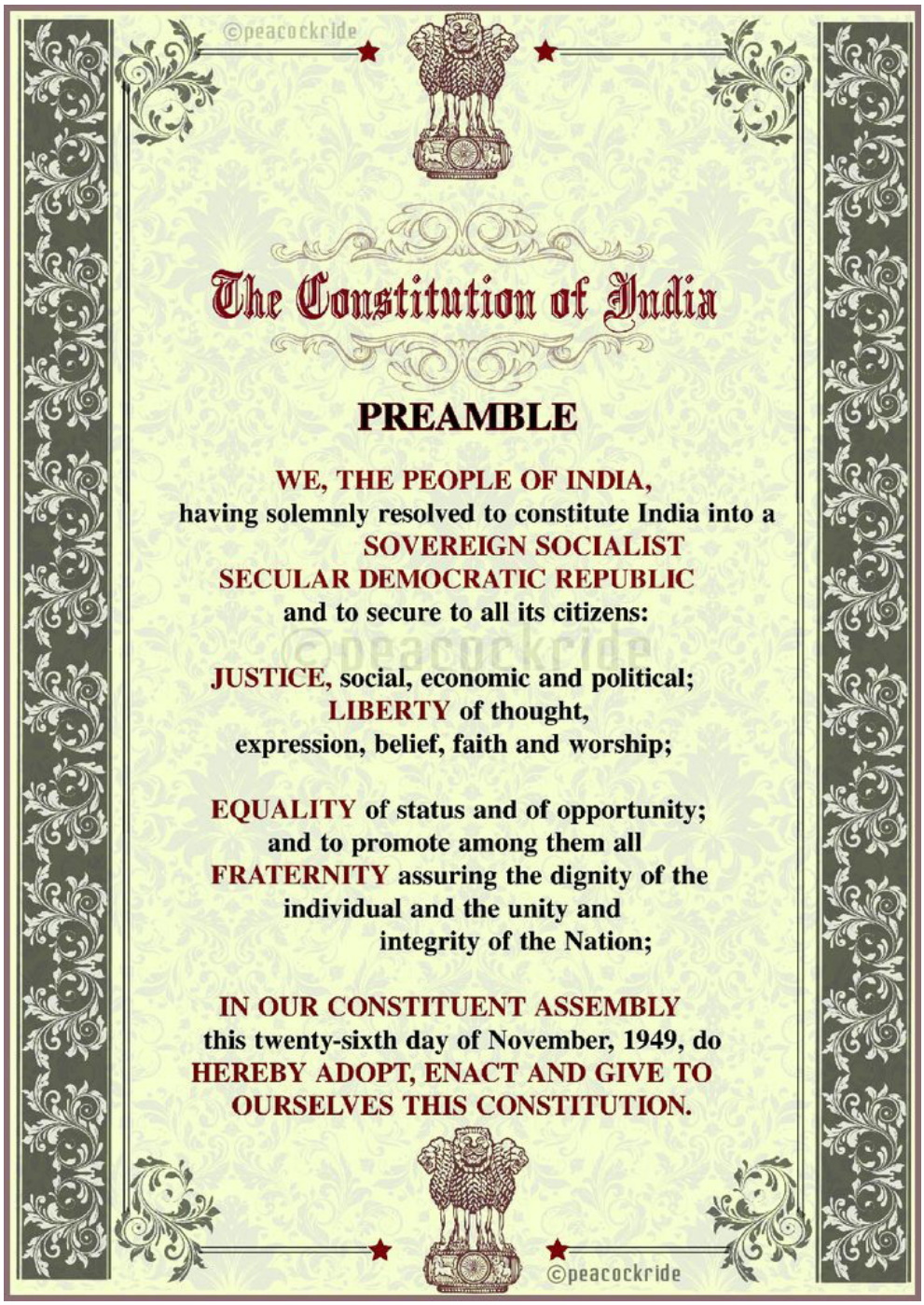
57. (d)

- Renowned jurist N.A. Palkhivala referred to the Preamble as the "identity card of the Constitution." Similarly, **K.M. Munshi described it as the "political horoscope of the Constitution."**
- On **13 December 1946**, Nehru introduced the Objective Resolution in the Constituent Assembly.
- This resolution defined the fundamental aims and objectives of the Indian Constitution and served as a guiding principle for the members during the drafting process.

- The same resolution was adopted on **22 January 1947**, forming the basis of the **Preamble** of the Constitution.
- **Kesavananda Bharati Case (1973)**: The Supreme Court held that the Preamble is indeed a part of the Constitution and hence can be amended, provided that the **"basic structure"** of the Constitution is not altered.

Amendments to the Preamble:

- The **42nd Constitutional Amendment Act, 1976**, based on the recommendations of the Sardar Swaran Singh Committee, amended the Preamble only once by adding three new words: **Socialist**, **Secular**, and **Integrity**.
- "Socialist" and "Secular" were inserted between "Sovereign" and "Democratic."
- "Unity of the Nation" was modified to "Unity and Integrity of the Nation."
- The Preamble also mentions the source of the Constitution's authority: **"We, the People of India."**



58. (c)

- As per **Article 75(3)**, the Council of Ministers is **collectively responsible to the Lok Sabha**, not to the Parliament (which includes the President, Lok Sabha, and Rajya Sabha). Hence, statement 1 is incorrect.
- Under **Article 75(2)**, Ministers hold office during the pleasure of the President.
- As per **Article 78(a)**, it is the duty of the Prime Minister to communicate to the President all decisions of the Council of Ministers relating to the administration of the Union and proposals for legislation.
- Under **Article 75(3)**, the Prime Minister, along with the Council of Ministers, is collectively responsible to the Lok Sabha.

59. (c)

- The Attorney General of India is the **chief legal advisor** of the Government of India. Under **Article 76(1)**, the President shall appoint a person who is qualified to be appointed a Judge of the Supreme Court as the Attorney General of India.
- As per **Article 88**, every Minister and the Attorney General shall have the right to speak and take part in the proceedings of both Houses of Parliament, any joint sitting of the Houses, and any committee of Parliament of which he may be named a member, but they **shall not have the right to vote**.
- The Attorney General is **not a member of the Cabinet**.

60. (b)

- **Madhya Pradesh** – 29 seats
- **Punjab** – 13 seats
- **Andhra Pradesh** – 25 seats
- **Assam** – 14 seats
- **Gujarat** – 26 seats
- **Rajasthan** – 25 seats
- **Tamil Nadu** – 39 seats

Hence, **Andhra Pradesh and Rajasthan** have equal Lok Sabha representation.

61. (b)

- The Speaker of the Lok Sabha exercises the **casting vote** under **Article 100**. This power is used when there is a tie in the votes of members on a motion in the House.
- **Article 99**: Oath or affirmation by members of Parliament.
- **Article 108**: Provisions relating to a joint sitting of the Lok Sabha and Rajya Sabha.
- **Article 102**: Disqualifications for membership of Parliament.

Speaker of the Lok Sabha is the presiding officer and the most powerful authority in the lower house of Parliament. The office is a symbol of **impartiality, authority, and dignity**, ensuring smooth conduct of legislative business.

The post is created under **Article 93** of the Indian Constitution, which mandates the election of a Speaker and Deputy Speaker.

Election and Tenure

- **Election**:
  - Elected from among the members of Lok Sabha by a **simple majority**.
  - Usually elected after the first sitting of a newly constituted Lok Sabha.
  - By convention, the Speaker belongs to the ruling party or alliance.

- **Tenure**:
  - Holds office during the life of the Lok Sabha.
  - Continues until a new Speaker is elected.
  - Can resign by submitting a resignation to the Deputy Speaker.
  - Can be removed by a **resolution passed by an absolute majority** (as per **Article 94**).

62. (c)

- The **Rajya Sabha** is the upper house of Parliament, described under **Article 80**. It is a **permanent house** and cannot be dissolved.
- Members have a tenure of **six years**, but **one-third of its members retire every two years**, ensuring continuity.
- A Rajya Sabha member must be at least **30 years of age**. The maximum strength of the House is **250** members (currently 245, including 12 nominated and 233 elected).

Rajya Sabha has recently **welcomed four distinguished individuals as nominated members.** These nominations reflect the government's recognition of excellence across diverse fields such as diplomacy, law, history, and social service.

Harsh Vardhan Shringla A seasoned diplomat and former Foreign Secretary of India, Shringla brings with him decades of experience in international relations and strategic affairs. His tenure as India's Ambassador to the United States and High Commissioner to Bangladesh witnessed several landmark agreements, including the Indo-US trade deals and the resolution of the land boundary agreement with Bangladesh. His nomination underscores the need for seasoned voices in foreign policy and strategic discussions within Parliament.

Ujjwal Nikam One of India's most celebrated legal minds, Ujjwal Nikam is known for successfully prosecuting high-profile cases, including the 26/11 Mumbai terror attacks and the 1993 Mumbai serial blasts. His deep knowledge of criminal law and unwavering commitment to justice make him a valuable addition to the Rajya Sabha, particularly in debates surrounding legal reforms and national security.

Meenakshi Jain An acclaimed historian and author, Meenakshi Jain has made significant contributions to Indian historiography. Her works have focused on cultural identity, civilisational continuity, and social history, offering a nuanced perspective on India's past. Her presence in the Rajya Sabha is likely to enrich policy discussions on education, culture, and heritage conservation.

C. Sadanandan Master A grassroots leader and social activist from Kerala, C. Sadanandan Master has spent decades working for the upliftment of marginalized communities. A survivor of political violence, his resilience and dedication to social harmony resonate with the spirit of service. His nomination acknowledges the role of ordinary citizens in shaping India's democratic journey.

63. (c)

The Indian Constitution has borrowed features from many foreign constitutions, and from the Australian Constitution, the following were adopted: the language of the Preamble, provision of the Concurrent List, relations and division of powers between the Centre and the States, joint sitting of both Houses of Parliament, and freedom of trade, commerce, and intercourse.

However, the feature "procedure established by law" was borrowed from the **Japanese Constitution**.

From the British Constitution, the following features were adopted:

- Parliamentary form of government
- Rule of Law
- Supremacy of the legislature

- Cabinet system
- Responsible executive with dual responsibility
- Power of dissolution of the Lok Sabha
- Role and powers of the Speaker

From the Government of India Act, 1935 (as per NCERT):

- Federal structure (Union + State governments)
- Distribution of powers – Union, State, and Concurrent Lists
- Provincial autonomy
- Powers of Governor and President (Governor-General model)
- Public Service Commission
- Independence of Judiciary – provision for High Courts
- Concept of Emergency Powers
- Bicameral legislature

From the United States, the following features were adopted:

- Fundamental Rights
- Judicial Review
- Independent Judiciary
- Articles inspired by Presidential system (although India has Parliamentary system)
- Preamble as a sub-Constitution
- Fundamental Rights modeled on the Bill of Rights

From Canada:

- Federal structure (but with a strong Centre)
- Appointment of Governor by the Centre
- Residuary powers with the Centre
- Quasi-federal system

From Ireland:

- Directive Principles of State Policy
- Nomination-based election of the President
- Concept of equality of states

From the Soviet Union (now Russia):

- Socialist ideology
- Provision of Fundamental Duties (added by the 42nd Amendment)
- Inspiration for Five-Year Plans

From Germany (Weimar Constitution):

- Emergency provisions

From France:

- Spirit of Liberty, Equality, and Fraternity (mentioned in the Preamble)
- Republicanism

64. (c)

Names of diseases - Causes

- Rickets - Deficiency of vitamin D
- Diabetes - Hormonal disorder
- Haemophilia - Genetic disease
- Contraction of muscles - By oxytocin
- Cystic fibrosis - Disease affecting lungs and digestive system
- Autism - A disease related to brain development
- Meningitis - Inflammation of brain (bacterial, viral, fungal or parasitic infection)
- Typhoid - From contaminated food or water

65. (d)

Zonal Councils were established under the States Reorganization Act, 1956. These are constituted by the **President**, and the **Union Home Minister** or a **Union Minister nominated by the President** serves as the chairman of these councils. The Chief Ministers of the respective states serve as vice-chairpersons on a rotational basis. These councils hold regular meetings to discuss issues like security, border disputes, water sharing, road connectivity, internal migration, health, education, and economic development.

India has five Zonal Councils and their member states are as follows:

1. **Northern Zonal Council:** Haryana, Himachal Pradesh, Punjab, Rajasthan, Uttarakhand, Union Territories of Jammu & Kashmir, Ladakh, and Chandigarh.
   - Headquarters: New Delhi
2. **Central Zonal Council:** Uttar Pradesh, Madhya Pradesh, Chhattisgarh, and Uttarakhand (sometimes counted in Northern or Central but generally considered in Central).
3. **Eastern Zonal Council:** Bihar, Jharkhand, Odisha, and West Bengal.
4. **Western Zonal Council:** Rajasthan, Gujarat, Maharashtra, Goa, and Union Territories of Daman & Diu, Dadra & Nagar Haveli.
5. **Southern Zonal Council:** Andhra Pradesh, Telangana, Tamil Nadu, Karnataka, Kerala, and Union Territory of Puducherry.

North Eastern Council (NEC):

- NEC was established in 1971 by an Act of Parliament as a regional planning body for the social and economic development of Northeast India.
- It includes **eight states**: Assam, Arunachal Pradesh, Manipur, Mizoram, Meghalaya, Nagaland, Tripura, and Sikkim.
- NEC acts as a statutory regional coordinating and planning agency that promotes implementation of schemes related to roads, health, education, power, tourism, etc.
- The **Union Home Minister** is the ex-officio chairman and the **Chief Ministers and Governors** of all eight member states are members.

66. (d)

- As per **Article 214**, there shall be a High Court for each state; however, **Article 231** empowers Parliament to establish a common High Court for two or more states and union territories.
- At present, India has **25 High Courts**, and the jurisdiction of **three High Courts** extends over more than one state.

- The **Delhi High Court** serves the National Capital Territory of Delhi.
- Judges of High Courts hold office till the age of **62 years** and can resign by submitting their

67. (d)

The termination of Indian citizenship can occur in the following ways:

- By voluntarily renouncing citizenship
- By acquiring the citizenship of another country
- By revocation of citizenship by the government

Citizenship is a legal relationship between an individual and the state, through which the individual obtains rights, duties, and identity within the state.

Part II of the Indian Constitution (Articles 5 to 11) deals with citizenship.

How is Indian citizenship acquired? (Modes of Acquisition)

According to the **Citizenship Act of 1955**, there are **five main ways** to acquire Indian citizenship:

1. **By Birth:** A person born in India may acquire citizenship (with certain conditions). The conditions for acquiring citizenship by birth were made stricter in **1987** and again in **2004**.
2. **By Descent:** If a person's parents are Indian citizens, they can acquire Indian citizenship by descent, even if born outside India (within specific date limits).
3. **By Registration:** Certain categories of people, such as persons of Indian origin residing abroad or foreigners married to Indian citizens, can acquire citizenship through registration.
4. **By Naturalization:** A foreign national who has lawfully resided in India for **12 years** may apply for Indian citizenship.
5. **By Incorporation of Territory:** If a territory becomes part of India, the residents of that territory become Indian citizens (e.g., **Pondicherry**, **Sikkim**).

How is Indian citizenship lost? (Loss of Citizenship)

There are **three ways** in which Indian citizenship can be lost:

1. **Renunciation:** If a person voluntarily wants to give up Indian citizenship, they may renounce it in writing.
2. **Termination:** If an Indian citizen voluntarily acquires the citizenship of another country, their Indian citizenship is automatically terminated.
3. **Deprivation:** The Government of India may revoke the citizenship of a person in specific situations, such as:
   - Acquiring citizenship by **fraud or misrepresentation**
   - **Acting against the interests of the country**
   - Being **imprisoned for 2 years within 5 years** of acquiring citizenship

Constitutional Provisions (Articles 5 to 11)

- **Article 5** grants citizenship to those who were born or domiciled in India at the commencement of the Constitution.
- **Article 6** provides for citizenship rights of migrants from **Pakistan** to India.
- **Article 7** denies citizenship to those who migrated to **Pakistan** and settled there.
- **Article 8** allows persons of Indian origin residing abroad to acquire citizenship.
- **Article 9** states that a person who voluntarily acquires the citizenship of another country **ceases to be an Indian citizen**.
- **Article 10** guarantees the **continuance of citizenship rights**.
- **Article 11** empowers **Parliament to enact laws** relating to citizenship.

68. (d)

- The **Concurrent List** presently contains **52 subjects** (originally 47), on which **both Parliament and State Legislatures** can make laws. If there is a conflict, the law made by Parliament prevails.
- Important subjects in the Concurrent List include: **national waterways, family planning, population control, newspapers, factories, education, and economic and social planning**.
- However, **Posts and Telegraphs** is included in the **Union List**, which presently has **100 subjects** (originally 97). The State List now has **61 subjects** (originally 66).

69. (c)

- As per **Part XVII, Article 343** of the Constitution, **Hindi in Devanagari script** is the official language of the Union.
- The **Eighth Schedule** of the Constitution recognizes **22 languages** as official languages: Assamese, Bengali, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Malayalam, Manipuri, Marathi, Nepali, Odia, Punjabi, Sanskrit, Sindhi, Tamil, Telugu, Urdu, Bodo, Dogri, Maithili, and Santali.
- **Haryanvi** is not among the languages of 8th schedule.

70. (b)

- **Estimates Committee:** This committee consists of **30 members from the Lok Sabha**; no members from the Rajya Sabha are included in it. The Estimates Committee is the **largest parliamentary committee**. The term of its members is **one year**, and the committee's tenure begins on **May 1** each year and ends on **April 30** the following year. This committee gives reports on topics such as how to reduce government expenditure, improve efficiency in organization, and bring reforms in administration. **No debate** takes place in the House on the reports of the Estimates Committee.
- **Public Accounts Committee (PAC):** This committee comprises **22 members**, of whom **15 are elected by the Lok Sabha** and **7 by the Rajya Sabha**, for a tenure of one year. It is also referred to as the **Mini Lok Sabha**. Members from the Rajya Sabha are considered **associate members** and **do not have voting rights** in the committee. The Public Accounts Committee is known as the **twin sister of the Estimates Committee**.
- **Committee on Public Undertakings:** Based on the **recommendation of the Krishna Menon Committee**, the Lok Sabha established the Committee on Public Undertakings in **1963** to exercise control over public undertakings. The committee consists of **22 members**, of whom **15 are from the Lok Sabha** and **7 from the Rajya Sabha**.

71. (b)

- Part XV of the Constitution (Articles 324 to 329) deals with provisions related to the **Election Commission and elections**.
- Under **Article 324**, the Election Commission of India is entrusted with the supervision, direction, and control of elections to Parliament, State Legislatures, and the offices of President and Vice President of India.
- The Election Commission is an **all-India body** and operates equally for both central and state governments.
- However, the conduct of **panchayat and municipal elections** falls under the jurisdiction of the **State Election Commissions**, as provided by **Article 243(K)** of the Constitution.

72. (c)

Originally, Article 19 of the Constitution mentioned **seven types of freedoms**, but now **only six remain**. **The Right to Property under Article 19(1)(f)** was **removed by the 44th Constitutional Amendment Act, 1978**.

- The current six freedoms under Article 19 are: **19(a):** Freedom of speech and expression **19(b):** Freedom to assemble peaceably and without arms **19(c):** Freedom to form associations or unions **19(d):** Freedom to move freely throughout the territory of India **19(e):** Freedom to reside and settle in any part of the territory of India **19(g):** Freedom to practice any profession, or to carry on any occupation, trade or business

73. (c)

- Part V of the Constitution (Articles **148 to 151**) provides for the CAG.
- **Article 148**: Provides for the appointment of the CAG of India by the President. The CAG is a single-member institution.
- **Article 149**: Defines the **duties and powers** of the Comptroller and Auditor General of India.
- **Article 151**: States that the audit reports relating to the accounts of the Union and States shall be submitted by the CAG to the President or Governor, who places them before Parliament or the State Legislature respectively.
- **Article 146**: Deals with officers and servants of the High Courts and their expenses.

74. (c)

The provisions related to the Vice President of India have been adopted from the **Constitution of the United States**. The **Vice President of India is the ex-officio Chairman of the Rajya Sabha**. However, the Vice President is **not a member** of the Rajya Sabha and therefore **does not have a vote** in regular proceedings. But as Chairman, he **has a casting vote** in case of a tie.

- A person shall be eligible to be elected as Vice President **if he/she:** Is a **citizen of India** Has **completed 35 years of age** Is **qualified to be elected as a member of the Rajya Sabha Does not hold any office of profit** at the time of election He/she **cannot be a member of either House of Parliament or a State Legislature**, and if such a person is elected as Vice President, **it shall be deemed that the seat held by him in the House becomes vacant from the date he/she assumes office** as Vice President.
- **Election Process:** As per **Article 66**, the Vice President is elected by an **electoral college** consisting of **both elected and nominated members** of the Lok Sabha and Rajya Sabha. (In contrast, only elected members participate in the Presidential election.) The election is held using the **Single Transferable Vote system** and based on **Proportional Representation**. The voting is done through **secret ballot**.
- **Term and Oath:** The term of the Vice President is **5 years**. He/she is **administered the oath by the President**. After completing the term, the Vice President **can contest again** for re-election.
- **Removal Process:** As per **Article 67** of the Constitution, the process to remove the Vice President is **less rigid** than that of the President. A **resolution for removal** can be **initiated only in the Rajya Sabha**. **At least 14 days' notice** must be given before moving the resolution. If the resolution is passed in the **Rajya Sabha by an absolute majority and a special majority of those present and voting**, and subsequently **approved by a simple majority in the Lok Sabha**, the **Vice President can be removed**. This process is **not called "Impeachment"**, as it is in the case of the President. The Vice President **cannot be removed on judicial grounds**—he/she can only be removed on the basis of **political majority**.

75. (b)

- Justice Pinaki Chandra Ghose was appointed as India's **first Lokpal** (anti-corruption ombudsman) on **23 March 2019** by a high-level committee comprising the Prime Minister, Chief Justice of India, and Lok Sabha Speaker.

- **List of NHRC Chairpersons**:
  - Justice Ranganath Misra: 12.10.1993 to 24.11.1996
  - Justice M.N. Venkatachaliah: 26.11.1996 to 24.10.1999
  - Justice J.S. Verma: 04.11.1999 to 18.01.2000
  - Justice A.S. Anand: 02.11.2000 to 31.10.2002 (and again 16.12.2002 to 22.06.2003)
  - Justice S. Rajendra Babu: 02.07.2003 to 31.05.2007
  - Justice K.G. Balakrishnan: 01.06.2007 to 11.05.2010
  - Justice Satyavrat Sinha: 07.06.2010 to 29.05.2011
  - Justice P. Sathasivam: 03.06.2014 to 26.04.2016
  - Justice H.L. Dattu: 29.02.2016 to 02.12.2020
  - Justice Arun Kumar Mishra: 02.06.2021 to 01.06.2024
  - Justice V. Ramasubramanian: From 30 December 2024 to present

76. (b)

- **Statement 1**: "Total internal reflection is only possible when light enters from a medium of lower refractive index to a medium of higher refractive index." In reality, **Total Internal Reflection (TIR)** is only possible when **light moves from an optically denser medium (higher refractive index)** to an **optically rarer medium (lower refractive index)**. Hence, statement 1 is **incorrect**. **Example**: From water (n 1.33) to air (n 1.00), or from glass (n 1.5) to air. If light travels from a medium of **lower refractive index to a higher one**, it will **refract**, not undergo total reflection.
- **Statement 2**: "The critical angle is the angle at which the ray travels along the boundary without refraction." Hence, **statement 2 is correct**. The **Critical Angle (θc)** is the **minimum angle of incidence** at which the light, instead of refracting, **travels along the interface** between the two media at **90°** to the normal. After this point, **if the angle of incidence exceeds the critical angle**, all the light is reflected **back into the denser medium** — a phenomenon known as **Total Internal Reflection**.

77. (a)

HKU5-CoV-2 is a newly detected virus in bats in China and belongs to the **MERS-CoV (Middle East Respiratory Syndrome Coronavirus) family** of zoonotic viruses.

It has not been found in monkeys. There is **no evidence yet of human-to-human transmission**, but scientists caution about its pandemic potential due to its ability to bind with human ACE2 receptors (like SARS-CoV-2).

78. (a)

The human heart is a **muscular, hollow organ** about the size of a clenched fist. It acts as a **pump** that circulates blood throughout the body, supplying oxygen and nutrients and removing waste products.

It is a central component of the **circulatory system** and works continuously to maintain life.

- It is Located in the **thoracic cavity** between the lungs, slightly tilted to the left, in a space called the **mediastinum**.
- It is Protected by the **rib cage** and enclosed in a double-layered sac called the **pericardium**.

The heart has **four chambers**: **Right Atrium** – receives deoxygenated blood from the body via the **superior and inferior vena cava**. **Right Ventricle** – pumps deoxygenated blood to the lungs through the **pulmonary artery**. **Left Atrium** – receives oxygenated blood from the lungs through the **pulmonary veins**. **Left Ventricle** – pumps oxygenated blood to the body via the **aorta** (thickest wall).

The heart contains **four valves** to prevent backflow of blood:

- **Tricuspid Valve**: Between right atrium and right ventricle.
- **Pulmonary Valve**: Between right ventricle and pulmonary artery.
- **Mitral (Bicuspid) Valve**: Between left atrium and left ventricle.
- **Aortic Valve**: Between left ventricle and aorta.

Circulation Pathways

Pulmonary Circulation:

- Carries deoxygenated blood from the heart to the lungs for oxygenation and returns oxygenated blood to the heart.

Systemic Circulation:

- Pumps oxygenated blood from the heart to the rest of the body and brings back deoxygenated blood.

Conducting System of the Heart

- **SA Node (Sinoatrial Node)**: The natural pacemaker of the heart, initiates electrical impulses.
- **AV Node (Atrioventricular Node)**: Delays the impulse slightly before sending it to ventricles.
- **Bundle of His and Purkinje Fibers**: Spread the impulse throughout ventricles causing contraction.

Functions of the Heart are:

- Pumps about **5 liters of blood per minute** in a resting adult.
- Maintains **blood pressure** and ensures one-way flow of blood.
- Supplies oxygen and nutrients to tissues and removes carbon dioxide and wastes.

79. (d)

- Lenz's Law actually **directly follows** the principle of conservation of energy. The assertion states that "Lenz's Law has no relation with energy conservation," which is **false**. On the contrary, this law **ensures that energy is not generated spontaneously**.
- According to **Lenz's Law**: "The induced current always opposes the change that caused it." If magnetic flux increases, the induced current produces such a magnetic field that **tries to decrease this increase**.

Relation with conservation of energy: Suppose Lenz's Law did not follow the conservation of energy and the induced current did not oppose the change in magnetic flux, then magnetic flux would continuously increase. As a result, magnetic energy would spontaneously generate without any external work, violating the law of conservation of energy. Therefore, Reason (R) is completely correct because it prevents the spontaneous generation of energy. Assertion (A) is incorrect because Lenz's Law is not limited to just determining the direction; it is deeply connected to the fundamental principle of energy conservation.

80. (d)

- Blood group **AB+** is a **universal recipient**, not a universal donor. The universal donor is **O-**.
- AB+ individuals have **A and B antigens** as well as the **Rh (positive) antigen** on the surface of their red blood cells, allowing them to accept blood from any group without reaction.
- Their plasma does **not** contain anti-A or anti-B antibodies.

81. (d)

Ultrafiltration is the **first step in urine formation**.

It occurs in the **renal corpuscle**, specifically in the **glomerulus**, which is a tuft of capillaries inside the **Bowman's capsule** of the nephron.

Here, blood pressure forces water and small solutes through the glomerular capillary walls into the Bowman's capsule.

- The glomerular filtration barrier acts as a **molecular sieve**:
  - It allows **water and small solutes** (e.g., urea, glucose, amino acids, salts) to pass through.
  - **Plasma proteins (like albumin)** and **blood cells (RBCs, WBCs, platelets)** are too large to pass through and remain in the bloodstream.
- This is why the filtrate is **protein-free and cell-free** under normal conditions.
- The filtrate formed in the Bowman's capsule is known as **glomerular filtrate**.
- It resembles **blood plasma minus large proteins and cells**.
- The filtrate contains:
  - **Nitrogenous wastes** like urea and creatinine.
  - **Nutrients** like glucose and amino acids (later reabsorbed in the tubules).
  - **Salts (NaCl)** and water.

82. (b)

- In addition to excretion, the kidneys perform several essential functions:
  - **Activate Vitamin D** into its active form (calcitriol), crucial for calcium absorption.
  - Produce **erythropoietin**, a hormone that stimulates red blood cell production in the bone marrow.
  - Help regulate **blood pressure** via the renin-angiotensin system

83. (c)

- **Explanation:** CRISPR-Cas9 (Clustered Regularly Interspaced Short Palindromic Repeats – CRISPR associated protein 9) is a highly advanced gene-editing technology developed by scientists inspired by the immune system of bacteria. This technology enables scientists to precisely identify a DNA sequence and modify it. Using CRISPR-Cas9 technology, scientists can cut a specific gene sequence and perform **mutation**, **deletion**, or **insertion**. It has revolutionized gene therapy, agricultural biotechnology, and the treatment of rare genetic diseases. The **Cas9 enzyme** does **not cut randomly**, rather it identifies a specific target site on the DNA **with the help of a guide RNA** and cuts **only at that site**. This **precision and targeting** is the greatest feature of CRISPR.
- **Importance: Medicine:** Possibilities in treatment of genetic disorders (such as sickle cell anemia, muscular dystrophy). **Agriculture:** Used in developing disease-resistant and high-yield crops. **Research:** Widely used in laboratories to understand gene functions.

84. (c)

Due to surface tension, an upward force acts on the pin

- When an object like a pin is carefully placed on the surface of water, it does not sink for some time, even though its **density is greater** than water. The reason for this is **surface tension** — the surface of the water behaves like a stretched thin membrane. Due to **cohesive forces** (attractive forces between molecules present at the liquid's surface), the surface experiences a kind of tension, which we call **surface tension**. When the pin is placed gently on the surface, the surface holds it up with its own force — this is **not due to buoyant force**, but is governed by **surface tension**. If the pin is dropped from above, it penetrates the surface and sinks because the **surface tension breaks**. This is also the reason why **insects like water striders** can walk on water — they don't sink due to surface tension.

85. (a)

- In the stomach, **HCl lowers the pH**, creating an acidic environment necessary for the activation of **pepsinogen into pepsin**, an enzyme that digests proteins.
- HCl also acts as a **germicidal agent**, killing harmful bacteria and sterilizing ingested food.
- Emulsification of fats is performed by bile salts, not HCl.

86. (c)

- The ENS does **not regulate heart rate**.
- Heart rate is controlled by the **autonomic nervous system (ANS)**, specifically the **sympathetic and parasympathetic divisions**.
- The ENS is often called the **"second brain"** but is restricted to the **gastrointestinal tract**.
- It controls gut-related functions, **not cardiovascular functions**. **Hence Statement 1 is incorrect**
- The ENS is a large network of neurons in the walls of the gastrointestinal tract.
- It regulates: **Motility** (peristalsis and segmentation movements). **Secretion** of digestive enzymes and mucus. **Blood flow** within the gut to meet metabolic demands.
- It consists of two main plexuses:
  - **Myenteric plexus (Auerbach's)** – controls motility.
  - **Submucosal plexus (Meissner's)** – regulates secretion and blood flow.

The ENS can operate **autonomously** without input from the CNS.

However, it does communicate with the CNS through the **vagus nerve** and **sympathetic fibers** for modulation.

This autonomous function is why it's called the **"second brain"**.

87. (d)

- Optical fibers function on the principle of **total internal reflection (TIR)**. When light travels from a denser to a rarer medium and strikes the interface at an angle greater than the **critical angle**, it is reflected entirely back into the denser medium, allowing the light to propagate through the fiber without escaping.
- **Fresnel diffraction** and **Brewster's angle** are unrelated to how optical fibers work.
- TIR ensures that signals travel long distances within the fiber with minimal loss.

88. (b)

- The speed of sound in a medium depends on the mechanical properties of the medium – such as elasticity, density, temperature, and humidity, etc.
- Statement 1 is incorrect – Because an increase in density may reduce the speed of sound only if the elasticity of the medium remains the same. However, in solids, although density is higher, elasticity is also significantly high, due to which the speed of sound is greater (e.g., more in steel > than in water > than in air). Hence, this statement is overgeneralized.
- **Statement 2 is correct –** In air, as temperature increases, the average kinetic energy of the molecules increases, which enables them to transmit vibrational waves faster. Hence, the speed of sound increases.
- **Statement 3 is incorrect** – With an increase in humidity in air, heavier gas molecules (like N_2 and O_2) are replaced by lighter water vapor molecules (H_2O), which decreases the average molar mass of the medium and thereby increases the speed of sound.
- **Statement 4 is correct** – In ideal gases, the speed of sound depends on temperature, not on pressure, if the temperature is kept constant.

89. (a)

- **Nuclear fusion** in a star's core requires **extremely high temperatures** to overcome the electrostatic repulsion between positively charged nuclei.
- At such temperatures, nuclei gain enough kinetic energy to collide and fuse.
- Alongside high temperature, **high density and pressure** are also crucial as they bring particles close enough for fusion to occur, maintaining equilibrium against gravitational collapse.

90. (b)

- **Spectrometer:** This instrument is used to obtain the spectrum of light, measure its wavelength and intensity. It is essential for qualitative and quantitative analysis in laboratories, such as identifying chemicals.
- **Pyrometer:** It is used where conventional thermometers fail (e.g., flames, furnaces, lava), to measure very high temperatures. It works by detecting thermal radiation.
- **Chronometer:** Used for very precise timekeeping, especially in marine navigation. It offers higher precision than normal clocks and was essential for locating position at sea.
- **Seismograph:** This instrument records seismic waves and measures the intensity and time of earthquakes. It helps determine the epicenter and magnitude of an earthquake.

91. (b)

- **Artificial sweeteners** are used as substitutes for sugar and provide little to no calories. They are often utilized for health purposes such as diabetes management and weight control. They are used to sweeten a variety of food and beverages, such as sodas, candies, and other processed products. Some common examples of artificial sweeteners include **aspartame**, **sucralose**, and **saccharin**. **Aspartame** is unstable at high temperatures, which is why it is not suitable for baking. Both **saccharin** and **cyclamate** are used to impart sweetness.

92. (d)

- **Food preservatives** are substances that prevent spoilage of food by inhibiting microbial growth or slowing chemical reactions, thus increasing **shelf life**.
- **Sodium Benzoate**: Used in bakery products, soft drinks, and fruit juices. It is effective in **acidic foods**.
- **Potassium Sorbate**: Used in cheese, yogurt, and bakery products.
- **Sorbic Acid**: Used in bakery products, cheese, and fruit juices.
- **Calcium Propionate**: Common in bakery items like bread and cheese.
- **Butylated Hydroxyanisole (BHA)** and **Butylated Hydroxytoluene (BHT)**: Used for **preserving fats and oils**.
- **Nitrates and Nitrites**: Used in **processed meats** like sausage, bacon, and ham.
- **Sulfur Dioxide**: Used in wine, dried fruits, and other food items.
- **Sodium Metabisulfite**: Used in dried fruits, wine, and more.
- **Ascorbic Acid (Vitamin C)**: Used to preserve **fruits and vegetables**.
- **Tocopherols (Vitamin E)**: Used in fats and oils.

93. (a)

- Bleaching powder ($Ca(OCl)_2$), also known as **Calcium Hypochlorite**, is used as a disinfectant and bleaching agent.
- It releases chlorine gas on contact with water, making it effective for water purification and sterilization.
- It is **not limited to bleaching**; it is widely used as a germicide and in sanitation.

94. (a)

- **Polymerase Chain Reaction (PCR)** is a technique used to create millions of copies of specific segments of DNA. It is an in vitro (outside the body) process that uses a device called a thermocycler along with DNA, primers, DNA polymerase, and nucleotides.
- **Enzyme-Linked Immunosorbent Assay (ELISA)** is a laboratory technique used to detect and quantify specific molecules such as proteins, **antibodies, or hormones** in biological samples.
- **Western Blotting Test** is performed to separate and identify a **specific protein** in a blood or tissue sample.

- **Spectrophotometry** works on the principle of the Beer-Lambert Law. This law states that the amount of light absorbed by a solution is directly proportional to the concentration of the solution and the path length of the light. In other words, **the more light a substance** absorbs, the higher its concentration.

95. (b)

- **Explanation:** Golden Rice is a genetically modified variety of rice, named for its deep yellow color, which is due to beta-carotene. It was developed by the Philippine Rice Research Institute (PhilRice). Bacillus thuringiensis (BT) is a bacterium that naturally produces crystal proteins. These proteins are toxic to certain insects. The name "Bt crops" comes from this bacterium. Bt crops are those that produce toxins similar to Bacillus thuringiensis to protect the crop from insect pests. Recombinant DNA technology is used for the production of insulin. Through this technique, the human insulin gene is inserted into a bacterium (such as E. coli), enabling the bacterium to produce insulin.

96. (b)

Diseases caused by Bacteria:

- Bacteria are microscopic unicellular organisms. They damage body organs and produce toxins.
- **Examples:**
  - **Typhoid:** Caused by Salmonella typhi through contaminated food or water.
  - **Tuberculosis (TB):** Caused by Mycobacterium tuberculosis, affecting lungs—leads to cough, sputum, and breathing difficulty.
  - **Plague:** Spread by Yersinia pestis via rats and fleas.
  - **Cholera:** Caused by Vibrio cholerae, leads to vomiting, diarrhea, and dehydration.

Diseases caused by Viruses:

- Viruses are ultra-microscopic and can only grow inside living cells. They destroy host cells to spread disease.
- **Examples:**
  - **Polio:** Caused by Poliovirus, can cause paralysis in children.
  - **Influenza (common cold):** Spreads via respiratory droplets.
  - **Dengue:** Spread by bite of Aedes mosquito.
  - **Hepatitis:** Damages liver.
  - **AIDS:** Caused by HIV, weakens the immune system.

Diseases caused by Protozoa:

- Protozoa are unicellular organisms that live as parasites in the human body, affecting blood or the digestive system.
- **Examples:**
  - **Malaria:** Caused by Plasmodium, transmitted by female Anopheles mosquito.
  - **Amoebiasis:** Caused by Entamoeba histolytica, leads to diarrhea, cramps, and gas.
  - **Sleeping sickness:** Caused by Trypanosoma.

Diseases caused by Helminths (worms):

- Helminths are multicellular parasites that live in intestines and absorb nutrients from the body.
- **Examples:**
  - **Filariasis:** Caused by Wuchereria bancrofti, leads to swelling of limbs, transmitted by mosquito.
  - **Roundworm infection:** Common in children, spreads through contaminated soil and hands.
  - **Tapeworm:** Enters body through consumption of undercooked meat.

Let me know if you'd like the next question translated as well.

97. (c)

- College of Arts and Crafts - Lucknow (1911)
- Bharatiya Kala Bhavan - Varanasi (1920)
- State Lalit Kala Academy - Lucknow (1962)
- Uttar Pradesh Sangeet Natak Academy - Lucknow (1969)
- (Formerly known as Uttar Pradesh Natya Bharati - 1963)
- Bhatkhande Music Institute - 1966 (Now - Bhatkhande University of Culture)
- Bharatendu Natya Academy - Lucknow (1975)
- National Kathak Institute - Lucknow
- Tribal and Folk Art Culture Institute - Lucknow
- Uttar Pradesh Film Corporation – 1975

Note: Formerly known as Marris College of Music.

98. (a)

- **Explanation:** Bioremediation is a technique where microorganisms (like bacteria and fungi) are used to transform toxic or harmful chemicals into less harmful or inert forms. **Phytoremediation** is a form of bioremediation where certain plants can absorb or degrade pollutants from soil, water, or air. Bioremediation is generally effective on biodegradable pollutants (like petroleum, pesticides, etc.). It has limited effect on non-biodegradable pollutants (like certain heavy metals). Bioremediation cannot completely convert heavy metals into minerals; these elements are chemically non-biodegradable. It can only reduce their bioavailability or toxicity but does not completely neutralize them.

99. (a)

- **Explanation:** Embryonic stem cells are **pluripotent**, meaning they can transform into almost all types of cells in the body. These cells are obtained from embryos, which raises ethical and religious concerns. Stem cell therapy is not limited to genetic disorders; it is also being explored for the potential treatment of heart diseases, spinal cord injuries, Parkinson's disease, diabetes, cancer, and more. In **autologous stem cell transplantation**, stem cells are taken from the patient's own body, processed, and then transplanted back into the same patient. In contrast, **allogeneic stem cell transplantation** involves obtaining stem cells from another individual (donor) and transplanting them into the patient.

100.(c)

- Nanotechnology is an interdisciplinary field of science and engineering that involves the design, synthesis, characterization, and application of materials and devices at the **nanoscale**, typically ranging from 1 to 100 nanometers. At this scale, materials exhibit **novel and enhanced physical, chemical, mechanical, optical, and biological properties** due to quantum effects and the high surface area-to-volume ratio. Nanoparticles are used in **targeted drug delivery**, allowing medicines to reach specific locations in the body, thereby increasing efficacy and reducing side effects. The **high surface-to-volume ratio** of nanoparticles makes them **more chemically reactive**, not inert. This high reactivity allows them to interact rapidly in chemical and biological systems. **Applications of Nanotechnology**

1. Medicine (Nanomedicine)

- Targeted drug delivery using **nanocarriers** like liposomes and dendrimers (e.g., cancer therapy).
- Early disease detection through **nanosensors**.
- Development of **artificial tissues and organs**.

2. Energy

- **Nanomaterials in solar cells** to improve efficiency.
- High-capacity **nanobatteries and supercapacitors**.

3. Agriculture

- **Nano-fertilizers** and **nano-pesticides** for precision farming.
- Nanosensors to monitor soil health.

4. Electronics

- Smaller, faster, and more efficient **transistors and memory chips**.
- **Flexible displays** and advanced wearables.

5. Environment

- **Nanofilters** for water purification.
- Nanomaterials to degrade environmental pollutants.

101.(d)

- During the freedom struggle, many leaders, thinkers, and reformers expressed their ideas through books. These works not only help understand the political, social, and religious environment of that time but also laid the ideological foundation for the independence movement. "Unhappy India" was written by Lala Lajpat Rai as a strong critique of British policies. It was written in response to "Young India". "India Divided" is authored by Dr. Rajendra Prasad and discusses in detail the potential dangers of India's partition. "Satyarth Prakash" is the famous book of Arya Samaj's founder Swami Dayanand Saraswati, focused on the supremacy of the Vedas, social evils, and religious reforms. Rabindranath Tagore's "Gora" is a socio-political novel reflecting on caste, religion, nationalism, and the struggle for personal identity in Indian society.

102.(c)

- The history of rulers of Punjab's Sikh Empire in the 18th and 19th centuries is highly significant: Ranjit Singh (1801–1839): Known as the "Lion of Punjab," he founded the Sikh Empire and built a strong, organized state. Amritsar and Lahore became the political and religious capitals of the empire. Kharak Singh (1839–1840): After Ranjit Singh's death, his son Kharak Singh ascended the throne. However, his reign was short and weak due to court conspiracies and growing British influence. Sher Singh (1841–1843): After Kharak Singh's death, Sher Singh took power. He tried to stabilize the empire but was assassinated due to court intrigues and British machinations. Duleep Singh (1843–1849): The youngest son of Ranjit Singh, he became ruler as a child. During his reign, the British gradually strengthened their hold over Punjab, and after the Second Anglo-Sikh War (1849), Punjab was annexed into the British Empire.

Thus, the correct chronological order is: **Ranjit Singh - Kharak Singh - Sher Singh - Duleep Singh.**

103.(B)

Asiatic Society of Bengal was established in 1784 by **William Jones** to promote the study of Indian history, languages, and culture. Sanskrit College was established in 1791 in Varanasi by **Jonathan Duncan** to encourage religious and cultural education in India. Sangat Sabha was founded in 1863 by **Keshab Chandra Sen** to promote the ideals of Brahmo Samaj, bring about socio-cultural reforms, and impart moral education to the youth. Seva Sadan was founded in 1885 by **D.N. Malabari** for the rehabilitation of women, especially widows and women from marginalized sections, to provide them with a respectable life.

104.(a)

- Wood's Dispatch laid the foundation for the modern education system in India. Its goals included spreading knowledge, promoting morality, and enhancing vocational skills.
- There was no direct provision to promote private industries in this.
- Importantly, it recommended a **secular governmental education system**, not one limited to religious teaching. Hence, Statement 3 is incorrect.
- Presented in 1854 by **Charles Wood** during Lord Dalhousie's tenure, the dispatch brought a historical transformation in Indian education. It is often called the "Magna Carta of Indian Education" as it outlined a detailed education policy for the first time. It suggested English as the medium for higher education and vernacular languages for primary education to make education accessible to the masses.
- Another key feature was its emphasis on **women's education**, marking the first such recognition in colonial India. Based on the Wood's Dispatch, universities were later established in **Calcutta, Madras, and Bombay (1857)**, and education departments were set up in Bengal, Bombay, Madras, Punjab, and the North-Western Provinces.

105.(c)

- Ram Prasad Bismil was a prominent revolutionary of the Indian freedom struggle. He played an important role in the establishment of the Hindustan Republican Association (HRA) in 1920. The main objective of the HRA was to overthrow British rule through armed revolution and establish the United States of India. The Kakori Incident (1925), which involved planning to loot the government treasury, was HRA's biggest action.
- The poem was originally written by **Bismil Azimabadi**, a nationalist poet from **Azimabad (Patna)**, in **1921**, following the **Jallianwala Bagh massacre**.
- It was first published in the Urdu journal **Sabah**, edited by Qazi Abdul Ghaffar.
- However, it was **popularized by Ram Prasad Bismil**, the revolutionary freedom fighter, who recited it as a **war cry** during the independence movement. The poem became so closely associated with him that many mistakenly attribute authorship to him
- Bismil was hanged on 19 December 1927 in Gorakhpur Jail, not in Allahabad Central Jail. His sacrifice remains a source of inspiration for Indian youth.

106. (d)

- The Treaty of Sugauli was signed in 1815-16 between the British and Nepal. This treaty was signed after the Anglo-Nepal War (Gorkha War), in which Nepal faced defeat. As a result, Nepal ceded Kumaon, Garhwal, Sikkim, and the Terai region to the East India Company. This treaty proved decisive in determining India's geography and borders.
- The Treaty of Yandabo was signed in 1826 after the First Anglo-Burmese War between the British and Burma. Under this treaty, regions like Assam, Arakan, and Manipur came under British control, leading to the expansion of the British Empire in Northeast India.
- The Treaty of Gandamak was signed in 1879 during the Second Anglo-Afghan War between Afghan Amir Yakub Khan and the British government, under which British control was established over Afghanistan's foreign policy.
- The Treaty of Lhasa was signed in 1904 after the British Tibet Expedition between Tibet and Britain, granting Britain commercial and political rights in Tibet. All these treaties reflect the expansion of British imperialism in India and their diplomatic power over neighboring countries.

107.(d)

- **Lord Curzon (1899–1905)** was one of the most controversial Governor-Generals of British India. While he implemented several administrative and cultural reforms, his actions also significantly accelerated the nationalist movement.

Partition of Bengal (1905):

- Lord Curzon partitioned Bengal in 1905. The official reason cited was administrative convenience, as Bengal had become too large. However, the real intent was the policy of "divide and rule"—to create communal divisions between Hindus and Muslims. This led to widespread unrest and gave rise to the **Swadeshi Movement**.

Indian Universities Act, 1904:

- This act curtailed the autonomy of universities. The government was granted more authority in university affairs, including the appointment of teachers and control over curriculum. The educated class strongly opposed this, further fuelling the nationalist movement.

Shimla Agreement (1905):

- The **Simla Convention**, often referred to as the Shimla Agreement, was held between **1913–1914**, not 1905.
- It was a **tripartite negotiation** involving **British India**, **Tibet**, and **China**, with **Sir Henry McMahon** representing British India—not Lord Curzon.
- Lord Curzon **did order the 1904 military expedition to Tibet**, led by **Francis Younghusband**, which laid the groundwork for future diplomatic engagement. But he was **not directly involved** in the Simla Convention itself.

Archaeological Conservation:

- Although the **Archaeological Survey of India (ASI)** had been established in **1861**, Lord Curzon **strengthened** it. He initiated efforts for the conservation of historical monuments like the Taj Mahal, Red Fort, etc. He also introduced laws to protect India's heritage.

Railways and Irrigation:

- Curzon invested in the expansion of **railways and irrigation** and introduced administrative reforms such as the creation of the **North-West Frontier Province (NWFP)**.

108.(a)

The **Simon Commission** was a group of seven British MPs under Sir **John Simon**, sent to India to assess the working of the **Government of India Act 1919** and suggest further constitutional reforms.

Indians were **outraged** because there were **no Indian members** in a commission that was to decide India's political future.

Its arrival in **Bombay on 3 February 1928** was met with widespread protests under the slogan **"Simon Go Back"**, spearheaded by the Indian National Congress and other nationalist groups.

Even moderate leaders like **Motilal Nehru** and **M. A. Jinnah** opposed the commission, marking a rare moment of unity across political factions.

The intense anti-Simon sentiment inspired many youth groups to become active.

Hindustan Socialist Republican Association (HSRA), originally formed in 1924 by **Ram Prasad Bismil** and others, saw a second phase of activity under **Chandrasekhar Azad** and **Bhagat Singh**.

HSRA WAS REORGANISED IN SEPTEMBER 1928.

HSRA adopted a **clear socialist ideology**, aiming not just at British overthrow but also at establishing a **proletarian government** in India.

Their activities shifted from sporadic violence to **planned revolutionary actions**, including targeted assassinations and bombings to awaken political consciousness.

On **30 October 1928**, in Lahore, Lala Lajpat Rai led a peaceful protest against the Simon Commission.

The police, under **Superintendent James A. Scott**, ordered a **lathi-charge** on the protesters.

Lala Lajpat Rai was struck multiple times on the chest and head. Although he gave a defiant speech later saying, *"Every blow on my body will be a nail in the coffin of British imperialism,"* he succumbed to his injuries on **17 November 1928**.

His death became a rallying point for revolutionaries, fueling anti-British sentiments across the country.

- The original target of the HSRA was **Superintendent James Scott**, but he escaped.
- **John P. Saunders**, a British police officer, was mistakenly shot by **Bhagat Singh** and **Rajguru** on **17 December 1928** outside the Lahore Police Headquarters.
- This was part of the **"Lahore Conspiracy"** planned by HSRA as revenge for Lala Lajpat Rai's death.
- Chandrashekhar Azad provided cover fire to help Bhagat Singh and Rajguru escape.
- This assassination marked the rise of Bhagat Singh as a **national revolutionary icon** and brought HSRA into the spotlight.

109.(d)

- To arrange the Governors of Bengal in the correct chronological order based on their tenure, we need to analyze their service periods in detail. Robert Clive was first Governor from **1757 to 1760**, and then again from **1765 to 1767**, strengthening the East India Company's political power after the Battle of Plassey (1757).
- Vansittart served as Governor from **1760 to 1765**, during whose tenure the Battle of Buxar (1764) took place.
- Verelst governed from **1767 to 1769**, further consolidating the Company's administrative control.
- Finally, Warren Hastings was Governor of Bengal from **1772 to 1774**, after which he became the **first Governor-General of India.**
- Thus, the correct chronological order is: **Clive- Vansittart - Verelst - Warren Hastings.**

110.(c)

- The **Permanent Settlement** was introduced in **1793** by Lord Cornwallis. Under this system, zamindars were declared the owners of the land and were made responsible for collecting and paying a fixed revenue to the Company.
- While this benefitted the zamindar class, it worsened the condition of the farmers.
- Farmers suffered under heavy taxation, exploitation, and usury, often losing their lands and becoming economically weaker.
- Hence, **statement (A) is false**, as it did not economically strengthen farmers but rather pushed them into debt and distress.
- **Reason (R) is true**, since the Permanent Settlement granted ownership rights to zamindars.

111. (b)

Puraṇa Kassapa: He neither believed in karma nor in its consequences, but he was not an Upanishadic thinker. The Upanishads belong to the Brahmanical tradition and focus on metaphysical ideas like Atman (soul) and Brahman (universal spirit), which had no connection to Pūraṇa Kassapa.

1. **Ajīvika Sect:** The Ājīvika sect was founded by **Makkhali Gosala**. It was based on the philosophy of fatalism. Accordingto this belief, everything in life is predetermined, and individual effort cannot change it. This outlook is called **determinism**. Followers of this sect practiced extreme asceticism, celibacy, and renunciation. They rejected the doctrine of karma and held that liberation of the soul was a fixed process that would occur automatically over time.

2. **Cārvāka (Lokāyata):** Cārvāka philosophy is also known as **Lokāyata**. It was a completely **materialistic** worldview. Its followers only accepted **direct perception** (knowledge gained through the senses) as valid. They rejected beliefs like God, soul, rebirth, Vedas, and rituals as meaningless. Their famous saying was: **"Live happily as long as you live, even if you have to borrow ghee to do so."** The Cārvāka system glorified sensual pleasure and dismissed ideas of soul or salvation as mere imagination. It strongly criticized religious rituals.
3. **Determinists (Niyativādins):** Determinists believed that everything in the world is **preordained** and humans cannot change it. This view aligns closely with the Ājīvika sect. According to this doctrine, neither good deeds yield merit nor bad deeds result in punishment. The idea of **free will** was entirely rejected.
4. **Skeptics (Saṁśayavādins):** The principal advocate of **skepticism** was **Sanjaya Belatthiputta**. He argued that no firm conclusions can be drawn on any subject. He avoided giving any definite yes/no answers and believed that every point of view has some uncertainty. Therefore, skeptics refused to reach any conclusion. These ideas later evolved into **agnosticism** and **indeterminism**.
5. **Agnostics/Indeterminists:** These were thinkers who neither fully accepted nor entirely rejected any belief or theory. According to them, **absolute truth is unknowable**. Hence, it's impossible to hold definite opinions on any matter. This school is often considered a deeper extension of skepticism.
6. **Atheists/Non-theists:**These thinkers outright rejected the existence of God. The Cārvākas, Ājīvikas, and some Jain and Buddhist sects also had elements of **atheism**. They believed that concepts like Brahma, soul, or rebirth were imaginative and lacked solid evidence.

112.(a)

- Various sub-styles developed within Indian temple architecture's **Nagara style**, among which the **Bhumija style** is prominent. It flourished mainly in the **10th–12th centuries** in central India, Malwa, Rajasthan, and Maharashtra.

Key Features:

- The main spire (shikhara) is **curvilinear (rekha-prasada)** and rises vertically.
- Around this central spire, **a symmetrical array of miniature spires** (called urushringa) is arranged, creating a pyramidal or clustered appearance.
- This arrangement gives the upper part of the temple a grand and balanced look, embodying dimensional symmetry extending in all four cardinal directions.
- **Notable Examples:**
  - Ugranarayan Temple in Ujjain
  - Siddheshwar Temple in Indore
  - Temples in Malwa and Vidarbha regions

- The Bhumija style is described in **Vastu Shastra texts** as a branch of the Nagara style.

Thus, both the assertion and reason are true, and (R) explains (A) correctly because the array of miniature spires is a defining feature of the Bhumija style.

113.(c)

- The **Kalachuri-Chedi era** began in **248–49 CE** by Ishwarsena of Western India and was later adopted by the Kalachuri rulers of Madhya Pradesh and Uttar Pradesh.

- The **Gupta era** began in **319 CE** under Chandragupta I and was used in inscriptions of the Gupta emperors and their feudatories.
- The **Vallabhi era** was established after the 241st year of the Shaka era and is credited to a king named Vallabh.

114.(c)

1. **Karkota Dynasty and Lalitaditya Muktapida:**

- Lalitaditya Muktapida (724–760 CE) was the most famous ruler of the Karkota dynasty.
- He established several towns, among which **Paraspur** was prominent and made his capital.
- He constructed the **Vishnu Temple at** Anantnag, which was architecturally marvellous.
- This temple was built in a **solid stone architectural style**.
- Lalitaditya is considered a powerful conqueror who conducted military campaigns in **Punjab, Bengal, Tibet, and the Afghan regions**.

2. **Utpala Dynasty and Avantivarman:**

- **Avantivarman (855–883 CE)** was the founder of the Utpala dynasty.
- He founded the town of **Avantipur**, where ruins of **Avantisvara** and **Vishnugupta** temples are still found today.
- During his reign, **irrigation and flood control** in Kashmir were given importance.
- An engineer named **Suyya** helped in controlling the course of the **Jhelum River**.
- This dynasty is known for **religious tolerance and cultural development**.

3. **Lohara Dynasty and Harsha:**

- The **Lohara dynasty** ruled Kashmir after the fall of the Utpala dynasty.
- **Harsha (1089–1101 CE)** was the last influential ruler of this dynasty, but due to his **excessive taxation and temple plundering**, public dissatisfaction grew.
- In **Rajatarangini**, Harsha is portrayed as a tyrant who **harmed religious institutions**.
- His **administrative policies were anti-people**, and eventually, he was **assassinated**.

115.(d)

- The Gupta period is called the **Golden Age of Indian history**, marked by advanced social and cultural life. Women's education was indeed prevalent during this period. Texts like the Amarakosha mention terms such as Upadhyaya, Upadhyayini, and Acharya, indicating that women served as teachers and scholars.
- However, the period also saw the presence of the **Devadasi system**, as described in Kalidasa's Meghaduta, which mentions Devadasis at the Mahakal Temple in Ujjain, reflecting women's roles in religious institutions.
- Similarly, texts like Kamasutra and Mrichchhakatika describe courtesans and prostitutes, showing the diverse roles of women in society. Moreover, **Narada Smriti** and **Parashara Smriti** supported widow remarriage, indicating progressive tendencies to some extent.
- Therefore, both statements are correct.

116.(a)

- The **Prayag Prashasti**, also known as the Allahabad Pillar Inscription, is a major source of information about Samudragupta's conquests and the expansion of his empire. It was composed by his court poet **Harishena**.

- According to the inscription, Samudragupta was a great conqueror who achieved victories in **Aryavarta**, **Dakshinapatha**, and over frontier states. He actively pursued a policy of military campaigns to expand and consolidate Gupta power.
- The verses of the Prayag Prashasti describe Samudragupta as the **"Conqueror of the Earth" (Dharnibandha)**. It also states that he subjugated numerous independent rulers, making some subordinate and forcing them to pay tribute.
- Samudragupta is often called the **"Napoleon of India"** because his conquests and military strategy laid a strong foundation for the Gupta Empire. Apart from the Prayag Prashasti, inscriptions such as the **Eran Pillar Inscription**, the **Gaya Copper Plate**, and the **Nalanda Copper Plate** corroborate his power and military achievements.

117.(a)

- **Vima Kadphises (65 CE – 78 CE)** is regarded as the real founder of Kushan power in India. He crossed the Indus River and established his empire extending up to Taxila and Punjab.
- He issued a large number of **gold coins**, which testify to his economic prosperity and thriving trade.
- These coins featured **Greek script on one side** and **Kharosthi script on the other**, symbolizing the cultural synthesis of Greek and Indian traditions.
- Religiously, he was a **Shaivite (follower of Shiva)**.
- His coins depict figures of **Shiva**, **Nandi**, and **Trishul**, confirming his devotion. He assumed titles such as **"Maheshwara" (Great Lord), "Maharaja" (Great King),** and **"Sarvaloka Ishvara" (Lord of all worlds),** which reflect his political authority and religious ambitions.
- The Kushan Empire was firmly consolidated during his reign and later reached its zenith under **Kanishka**.

118.(b)

- During the Mauryan period, the taxation system was well-organized and diverse. **Seeta** referred to income derived from state-owned land. In the Mauryan administration, most produce from land under state control was deposited in the royal treasury.
- **Hiranya** was a tax collected in cash instead of in grains. It was more prevalent in trade and urban areas where cash transactions were common.
- **Pranya** was an emergency tax imposed in special circumstances such as war, natural calamity, or fiscal crisis. It was temporary and collected only under extraordinary conditions.
- **Bhaag** was the fixed portion of the farmer's produce that had to be given to the state, generally 1/6 of the total yield, and it was the most important form of land revenue.
- The revenue collected through this system was used for irrigation, roads, and public works, serving as the foundation for administrative efficiency and economic stability.

119.(b)

- The prehistoric period reflects the early stages of human civilization, in which the use of stone tools was prominent. It is mainly divided into Lower, Middle, Upper Paleolithic and Neolithic periods based on tool complexity, settlement systems, and lifestyle. Statement 1 is correct because in the Mesolithic period (100000 – 40000 BCE), the use of microlith tools (small, pointed, blade-like stones) started, which were used as weapons by attaching them to wood or bone. These tools were used for hunting and scraping. Statement 2 is also correct. The Neolithic period witnessed a revolution in human life. Agriculture and animal husbandry started in this era, which led to permanent settlements. Evidence of this is found from sites like Mehrgarh (Pakistan), Belan Valley (Uttar Pradesh), Chirand (Bihar), and Burzahom (Kashmir). Pottery, polished stone tools, and burial practices also characterize this period. Statement 3 is incorrect because pebble and chopping tools were mainly used in the Lower Paleolithic

period. In the Upper Paleolithic period (40000 – 10000 BCE), tools became more refined, thin, and sharp, which are called microliths. This period also shows evidence of cave painting and early social organization. Statement 4 is also incorrect because Neolithic culture remains are not limited to South India. Evidence is also found in North, East, and Northeast India. For example – Belan Valley (Uttar Pradesh), Chirand (Bihar), Burzahom (Kashmir), Mehrgarh (Pakistan), etc. In South India, sites like Maski, Brahmagiri, Paiyampalli provide Neolithic evidence, but it was a widespread culture across India. The development of ancient Indian history is shown by dividing it into three major periods — Prehistoric, Protohistoric, and Historic. The prehistoric period is that time when no written evidence is available, and knowledge is obtained only through archaeological sources (like tools, bones, settlements, etc.). Its major example is the Stone Age. The Stone Age is divided into three phases — Paleolithic (up to 10,000 BCE), Mesolithic (10,000–5500 BCE), and Neolithic (5500–3000 BCE). The Paleolithic period is further divided into three parts:

1. Lower Paleolithic (from beginning to 1 lakh BCE)
2. Middle Paleolithic (1 lakh BCE – 40,000 BCE)
3. Upper Paleolithic (40,000 BCE – 10,000 BCE)

After this comes the Protohistoric period, where written evidence is available, but the script is not yet fully deciphered. Examples include the Indus Civilization and Vedic culture. Finally comes the Historic period, where both written and literary evidence is available. This period is based on archaeological, literary, and foreign travelers' accounts.

120.(d)

- Yajurveda is called the "ritualistic Veda" because it contains details of rituals and rules of sacrifices. This Veda is mainly related to the mantras and procedures used in yajnas.
- There are two major branches of the Yajurveda — Shukla Yajurveda (in prose form only) and Krishna Yajurveda (in both prose and verse forms).
- The priest who recites the mantras of the Yajurveda is called "Adhvaryu".
- Among its major Upanishads, the Isha Upanishad is prominent, which is the last chapter of the Yajurveda and is related to profound spiritual contemplation. Other Upanishads like Katha, Maitrayani, and Shvetashvatara are also related to this.
- The two Brahmana texts of the Yajurveda — Shatapatha Brahmana and Taittiriya Brahmana — are also notable.
- **Rigveda** is considered the oldest and most important Veda, believed to have been composed around 1500 BCE. It contains a total of 1028 hymns and 10 mandalas, mostly consisting of praises to various deities such as Agni, Indra, Varuna, and Soma. This Veda is mainly in verse form.
- In Rigveda, natural forces are worshipped in the form of deities. It gives a glimpse of the social, religious, and economic life of Vedic society. The 10th Mandala mentions the Varna system. It is called the source of knowledge and is referred to as the Samhita portion.
- In **Samaveda**, 'Sama' means 'song'. It is mainly related to music and describes the method of singing most of the mantras from the Rigveda in melody. It mostly contains mantras to be sung by the Udgata priest. The primary subject of the Samaveda is the worship of the Sun, and its Upanishad is the Chandogya Upanishad.
- **Atharvaveda** is considered different from the other three Vedas because it mainly contains subjects like spells, medicine, witchcraft, ghosts, and disease prevention instead of yajnas. It is also called Brahmaveda. It has mantras related to common life, medicine, and social issues. Its major Upanishads are — Mandukya, Prashna, and Mundaka Upanishads.

121.(b)

- Shah Jahan's childhood name was Khurram. During the early years of his reign, Mughal Emperor Shah Jahan leaned toward Islamic orthodoxy but later became more liberal under Jahangir's influence.
- Shah Jahan abolished the practices of Sijda (prostration) and Peboos (kissing the ground) and replaced them with the Chahar Taslim practice. He also granted exemption to religious scholars from performing Sijda.
- The Peacock Throne was indeed constructed under Shah Jahan's reign. Its chief artist was Bebadal Khan Badshah, who decorated the throne with Pietra Dura (inlay work) and depicted the mythical Greek figure Orpheus playing a lyre.
- Jharokha Darshan and Tuladaan practices were abolished by Aurangzeb.
- Jahangir, not Shah Jahan, established a painting workshop in Agra under the leadership of Agharaja.

122.(b)

- Iltutmish (1211–1236) is known as the "slave of a slave." He was an Ilbari Turk.
- At the time of Qutbuddin Aibak's death, he was the governor of Badaun. Iltutmish is regarded as the real founder of the Delhi Sultanate.
- He also established the Turkan-i-Chahalgani (Group of Forty), a council of nobles.

123.(c)

- Alauddin assumed the title of Sikandar-i-Sani or the "Second Alexander." The Mongol general Targhi defeated Alauddin Khalji. In 1303 CE, Targhi laid siege to Delhi for two months, forcing Alauddin to sign a treaty. This was, in effect, a defeat for Alauddin at the hands of the Mongols.
- The Mongols launched their most frequent invasions during Alauddin Khalji's reign. To counter them, Alauddin appointed Zafar Khan as his military commander. Malik Kafur was credited with Alauddin's victories in southern India.

124.(c)

- Malwa has been a historically and strategically significant region of India. During the 14th and 15th centuries, it was under the Delhi Sultanate. However, due to the weakening of the Sultanate, many governors declared themselves independent.
- Akbar annexed Malwa in 1561–62 CE when Baz Bahadur was the ruler there.
- Dilawar Khan, a governor under the Delhi Sultanate, declared Malwa independent in 1401 CE by taking advantage of political instability.
- Dilawar Khan's son Alp Khan assumed the title Hoshang Shah and became the ruler of Malwa in 1405 CE.
- Hoshang Shah shifted his capital from Dhar to Mandu. He also built the fort of Mandu and founded the city of Hoshangabad.
- Alp Khan, the son of Dilawar Khan, assumed power after his father's death in 1406 CE and later took the title Hoshang Shah. However, the question mentions that he became the ruler and assumed the title in 1435 CE, which is incorrect. In 1435 CE, the ruler of Malwa was Muhammad Shah, the last ruler of that dynasty. Hence, statement (c) is false.

125.(b)

- The Bhakti movement began in the 6th century CE in South India with the 12 Alvars and 63 Nayanars. It was brought to North India by Ramananda.

- Among Ramananda's twelve disciples were two women, Padmavati and Sursari. His prominent disciples included Ravidas, Kabir, Dhanna, and Pipa.
- Chaitanya Swami was born in Bengal. During his schooling, he was known as Nimai Pandit or Gauranga. His real name was Vishvambar. He founded the Gosai Sangh and introduced the Sankirtan practice.

126.(c)

1. Bandhavgarh was ruled by the Baghel dynasty

This statement is **correct**.

- The Baghel dynasty, a branch of the Solanki Rajputs of Gujarat, ruled over Bandhavgarh in present-day Madhya Pradesh.
- They later shifted their capital to Rewa, but Bandhavgarh remained an important center for administration and defense.

2. Orchha was founded in 1531 by Veer Pratap Singh who was the first Bundela ruler of Orchha.

This statement is **incorrect**.

- Orchha was founded in 1531 by Rudra Pratap Singh, the first Bundela ruler of Orchha.
- Veer Singh Bundela was the ruler of Orchha, not Bandhavgarh.
- He supported Prince Salim during his rebellion against Akbar and became one of Jahangir's trusted allies.
- Bandhavgarh had no direct association with Veer Singh Bundela.

3. Orchha was located on the communication route between North and South India

This statement is **correct**.

- Orchha occupied a strategic location in central India on key trade and military routes linking North India to the Deccan Plateau.
- This made it significant for commerce, administration, and movement of armies during the medieval period.

4. Orchha is an ancient town situated on the banks of the Betwa River

This statement is **correct**.

- Orchha was founded in 1531 by Rudra Pratap Singh, the first Bundela ruler of Orchha.
- The town is situated on the Betwa River, which provided natural defence and added to its scenic beauty.

5. Orchha was developed under the Bundela Rajputs

This statement is **correct**.

- The Bundela Rajputs developed Orchha into a flourishing capital with magnificent architecture such as Raja Mahal, Jahangir Mahal, and Ram Raja Temple.
- Orchha became a prominent political and cultural centre in central India under their rule.

127.(c)

- Ramayana: Translated by Abdul Qadir Badauni
- Atharvaveda: Translated by Haji Ibrahim Sarhindi
- Bhagavata Purana: Translated under the supervision of Raja Todarmal
- Bhagavad Gita: Translated by Dara Shikoh
- Panchatantra: Translated by Faizi
- Lilavati: Translated by Faizi

- Simhasana Battisi: Translated by Abdul Qadir Badauni
- Rajatarangini: Translated by Maulana Shah Mohammad Shahabadi

128.(d)

- The founder of the Lodi dynasty was **Bahlul Lodi**. He ascended the throne of Delhi on 19 April 1451 with the title **Bahlul Shah Ghazi**. The credit for establishing the first Afghan state in Delhi is given to him.
- Bahlul Lodi issued the **Bahluli coin**. His son **Nizam Khan** ascended the throne of Delhi on 17 July 1489 with the title **Sultan Sikandar Shah**.
- In **1504**, **Sikandar Lodi** founded the city of **Agra** and made it his new capital. The Sultan who wrote **Persian** (not Arabic) poems under the pen name **Gulrukhi** was Sikandar Lodi.
- In the **First Battle of Panipat** (21 April 1526), **Ibrahim Lodi** was defeated by **Babur**.

129.(d)

- Sher Shah Suri's childhood name was Farid Khan. He earned the title Sher Khan after killing a tiger, given by Bahar Khan Lohani, who later appointed him guardian of his son Jalal Khan. Sher Shah (1540–45 CE) defeated the ruler of Bihar and took control. He defeated Humayun in the battles of Chausa and Kannauj, captured Agra, and established the Second Afghan Empire.
- His empire extended over Bengal, Bihar, Malwa, Rajasthan, Multan, and Sindh. The conquest of Kalinjar in Bundelkhand in 1545 CE was his last victory, as he died during this campaign.
- He established an excellent administrative system and introduced Hindavi as the language of administration. Sher Shah ensured impartial justice and enforced strict law and order to reduce crime.
- He reformed the currency system, introducing new coins: silver rupiya (178 grains), gold ashrafi, and copper dam (380 grains), while withdrawing old and debased coins from circulation.

130.(a)

- During the accession of Devaraya I (ruler of Vijayanagara), a war broke out with Bahmani ruler Tajuddin Firoz Shah over the Tungabhadra Doab (Raichur). This war became famous as the "**Battle of the Goldsmith's Daughter** In this battle, Devaraya I was defeated and had to pay war indemnity in the form of 10 lakh hoons (gold coins), pearls, and elephants, and marry his daughter to Firoz Shah. However, later, Devaraya I aligned with the ruler of Warangal and defeated Firoz Shah.
- During Devaraya I's reign, the Italian traveler Niccolò de' Conti visited and described him as a powerful king.
- Devaraya II adopted the title "Gajapatekara." Ahmad Shah Bahmani I shifted his capital from Gulbarga to Bidar, not Warangal.

131. (d)

Uttar Pradesh tops the country

- 16.21 percent share in milk production
- Free ration distribution to 15 crore citizens
- 9.57 crore people have bank accounts under Jan Dhan Yojana
- Free electricity connection to 1.58 crore people
- Rs 80,000 crore transferred to 2.86 crore farmers under Pradhan Mantri Kisan Samman Nidhi Yojana. Transferred
- Gas connections to 1.86 crore families under Pradhan Mantri Ujjwala Yojana.
- Distribution of Ayushman cards to more than 9 crore people under Ayushman Bharat Yojana.

- Construction of more than 56 lakh houses under Pradhan Mantri Awas Yojana and Mukhyamantri Awas Yojana.
- Construction of more than 2.75 crore toilets under Swachh Bharat Mission, the highest in the country.
- Highest production of about 55 percent of total mobile phone production in the country. Highest MSME units in the country, more than 96 lakh.

132.(a)

- **Barents Sea**: Located in the Arctic Ocean, near the coasts of Russia and Norway. It is strategically important due to the presence of Russia's Northern Fleet and is rich in oil and gas resources. **Celebes Sea**: Located between the Philippines, Indonesia, and Malaysia. Known for its marine biodiversity, it is also an area of concern for maritime piracy and terrorism. **Tasman Sea**: Also known as "The Ditch," it lies between Australia and New Zealand. It hosts annual yacht races and trans-Tasman swimming adventures. **Scotia Sea**: Situated between Antarctica and South Georgia Island. It is significant for Antarctic research and marine life conservation, especially in studying climate change effects.

133.(b)

- The plate tectonic theory states that Earth's surface is made up of various rigid tectonic plates that move slowly. There are three types of plate boundaries: convergent, divergent, and transform.
- Statement 1 is incorrect because transform boundaries (e.g., San Andreas Fault) primarily experience earthquakes, but no volcanic activity, as there is no subduction.
- Statement 2 is correct: when continental and oceanic plates collide, the denser oceanic plate subducts beneath the continental plate, forming a subduction zone. This leads to mountain formation, as seen in the Andes.
- Statement 3 is incorrect: the plate tectonic theory explains the activities of both oceanic and continental plates, such as the Himalayas (continental plates) and mid-oceanic ridges (oceanic plates).
- The Plate Tectonic Theory is a significant concept in modern geology. It posits that the Earth's outer layer (lithosphere) is divided into rigid pieces called "plates." These plates float on the semi-molten asthenosphere beneath them. Interactions among these plates cause geological events such as earthquakes, volcanoes, and mountain building. The theory was clarified in 1967 by McKenzie, Morgan, and Parker using satellite images and sea-floor spreading activities.
- There are seven major plates on Earth's surface, such as the Pacific Plate, Eurasian Plate, and Indo-Australian Plate. These can be of two types — oceanic and continental.
- **Oceanic Plate:** Most of the oceanic plate is submerged under water. It is mainly composed of basaltic rocks, which are dense and heavy. Though thinner (approximately 5–10 km thick), it lies lower than the continental plate due to its higher density. When an oceanic plate collides with a continental plate, it subducts, forming a subduction zone. This process leads to the creation of trenches, volcanic islands, and earthquakes.
- **Continental Plate:** The continental plate makes up the terrestrial surface and is primarily composed of granite rocks, which are lighter. It is thicker (approximately 30–70 km) but less dense than the oceanic plate and floats over the asthenosphere. When two continental plates collide, mountain ranges like the Himalayas are formed.

134.(b)

- The IOD actually affects the western Pacific region as well and is closely linked to ENSO (El Niño–Southern Oscillation).
- **Muninghat:** Refers to river islands formed by erosion in the Brahmaputra in Assam.
- **Chapori:** Refers to permanent/temporary river islands in the Brahmaputra.
- **Loess Plateau:** Found in cold and dry climatic regions and formed from windblown fine sediments. In India, an example is in the Leh region.

135.(c)

- The Indian monsoon primarily originates due to the temperature difference between land and ocean. During summer, the land heats up quickly, creating a low-pressure zone, and southwest winds blow from the ocean toward the land. This process is driven by Hadley Cell circulation and the shifting of the ITCZ (Inter-Tropical Convergence Zone).
- The Walker Circulation is mainly associated with the Pacific Ocean (El Niño and La Niña phenomena) and has only an indirect effect on the monsoon.
- The southwest monsoon has two major branches:
  - **The Arabian Sea branch,** which brings rain to the western coast (Kerala, Konkan) and then moves towards central India and Rajasthan.
  - **The Bay of Bengal branch,** which enters northeast India (Assam, Meghalaya) and causes heavy rainfall by striking the Himalayas.
- Thus, statement 3 is incorrect because rainfall in northeast India comes from the Bay of Bengal branch, not the Arabian Sea branch.

136.(c)

- **Agulhas Current:** A warm ocean current that flows along the eastern coast of South Africa, from the Indian Ocean towards the Atlantic Ocean. It is one of the significant warm currents of the Indian Ocean and curves around near Cape Agulhas.
- This current influences marine trade routes and weather systems. Both statements are correct because the current flows near South Africa and moves from the Indian Ocean to the Atlantic Ocean.

137.(a)

- **Mica** is a light and layered mineral, primarily found in **igneous** and **metamorphic** rocks. It occurs in colors like white, green, and black and has a shiny, transparent surface. The best variety of mica is called **'Ruby Mica'** or **Muscovite**.
- Its major feature is **thermal and electrical insulation**, which makes it widely used in electrical appliances, wires, motors, and radio devices. Additionally, mica is used in **aircraft construction, cement, cosmetics, and electronic products**.
- Mica sheets can be converted into thin layers of any shape, enhancing its industrial importance. Notably, **India accounts for nearly 80% of the world's mica production**, making it a global leader in this field.

138. (b)

- **South Eastern Railway (SE Railway):** Headquarters – Garden Reach, Kolkata. Its divisions include **Ranchi, Kharagpur, Adra, and Chakradharpur**.
- **North Central Railway (NCR):** Headquarters – Prayagraj. Its divisions include **Agra, Prayagraj, and Jhansi**.
- **South Western Railway (SWR):** Headquarters – Hubli. Its major divisions are **Hubli, Bengaluru, and Mysore**.
- Therefore, only **Option B** (North Central Railway – Agra) is factually correct.

139. (a)

- As per **Census 2011**, Bihar has the **lowest decadal population growth rate** among these three at **25.42%**. Despite its historically high birth rate, family planning programs and reduced infant mortality have slowed the growth.
- Next is **Arunachal Pradesh** with a growth rate of **26.03%**. High birth rates in tribal communities and natural increase are contributing factors, though its total population base is smaller.
- The **highest growth rate** is seen in **Meghalaya** at **27.95%**, due to traditional societal patterns in tribal regions, lower adoption of family planning, and reduced infant mortality with improved health facilities.
- Thus, the correct ascending order is: **Bihar → Arunachal Pradesh → Meghalaya**.

140.(b)

- The development of India's major industrial regions has primarily been based on resources, transport networks, and availability of labor.

Statement 1 is correct: The Hooghly belt (Kolkata, Howrah, Kharagpur, etc.) developed in Bengal due to its proximity to the Raniganj coalfield and Kolkata port, which facilitated both raw material supply and export.

Statement 2 is incorrect: In the Mumbai–Pune region, the textile industry has been prominent since the 19th century, while the IT industry rapidly developed only after the 1990s. The growth of both sectors differed in time and nature.

Statement 3 is correct: Most of India's heavy industries are located in Gondwana valleys (e.g., Chotanagpur) and old volcanic platforms (e.g., Deccan Traps), as these areas are rich in mineral resources such as coal, iron, and manganese.

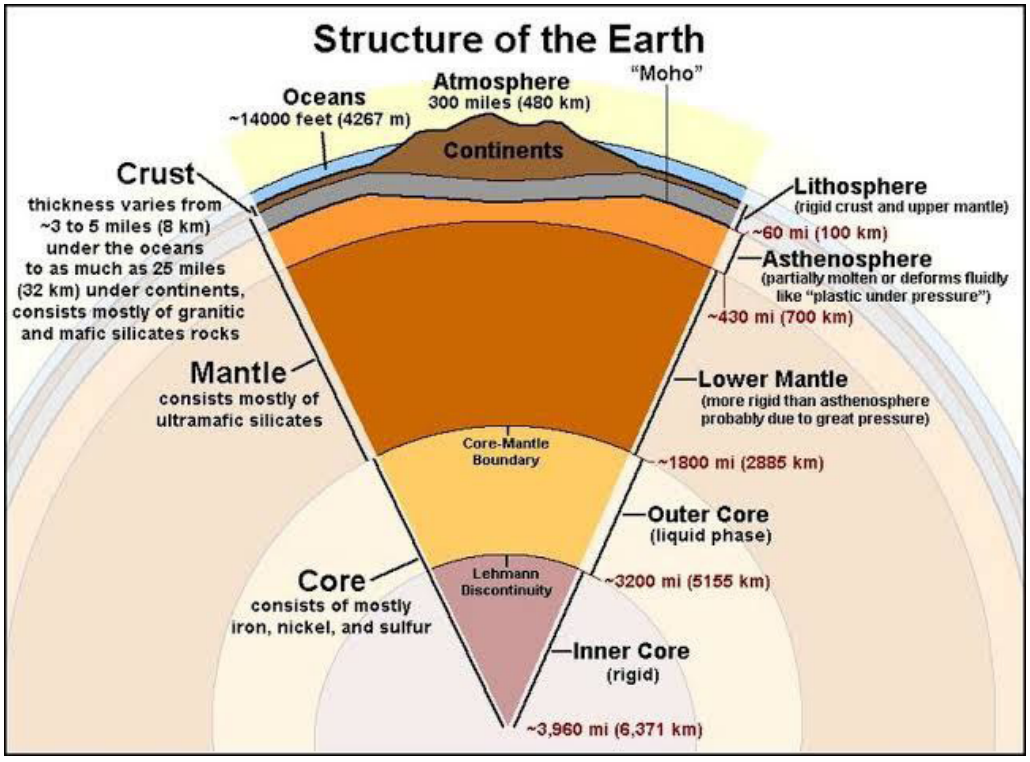
141.(d)

- The internal structure of the Earth is mainly divided into three layers – crust, mantle, and core. **The core is highly dense** (Density ~13 g/cm³) because it mainly contains Fe (iron) and Ni (nickel), and is therefore called **NIFE**. This statement is correct. **The Earth's crust** is the lightest layer, composed

mainly of silica (SiO_2) and alumina (Al_2O_3), referred to as **SIAL**, especially in the continental crust.

SIMA:

- Its main components are silica (Si) and magnesium (Mg).
- It lies just below the SIAL and is made of heavy basaltic igneous rocks.
- Its average density ranges from 2.9 to 4.7, and its thickness is between 1,000 to 2,000 km. **NIFE:**
- This layer is composed of nickel (Ni) and iron (Fe).
- It lies below the SIMA layer and has an average density of around 11. **The lithosphere** is a solid layer formed by the crust and upper mantle, while the **asthenosphere** is the plastic-like layer of the mantle beneath the lithosphere and is flexible. They are **not the same structure**, but different layers.



142.(c)

- **Iraq:** Located in the Tigris and Euphrates river valleys, considered the cradle of civilization.
- **Lebanon:** Known as the "Switzerland of the East" because of its cultural diversity, especially its significant Christian population.
- **Turkey:** Geographically connects Asia and Europe, with the Bosporus Strait being a key feature.
- **Israel:** The **Golan Heights** is a disputed geopolitical area between Israel and Syria.

143.(a)

- **Black Roler**: It is incorrectly said to blow in the "Amazon region of Africa," but the Amazon is in **South America**. This pair is wrong.
- Harmattan is a dry, dusty, and cold trade wind that blows from the northeast Sahara Desert across West Africa towards the Gulf of Guinea between November and March. It reduces humidity drastically, carries fine dust particles over long distances, lowers visibility (causing dusty haze), and impacts agriculture and human health due to its drying effect.

- Bora is a cold, dry, and gusty katabatic wind blowing from the Dinaric Alps onto the eastern Adriatic coast, especially affecting Croatia and Slovenia during winter. It descends rapidly, creating sudden drops in temperature and intense winds that can disrupt maritime and coastal activities, often reaching hurricane-force speeds.
- Chinook is a warm, dry, downslope wind occurring on the eastern slopes of the Rocky Mountains in North America, mainly during winter and early spring. Known as the "snow eater," it causes a rapid rise in temperature, melts snow swiftly, and provides temporary relief from harsh winter cold, which is beneficial for grazing livestock.

144.(b)

- Cardamom is a globally important spice crop used in food, medicine, and perfumes. In world production, **Guatemala** and **Indonesia** are the top producers, while **India ranks third**. **Statement 1 is incorrect.**
- Cardamom requires a **tropical climate** with temperatures between **14°C and 32°C** and rainfall exceeding **150 cm**, typically in areas of moderate altitude. **Statement 2 is correct.**
- In India, the major production regions are the **Western Ghats** (Kerala, Karnataka, and Tamil Nadu). The **northeastern hill states** produce some cardamom but are not the major producers. **Statement 3 is incorrect.**

145.(a)

- The Ganga-Brahmaputra plain extends from North India to Assam and is one of the most fertile plains in the world. The alluvial soil deposited annually by rivers from the Himalayas, abundant water resources, a dense river network, and a favorable climate make this region ideal for agriculture. Hence, crops like rice, wheat, sugarcane, and pulses are widely cultivated here.
- The agrarian economy has led to an extremely high population density in this region, making it one of the most densely populated areas globally.
- Both the assertion and reason are correct, and R explains A because fertile soil and water resources are the primary basis for high population density

146.(a)

- The Defence Ministry is finalising a deal worth around Rs 2,000 to Rs 3,000 crore to buy 500 Invar Anti-Tank Guided Missiles (ATGM) from Bharat Dynamics Limited (BDL).
- The Invar missile is an ATGM designed to be launched from a tank barrel, especially the T-90 tank.
- It is known for its long-range precision strike capability and can destroy enemy tanks equipped with Explosive Reactive Armour (ERA).
- It is originally manufactured by Rosoboronexport of Russia.
- The missile is now manufactured in India under licence by BDL. This move enhances India's defence capabilities and supports the Make in India initiative.

147.(a)

Plant Hormone Summary Table (English Version)			
Hormone	**Primary Source**	**Main Effects**	**High-Yield Exam Point / Use**
Auxin	Shoot apex, young leaves	Cell elongation, phototropism, apical dominance, lateral/ adventitious roots	2,4-D as selective herbicide; parthenocarpy; root induction
Cytokinin	Root apex	Cell division, shoot induction, delay of senescence	Tissue culture; extending leaf shelf-life

Plant Hormone Summary Table (English Version)			
Hormone	**Primary Source**	**Main Effects**	**High-Yield Exam Point / Use**
Gibberellin	Seeds / young tissues	Bolting, stem elongation, breaking dormancy, α-amylase activation	GA_3 enlarges grape berries; used in malting
ABA	**Leaves, roots, seeds**	**Stomatal closure, dormancy, stress response**	**Drought tolerance; germination control**
Ethylene	Ripening fruits, aging tissues	Fruit ripening, abscission, triple response	Ethrel used for ripening / degreening
BRs	Throughout plant (in low amounts)	Cell expansion, vascular development, male fertility	Dwarf mutants; stress tolerance (research applications)
SA	Leaves	Systemic Acquired Resistance (SAR), disease resistance	Disease management strategies
JA	Wounded tissues	Defense against herbivory, secondary metabolism	Tuber formation; flavor profile modulation
SLs	Roots	Suppression of shoot branching, signaling to mycorrhiza	Tiller / branching control

148.(a)

- **Subsidence:**
  - Occurs when part of the lithosphere sinks due to internal processes like tectonic forces or geologic disturbances
  - Can create continental basins
  - May later form lakes, reservoirs, or parts of seas
  - **Examples:** Great Basin (USA), Rift Valley (Africa)
- **Submergence:**
  - Gradual sinking of land into the sea or water body, either due to rising sea levels or land sinking
  - Leads to continental shelf formation
  - Results in coastal plains or submerged coastlines
  - **Examples:** Konkan Coast (India), Ria Coast (Spain), Doggerland (now mostly submerged in the North Sea)
- **Uplift:**
  - Caused by tectonic or internal forces pushing land upward
  - Forms new landforms like plateaus and mountains
  - Coastal areas may emerge to form coastal plains
  - Known as emergence
  - **Examples:** Western Ghats (some parts), Scotland coast (post-Ice Age uplift)
- **Tectonic Forces:**
  - Forces originating from Earth's interior that move plates and cause lithospheric motions (uplift, subsidence, faulting, etc.)
  - **Do not** keep plates stationary; rather, cause collisions, drifts, and separations
  - Lead to earthquakes, mountain formation, rift valleys, trenches, volcanoes
  - **Examples:**
    - Himalayas – due to collision of Indian and Eurasian plates
    - Andaman & Nicobar Islands – volcanic activity at plate boundaries

149.(b)

- **Statement 1:** Black soil is primarily found in the Deccan Plateau (e.g., Maharashtra) and is not typical of the coastal plains. The coastal plains have mainly sandy and alluvial soils. (Incorrect)
- **Statement 2:** Brackish water (a mix of fresh and saltwater) in estuaries and backwaters is crucial for biodiversity, fisheries, and aquaculture. (Correct)
- The Western Coastal Plains lie along the Arabian Sea, from Kutch (Gujarat) to Kanyakumari (Tamil Nadu), and are geographically divided into Konkan Coast, Kanara Coast, and Malabar Coast. These plains are narrow and have rich estuarine systems supporting fishing and navigation.

150.(c)

- **Statement 1:** Gondwana was the southern part of Pangaea and included present-day India, Australia, Africa, Antarctica, and South America. (Correct)
- **Statement 2:** Most of India's coal reserves (e.g., Jharkhand, Odisha, Chhattisgarh, Madhya Pradesh) are associated with Gondwana sedimentary formations. (Correct)
- **Statement 3:** Gondwana rocks are not Archean igneous rocks; they are primarily **Paleozoic sedimentary rocks**. (Incorrect)