

General Studies

Current Affair Test (October-2025)

1.Solution: C

- Guru Tegh Bahadur, the ninth of the ten Sikh Gurus, was born in Amritsar in 1621. He was the youngest son of Guru Hargobind. His teachings and hymns are a part of the holy scripture of Sikhism, the Guru Granth Sahib.
- A significant contribution of Guru Tegh Bahadur was the founding of the city of Anandpur Sahib in the foothills of the Himalayas. This city later became a major center for Sikhism, where his son, Guru Gobind Singh, established the Khalsa Panth. Guru Tegh Bahadur's life was a testament to his commitment to religious freedom and human rights.

He stood against the forced conversions of Kashmiri Pandits by the Mughal emperor Aurangzeb, for which he was martyred in Delhi in 1675. His martyrdom is a pivotal event in Sikh history, symbolizing the ultimate sacrifice for the freedom of conscience and the right to practice one's faith without coercion. He is reverently remembered as 'Hind di Chadar' or the 'Protector of India'.

2.Solution: B

- Statement 1 is incorrect. The State Energy Efficiency Index (SEEI) is a collaborative effort between the Bureau of Energy Efficiency (BEE) and the Alliance for an Energy Efficient Economy (AEEE), but it is released annually, not biennially. The 2024 edition is the sixth one since its inception in 2018.
- The primary purpose of the SEEI is to foster a competitive environment among states to drive improvements in energy efficiency. It achieves this by tracking the performance of states and UTs across 66 indicators spanning seven sectors: buildings, industry, transport, agriculture, DISCOMs, municipal services, and cross-sector initiatives.
- The performance categorization into Front Runners (>60%), Achievers (50–60%), Contenders (30–50%), and Aspirants (<30%) helps in benchmarking and identifying areas for improvement.
- A significant achievement highlighted in the 2024 report is that all 36 states and UTs have developed State Energy Efficiency Action Plans (SEEAPs), indicating a nationwide commitment to energy efficiency.

3.Solution: B

- Statement 1 is correct. The Shanghai Cooperation Organization (SCO) was established in 2001, evolving from the 'Shanghai Five' mechanism

which was formed in 1996 and comprised China, Russia, Kazakhstan, Kyrgyzstan, and Tajikistan.

- Statement 2 is incorrect. The headquarters of the SCO is in Beijing, China, not Shanghai. The Regional Anti-Terrorist Structure (RATS), a permanent body of the SCO, is headquartered in Tashkent, Uzbekistan.
- Statement 3 is correct. India and Pakistan were admitted as full members of the SCO during the Astana summit in Kazakhstan in June 2017.
- Statement 4 is incorrect. The SCO explicitly upholds the principle of multipolarity and non-interference in the internal affairs of other countries. It aims to foster a more democratic and equitable international order, which is contrary to the idea of a unipolar world.

The organization's core objectives are to strengthen mutual trust and neighborliness among the member states; promote their effective cooperation in politics, trade, the economy, research, technology and culture, as well as in education, energy, transport, tourism, environmental protection, and other areas; and make joint efforts to maintain and ensure peace, security and stability in the region.

4.Solution: A

- The Joint Crediting Mechanism (JCM) is a bilateral carbon crediting mechanism initiated by Japan. It allows for the transfer of low-carbon technologies from Japan to developing countries.
- The core of the JCM is that when these technologies lead to a reduction in greenhouse gas emissions in the host country, a portion of these emission reductions can be claimed by Japan as a credit. This directly contributes to Japan's own Nationally Determined Contributions (NDCs) under the Paris Agreement.
- Therefore, the mechanism by which Japan benefits, as described in Statement-II, is the reason why the JCM is a tool for Japan to meet its climate targets, as stated in Statement-I.

5.Solution: B

- Statement 1 is correct. The Ravi River is one of the six rivers of the Indus system. Under the Indus Waters Treaty of 1960, the waters of the three eastern rivers—Ravi, Beas, and Sutlej—were allocated to India for unrestricted use, while the waters of the three western rivers—Indus, Jhelum, and Chenab—were allocated to Pakistan.
- Statement 2 is incorrect. The Ravi River originates near the Bara Bhangal in the Chamba region of Himachal Pradesh, which lies in the Dhauladhar

range of the Himalayas, not the Pir Panjal range. It flows through a deep gorge before entering the Punjab plains.

- Statement 3 is correct. The Ranjit Sagar Dam, also known as the Thein Dam, is a major multipurpose river valley project located on the Ravi River in the state of Punjab. It is a significant source of hydroelectric power and irrigation water for the region. Other important projects on the Ravi include the Chamara Hydropower Projects in Himachal Pradesh and the Shahpur Kandi Project.

6.Solution: D

- Statements 2 and 3 are correct. The Digital Connectivity Rating is a regulatory framework introduced by the Telecom Regulatory Authority of India (TRAI) to assess and rate the quality of telecom and internet services within buildings. The rating is provided on a 1 to 5-star scale, with 5 stars indicating the highest quality of digital connectivity.
- Statement 1 is incorrect. The rating system is currently voluntary, not mandatory. It is designed to encourage developers to improve in-building digital infrastructure to attract buyers and tenants. By making the quality of digital connectivity transparent, it empowers consumers to make informed decisions.
- The initiative is closely aligned with the objectives of the 'Digital India' and 'Smart City' missions. By ensuring that urban spaces are digitally enabled, it contributes to the creation of a digitally empowered society and knowledge economy.
- The rating system is expected to foster competition among real estate developers to provide better digital infrastructure, which is crucial for the rollout of 5G, 6G, and other next-generation technologies.

7.Solution: A

- Only statement 2 is correct. Guru Tegh Bahadur was trained in martial skills from a young age and fought in battles alongside his father, Guru Hargobind, the sixth Sikh Guru. This early experience instilled in him the values of bravery and service.
- Statement 1 is incorrect. Guru Tegh Bahadur's Guruship (1665–1675) and his martyrdom in 1675 occurred during the reign of the Mughal emperor Aurangzeb, not Shah Jahan. It was Aurangzeb's policy of religious persecution that Guru Tegh Bahadur vehemently opposed.
- Statement 3 is incorrect. While Guru Tegh Bahadur led a life of deep meditation and simplicity, his teachings did not advocate for complete renunciation of worldly life. Instead, he emphasized spiritual strength over material wealth, and his philosophy was rooted in compassion, humility, and the equality of all human beings.

- He encouraged his followers to be householders who are spiritually enlightened, a core principle of Sikhism. His life and teachings were about finding the divine while living a responsible and engaged life in the world.

8.Solution: D

- The Bureau of Energy Efficiency (BEE) was established as a statutory body in March 2002. Its formation was a direct result of the enactment of the Energy Conservation Act, 2001. The Act provides the legal framework for energy efficiency initiatives in the country, and the BEE is the primary agency responsible for implementing its provisions.
- While India's commitment to international climate agreements like the Kyoto Protocol and the subsequent National Action Plan on Climate Change (NAPCC) provided a broader policy context for energy conservation, the specific legislative mandate for the BEE comes from the Energy Conservation Act, 2001.
- The BEE's functions include developing policies and strategies for energy conservation, promoting the use of energy-efficient equipment and appliances through its star rating program, and guiding states in their energy efficiency efforts.

9.Solution: C

- The Shanghai Cooperation Organization (SCO) is primarily a political, economic, and security organization. While it has a strong focus on security, particularly in combating the "three evils" of terrorism, separatism, and extremism through its Regional Anti-Terrorist Structure (RATS), it is not a military alliance in the vein of NATO.
- The SCO's charter does not include a collective defense clause that would obligate member states to come to the defense of another member in the event of an attack. The annual joint military exercises, such as the "Peace Mission" series, are aimed at enhancing interoperability and cooperation in counter-terrorism operations, not preparing for collective defense.

10.Solution: A

- Statements 1, 2, and 3 are the primary significance of the Digital Connectivity Rating Agencies (DCRA) initiative. By providing a star-based rating for in-building digital connectivity, the framework brings much-needed transparency for consumers (Statement 1).
- This transparency, in turn, creates a market incentive for real estate developers to invest in robust telecom infrastructure to achieve higher ratings, making their properties more attractive (Statement 2).
- The focus on in-building infrastructure directly addresses the common problem of poor network quality inside high-rise buildings, offices, and

malls, thus leading to improved network quality in dense urban environments (Statement 3).

- Statement 4 is incorrect. While having digital-ready buildings is beneficial and will facilitate the rollout of future technologies like 6G, it is not a prerequisite. The rollout of 6G depends on a much wider ecosystem of spectrum availability, network technology development, and policy frameworks. The DCRA initiative supports future readiness but is not a mandatory precondition for it.

11.Solution: B

The scheme to promote critical mineral recycling is a significant step towards building a circular economy and ensuring supply chain resilience for India's strategic sectors.

- Statement 1 is correct. The scheme is a key initiative under the National Critical Mineral Mission (NCMM) and is spearheaded by the Ministry of Mines. The NCMM is a comprehensive framework aimed at securing a steady supply of critical minerals for India's economic growth and national security.
- Statement 2 is correct. The financial incentives under the scheme are two-pronged. It offers a 20% capital subsidy on plant, machinery, and utilities to encourage investment in recycling infrastructure. Additionally, an operating expense (OPEX) subsidy, linked to incremental sales over a base year, is provided to support the operational viability of recycling units.
- Statement 3 is incorrect. The scheme is not exclusive to large recyclers. It has a provision to support small and new recyclers, including startups, with one-third of the financial outlay earmarked for them. This inclusive approach is intended to foster a competitive and diverse recycling ecosystem.

12.Solution: A

- Pair 1 is correctly matched. V. Ramasamy, popularly known as Periyar, was the founder and chief ideologue of the Self-Respect Movement. He launched the movement in 1925 to challenge the caste hierarchy, religious orthodoxy, and patriarchal norms prevalent in society.
- Pair 2 is incorrectly matched. The Justice Party, officially the South Indian Liberal Federation, was founded by Dr. C. Natesa Mudaliar, T. M. Nair, and P. Theagaraya Chetty. While Iyothoe Thass was an early anti-caste activist and a major influence on the Self-Respect Movement, he was not a founder of the Justice Party.
- Pair 3 is incorrectly matched. The Dravidar Kazhagam was formed by Periyar in 1944 after he split from the Justice Party. B.R. Ambedkar, a contemporary of Periyar and a stalwart of the anti-caste movement, was not associated with the

founding of the Dravidar Kazhagam.

13.Solution: C

The GST Council is the key decision-making body for Goods and Services Tax in India. Its structure and functioning are critical to the federal fiscal architecture.

- Statement I is correct. The GST Council was established through the 101st Constitutional Amendment Act, 2016, which inserted Article 279A into the Constitution. This gives the Council a constitutional status, making it a powerful body in the Indian federal system.
- Statement II is correct. The Union Finance Minister is the ex-officio Chairperson of the GST Council. The Council also includes the Union Minister of State for Finance/Revenue and the Finance/Taxation Ministers of all the States and Union Territories with legislatures.
- Statement III is incorrect. Decisions in the GST Council are not taken by a simple majority. They require a three-fourths majority of the weighted votes of the members present and voting. The Union Government has a weightage of one-third of the total votes cast, and all the State Governments combined have a weightage of two-thirds. This ensures that decisions are taken with a broad consensus between the Centre and the States.

14.Solution: D

The Debrigarh Wildlife Sanctuary is a prime example of successful conservation efforts, integrating wildlife protection, community participation, and eco-tourism.

(a) is correct. Debrigarh Wildlife Sanctuary is located near Sambalpur in western Odisha and is contiguous with the Hirakud Reservoir, which forms its eastern and northern boundaries.

(b) is correct. The sanctuary has a rich historical legacy, as it served as a hideout for the renowned freedom fighter Veer Surendra Sai during his rebellion against the British.

(c) is correct. Debrigarh boasts a unique ecosystem that combines terrestrial and aquatic habitats, supporting a diverse range of flora and fauna, including a thriving population of the Indian bison (gaur).

(d) is incorrect. While Debrigarh has received approval to become a tiger reserve, the approval is granted by the National Tiger Conservation Authority (NTCA), not the Ministry of Environment, Forest and Climate Change directly.

15.Solution: B

- Statement 1 is incorrect. Sudan is not a landlocked country. It has a coastline on the Red Sea in the east.
- Statement 2 is correct. The capital city of Sudan, Khartoum, is strategically located at the confluence of the White Nile and the Blue Nile, which then flow northwards as the Nile River.

- Statement 3 is correct. The Marra Mountains, a prominent geographical feature, are a range of volcanic highlands situated in the Darfur region of western Sudan.

16.Solution: D

The Self-Respect Movement was a radical social reform movement that challenged many of the prevailing social and political norms of its time.

(a) is a key feature. The movement strongly advocated for “self-respect marriages,” which were conducted without Brahmin priests and the associated caste-based rituals.

(b) is a key feature. The movement was a champion of women’s rights, advocating for radical ideas such as widow remarriage, the right to divorce, property rights for women, and even the right to abortion.

(c) is a key feature. The movement emphasized a distinct Dravidian identity as a counter to the perceived Aryan-Brahminical dominance. It also promoted rationalism and a scientific temper over religious dogma and superstition.

(d) is NOT a key feature. The Self-Respect Movement was critical of the Indian National Congress and its brand of nationalism, which Periyar viewed as being intertwined with religious, particularly Hindu, sentiments. The movement rejected what it saw as the Congress’s “religion-tinted nationalism.”

17.Solution: C

- Statement 1 is correct. The sanctuary has implemented a successful community-led conservation model, which includes the voluntary relocation of around 400 families with a comprehensive rehabilitation package.
- Statement 2 is correct. Debrigarh is characterized by its unique amphi-terrestrial habitat, which encompasses a mix of forests, grasslands, and wetlands, supporting a high level of biodiversity.
- Statement 3 is correct. The Hirakud Wetland, which is an integral part of the Debrigarh ecosystem, has been designated as a Ramsar site, recognizing its international importance as a wetland.

18.Solution: A

The scheme targets specific waste streams that are rich in critical minerals.

- 1, 2, and 3 are correct. The eligible feedstock for the scheme includes e-waste, lithium-ion battery scrap, and catalytic converters from end-of-life vehicles. These are all significant sources of critical minerals like lithium, cobalt, nickel, and platinum group metals.
- 4 is incorrect. While industrial slag can contain valuable minerals, it is not an eligible feedstock under this particular scheme.

19.Solution: B

- The Kartarpur Corridor is a visa-free border crossing that connects the Dera Baba Nanak shrine

in the Gurdaspur district of Punjab, India, with the Gurdwara Darbar Sahib in Kartarpur, located in the Narowal district of Punjab, Pakistan. The corridor allows Sikh pilgrims from India to visit the Gurdwara in Kartarpur, which is one of the holiest sites in Sikhism.

- The Gurdwara Darbar Sahib in Kartarpur holds immense religious significance as it is built on the site where the founder of Sikhism, Guru Nanak Dev, spent the last 18 years of his life. The recent flooding of the Ravi River, which submerged the corridor complex, highlighted the vulnerability of this important cross-border pilgrimage route to natural calamities.

20.Solution: A

- 1, 2, and 3 are correct. Periyar was deeply influenced by the pioneering work of social reformers like Jyotirao Phule, B.R. Ambedkar, and Iyothee Thass, who had all challenged the caste system and advocated for the rights of the oppressed.
- 4 is incorrect. While Raja Ram Mohan Roy was a prominent social reformer, his focus was primarily on issues like sati, idol worship, and women’s education within the framework of Hindu reform, rather than a radical critique of the caste system in the way that Phule, Ambedkar, and Thass did.

21.Solution: B

- The TPCR-2025 is a tri-services document, outlining the future technology and capability requirements for the Indian Army, Navy, and Air Force.
- Statement 1 is correct. A core aim of the TPCR is to act as a guide for Indian industry, academia, and research institutions. By providing early visibility of future requirements, it seeks to align domestic research and development (R&D) with military needs, thereby promoting indigenisation and self-reliance in defence.
- Statement 2 is incorrect. The TPCR-2025 places significant emphasis on preparing for emerging multi-domain warfare challenges. It specifically mentions the adoption of AI-enabled cyber tools, quantum communication networks, satellite-hardening measures, and High-Altitude Pseudo-Satellites (HAPS), indicating a strong focus on cyber, space, and AI-enabled conflicts.
- Statement 3 is correct. The document explicitly mentions the development and induction of over 500 hypersonic missiles with scramjet propulsion and universal missile launchers. This is intended to enhance strategic deterrence and, crucially, interoperability by allowing different platforms across the Army, Navy, and Air Force to use a common launcher system.

22.Solution: C

- The reddish hue of a Blood Moon is a direct

consequence of Earth's atmosphere interacting with sunlight. During a total lunar eclipse, the Earth is positioned directly between the Sun and the Moon, blocking direct sunlight from reaching the lunar surface. However, some sunlight passes through the Earth's atmosphere at the edge (the "terminator"). This atmosphere acts like a lens, refracting or bending the light.

- The atmospheric phenomenon known as Rayleigh scattering, which is also responsible for Earth's blue skies, scatters the shorter, blue wavelengths of light more effectively. The remaining longer wavelengths, primarily in the red and orange part of the spectrum, pass through the atmosphere and are refracted towards the Moon. This refracted red light illuminates the lunar surface, giving it a distinct copper or blood-red appearance. The intensity of the colour depends on the amount of dust and clouds in Earth's atmosphere.

23.Solution: B

- Statement 1 is correct. Dr. Sarvepalli Radhakrishnan served two terms as the first Vice President of India from 1952 to 1962 under President Dr. Rajendra Prasad. Following this, he was elected as the second President of India, serving from 1962 to 1967.
- Statement 2 is correct. In 1948-49, he was appointed to chair the University Education Commission. The commission's report, often referred to as the Radhakrishnan Commission Report, provided foundational recommendations for shaping the higher education system in newly independent India, addressing issues of structure, autonomy, and standards.
- Statement 3 is incorrect. While he was a distinguished philosopher of comparative religion, his renowned work focused on bridging Indian philosophy (particularly Vedanta) and Western thought. He was instrumental in introducing Indian philosophical concepts to a global audience and making them accessible and understandable in the West. His work did not primarily focus on Chinese philosophical traditions.

24.Solution: A

- Statement 1 is incorrect. Acanthamoeba is a free-living protozoan, meaning it can survive and reproduce independently in the environment, typically in soil and various freshwater sources like ponds, wells, and storage tanks. It does not require a human host to complete its life cycle, but it can act as an opportunistic pathogen.
- Statement 2 is correct. The Acanthamoeba life cycle includes two stages: the active, feeding trophozoite stage and the dormant cyst. The cyst form is a key survival mechanism, as it is encased in a protective wall that makes it highly resistant to harsh conditions, including temperature

extremes, desiccation, and common disinfectants like chlorine.

- Statement 3 is incorrect. Acanthamoeba infection does not typically cause gastrointestinal illness. It enters the body through other routes. Acanthamoeba keratitis, a severe eye infection, occurs when it enters through minor corneal tears, often associated with poor contact lens hygiene. The more fatal Granulomatous Amoebic Encephalitis (GAE) occurs when the parasite enters through open wounds or the respiratory tract and travels to the brain.

25.Solution: A

- High-Altitude Pseudo-Satellites (HAPS) are long-endurance unmanned aerial systems that operate in the stratosphere. They are slated for use by the Indian Air Force to provide persistent Intelligence, Surveillance, and Reconnaissance (ISR) and secure communications, especially in a two-front war scenario. So, A matches with 3.
- Electromagnetic Aircraft Launch System (EMALS) is an advanced technology used to launch aircraft from carriers. It is a feature planned for India's next-generation aircraft carrier, which falls under the purview of the Indian Navy. This system allows for launching heavier aircraft and reduces stress on airframes. So, B matches with 2.
- Future Ready Combat Vehicles (FRCVs) are the next generation of main battle tanks intended to replace the ageing fleet of T-72 tanks. This is a crucial modernisation project for the Indian Army's armoured corps, tailored for challenges on the northern and western borders. So, C matches with 1.

26.Solution: D

- Mauritius is a prominent island nation in the Southwestern Indian Ocean. Its location is strategically important. It is situated approximately 2,000 kilometres off the southeastern coast of Africa and about 800 kilometres east of Madagascar.
- The Mascarene Islands, of which Mauritius is a part, lie east of Madagascar. The Mozambique Channel is to the west of Madagascar.
- The Seychelles are to the north of Mauritius, while the Maldives are much further to the northeast.
- The Chagos Archipelago lies to the northeast of Mauritius.

27.Solution: C

- Statement I is correct. A primary aim of establishing this facility is to position VOC Port as a key hub for green bunkering and refuelling for ships in the South Indian maritime region, aligning with global green shipping trends.
- Statement II is incorrect. The project was set up at a cost of 3.87 crore and inaugurated by the Union Minister. It is a government-led initiative

aligned with national missions like the Sagarmala programme and Viksit Bharat 2047, not an exclusive private-sector CSR project.

- Statement III is incorrect. The initial output will be used to power streetlights and EV charging stations in the port colony.

28.Solution: D

- Statement 1 is incorrect. Dr. Radhakrishnan served as India's Ambassador to the Soviet Union from 1949 to 1952, which was before he became the Vice President and subsequently the President. His presidency was from 1962 to 1967.
- Statement 2 is incorrect. While Dr. Radhakrishnan was one of the first three recipients of the Bharat Ratna in 1954, he was not the sole "first" recipient. The award was conferred simultaneously on him, Rajagopalachari, and C.V. Raman.
- Statement 3 is incorrect. Dr. Radhakrishnan was the Spalding Professor of Eastern Religions and Ethics at the University of Oxford, not the University of Cambridge.

29.Solution: C

The colour and brightness of a Blood Moon are directly influenced by the state of Earth's atmosphere, as it is the medium through which sunlight is filtered and refracted onto the Moon.

- Option (a) is incorrect. A clearer atmosphere would allow more light, including reddish hues, to pass through, likely resulting in a brighter, more vividly coloured eclipse.
- Option (b) is incorrect. The Moon's distance from Earth (perigee or apogee) affects its apparent size and the duration of the eclipse, but it does not directly determine the colour intensity.
- Option (c) is correct. The presence of dense particles like volcanic ash, dust, or heavy pollution in Earth's stratosphere makes the atmosphere more opaque. This blocks more light from being refracted onto the Moon's surface, resulting in a much darker, dimmer, and less intensely red lunar eclipse. For example, eclipses following major volcanic eruptions have been observed to be significantly darker.
- Option (d) is incorrect. Solar activity cycles (solar maximum/minimum) primarily affect space weather and Earth's upper atmosphere (ionosphere/magnetosphere) but are not the primary determinant of the colour of the lunar surface during an eclipse.

30.Solution: B

- Statement 1 is incorrect. VOC Port is located in Tuticorin, Tamil Nadu, on the Coromandel Coast along the Bay of Bengal, not the Malabar Coast (which is on the western side of India along the Arabian Sea). Its location is strategic for trade routes in the Bay of Bengal and the wider Indian Ocean.
- Statement 2 is correct. The port, formerly known as

Tuticorin Port, was renamed in 2011 to honour O. Chidambaranar. He is celebrated as "Kappalottiya Tamizhan" (The Tamil Helmsman) for launching the Swadeshi Steam Navigation Company in 1906 to compete against the British monopoly in shipping, a significant act of economic resistance during the freedom struggle.

- Statement 3 is correct. VOC Port is classified as one of India's 13 major ports, which are administered by the central government. It is a critical maritime hub for Southern India, with major operations in handling coal for thermal power plants, container movement, and other general cargo.

31.Solution: B

Statements 1 and 2 are correct. The deep-winter heatwave in Antarctica could lead to a reduction in the Antarctic Ice Sheet, raising global sea levels, and might disrupt the global ocean circulation system, which plays a crucial role in regulating climate.

Statement 3 is incorrect because the heatwave is associated with a weakening, not strengthening, of the polar vortex.

32.Solution: B

The Maneka Gandhi vs. Union of India case expanded the interpretation of Article 21, which initially only protected against the deprivation of life and personal liberty, to include the right to live with dignity, ensuring that any law affecting this right must be fair, just, and reasonable.

33.Solution: A

India is unique in producing all five major types of commercially important silk, which are derived from different species of silkworms. These types include Mulberry, Oak Tasar, Tropical Tasar, Muga, and Eri.

Among these, Mulberry silk is cultivated, while the others, known as vanya silks, are wild silks.

34.Solution: B

Statement 1 is correct as an extraordinary event that poses a public health risk to other states through the international spread of disease is a key criterion for declaring a PHEIC.

Statement 3 is also correct because a PHEIC may require a coordinated international response.

Statement 2 is incorrect because a high fatality rate is not a necessary criterion for declaring a PHEIC.

35.Solution: B

Only Statement 2 is correct.

- "Super Blue Moon" combines two rare phenomena: a "blue moon" and a "super moon."
- Blue Moon: Contrary to what the term suggests, a blue moon isn't necessarily blue in color. It refers to a second full moon within a single calendar month, or, less commonly, the third full moon in a season with four full moons. This phenomenon happens every two or three years.
- Super Moon: This occurs when a full moon is at its

closest point to Earth in its elliptical orbit, known as perigee. This proximity makes the moon appear about 14% larger and 30% brighter compared to when it's at its farthest point, or apogee.

- While the term “blue moon” might imply a rare occurrence, the sighting of a supermoon and blue moon together is indeed rare.

36. Solution: C

- Prokaryotes, including bacteria and archaea, play a fundamental role in marine ecosystems by facilitating nutrient cycling, carbon fixation, and decomposition. They form the base of the microbial food web, supporting marine food chains by serving as primary producers (through processes like chemosynthesis and nitrogen fixation) and decomposers (breaking down organic matter).
- Prokaryotes drive major biogeochemical cycles, including the carbon, nitrogen, and sulfur cycles, regulating ocean chemistry and atmospheric carbon dioxide levels.
- They act as primary decomposers, breaking down organic matter and recycling nutrients for higher trophic levels.
- As ocean temperatures rise, marine biodiversity is expected to decline, but prokaryotes may show resilience due to their adaptability, potentially increasing their dominance in marine ecosystems.

37. Solution: C

Anaphylaxis is a severe, life-threatening allergic reaction. It can happen seconds or minutes after you've been exposed to something you're allergic to.

- Peanuts or bee stings are examples.
 - ♦ In anaphylaxis, the immune system releases a flood of chemicals that can cause the body to go into shock.

38. Solution: A

Accredited Social Health Activists (ASHAs) are key community health workers under the National Health Mission (NHM), playing a crucial role in last-mile healthcare delivery.

- Statement 1 is correct: ASHAs are selected from within their local communities to foster better trust and communication with the people they serve. Their familiarity with the region, culture, and language enhances their effectiveness in providing healthcare support, spreading awareness, and mobilizing communities for health initiatives.
- Statement 2 is incorrect: ASHAs do not receive a fixed salary but are paid through performance-based incentives. These incentives are provided for services such as promoting institutional deliveries, ensuring child immunization, and encouraging family planning measures.
- Statement 3 is correct: ASHAs play a significant role in disease surveillance and outbreak prevention by identifying early symptoms of

infectious diseases, reporting cases to health authorities, and assisting in vaccination drives and community health programs. Their grassroots-level engagement helps in controlling disease spread effectively.

39. Solution: A

The UNESCO Tentative List is an essential step in the process of getting a site inscribed as a World Heritage Site. Each country submits its list of potential sites, which may later be nominated for official recognition.

- Statement 1 is incorrect: A site does not have to be owned by the national government to be included in the Tentative List. It can be privately owned or managed by local or state governments, as long as it holds cultural or natural significance and meets the eligibility criteria.
- Statement 2 is correct: Countries can modify their Tentative List over time by adding or removing sites based on new findings, conservation priorities, or changes in site conditions. This flexibility allows them to refine their nominations.
- Statement 3 is correct: The World Heritage Committee of UNESCO is responsible for evaluating nominations and making the final decision on whether a site gets inscribed as a World Heritage Site.
- Statement 4 is incorrect: Being on the Tentative List does not guarantee UNESCO funding. While inclusion is a prerequisite for nomination, financial assistance for conservation depends on additional approvals, grant applications, and UNESCO's World Heritage Fund allocations.

40. Solution: C

Chausath Yogini Temples are significant Hindu temples associated with Tantric worship, known for their unique architectural and religious aspects.

- Statement 1 is incorrect: Unlike most traditional Hindu temples, Chausath Yogini temples follow a circular architectural layout rather than a linear one. The circular design is believed to facilitate tantric rituals and meditation, with the central deity often placed in the middle. Examples include the Chausath Yogini temples at Mitawali (Madhya Pradesh) and Hirapur (Odisha).
- Statement 2 is incorrect: These temples are dedicated to the 64 Yoginis, who are considered fierce manifestations of the Goddess Shakti in Hinduism. There is no direct connection to Buddhist deities or Mahayana Buddhism, as the Yogini cult is firmly rooted in Tantric Hindu traditions.
- Statement 3 is incorrect: The Chausath Yogini temples were primarily built between the 9th and 12th centuries during the Kalachuri and Chandela dynasties, mostly in North and Central India. The Chola dynasty, which ruled in South India, did not construct these temples.

41. Solution: B

The most accurate description of the MiG-21's significance is its role as a long-serving, foundational aircraft for the IAF. It was inducted in 1963 as the IAF's first supersonic jet and remained in service for six decades, a testament to its durability and adaptability. During this period, it became the primary platform for training numerous fighter pilots, earning it the reputation of a "flying school."

Furthermore, its procurement and sustained use highlighted the strong defence partnership between India and the Soviet Union during the Cold War era. While it was a capable interceptor with a top speed of Mach 2, its delta-wing design gave it a rapid climb rate but limited its effectiveness in turning combat. It was not a stealth aircraft, nor was it solely a ground-attack platform.

42. Solution: D

Statement-I is incorrect. SICA is an institutional framework for regional integration in Central America, focusing on achieving peace, liberty, democracy, and development through economic and political cooperation. Its aims are not military but are centered on creating a Customs Union, promoting human rights, and developing regional infrastructure.

Statement-II is correct. India's partnership with SICA is a key component of its South-South cooperation. India offers its developmental experience and expertise to address shared challenges like poverty and climate change. The engagement provides significant economic opportunities for Indian industries in sectors such as agriculture, pharmaceuticals, IT, renewable energy, and digital payment systems like the UPI model, reflecting a partnership based on mutual growth and knowledge sharing.

43. Solution: B

Statement 1 is Incorrect: Algorithmic trading is characterized by its automation, with computer programs executing trades automatically based on predefined rules with zero human intervention at the point of execution.

Statement 2 is Correct: Backtesting is a key feature of algorithmic trading, where strategies are tested on historical market data to assess their potential profitability and risk before being deployed in a live market.

Statement 3 is Incorrect: SEBI has recognized and regulated algorithmic trading since 2008. The regulations aim to manage risks by requiring exchange approval for strategies, ensuring brokers have risk controls, and discouraging unauthorized "black-box" algos, not to discourage its use altogether.

44. Solution: A

Statement 1 is incorrect. The World Para Athletics Championships are organized biennially (every two years), not annually.

Statement 2 is incorrect. While the 2025 event in New Delhi is a significant milestone as India's first time hosting, other Asian cities have hosted it before. For instance, Kobe, Japan hosted the championships in 2024 and Dubai, UAE hosted in 2019.

Statement 3 is correct. The roots of the Paralympic movement and para-athletics are in the Stoke Mandeville Games, first organized in 1948 by Sir Ludwig Guttman for British World War II veterans with spinal cord injuries. This initiative evolved into the modern Paralympic Games, where para-athletics is a core sport. The first official World Para Athletics Championships were held in Berlin in 1994.

45. Solution: D

- 1G (First-Generation) Ethanol is produced from edible crops. The most common feedstocks are sugarcane juice, maize (corn), and other starches or sugars. Therefore, A matches with 2.
- 2G (Second-Generation) Ethanol is produced from non-food lignocellulosic biomass. This includes agricultural residues like rice straw, wheat straw, and bagasse (sugarcane residue). Therefore, B matches with 3.
- 3G (Third-Generation) Biofuels are derived from microorganisms. The primary feedstock is algae, which can be cultivated on land and in water not suitable for conventional agriculture. Therefore, C matches with 1.
- 4G (Fourth-Generation) Biofuels represent a more advanced stage, focusing on creating sustainable energy without compromising food security. This involves using genetically engineered crops designed to capture larger amounts of CO₂ and storing more energy, which is then converted into fuel. Therefore, D matches with 4.

46. Solution: C

1. Statement 1 is correct: The Dugong (Dugong dugon) is the only marine mammal that is a strict herbivore, feeding primarily on seagrass.
2. Statement 2 is incorrect: While major populations are found in Palk Bay and the Gulf of Mannar, they are not exclusive to this region. Dugongs are also found in the Gulf of Kutch and the Andaman & Nicobar Islands.
3. Statement 3 is incorrect: Dugongs have a very low reproductive rate, characterized by long calving intervals and significant parental investment. This slow life cycle makes their populations particularly vulnerable and slow to recover from threats.
4. Statement 4 is incorrect: The Dugong is listed as 'Vulnerable' on the IUCN Red List, not 'Critically Endangered'. This classification still signifies a high risk of extinction in the wild, but 'Critically Endangered' is a more severe category.

47. Solution: C

The chemical composition of ethanol (C₂H₅OH) is

the same regardless of whether it is produced from 1G or 2G processes. Therefore, its energy density and combustion efficiency do not differ. The primary advantages of 2G ethanol are environmental and strategic, not related to the fuel's intrinsic properties. Statements (a), (b), and (d) are all correct. The production of 2G ethanol relies on hydrolysis to break down complex plant matter (a). It provides a sustainable solution to stubble burning, a major cause of air pollution (b). By using agricultural waste instead of food crops like sugarcane or maize, it addresses the critical "food vs. fuel" dilemma and enhances food security (d).

48. Solution: A

The primary aims of SICA are centered on political, economic, and social integration, not military alliance. Its foundational purpose is to achieve peace, liberty, democracy, and development. The objectives explicitly include progressing from a Free Trade Area to a Customs Union (b), promoting peace and democracy (c), and coordinating policies to form common global positions (d). The creation of a unified military command is characteristic of a military alliance like NATO, which is fundamentally different from the institutional framework of SICA.

49. Solution: C

1. Statement 1 is incorrect: The reserve was notified in September 2022 under the Wildlife Protection Act, 1972, not the Environment (Protection) Act, 1986. The WPA, 1972 is the primary legislation for establishing such protected areas for wildlife.
2. Statement 2 is incorrect: The IUCN's recognition specifically praised the reserve as a model for community-led conservation, not a top-down, state-enforced one. The success of the initiative relies heavily on the active participation and cooperation of local fishing communities.
3. Statement 3 is incorrect: The seagrass beds, in addition to being the primary food for Dugongs, also support commercial fish, crabs, and shrimps, thereby directly benefiting the livelihoods of marginal fishermen in the region. This highlights the interconnectedness of ecological conservation and local economies.

50. Solution: D

The process of converting complex lignocellulosic biomass into ethanol follows a specific sequence:

1. Pretreatment (3): The first step is to break down the rigid structure of the plant cell walls (lignin, cellulose, hemicellulose). This is done through mechanical, thermal, or chemical processes to make the cellulose and hemicellulose accessible.
2. Hydrolysis (4): Following pretreatment, enzymes (like cellulases) are used to break down the exposed cellulose and hemicellulose into simple, fermentable sugars (like glucose). This step is also known as saccharification.

3. Fermentation (1): Microorganisms, typically yeast, are introduced to convert these simple sugars into ethanol.
4. Distillation (2): The final step involves separating and purifying the ethanol from the fermentation broth to produce bioethanol of the required concentration for blending with petrol or for industrial use.

51. Solution: A

- Statement 1 is correct. Aflatoxins are toxic secondary metabolites produced by the fungi *Aspergillus flavus* and *Aspergillus parasiticus*. These fungi are common and widespread in nature and can colonize and contaminate grains before harvest or during storage.
- Statement 2 is incorrect. Aflatoxins are heat-stable, which means they are not destroyed by normal cooking or processing temperatures. This is a major food safety concern as contaminated food remains toxic even after being cooked.
- Statement 3 is correct. Aflatoxin M1 is a metabolite of Aflatoxin B1. When cows consume feed contaminated with Aflatoxin B1, they metabolize it into Aflatoxin M1, which is then excreted in their milk. This poses a significant health risk, especially for infants and young children who consume large quantities of milk.

52. Solution: B

- Statement 1 is correct. The Universal Postal Union (UPU) is a specialized agency of the United Nations that coordinates postal policies among member nations, in addition to the worldwide postal system.
- Statement 2 is incorrect. The headquarters of the UPU is in Berne, Switzerland, not Geneva.
- Statement 3 is incorrect. The Congress is the supreme authority of the UPU and meets every four years. The Council of Administration (CA) ensures the continuity of the UPU's work between Congresses.
- Statement 4 is correct. India has been re-elected to the Council of Administration (CA) and the Postal Operations Council (POC) of the Universal Postal Union (UPU).

53. Solution: D

- Statement 1 is incorrect. 'Androth' is the second in a series of eight Anti-Submarine Warfare Shallow Water Crafts (ASW-SWCs). The first ship of this series is 'Arnala'.
- Statement 2 is incorrect. 'Androth' has been built by Garden Reach Shipbuilders & Engineers (GRSE), Kolkata, not Mazagon Dock Shipbuilders Limited (MDL), Mumbai.
- Statement 3 is incorrect. The ship is an ASW-SWC, which means it is designed for shallow water operations, primarily in coastal areas. It is intended for coastal security, anti-submarine patrols, and shallow-water operations in India's

maritime zones, not deep-sea operations in the Pacific Ocean.

54. Solution: A

- Statement 1 is incorrect. The 'One-In, One-Out' scheme is a bilateral agreement between the United Kingdom and France. Germany is not a party to this agreement.
- Statement 2 is incorrect. The scheme is primarily aimed at deterring illegal small-boat crossings across the English Channel and targeting asylum seekers, not specifically economic migrants.
- Statement 3 is correct. The scheme operates on a reciprocal mechanism where for every migrant France takes back, the UK agrees to accept a legal asylum seeker from France, hence the name "one-in, one-out". This is a key feature of the agreement. Therefore, only statement 3 is correct.

55. Solution: C

- The Chabahar Port is situated in the Sistan-Baluchestan province in southeastern Iran. This province borders Pakistan and Afghanistan, making the port's location highly strategic for regional connectivity. The port is located on the coast of the Gulf of Oman, which provides it with direct access to the Indian Ocean. Its location outside the Strait of Hormuz is another strategic advantage, as it is less vulnerable to potential disruptions in the Persian Gulf.

56. Solution: C

- Statement 1 is correct. The H-1B visa is initially granted for a period of up to three years. It can be extended for an additional three years, for a total of six years.
- Statement 2 is correct. To be eligible for an H-1B visa, a foreign worker must have at least a bachelor's degree or its equivalent in a specific field. In some cases, work experience can be substituted for a formal degree.
- Statement 3 is correct. There is a regular annual cap of 65,000 H-1B visas. In addition to this, there is an extra quota of 20,000 visas reserved for applicants who have earned a master's degree or a higher degree from a U.S. institution of higher education.

57. Solution: C

- Statement 1 is correct. Aflatoxins belong to the class of mycotoxins, which are toxic chemical products of fungi.
- Statement 2 is correct. The fungi that produce aflatoxins, primarily *Aspergillus flavus* and *Aspergillus parasiticus*, are found in soil, decaying vegetation, hay, and grains. They thrive in hot and humid conditions.
- Statement 3 is correct. Aflatoxin B1 is the most common and the most toxic of the aflatoxins. It is a potent liver carcinogen and is subject to strict global limits.

58. Solution: D

- The new deep-sea coral species *Iridogorgia chewbacca* is named after Chewbacca, the tall, furry Wookiee character from the Star Wars. The name was chosen because the coral's appearance, with its long, curly, and hairy branches, resembles the character's fur. This practice of naming new species after fictional characters or celebrities is not uncommon in science and can help to generate public interest in scientific discoveries and biodiversity. The name reflects the unique morphology of the coral and its resemblance to the iconic character.

59. Solution: B

- Statement 1 is incorrect. The Chabahar Port is located on the coast of the Gulf of Oman, not the Persian Gulf. This location gives it direct access to the Indian Ocean and places it outside the volatile Strait of Hormuz.
- Statement 2 is correct. The Chabahar Port is a key component of the International North-South Transport Corridor (INSTC), a multi-modal network of ship, rail, and road routes for moving freight between India, Iran, Afghanistan, Armenia, Azerbaijan, Russia, Central Asia, and Europe.
- Statement 3 is correct. The Chabahar Port comprises two separate ports: Shahid Kalantari and Shahid Beheshti. India's investment and development efforts are primarily focused on the Shahid Beheshti port.

60. Solution: A

- The Caribbean region's strategic importance is multifaceted.
- Its location (b) is paramount, as it sits at the confluence of the Atlantic Ocean and the Gulf of Mexico and controls access to the Panama Canal, a vital artery for global trade.
- Historically and currently, it has been a geopolitical hotspot (c), subject to influence from the US, and previously the Soviet Union, with ongoing tensions such as the US-Venezuela standoff.
- Furthermore, its geography makes it a significant transit point for illicit activities like drug trafficking (d), which necessitates a strong naval and security presence from international powers.
- However, the region is not known for large deposits of rare earth minerals (a). Its economy is primarily based on tourism, agriculture (like sugar and bananas), and financial services, not large-scale mining of strategic minerals.

61. Solution: A

- Statement 1 is correct. Aflatoxins are toxic secondary metabolites produced by the fungi *Aspergillus flavus* and *Aspergillus parasiticus*. These fungi are common and widespread in nature and can colonize and contaminate grains before harvest or during storage.
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62.Solution: B

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63.Solution: D

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Therefore, only statement 3 is correct.

65.Solution: C

- The Chabahar Port is situated in the Sistan-Baluchestan province in southeastern Iran. This province borders Pakistan and Afghanistan, making the port's location highly strategic for regional connectivity. The port is located on the coast of the Gulf of Oman, which provides it with direct access to the Indian Ocean. Its location outside the Strait of Hormuz is another strategic advantage, as it is less vulnerable to potential disruptions in the Persian Gulf.

66.Solution: C

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- Statement 2 is correct. To be eligible for an H-1B visa, a foreign worker must have at least a bachelor's degree or its equivalent in a specific field. In some cases, work experience can be substituted for a formal degree.
- Statement 3 is correct. There is a regular annual cap of 65,000 H-1B visas. In addition to this, there is an extra quota of 20,000 visas reserved for applicants who have earned a master's degree or a higher degree from a U.S. institution of higher education.

67.Solution: C

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- Statement 3 is correct. Aflatoxin B1 is the most common and the most toxic of the aflatoxins. It is a potent liver carcinogen and is subject to strict global limits.

68.Solution: D

- The new deep-sea coral species *Iridogorgia chewbacca* is named after Chewbacca, the tall, furry Wookiee character from the Star Wars. The name was chosen because the coral's appearance, with its long, curly, and hairy branches, resembles the character's fur. This practice of naming new species after fictional characters or celebrities is not uncommon in science and can help to generate public interest in scientific discoveries and biodiversity. The name reflects the unique morphology of the coral and its resemblance to the iconic character.

69.Solution: B

- Statement 1 is incorrect. The Chabahar Port is located on the coast of the Gulf of Oman, not the

Persian Gulf. This location gives it direct access to the Indian Ocean and places it outside the volatile Strait of Hormuz.

- Statement 2 is correct. The Chabahar Port is a key component of the International North-South Transport Corridor (INSTC), a multi-modal network of ship, rail, and road routes for moving freight between India, Iran, Afghanistan, Armenia, Azerbaijan, Russia, Central Asia, and Europe.
- Statement 3 is correct. The Chabahar Port comprises two separate ports: Shahid Kalantari and Shahid Beheshti. India's investment and development efforts are primarily focused on the Shahid Beheshti port.

70.Solution: A

- The Caribbean region's strategic importance is multifaceted.
- Its location (b) is paramount, as it sits at the confluence of the Atlantic Ocean and the Gulf of Mexico and controls access to the Panama Canal, a vital artery for global trade.
- Historically and currently, it has been a geopolitical hotspot (c), subject to influence from the US, and previously the Soviet Union, with ongoing tensions such as the US-Venezuela standoff.
- Furthermore, its geography makes it a significant transit point for illicit activities like drug trafficking (d), which necessitates a strong naval and security presence from international powers.
- However, the region is not known for large deposits of rare earth minerals (a). Its economy is primarily based on tourism, agriculture (like sugar and bananas), and financial services, not large-scale mining of strategic minerals.

71.Solution: B

- Statement 1 is incorrect. Aquamonitrix is a low-pressure system, which makes it simple, cost-effective, and safe for use even by students outside of traditional laboratories.
- Statement 2 is incorrect. A key feature of Aquamonitrix is its environment-friendly design, which uses a sodium chloride solution as a carrier instead of hazardous eluent mixtures.
- Statement 3 is correct. The future potential of expanding the device's capabilities to detect arsenic, which would be particularly useful for groundwater quality assessment in regions like India and Bangladesh.

72.Solution: B

- Statement 1 is incorrect. The CIC is a statutory body, not a constitutional one. It was established by a Central Government notification under the Right to Information (RTI) Act, 2005.
- Statement 2 is correct. The appointment of the Chief Information Commissioner and Information Commissioners is made by the President on the recommendation of a committee that includes the

Prime Minister as the chairperson.

- Statement 3 is correct. Under Section 20 of the RTI Act, the CIC has the power to impose penalties on officials who fail to comply with the provisions of the Act.

73.Solution: C

- Tiger Lightning: The exercise aims to improve readiness for counter-terrorism, peacekeeping operations, jungle warfare, and medical evacuation.
- Tiger Shark: This exercise is designed to strengthen maritime security operations and special operations readiness.
- Pacific Angel: The primary aim of this exercise is to enhance disaster response, humanitarian assistance, and aeromedical evacuation capability.

74.Solution: A

- Statement 1 is incorrect. "Operation Weed Out" was launched by the Directorate of Revenue Intelligence (DRI) under the Central Board of Indirect Taxes and Customs (CBIC), Ministry of Finance.
- Statement 2 is incorrect. The operation specifically targets the smuggling of hydroponic cannabis (high-potency weed) from Southeast Asia, not heroin from the Golden Crescent.
- Statement 3 is correct. "Operation Weed Out" is characterized by its intelligence-driven operations, pan-India coverage, multi-agency coordination, and investigations into the financial trails of drug syndicates.

75.Solution: C

- Statement 1 is incorrect. Qatar shares a land border only with Saudi Arabia. It is separated from Bahrain by the Gulf of Bahrain.
- Statement 2 is correct. Qatar is a major non-NATO ally of the United States and hosts a significant U.S. military base at Al Udeid.
- Statement 3 is incorrect. Qatar's high-income economy is backed by the world's third-largest natural gas reserves and significant oil reserves, making it one of the largest exporters of LNG globally.

76.Solution: D

- Statement I is incorrect. GLP-1 drugs are used for the treatment of type-2 diabetes, not type-1 diabetes.
- Statement II is correct. GLP-1 drugs are glucagon-like peptide-1 receptor agonists that mimic the action of the natural GLP-1 hormone. They have proven benefits for weight loss and obesity management.

77.Solution: D

- Statement I is incorrect. The committee for the appointment of the Chief Information Commissioner includes the Leader of the Opposition in the Lok Sabha, not the Rajya Sabha.

- Statement II is incorrect. As per Section 25 of the RTI Act, the Central Government then places this report before both Houses of Parliament.
- Statement III is incorrect. While the CIC can impose penalties on erring officials, the power to award compensation to the complainant lies with the High Courts and the Supreme Court.

78.Solution: A

- Statement 1 is correct. The Aquamonitrix is equipped with a UV absorbance detector that produces clear peaks for nitrate and nitrite.
- Statement 2 is incorrect. The device runs on a battery, which enables its field portability.
- Statement 3 is incorrect. Its primary applications are as an educational tool, in environmental monitoring, and for research in areas like greenhouses, rivers, and water treatment plants.

79.Solution: D

- Statement I is incorrect. The EML serves as a guide for countries to develop their own national essential medicines lists. It is not legally binding.
- Statement II is correct. The selection of drugs for the EML is a rigorous, evidence-based process that considers their proven efficacy, safety, and cost-effectiveness.

80.Solution: A

- Statement 1 is correct. Qatar is a member of the Gulf Cooperation Council (GCC).
- Statement 2 is incorrect. Doha is located on the coast of the Persian Gulf, not the Red Sea.

81.Solution: B

- Statement 1 is incorrect. The Manki-Munda system, in its original form before British intervention, was a community-driven socio-political governance structure. It did not have the concept of land tax or revenue collection for an external sovereign. Its primary function was internal dispute resolution and maintaining social order based on customary laws of the Ho tribe.
- Statement 2 is correct. After facing resistance through the Ho and Kol revolts, the British administration realized the unsustainability of direct control. Captain Thomas Wilkinson codified the customary laws into "Wilkinson's Rules" in 1833. This move was a strategic integration of the traditional system into the colonial administrative framework, making Mankis and Mundas intermediaries.
- Statement 3 is correct. A key feature of the Manki-Munda system is its hereditary leadership structure. The roles of the Munda (village head) and the Manki (head of a cluster of villages) are traditionally passed down from father to son, which has been a point of discussion in modern times regarding its compatibility with democratic principles.

82.Solution: A

- Statement 1 is incorrect. The Supreme Court's guideline specifies a 48-hour rule for transporting DNA samples to the Forensic Science Laboratory (FSL), not 24 hours. Any delay beyond this period must be justified in writing.
- Statement 2 is incorrect. The chain of custody register is a critical document that must track the sample from the moment of collection until the logical conclusion of the case, which includes conviction or acquittal and any subsequent appeals, not just until the report is submitted.
- Statement 3 is correct. The primary impetus for these guidelines was the significant inconsistency observed in the procedures for collecting, storing, and presenting DNA evidence across various states. Since policing is a State subject, this led to disparities that could compromise the integrity of evidence, necessitating a uniform standard set by the Supreme Court.
- Statement 4 is incorrect. Once a DNA sample is sealed, the integrity of the package is paramount. The guidelines strictly state that the package cannot be opened, altered, or resealed without explicit permission from the trial court, not the investigating officer.

83.Solution: D

- Statement 1 is incorrect. Eustoma, also known as Lisianthus, is native to the warm regions of the Americas, including Mexico, the southern USA, the Caribbean, and northern South America, not Southeast Asia. It typically grows in grasslands and disturbed areas in its native habitat.
- Statement 2 is incorrect. The successful cultivation of Eustoma for the first time in Odisha was achieved in a controlled environment, specifically a polyhouse, at Sanatanpali in the Sambalpur district. This structure helps manage temperature, humidity, and other climatic factors, which is crucial for growing an exotic flower.
- Statement 3 is incorrect. The economic viability and high demand for Eustoma are largely due to its long vase life, often lasting for more than two weeks. This characteristic makes it highly prized in the cut flower industry for bouquets, events, and luxury decor, and also suitable for export, contrary to the suggestion of a short shelf life.

84.Solution: D

- Statement 1 is incorrect. The plant uses advanced 2G (second-generation) bio-refinery technology. This technology is crucial as it allows the conversion of lignocellulosic biomass (like bamboo fibre) into ethanol through processes like enzymatic hydrolysis, which is more complex than 1G technology that uses sugars or starches.

- Statement 2 is incorrect. The plant is developed by Assam Bio-Ethanol Private Limited (ABEL), which is a collaboration involving Numaligarh Refinery Ltd (NRL), a public sector undertaking under the Ministry of Petroleum & Natural Gas. It is not a venture with a private international corporation.
- Statement 3 is incorrect. The plant is a part of India's Ethanol Blending Programme (EBP), but the national target is to achieve 20% ethanol blending in petrol by the year 2025, not 50% by 2030. The plant's output will contribute to this more immediate and specific national goal.

85.Solution: C

- The core idea behind the “grey rhino” concept, as developed by Michele Wucker, is to draw attention to obvious dangers that we fail to address. Unlike “black swan events” which are unpredictable (a) and (b), grey rhinos are foreseeable.
- The term is a metaphor for a large, visible threat charging towards us that we inexplicably ignore. In public policy, this framework is crucial for risk governance and disaster preparedness. It urges policymakers to move beyond crisis response and proactively tackle well-documented, high-probability threats—such as climate change impacts, ecological fragility in sensitive zones, or public health vulnerabilities—before they escalate into full-blown crises. It is about overcoming the inertia and complacency that often prevent action on predictable problems.

86.Solution: A

- Statement-I correctly identifies a major implication of the local cultivation of Eustoma. Before this breakthrough, high-end demand for this flower was met through imports from countries like the Netherlands and Kenya. Domestic production provides a direct substitute, thereby reducing import dependency and saving foreign exchange.
- Statement-II explains why this shift to domestic production is feasible and beneficial, thus providing the reason for the outcome in Statement-I. The flower's adaptability to warm Indian conditions (as demonstrated in Sambalpur) and its high yield (harvestable twice a year) make it an economically attractive crop for farmers. This high economic potential incentivizes local cultivation, which in turn leads to import substitution.

87.Solution: A

- Statement-I states the overall objective of DPM 2025, which is to improve military preparedness. A key factor in readiness is the timely availability of equipment, spares, and services. Delays in procurement directly impact this.
- Statement-II provides the specific mechanism through which this objective is achieved. By decentralizing decision-making and empowering

CFAs at lower formations to handle routine matters like delivery period extensions, the manual cuts down on bureaucratic delays (“red tape”) and avoids the slow movement of files. This empowerment leads to faster decision-making and quicker procurement, which directly contributes to the enhanced operational readiness mentioned in Statement-I.

88.Solution: B

- Statement 1 is incorrect. Greece shares land borders with Albania, North Macedonia, Bulgaria, and Turkey. Its western border is with the Ionian Sea; it does not share a land border with Italy.
- Statement 2 is correct. Due to its thousands of islands and deeply indented mainland, Greece has a remarkably long coastline. At approximately 13,676 kilometers, it is the longest in the Mediterranean Basin and one of the longest in the world.
- Statement 3 is incorrect. Athens is located on the Attica peninsula, not the Peloponnese peninsula. The Peloponnese is the large peninsula to the south of the Gulf of Corinth.

89.Solution: C

Sudan shares borders with seven countries: Egypt, Libya, Chad, the Central African Republic, South Sudan, Ethiopia, and Eritrea. Somalia does not share a border with Sudan.

90.Solution: B

The voting structure of the GST Council is a unique feature of Indian federalism, designed to foster consensus between the Centre and the States.

- Statement 1 is correct. The Union Government has a weightage of one-third of the total votes cast in the GST Council.
- Statement 2 is correct. All the State Governments combined have a weightage of two-thirds of the total votes cast.
- Statement 3 is incorrect. A decision in the GST Council requires the support of at least three-fourths (75%) of the weighted votes of the members present and voting, not a simple majority of 50%.

91.Solution: C

- The core purpose of the Bilateral Investment Agreement (BIA) between India and Israel is to foster a stable and predictable environment for investors from both nations. The agreement aims to strike a crucial balance between protecting foreign investors and preserving the host state's right to regulate its economy and public policy. It achieves this by setting a minimum standard of treatment for investments, which includes provisions against arbitrary expropriation without fair compensation and ensuring transparency in regulations.

- A key feature is the establishment of a neutral dispute resolution mechanism, typically through international arbitration, which allows investors to seek redress for grievances outside the domestic judicial system of the host country.
- This framework is designed to build investor confidence, thereby encouraging greater capital flows and strengthening economic ties in strategic sectors like fintech, cybersecurity, and high-tech innovation.

92.Solution: A

- Both statements are correct, and Statement-II provides the technical explanation for how the mechanism described in Statement-I functions.
- Statement-I accurately describes the fundamental principle of 2FA, which layers security by combining “something you know” (password) with “something you have” (a device generating a code).
- A key feature of modern 2FA apps is their ability to function offline, as the code generation is not dependent on an active internet connection. Statement-II explains the underlying technology. The TOTP standard is the bedrock of this system.
- It uses a shared secret key, established during the initial setup, along with the current time as a moving factor. Both the user’s app and the server independently compute a Hash-based Message Authentication Code (HMAC), often using algorithms like SHA-256.
- Since both use the same secret key and time counter, they generate identical codes for a short duration (e.g., 30 seconds), enabling secure verification without transmitting the secret key itself.

93.Solution: B

- Statement 1 is incorrect. The Electoral College for the Vice-President’s election is composed of all members (both elected and nominated) of the Lok Sabha and the Rajya Sabha. This is a key difference from the Presidential election, where nominated members do not participate.
- Statement 2 is correct. In the Vice-Presidential election, the vote of every Member of Parliament has a uniform value, which is 1. This simplifies the counting process compared to the Presidential election, where the value of an MLA’s vote varies from state to state based on population.
- Statement 3 is correct. The election employs the system of proportional representation by means of the single transferable vote (STV) to ensure the winning candidate has broad support. Furthermore, the voting is conducted by secret ballot, and the provisions of the anti-defection law (which mandates following a party whip) do not apply to this election. This principle of a secret ballot allows MPs to vote according to their

conscience, making cross-voting possible.

94.Solution: D

- The mascot ‘Chaand’ was designed to be a fierce tiger, symbolizing a combination of key attributes relevant to sport and the host region’s natural heritage. The choice of a tiger is directly inspired by the Valmiki Tiger Reserve, which is a prominent wildlife sanctuary located in the state of Bihar.
- The mascot’s characteristics—skill, courage, agility, and pride—are meant to reflect the qualities of the athletes competing in the high-stakes tournament. By linking the mascot to a significant ecological site, the event also promoted awareness of Bihar’s rich biodiversity and its conservation efforts.

95.Solution: B

- Statement 1 is correct; Dr. Bhupen Hazarika was posthumously awarded the Bharat Ratna in 2019, recognizing his immense contribution to Indian culture.
- Statement 3 is also correct. He is widely celebrated as the ‘Bard of Brahmaputra’ and is credited with being a cultural unifier whose work gave a powerful voice to the issues and identity of Northeast India, integrating it into the national consciousness.
- Statement 2 is incorrect. While his music was deeply rooted in Assamese folk traditions, it was not confined to them. A central theme of his work was social and political commentary. His songs often addressed universal themes of humanity, justice, poverty, and inequality, inspired in part by global civil rights movements.

96.Solution: C

- Statement 1 is correct. The Bhils are among the most ancient tribal communities in India, often associated with the Dravidian racial stock of Western India. Their name is derived from the Dravidian term ‘billu’ or ‘villu’, which means ‘bow’, reflecting their historical reputation as skilled archers.
- Statement 2 is also correct. The British colonial administration, under the Criminal Tribes Act of 1871, classified the Bhils as a “criminal tribe.” This policy subjected them to systematic oppression, including restrictions on their movement, bonded labour, and displacement from their ancestral lands, as it was a measure to control communities that resisted colonial authority.
- Statement 3 is correct as well. The Bhils have a history of organized resistance. The Bhagat Movement, led by Govind Guru in the late 19th and early 20th centuries, was a socio-religious reform movement that took on a political dimension against British policies and feudal oppression, culminating in the tragic Mangarh massacre of 1913. Subsequently, the Eki Andolan (Unity

Movement) in the 1920s, led by Motilal Tejawat, further organized the Bhils to fight against heavy taxation and forced labour.

97.Solution: D

- The discovery of the Pallas's cat (*Otocolobus manul*) in Arunachal Pradesh is a milestone in Indian wildlife research. This species is primarily native to the cold, arid steppes and grasslands of Central Asia, with Mongolia and China being its core habitats.
- While there had been sightings in other Himalayan regions like Sikkim and Bhutan, this photographic evidence confirms and extends its known eastern Himalayan range into Arunachal Pradesh. This is significant because it enhances our understanding of the species' adaptability and geographical distribution.
- It also underscores the ecological importance of the eastern Himalayas as a global biodiversity hotspot, capable of supporting rare and elusive species. The finding does not provide information on its population status (it is listed as Near Threatened by IUCN), nor does it relate to captive breeding or evolution; its primary importance lies in biogeography and conservation.

98.Solution: A

The Caribbean region is politically diverse, comprising independent nations as well as territories linked to former colonial powers.

- Cuba is a sovereign, independent nation and has been since its independence from Spain and subsequent period of US influence. (A-2)
- Puerto Rico is an unincorporated territory of the United States. Its residents are U.S. citizens, but it is not a state and has limited representation in the U.S. Congress. (B-1)
- Martinique is an overseas department and region of France. It is an integral part of the French Republic, uses the euro as its currency, and is represented in the French Parliament. (C-4)
- Aruba is a constituent country of the Kingdom of the Netherlands. Along with the Netherlands,

Curaçao, and Sint Maarten, it forms the Kingdom. It has internal autonomy but shares defense and foreign affairs with the Kingdom. (D-3)

99.Solution: D

- During his time at Columbia University, Dr. Bhupen Hazarika met Paul Robeson, a prominent figure in the American Civil Rights Movement whose art was deeply intertwined with his activism. Hazarika was profoundly inspired by Robeson's belief that music should be an instrument of social change.
- This influence is clearly reflected in the thematic content of Hazarika's work. While his musical roots remained in Assamese folk, the lyrical focus of his songs often transcended regional boundaries to address universal themes of humanity, justice, equality, and the plight of the marginalized—themes central to Robeson's own work. His famous song "Manuhe Manuhar Babe" (Man is for Humanity) is a prime example.
- While he was a master of musical fusion, the most significant and direct influence of Paul Robeson was ideological, steering his art towards becoming a powerful voice for social consciousness rather than merely stylistic imitation.

100.Solution: B

- Statement 1 is correct. The Pallas's cat (also known as manul) is roughly the size of a domestic cat but its long, dense fur coat gives it a much heavier and stockier build, which is an adaptation to its cold habitat.
- Statement 2 is also correct. The species is well-adapted to life in harsh, cold environments and is typically found in high-altitude grasslands, rocky steppes, and cold deserts across Central Asia and the Himalayas.
- Statement 3 is incorrect. One of the distinctive features of the Pallas's cat is its rounded pupils, which are different from the vertical slit pupils commonly seen in other small cats, including domestic cats. This is a unique characteristic that sets it apart.





