Q.1) Solution (b)

Explanation:

- The 'One Nation, One Election' (ONOE) proposal aims to synchronize elections for Lok Sabha and State Assemblies to reduce frequent elections and their economic burden. The Government of India has constituted two committees so far to examine the feasibility and legal requirements of ONOE:
  1. Law Commission of India was officially tasked by the Government of India to examine the feasibility of 'One Nation, One Election'.
  2. High-Level Committee (HLC) chaired by former President Ram Nath Kovind (2023) – Formed by the Union Government to assess legal and logistical challenges. **(Option (b) is correct)**
- In April 2018, the Department of Legal Affairs requested the Law Commission to study the possibility of holding simultaneous elections to the Lok Sabha and State Legislative Assemblies. The Commission subsequently released a draft report addressing this issue.

Sources:
https://legalaffairs.gov.in/sites/default/files/simultaneous_elections/LCI_2018_DRAFT_REPORT.pdf&https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2085082#:~:text=The%20High%2DLevel%20Committee%20on,Sabha%20and%20State%20Legislative%20Assemblies.&https://static.pib.gov.in/WriteReadData/specificdocs/documents/2024/mar/doc2024314323501.pdf

Q.2) Solution (a)

Explanation:

- The Constitution (128th Amendment) Bill, 2023, also known as the Nari Shakti Vandan Adhiniyam, amends the Constitution of India to introduce reservation for women in legislative bodies.
- The amendment provides for 33% reservation of seats for women in the Lok Sabha.This reservation is based on the principle of rotation and will be effective for 15 years from the date of enactment. **(Statement 1 is correct)**
- Similar to Lok Sabha, 33% reservation is also extended to State Legislative Assemblies, following the same principle of rotation and 15-year duration. **(Statement 2 is correct)**
- The Constitution (128th Amendment) Bill, 2023 does not provide reservation for women in Rajya Sabha. Reservation is limited only to elected bodies (Lok Sabha and State Legislative Assemblies). **(Statement 3 is incorrect)**

- Reservation in local bodies (Panchayats and Municipalities) for women is already provided under the 73rd and 74th Constitutional Amendments (1992), mandating at least one-third reservation, which has been increased to 50% in many states through state-level legislation. Thus, this amendment doesn't include local bodies. **(Statement 4 is incorrect)**

Sources:
https://sansad.in/getFile/BillsTexts/LSBillTexts/PassedBothHouses/const%20128th%20amend104202340415PM.pdf?source=legislation#:~:text=(1)%20Seats%20shall%20be%20reserved,Castes%20or%20the%20Scheduled%20Tribes.

Q.3) Solution (c)

Explanation:

- The Self Respect Movement was launched in 1925 by Periyar E.V. Ramasamy Naicker in Tamil Nadu. It aimed at social reform, rationalism, and eradication of caste-based inequalities and promoting gender equality and rational thinking. **(Pair 1 is correct)**
- Jyotirao Phule established the Satya Shodhak Samaj ("Society of Truth Seekers") in 1873 in Maharashtra to fight against caste discrimination and uplift lower castes and women. It advocated social equality, rationalism, and opposed the supremacy of Brahmins. **(Pair 2 is correct)**
- The All-India Kisan Sabha (AIKS) was established in April 1936 under the leadership of Swami Sahajanand Saraswati at Lucknow. It became an important platform in India's freedom struggle representing the interests of peasants against landlord exploitation and British colonial policies. **(Pair 3 is correct)**
- The Justice Party was founded in 1916 in Madras by C.N. Mudaliar, T.M. Nair, and P. Thyagaraja Chetty as an anti-Brahmin movement to represent non-Brahmin interests and demand representation in administration. Annie Besant was associated with the Home Rule Movement (1916) and was the President of the Indian National Congress in 1917, but she was not associated with the Justice Party. **(Pair 4 is incorrect)**

Sources: https://ncert.nic.in/textbook.php?lehs3=0-4

Q.4) Solution (d)

Explanation:

- Fundamental Duties were added through the 42nd Constitutional Amendment Act, 1976.They are enumerated in Part IVA (Article 51A), and currently list 11 duties to be followed by citizens. **(Statement 1 is correct)**
- Article 279A was inserted through the 101st Constitutional Amendment Act, 2016.It provides for the constitution of the GST Council to oversee the implementation and administration of GST. **(Statement 2 is correct)**
- Part IXB, dealing with Cooperative Societies, was added by the 97th Constitutional Amendment Act, 2011.It covers provisions related to the incorporation, regulation, and management of Cooperative Societies. **(Statement 3 is correct)**

Sources: https://legislative.gov.in/constitution-of-india/

Q.5) Solution (c)

Explanation:

- The Seventh Schedule (Article 246) of the Indian Constitution divides legislative powers between the Union and States, categorizing them into three lists: Union List, State List, and Concurrent List.
- Cyber laws and Information Technology are not exclusively under the Union List. While the Union Government legislates extensively on Information Technology under entry 31 ("Posts and telegraphs; telephones, wireless, broadcasting and other like forms of communication") of the Union List, cyber-related criminal laws such as "cybercrimes" come under Concurrent List (Entry 1 - Criminal Law), allowing both Centre and States to legislate.
- Public order and Police are exclusively under State List (Entries 1 and 2 respectively). Therefore, the Union can legislate on these subjects only during emergencies or specific circumstances mentioned in the Constitution.
- Agriculture, including agricultural education and research, is explicitly mentioned under the State List (Entry 14). States primarily legislate on agriculture, although the Union may support through schemes or concurrent jurisdiction indirectly, but the direct legislative power is clearly under the State List. **(Option (c) is correct)**
- Banking, insurance, and stock exchanges are subjects exclusively mentioned under the Union List (Entries 43, 44, and 45 respectively). Only the Parliament can legislate on these issues.

Sources: https://www.mea.gov.in/images/pdf1/S7.pdf

Q.6) Solution (b)

Explanation:

- Article 14 guarantees "equality before law and equal protection of the laws". It ensures fairness and non-discrimination by the State, but has not directly been used by the Supreme Court to recognize the Right to Internet.
- Article 19 ensures the protection of certain rights regarding freedom of speech and expression, peaceful assembly, association, movement, residence, and profession. In the landmark judgment of Anuradha Bhasin v. Union of India (2020), the Supreme Court held that access to the internet is protected under Article 19(1)(a) – freedom of speech and expression, and Article 19(1)(g) – freedom of profession and occupation. Thus, the Right to Internet has been recognized under Article 19 of the Constitution. **(Option (b) is correct)**
- Article 25 deals with "freedom of conscience and free profession, practice and propagation of religion". It does not pertain to the right to internet access.
- Article 29 protects "the interests of minorities by guaranteeing the right to conserve their language, script, and culture". It is not related to the right to internet.

Sources: https://www.cambridge.org/core/journals/legal-information-management/article/constitutional-liberties-and-cyberspace-analysing-the-anuradha-bhasin-v-union-of-india-case-and-its-impact-on-fundamental-rights/34583063BFD894ADD06419C29281A884#:~:text=The%20ruling%20of%20the%20Supreme%20Court%20in%20the%20case%20of,of%20%E2%80%9CFreedom%20of%20expression%E2%80%9D.

Q.7) Solution (b)

Explanation:

The Supreme Court has clarified that **royalty is not a tax**, but a **contractual payment** made to the lessor (often the state or private landholder) for extraction of minerals. Royalties arise out of lease agreements and are not imposed as statutory taxes.**(Statement 1 is incorrect)**

- Under **Entry 50 of the State List**, states have the power to impose **taxes on mineral rights**, **subject to any limitations imposed by Parliament** through laws such as the

Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act).**(Statement 2 is correct)**

- Royalties are **payments made under the terms of mining lease agreements**—they compensate the landowner or state for the right to extract mineral resources. These are **contractual in nature**, not taxes.**(Statement 3 is correct)**

Sources: https://indianexpress.com/article/explained/explained-law/royalty-tax-mining-supreme-court-judgment-9210783/

Q.8) Solution (c)

Explanation:

- **Karnataka** possesses the largest share of tungsten reserves in India, accounting for approximately **41%** of the total resources. Significant deposits are found in the **Chitradurga and Mysuru** regions.
- **Rajasthan** holds about **27%** of the country's tungsten reserves, with notable deposits in the **Degana mines** of Nagaur district.
- **Andhra Pradesh** and **Maharashtra** contribute around **17%** and **11%** respectively to India's tungsten reserves.

Despite Karnataka's substantial reserves, **Rajasthan** has historically been a significant producer of tungsten in India.

Sources:https://ibm.gov.in/writereaddata/files/170989619465eaf20275d31Tungsten_2022.pdf

Q.9) Solution (d)

Explanation:

- The India-Pakistan border is one of the most volatile borders in the world, spanning 3,323 km.It includes the heavily militarized Line of Control (LoC) in Jammu & Kashmir, where frequent skirmishes occur.
- The Russia-Ukraine border has become one of the most conflict-prone zones due to the Russia-Ukraine War that started in 2022.While heavily patrolled, it does not have a permanent fortification like the DMZ.

- The Israeli security barrier (West Bank Wall) is a highly secured border, but it does not cover the entire Israel-Palestine region. The border has military outposts, air defense systems, and electronic surveillance.
- The North Korea-South Korea border is known as the Korean Demilitarized Zone (DMZ) and is considered the most fortified border in the world. It is a 250 km long and 4 km wide buffer zone filled with landmines, barbed wire, tank traps, and heavy military presence. The border is constantly monitored by the United Nations Command (UNC) and North Korean forces. **(Option (d) is correct)**

Sources: https://www.unc.mil/Organization/UNC-Security-Battalion/

Q.10) Solution (a)

Explanation:

- The Privileges Committee deals with cases related to breach of privileges of MPs and the House itself. Parliamentary privileges are special rights and immunities enjoyed by Parliament, its members, and committees to ensure their independence and effectiveness. **(Statement 1 is correct)**
- The Privileges Committee is constituted by the Speaker of the Lok Sabha in accordance with the rules of procedure. It usually consists of 15 members in Lok Sabha and 10 members in Rajya Sabha, drawn from different political parties. **(Statement 2 is correct)**
- The recommendations made by the Privileges Committee are not legally binding but are subject to the approval of the House. The House has the final authority on whether to accept or reject the recommendations. **(Statement 3 is incorrect)**

Sources: https://pib.gov.in/PressReleasePage.aspx?PRID=2000146

Q.11) Solution (c)

Explanation:

- Dr. Ambedkar was the Chairman of the Drafting Committee of the Constitution but was not associated with the role of Lok Sabha Speaker. He later served as India's first Law Minister.
- Dr. Rajendra Prasad was the first President of India (1950-1962) and earlier served as President of the Constituent Assembly.

- Ganesh Vasudev Mavalankar (G.V. Mavalankar) was elected as the first Speaker of the Lok Sabha on 15 May 1952 after the first general elections. Before this, he also served as the Speaker of the Constituent Assembly (Legislative) from 1946-1952, making his role crucial in the formative years of Indian parliamentary democracy. **(Option (c) is correct)**
- Sardar Hukam Singh was not the first Lok Sabha Speaker, but he later served as the Speaker of Lok Sabha from 1962-1967.

Sources: https://sansad.in/ls/about/speaker

Q.12) Solution (a)

Explanation:

- The Indian Independence Act, 1947 was passed by the British Parliament on July 18, 1947, and it came into effect on August 15, 1947. It marked the formal end of British rule in India.
- The Indian Independence Act, 1947 divided British India into two sovereign dominions: India and Pakistan. The territories of Pakistan included East Pakistan (now Bangladesh) and West Pakistan (present-day Pakistan). **(Statement 1 is correct)**
- While the Act abolished the Secretary of State for India's control over Indian affairs, its functions were transferred to the respective dominion governments and NOT to the Governor-General. Each dominion (India and Pakistan) had its own Governor-General who acted as a constitutional head until the respective Constitutions were framed. **(Statement 2 is incorrect)**

Sources:https://www.legislation.gov.uk/ukpga/1947/30/pdfs/ukpga_19470030_en.pdf

Q.13) Solution (d)

Explanation:

- Mudrarakshasa is a famous historical Sanskrit play written by Vishakhadatta.It deals with the rise of Chandragupta Maurya and the role of Chanakya (Kautilya) in overthrowing the Nanda dynasty.
- Harshacharita is a biography of King Harsha written by Banabhatta in the 7th century CE.It is a historical prose work, NOT a literary or dramatic composition of Kalidasa.
- Kamasutra was written by Vatsyayana, NOT Kalidasa.It is an ancient treatise on love, relationships, and human behavior, primarily focusing on social customs and pleasure.

- Raghuvamsha is an epic Sanskrit poem composed by Kalidasa, one of the greatest classical Sanskrit poets and playwrights.It narrates the genealogy and exploits of the Raghu dynasty, to which Lord Rama belonged.It is one of Kalidasa's major works, along with Meghaduta, Abhijnana Shakuntalam, and Kumarasambhava. **(Option (d) is correct)**

Sources: https://egyankosh.ac.in/bitstream/123456789/64647/1/BLOCK%201.pdf

Q.14) Solution (b)

Explanation:

- The Milindapanha (Questions of King Milinda) is a Pali Buddhist text containing a dialogue between King Menander (Milinda) and the monk Nagasena.It belongs to the Theravāda tradition, not the Sarvastivāda school associated with the Fourth Buddhist Council.
- The MahāvibhāṣāŚāstra was compiled during the Fourth Buddhist Council under Kushan Emperor Kanishka in the 2nd century CE.It is a commentary on the Abhidharma texts and played a crucial role in defining the Sarvāstivāda school of Buddhist thought.The authorship of Mahavibhasa is debated, with some sources attributing it to Kātyāyanīputra and a council of 500 monks, while others suggest involvement from Vasumitra. **(Option (b) is correct)**
- Dipavamsa (4th century CE) is a historical chronicle of Sri Lanka, written in Pali, primarily related to Theravāda Buddhism.
- Lalitavistara is a Mahayana Buddhist text describing the biography of Gautama Buddha.It is not related to the Fourth Buddhist Council.

Sources: https://www.britannica.com/topic/Buddhist-council

Q.15) Solution (a)

Explanation:

- Located in Charaideo, Assam, Moidams are burial mounds of the Ahom dynasty, which were inscribed as a UNESCO World Heritage Site in 2024.They represent a unique blend of Tai-Ahom and Indic burial traditions. **(Option (a) is correct)**
- Gwalior Fort, one of India's most iconic hill forts, it remains on India's Tentative List for UNESCO World Heritage status but has not been inscribed yet.

- Known as the "Angkor Wat of the Northeast", Unakoti in Tripura features massive rock-cut sculptures of Hindu deities.It is currently on India's Tentative List, awaiting UNESCO recognition.
- The Hoysala temples of Belur, Halebid, and Somanathapura were inscribed as a UNESCO World Heritage Site in 2023, not 2024.

Sources:https://pib.gov.in/PressNoteDetails.aspx?NoteId=151948&ModuleId=3#:~:text=Charaideo%20Moidams%20%E2%80%93%20The%20Mound%2DBurial,of%20India%20listed%20by%20UNESCO.

Q.16) Solution (a)

Explanation:

- As per Article 368, amendments to certain provisions require both a special majority of the Parliament and ratification by at least half of the state legislatures.
- Article 54 & 55 (Election of the President) fall under provisions requiring special majority + state ratification because they affect federalism. **(Statement 1 is correct)**
- Changes to the division of powers (Article 245-263) between the Union and States require ratification by at least half of the states. This ensures federalism is not altered unilaterally by the Parliament. **(Statement 2 is correct)**
- Fundamental Rights (Part III) can be amended only by a special majority but do not require ratification by states. **(Statement 3 is incorrect)**

Sources: https://www.constitutionofindia.net/articles/article-368-power-of-parliament-to-amend-the-constitution-and-procedure-therefor/#:~:text=Article%20368-,Power%20of%20Parliament%20to%20amend%20the%20Constitution%20and%20procedure%20therefor,laid%20down%20in%20this%20article.

Q.17) Solution (a)

Explanation:

- Since Russia's invasion in 2022, Ukraine has witnessed one of the largest refugee crises in the world. According to UNHCR (2024 report), over 6 million Ukrainians have fled the country due to war.Many have relocated to Poland, Germany, and other European nations. **(Point 1 is correct)**
- Syria remains one of the largest sources of refugees due to its ongoing civil war, which began in 2011.According to UNHCR (2024), 6.8 million Syrians are refugees or asylum

seekers, primarily in Turkey, Lebanon, and Jordan. Internal displacement remains a serious issue due to continued instability. **(Point 2 is correct)**

- While Pakistan has seen internal migration due to floods and regional conflicts, it has not experienced mass international displacement in the same way as Ukraine or Syria. The 2022 floods caused large-scale displacement, but the situation has since stabilized.**(Point 3 is incorrect)**
- Bangladesh is prone to environmental disasters (flooding, cyclones, and rising sea levels), but it has not seen mass forced migration across borders. However, Bangladesh hosts a large number of Rohingya refugees from Myanmar but is not itself a major source of forced migration. **(Point 4 is incorrect)**
- South Sudan has faced civil wars, ethnic conflicts, and humanitarian crises since its independence in 2011.According to UNHCR (2024), over 2 million people are displaced internally, and 2.3 million South Sudanese refugees have fled to neighbouring countries like Uganda, Sudan, and Ethiopia. **(Point 5 is correct)**

Sources: https://www.unhcr.org/in/mid-year-trends#:~:text=Over%20122.6%20million%20people%20are%20forcibly%20displaced%20globally&text=By%20the%20end%20of%20June,%2D%20and%20middle%2Dincome%20countries.

Q.18) Solution (d)

Explanation:

- As per Article 108, if a disagreement arises between the Lok Sabha and the Rajya Sabha over an ordinary bill, the President of India can summon a Joint Sitting to resolve the deadlock. The Joint Sitting is not applicable for a Money Bill or a Constitutional Amendment Bill. **(Statement 1 is correct)**
- As per Article 118(4), the Speaker of the Lok Sabha presides over the Joint Sitting. If the Speaker is absent, the Deputy Speaker presides. If neither is available, the Deputy Chairman of the Rajya Sabha takes charge. **(Statement 2 is correct)**
- A Constitutional Amendment Bill (Article 368) cannot be passed in a Joint Sitting. Such a bill must be separately passed by both Houses of Parliament with a special majority. If one House rejects it, the bill fails automatically. **(Statement 3 is incorrect)**
- Once a Joint Sitting is convened, the Rajya Sabha loses the ability to amend or reject the bill separately. A simple majority of both Houses combined determines the fate of the bill. This limits the Rajya Sabha's power, especially in cases where the Lok Sabha has a strong majority. **(Statement 4 is correct)**

Sources:
https://indiankanoon.org/doc/1134140/#:~:text=(1)If%20after%20a%20Bill,by%20the%20other%20House%20without

Q.19) Solution (a)

Explanation:

- Pinaka is a multi-barrel rocket launcher (MBRL) system used by the Indian Army. BrahMos-A is the air-launched version of the BrahMos cruise missile, used by the Indian Air Force. BrahMos-N is the naval variant of BrahMos, deployed on Indian Navy warships. **(Pair 1 is correct)**
- Arjun MBT (Main Battle Tank) is an armoured warfare platform used by the Indian Army.LCA Tejas is a fighter aircraft, NOT a direct equivalent to a tank in land warfare.INS Vikrant is an aircraft carrier, not an equivalent to either a tank or a fighter jet. **(Pair 2 is incorrect)**
- Akash is an indigenous surface-to-air missile (SAM) system used by the Indian Army.S-400 Triumf is a long-range air defense system procured from Russia for the Indian Air Force.Barak-8 is a naval air-defense missile system used by the Indian Navy. **(Pair 3 is correct)**
- Rudram-1 is an air-launched anti-radiation missile (ARM) used by the Air Force, but Nag is an anti-tank missile, making them non-equivalent.BrahMos Anti-Ship Missile is a cruise missile, fundamentally different in purpose from an anti-radiation or anti-tank missile. **(Pair 4 is incorrect)**

Sources: https://www.drdo.gov.in/drdo/technical-clusters/missiles-and-strategic-systems

Q.20) Solution (b)

Explanation:

- The Zonal Councils were established under the States Reorganisation Act, 1956, to promote inter-state cooperation and coordination.There are five Zonal Councils: Northern, Southern, Eastern, Western, and Central.These councils act as advisory bodies to foster cooperation among states on economic and social development issues.
- The Chief Ministers of all states in the respective zones are members of the Zonal Councils.They play a key role in discussing inter-state issues and recommending policy solutions. **(Statement 1 is correct)**

- The Governor is not a member of the Zonal Council.The Zonal Councils are chaired by the union Home minister and include Chief Ministers, Chief Secretaries, and senior officials—but not Governors. **(Statement 2 is incorrect)**
- The union Home minister serves as the ex-officio Chairman of all Zonal Councils.The Home Minister's role is to facilitate discussions on issues like internal security, development, and resource-sharing among states. **(Statement 3 is correct)**
- The Chief Secretary is not a formal member of the Zonal Council but is a special invitee to provide administrative inputs and policy recommendations.**(Statement 4 is incorrect)**

Sources: https://www.mha.gov.in/sites/default/files/ZCS-CitiCharter-130710_1.pdf

Q.21) Solution (a)

Explanation:

- Article 330 provides for the reservation of seats for Scheduled Castes (SCs) and Scheduled Tribes (STs) in the Lok Sabha.Article 332 provides for the reservation of seats for SCs and STs in State Legislative Assemblies.This reservation ensures adequate political representation for marginalized communities. **(Statement 1 is correct)**
- The original Constitution (1950) provided for SC/ST reservations for ten years, expiring in 1960.However, this reservation has been extended periodically through successive constitutional amendments, recognizing the continued socio-economic challenges faced by these communities. **(Statement 2 is correct)**
- The latest extension of SC/ST reservation in legislatures was made by the 104th Constitutional Amendment Act, 2019, extending it till January 25, 2030.The 106th Constitutional Amendment Act, 2023, pertains to the Nari Shakti Vandan Adhiniyam (Women's Reservation Bill), which provides one-third reservation for women in Lok Sabha and State Assemblies. **(Statement 3 is incorrect)**

Sources: https://www.india.gov.in/my-government/constitution-india/amendments/constitution-one-hundred-and-fourth-amendment-act-2019

Q.22) Solution (b)

Explanation:

- Exercise Yudh Abhyas is an annual Indo-US military exercise, held alternately in India and the USA since 2004.The 2024 edition was the 20th edition of the exercise. **(Statement 1 is correct)**
- The 2024 edition was held at Foreign Training Node, Mahajan Field Firing Ranges, Rajasthan, from 9th to 22nd September 2024.Previous editions were held in locations such as Alaska (USA) and Uttarakhand (India). **(Statement 2 is correct)**
- The primary objective of Yudh Abhyas-2024 was enhancing joint military capability for counter-terrorism operations in a semi-desert environment.The exercise was conducted under Chapter VII of the United Nations Charter, which deals with international peace and security. **(Statement 3 is correct)**
- Yudh Abhyas is an Army-to-Army bilateral exercise.The Indian Navy was NOT part of this exercise.Naval cooperation between India and the US occurs under exercises like 'Malabar' and 'RIMPAC'. **(Statement 4 is incorrect)**

Sources: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2053095

Q.23) Solution (c)

Explanation:

- Article 32 empowers the Supreme Court to issue writs for the enforcement of Fundamental Rights.Article 226 empowers High Courts to issue writs for both Fundamental Rights and other legal rights.The five types of writs are: Habeas Corpus, Mandamus, Prohibition, Certiorari, and Quo Warranto.
- The writ of Mandamus commands a public official to perform a legal duty that has been refused.
- The judiciary cannot issue a writ directing Parliament to amend a law.Constitutional amendments are governed by Article 368, and writs cannot interfere in the legislative process.
- Certiorari literally means "to be certified" or "to be informed."It is issued by a higher court to a lower court or tribunal, quashing an order if it acted beyond its jurisdiction, violated principles of natural justice, or made an error of law.This writ is corrective in nature. **(Option (c) is correct)**
- The President's power to issue ordinances (Article 123) is executive in nature, and the judiciary cannot issue a writ to review an ordinance before it is promulgated.

Sources: https://indiankanoon.org/search/?formInput=certiorari

Q.24) Solution (a)

Explanation:

- Article 341(1) of the Constitution empowers the President to notify the Scheduled Castes (SCs) for any state or union territory, after consulting the Governor in the case of a state.This ensures that the process of recognizing SCs follows a constitutional procedure rather than an executive decision by state governments.However, any subsequent changes to the SC list can only be made by Parliament via a law under Article 341(2). **(Statement 1 is correct)**
- The Scheduled Caste status is state-specific, meaning a community designated as SC in one state is not automatically recognized as SC in another state.The Supreme Court in Marri Chandra Shekhar Rao v. Dean, Seth G.S. Medical College (1990) ruled that SC/ST status cannot be transferred across states.For example, a community recognized as SC in Punjab may not have the same status in Haryana or Maharashtra. **(Statement 2 is incorrect)**

Sources: https://www.constitutionofindia.net/articles/article-342-scheduled-tribes/#:~:text=(1)%20The%20President%20may%2C,in%20relation%20to%20that%20State.

Q.25) Solution (b)

Explanation:

- The Appropriation Bill is introduced after the demands for grants are voted upon, not after the Finance Bill is passed.As per Article 114 of the Constitution, the Appropriation Bill is introduced before the Finance Bill.It authorizes the expenditure approved by Parliament before any tax proposals in the Finance Bill take effect. **(Statement 1 is incorrect)**
- The Appropriation Bill is necessary for the withdrawal of funds from the Consolidated Fund of India (CFI).Without its passage, no money can be withdrawn from the CFI for government expenditure. **(Statement 2 is correct)**

Sources: https://www.constitutionofindia.net/articles/article-114-appropriation-bills/

Q.26) Solution (c)

Explanation:

- Samir Saran is the President of the Observer Research Foundation (ORF) and an expert on foreign policy and technology.He has authored "The New World Disorder and the Indian Imperative" (with Shashi Tharoor).
- Shashi Tharoor, a former diplomat and MP, is known for books like:
    - Pax Indica: India and the World of the 21st Century
    - The Battle of Belonging
    - Inglorious Empire: What the British Did to India
- Anirudh Suri is an Indian author and venture capitalist focused on technology, geopolitics, and public policy.His notable books include:
    - "The Great Tech Game: Shaping Geopolitics and the Destinies of Nations" (2022) – It discusses how technology shapes the global balance of power.
    - "The Global Resurgence of Democracy" (2024) – A study of democratic resilience in an era of digital authoritarianism.
- His work explores India's role in global tech leadership and digital governance. **(Option (c) is correct)**
- C. Raja Mohan is a leading foreign policy analyst and author.His books include "Modi's World: Expanding India's Sphere of Influence" and "Crossing the Rubicon".

Sources: https://www.thehindu.com/books/books-reviews/great-tech-game-cable-cars-global-power/article65680977.ece

Q.27) Solution (b)

Explanation:

- In 2024, Mauritius was among the African countries that imposed internet shutdowns during elections, aiming to control information flow and maintain governmental authority during critical periods. Such actions have raised concerns about digital rights and freedom of expression. **(Pair 1 is correct)**
- In mid-June 2024, Greece experienced a severe heatwave, with temperatures forecasted to reach up to 43°C. This heatwave was part of a series of extreme weather events affecting Europe during that period. **(Pair 2 is correct)**
- In the 2024 Venezuelan presidential election held on July 28, opposition candidate Edmundo González Urrutia was widely viewed as having won the election. However, the incumbent government announced Nicolás Maduro as the winner, leading to a

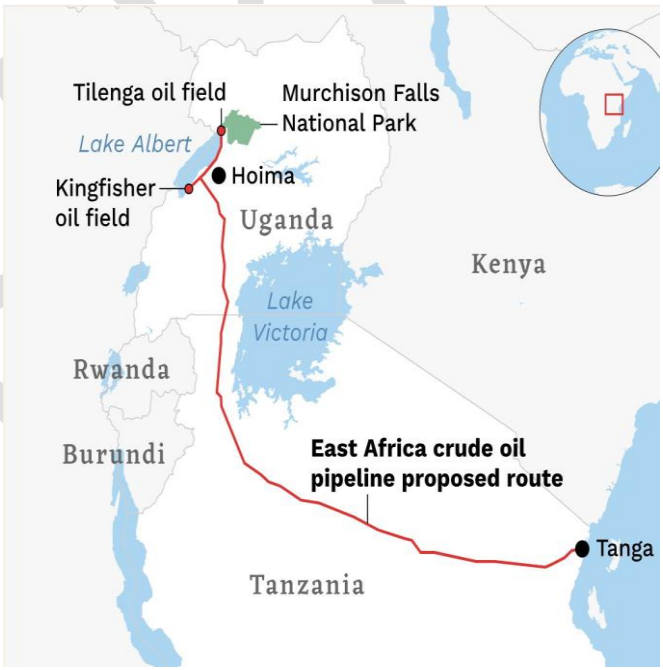
political crisis with allegations of electoral fraud and subsequent protest. **(Pair 3 is incorrect)**

Sources: https://www.thehindu.com/news/international/venezuelas-nicolas-maduro-wins-third-term-as-president-amid-opposition-claims-of-irregularities/article68459225.ece

Q.28) Solution (a)

Explanation:

- The East African Crude Oil Pipeline (EACOP) is a significant infrastructure project aiming to transport crude oil from Uganda's oilfields, specifically the Kingfisher and Tilenga fields, to the port of Tanga in Tanzania on the Indian Ocean.
- This pipeline, spanning approximately 1,443 kilometers, is designed to be electrically heated to ensure the flow of the waxy crude oil, making it the longest heated oil pipeline globally upon completion.
- The project's strategic route from landlocked Uganda to Tanzania's coastline facilitates the export of Ugandan oil to international markets. Therefore, both statements are correct, and Statement II provides the specific context that explains Statement I.**(Option (a) is correct)**



Sources: https://www.ft.com/content/061f0636-c868-4c8e-93f1-89a9e0a8f486

Q.29) Solution (a)

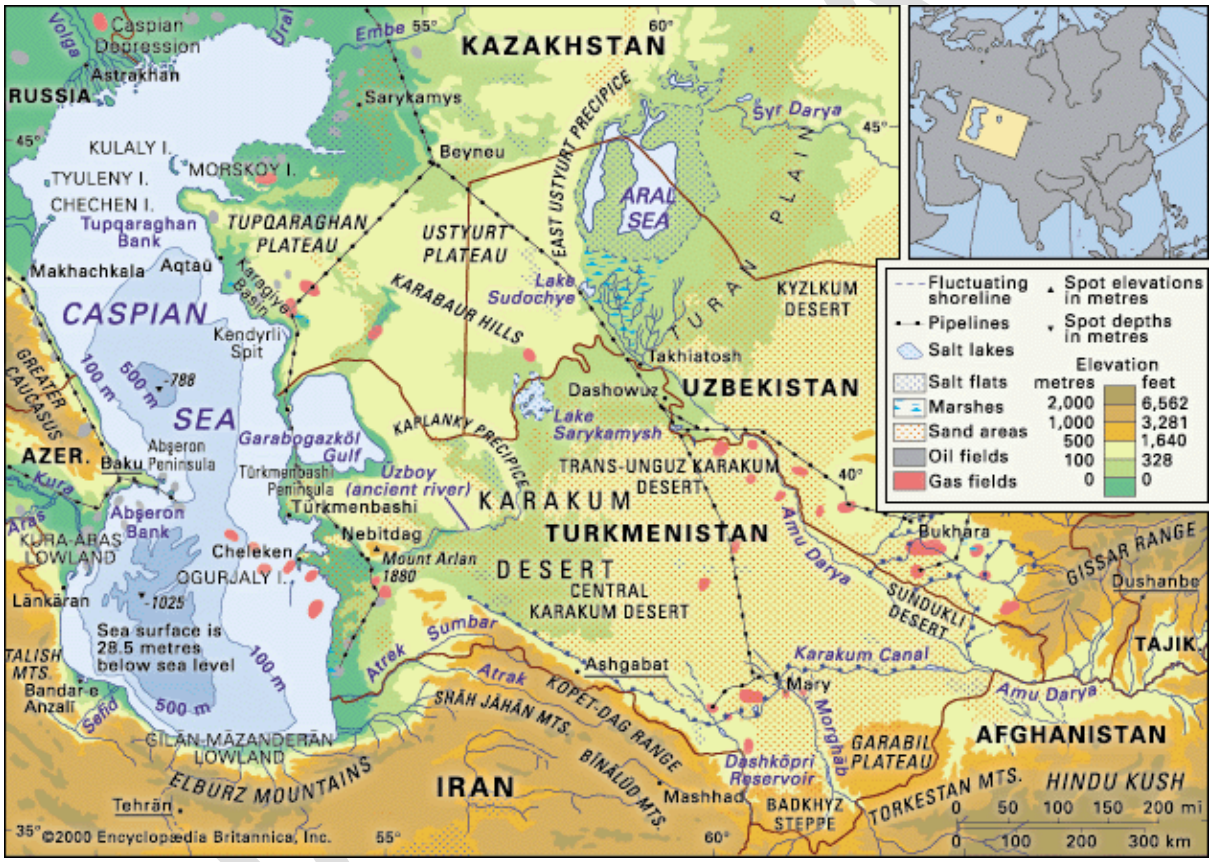
Explanation:

- The Caspian Sea has been experiencing a continuous decline in water levels due to climate change, increasing evaporation, and reduced inflow from the Volga River,

which contributes nearly 80% of its freshwater. This decline has had severe ecological and economic consequences. **(Statement 1 is correct)**

- The Caspian Sea, despite being the world's largest enclosed inland body of water, receives significant inflow from the Volga River, Ural River, and Kura River. Unlike the Red Sea, which does not receive any river inflow, the Caspian Sea still has riverine input. **(Statement 2 is incorrect)**

Sources: https://earthobservatory.nasa.gov/images/150452/the-caspian-seas-shrinking-coastline



Q.30) Solution (c)

Explanation:

- Nitrogen oxides (NO_x) are significant pollutants that contribute to the formation of smog and acid rain, adversely affecting human health and the environment. According to the U.S. Environmental Protection Agency (EPA), the largest sources of NO_x emissions are:

  - On-road motor vehicles: These include cars, trucks, and buses that operate on public roadways.
  - Non-road equipment: This category encompasses machinery such as construction equipment, agricultural machinery, and other off-road vehicles.
- Therefore, on-road motor vehicles are identified as the largest source of NO_x emissions. **(Option (c) is correct)**

Sources: https://www3.epa.gov/ttncatc1/dir1/fnoxdoc.pdf

Q.31) Solution (d)

Explanation:

- The United States government debt is not backed by gold or any other tangible asset. Since 1971, the U.S. has operated under a fiat currency system, meaning the value of its currency and government debt is not tied to gold reserves. Instead, U.S. Treasury securities (bonds, bills, and notes) are backed by the "full faith and credit" of the U.S. government. This means that the U.S. government guarantees repayment of its debt through its ability to levy taxes, print money, and manage fiscal policies.
- Before 1971, the gold standard was in place, where the U.S. dollar was convertible to a fixed amount of gold. However, President Richard Nixon ended the convertibility of the U.S. dollar to gold in 1971, effectively making U.S. debt backed only by trust in the government and its financial system.
- The U.S. dollar remains the world's primary reserve currency, meaning global investors and central banks continue to buy U.S. Treasury bonds despite the lack of a gold backing, as the U.S. economy is considered stable and reliable. **(Statement 1 is incorrect)**
- The United States holds the largest official gold reserves in the world, with 8,133.5 metric tons of gold as of 2025. The U.S. gold reserves are primarily stored in locations such as Fort Knox (Kentucky), the U.S. Mint in Denver, and the Federal Reserve Bank of New York.
- While these gold reserves are substantial, they do not back U.S. government debt or the U.S. dollar. They serve more as a national asset rather than a direct guarantee for Treasury securities.The International Monetary Fund (IMF) and central banks worldwide still hold significant gold reserves, but most major economies operate on a fiat currency system similar to the U.S. **(Statement 2 is correct)**
- The U.S. Treasury debt is not backed by gold but by the trust in the U.S. government's ability to meet its obligations. However, the U.S. still holds the largest gold reserves in the world. Thus, Statement I is incorrect, but Statement II is correct.

Sources: https://fiscal.treasury.gov/debt-management/

Q.32) Solution (a)

Explanation:

- Open Market Operations (OMO) are conducted by the central bank (RBI in India) to regulate liquidity in the economy by buying or selling government securities. This not only affects money supply but also influences interest rates and subsequently the availability of credit in the banking system. **(Statement 1 is correct)**
- While OMO is a key monetary policy tool, its effectiveness depends on how much of the credit demand is met by the formal banking sector. In economies where a large portion of credit is supplied by non-banking financial institutions (NBFCs), informal lenders, or external borrowings, OMO has limited impact on inflation and liquidity. This is because liquidity injected or absorbed by the central bank does not fully translate into changes in credit availability across all sectors of the economy. **(Statement 2 is correct)**

Sources:
https://www.rbi.org.in/commonman/english/scripts/PressReleases.aspx?Id=3356#:~:text=On%20the%20basis%20of%20an,per%20cent%20with%20immediate%20effect.

Q.33) Solution (a)

Explanation:

- Tokenization refers to the process of replacing actual card details (such as the 16-digit number) with an alternate unique token, which is generated for each combination of card, device, and merchant.This means that even if a hacker breaches a merchant's system, they would not gain access to the actual card details, thereby enhancing transaction security.This system has been implemented across digital payments in India by Visa, Mastercard, RuPay, and other networks. **(Statement 1 is correct)**
- Under RBI's guidelines, merchants and payment processors are not allowed to store card details after tokenization. This helps in preventing fraud, identity theft, and data leaks.Only banks and authorized networks (such as Visa, Mastercard, and NPCI-RuPay) can store actual card details for the purpose of token generation. **(Statement 2 is correct)**
- Tokenization is not mandatory for all digital transactions.Customers can choose whether to tokenize their card details or not. If they do not opt for tokenization, they

must enter their full card details manually for every transaction.RBI has encouraged tokenization for security reasons, but it is not compulsory for all users. **(Statement 3 is incorrect)**

- Tokenization applies to both debit and credit cards, not just credit cards.The RBI's Card-on-File Tokenization (CoFT) framework allows both debit and credit card users to tokenize their card details for safer transactions. **(Statement 4 is incorrect)**

Sources: https://www.rbi.org.in/commonman/english/scripts/FAQs.aspx?Id=2917

Q.34) Solution (b)

Explanation:

- The term "Nirgrantha" was used to refer to Jain monks. It means "free from all bonds", signifying renunciation of worldly attachments.The term was frequently used in Buddhist and Jain texts to describe followers of Jainism.Mahavira, the 24th Tirthankara, was often referred to as NirgranthaJnatiputra in Buddhist literature. **(Statement 1 is correct)**
- Kevalin refers to one who has attained Kevala Jnana (supreme knowledge or omniscience).In Jainism, Kevala Jnana is the highest form of knowledge attained by Tirthankaras after achieving spiritual liberation.Mahavira attained Kevala Jnana at the age of 42 after years of ascetic practice. **(Statement 2 is correct)**
- Ajivika was a separate ascetic sect that coexisted with Jainism and Buddhism but was not part of Jainism.TheAjivikas followed a doctrine of strict determinism (fatalism), believing that everything was preordained and beyond human control.
- The sect was founded by MakkhaliGosala, who was initially a follower of Mahavira but later parted ways.Ajivikas were rivals of Jainism and Buddhism, and their philosophy differed significantly. **(Statement 3 is incorrect)**

Sources: https://ncert.nic.in/textbook.php?lehs1=0-4

Q.35) Solution (b)

Explanation:

- The Hathigumpha inscription is located in Odisha, not Madhya Pradesh.It is an inscription of Kharavela, the ruler of the Mahameghavahana dynasty, inscribed in Prakrit language.The inscription describes his military conquests, infrastructure projects, and patronage of Jainism. **(Pair 1 is incorrect)**

- The Girnar Rock Edicts, located in Gujarat, were issued by Ashoka.They contain one of the earliest references to Dhamma (moral governance) and Ashoka's efforts to spread Buddhism.Later, Rudradaman I (a Shaka ruler) also inscribed his achievements on the same rock. **(Pair 2 is correct)**
- The Aihole inscription (Karnataka) was composed by Ravikirti, the court poet of the Chalukya king PulakesinII.It commemorates Pulakesin II's victory over Harshavardhana.It also describes the Chalukyan lineage and their achievements, making it an essential source for South Indian history. **(Pair 3 is correct)**
- The Maski inscription is located in Karnataka, not Maharashtra.It is significant because it is the first known inscription where Ashoka explicitly mentions his name (Devanampriya Ashoka).Most of Ashoka's edicts simply refer to him as "Devanampriya" (Beloved of the Gods) or "Piyadasi" (of pleasant appearance). **(Pair 4 is incorrect)**

Sources: https://ncert.nic.in/textbook.php?lehs1=0-4

Q.36) Solution (d)

Explanation:

- Nauroz (Nowruz) is the Persian New Year celebrated as an important cultural and seasonal festival in Iran, Central Asia, and parts of South Asia.The festival symbolizes renewal, prosperity, and the coming of spring.It was introduced into India during the Delhi Sultanate period.
- Alauddin Khilji was a military-focused ruler and did not patronize Nauroz.He was known for his strict control over the nobility, price regulations, and expansionist policies but not for Persian customs.
- Though Firuz Shah Tughlaq was a patron of Persian culture and architecture, there is no historical evidence that he actively promoted Nauroz.He is better known for his irrigation projects, religious policies, and building new towns like Firozabad.
- Sher Shah Suri was a pragmatic ruler who focused on administrative and military reforms rather than courtly traditions.He is known for his currency reforms, Grand Trunk Road construction, and an efficient revenue system.
- Ghiyasuddin Balban (1266–1287 CE), a ruler of the Slave Dynasty, introduced Nauroz in his court.Balban adopted Persian customs, court etiquette, and the theory of divine kingship (Zill-e-Ilahi) to strengthen his authority.
- He believed in strict monarchical discipline and wanted to establish an elite Persian-style court culture in Delhi.Nauroz was celebrated grandly in his court to emphasize the superiority of the Sultan and impress the nobles. **(Option (d) is correct)**

Sources: https://ncert.nic.in/textbook.php?lehs2=0-5

Q.37) Solution (a)

Explanation:

- The Mahalwari system was introduced by Holt Mackenzie in 1822 and later modified under Lord William Bentinck in 1833.Under this system, the settlement was made with the village community or the head of the village (Mahal), rather than individual cultivators or zamindars.The village headman or landlord was made responsible for collecting and paying the revenue on behalf of the entire village, ensuring collective responsibility. **(Statement 1 is correct)**
- Unlike the Permanent Settlement, the Mahalwari system did not fix the revenue demand permanently.The revenue demand was revised periodically (usually every 20-30 years) based on agricultural productivity and other factors.This made it different from the Zamindari system (Permanent Settlement), where the revenue was fixed for perpetuity. **(Statement 2 is incorrect)**

Sources: https://ncert.nic.in/textbook.php?lehs3=0-4

Q.38) Solution (a)

Explanation:

- The Rig Veda is the earliest known Indo-Aryan text, composed around 1500 BCE – 1000 BCE.It is considered the oldest religious and philosophical text of Hinduism and consists of hymns dedicated to various deities.
- Sangam literature belongs to the early Tamil literary tradition and is dated roughly between 300 BCE and 300 CE, making it much later than the Rig Veda.Thus, Rig Vedic literature predates Sangam literature by over a thousand years. **(Statement 1 is correct)**
- Sangam literature was composed in Tamil, not Sanskrit.The Sangam texts do not contain hymns similar to the Vedic Samhitas. Instead, they include secular and heroic poetry, detailing the political, social, and economic life of the Tamil kingdoms.
- The earliest Sangam texts include works like Tolkappiyam, Ettuthokai (Eight Anthologies), and Pathuppattu (Ten Idylls).The Vedic Samhitas, on the other hand, contain religious hymns dedicated to gods like Indra, Agni, and Varuna and are primarily concerned with ritualistic practices. **(Statement 2 is incorrect)**

Sources: A History of Ancient and Early Medieval India by Upinder Singh

Q.39) Solution (a)

Explanation:

- India has been a member of the World Trade Organization (WTO) since its inception in 1995 and enjoys the Special and Differential Treatment (SDT) provisions under WTO agreements.SDT provisions allow developing countries like India to receive longer timeframes for implementing trade commitments, greater flexibility in tariff reduction schedules, and exemptions for food security programs.Under SDT, India is permitted to provide domestic support to its farmers, particularly for public stockholding programs related to food security. **(Statement 1 is correct)**
- The Agreement on Agriculture (AoA) under WTO does not ban the provision of Minimum Support Price (MSP).However, it limits the extent to which governments can provide subsidies to their agricultural sector.
- Subsidies are categorized as "Green Box," "Amber Box," and "Blue Box" measures. MSP falls under Amber Box subsidies, which must be gradually reduced if they exceed the de minimis limit (10% of the total value of agricultural production for developing countries like India).
- India has been in disputes with other WTO members regarding its MSP program, especially in relation to wheat and rice procurement under the Public Distribution System (PDS). **(Statement 2 is incorrect)**

Sources: https://www.wto.org/english/docs_e/legal_e/14-ag_01_e.htm

Q.40) Solution (b)

Explanation:

- The Kumbh Mela, a mass Hindu pilgrimage, was added to UNESCO's list in 2017, much later than Vedic chanting.It is one of the largest religious gatherings in the world, held in Haridwar, Prayagraj, Nashik, and Ujjain at different intervals.
- Vedic chanting was India's first-ever inclusion in UNESCO's Representative List of the Intangible Cultural Heritage of Humanity in 2008.The Vedas, composed in Sanskrit between 1500 BCE and 500 BCE, are one of the world's oldest religious texts.The tradition of reciting Vedic hymns orally has been maintained for thousands of years, ensuring its continuation through guru-shishya parampara (teacher-student tradition). **(Option (b) is correct)**

- Mudiyettu, a ritualistic dance-drama from Kerala, was inscribed in 2010.It is a traditional performance art depicting the victory of Goddess Kali over the demon Darika.
- Chhau dance, a martial-arts-based folk dance performed in Odisha, Jharkhand, and West Bengal, was included in UNESCO's list in 2010.

Sources: https://ich.unesco.org/en/lists

Q.41) Solution (a)

Explanation:

- The Levant region, encompassing countries like Syria, Lebanon, Jordan, and Israel, has historically been a hotspot for political upheavals. In recent years, Syria, in particular, has witnessed significant turmoil, culminating in the fall of President Bashar al-Assad's regime in December 2024. This event has had profound implications for the region's political landscape, leading to shifts in power dynamics and governance structures. **(Statement 1 is correct)**
- The ousting of President Bashar al-Assad has ushered in a complex transitional period for Syria. The power vacuum left by his departure has resulted in internal conflicts among various factions vying for control. Additionally, regional powers have intervened, each pursuing their strategic interests, further complicating the situation. For instance, Israel has expanded its military presence in the Golan Heights, citing security concerns. **(Statement 2 is correct)**
- Therefore, both statements are correct, and Statement-II provides a specific example that explains the broader assertion made in Statement-I.

Sources: https://www.reuters.com/world/middle-east/israel-says-it-will-let-syrian-druze-workers-cross-into-golan-heights-2025-03-09/

Q.42) Solution (b)

Explanation:

- In February 2025, India awarded a contract to Cargill, a US-based company, to supply 405,000 tonnes of wheat to address domestic shortages and control rising prices.The decision to import wheat was influenced by declining domestic wheat production and depleted government reserves, which put pressure on food inflation.This marks the

first large-scale wheat import by India in recent years as the government seeks to ensure food security. **(Statement 1 is correct)**

- Under India's Food Safety and Standards Act, 2006, the import of Genetically Modified (GM) food requires prior approval from the Food Safety and Standards Authority of India (FSSAI).This applies to all GM food products, including grains, oilseeds, and processed foods.The government has strict regulations against unauthorized GM crop imports to protect domestic agriculture and public health. **(Statement 2 is correct)**
- While both statements are correct, Statement-II does not directly explain Statement-I because the wheat imported by India is not Genetically Modified (GM).India's wheat imports were driven by domestic shortages, not GM food regulations.

Sources:https://www.indianembassyusa.gov.in/ArchivesDetails?id=690#:~:text=Cargill%20based%20in%20Minnetonka%2C%20Minnesota,control%20rising%20domestic%20wheat%20prices.

Q.43) Solution (b)

Explanation:

- Article 93 of the Indian Constitution provides for the election of the Speaker and Deputy Speaker of the Lok Sabha from among its members.The Deputy Speaker is elected after the election of the Speaker and presides over the House in the absence of the Speaker.
- The Deputy Speaker is elected by a simple majority of members present and voting in the Lok Sabha.While it is customary for the Deputy Speaker to be chosen from the opposition party or non-ruling alliance, this is not a constitutional requirement. **(Statement 1 is correct)**
- The term of the Deputy Speaker is NOT fixed for five years.The Deputy Speaker holds office until the dissolution of the Lok Sabha, meaning their tenure depends on the life of the House.The Deputy Speaker continues in office even after the dissolution of the Lok Sabha until a new Deputy Speaker is elected in the next Lok Sabha.The Deputy Speaker can vacate office earlier in three ways:
    1. Resignation by submitting it to the Speaker.
    2. Ceasing to be a member of the Lok Sabha.
    3. Removal by a resolution passed by a majority of all the then members of the Lok Sabha. **(Statement 2 is incorrect)**
- The Deputy Speaker can be removed from office by a resolution passed by a majority of all the then members of the Lok Sabha.This majority is an "effective majority," meaning more than 50% of the total strength of the House, excluding vacant seats.

- The resolution for removal can be moved only with a 14-day prior notice.The Deputy Speaker does not preside over the House when the resolution for their removal is being discussed (Article 96). **(Statement 3 is correct)**

Sources: https://mpa.gov.in/about-us/functions

Q.44) Solution (b)

Explanation:

- When the Lok Sabha is dissolved, all bills pending in the Lok Sabha lapse. This includes bills that have been introduced and are under consideration but have not been passed by the House. **(Statement 1 is correct)**
- If a bill has been passed by the Lok Sabha but is still pending in the Rajya Sabha at the time of dissolution of the Lok Sabha, it lapses. This is because the originating House (Lok Sabha) has been dissolved, and the bill cannot proceed further in the legislative process. **(Statement 2 is correct)**
- If the President has notified a joint sitting for a bill due to a deadlock between the two Houses, the dissolution of the Lok Sabha does not lead to the lapse of the bill. The joint sitting can still proceed as scheduled. **(Statement 3 is incorrect)**

Sources: https://sansad.in/uploads/mfm_G8_04fa398e83.pdf?updated_at=2022-11-29T06:58:05.044Z

Q.45) Solution (c)

Explanation:

- While the Speaker has certain powers under the rules, amendments to the Rules of Procedure and Conduct of Business in Lok Sabha are typically made based on the recommendations of the Rules Committee and require the approval of the House.**(Statement 1 is incorrect)**
- The Rules were initially adopted in 1952 and have undergone several amendments to address evolving parliamentary practices and requirements. **(Statement 2 is correct)**
- During the Eighth Lok Sabha, a comprehensive review of the Rules was undertaken, leading to significant amendments to align the rules with contemporary parliamentary practices.**(Statement 3 is correct)**

Sources: https://mpa.gov.in/sites/default/files/Manual2018_0.pdf

Q.46) Solution (c)

Explanation:

- The European Union adopted the Nature Restoration Law in June 2024, aiming to restore at least 20% of degraded ecosystems by 2030. This law is a core element of the European Green Deal and the EU Biodiversity Strategy, making the targets set therein for the "restoration of nature" binding. **(Statement 1 is correct)**
- The Nature Restoration Law mandates that EU member states restore at least 30% of habitats in poor condition by 2030, 60% by 2040, and 90% by 2050. **(Statement 2 is incorrect)**

Sources: https://environment.ec.europa.eu/topics/nature-and-biodiversity/nature-restoration-law_en

Q.47) Solution (b)

Explanation:

- The 2024 United Nations Climate Change Conference, known as COP29, was held from November 11 to 22, 2024, in Baku, Azerbaijan. This conference brought together global leaders and negotiators to discuss and advance international climate action. **(Statement 1 is correct)**
- During COP29, countries reached an agreement to establish rules for a global carbon credit trading market. This initiative aims to channel funds into projects that combat global warming by allowing countries and companies to trade carbon credits generated from activities like reforestation and renewable energy projects. The agreement seeks to ensure the credibility of the system by mandating genuine greenhouse gas emission reductions. **(Statement 2 is correct)**
- While both statements are correct, Statement-II does not explain Statement-I. Statement-I pertains to the location and occurrence of COP29, whereas Statement-II addresses one of the significant outcomes of the conference. Therefore, option (b) is correct.

Sources: https://www.reuters.com/sustainability/sustainable-finance-reporting/cop29-agrees-deal-kick-start-global-carbon-credit-trading-2024-11-23/

Q.48) Solution (d)

Explanation:

- The Unique Land Parcel Identification Number (ULPIN) assigns a 14-digit alphanumeric unique ID to each land parcel based on the geo-coordinates of its vertices. This initiative aims to uniquely identify every surveyed land parcel in India, enhancing the precision and reliability of land records. **(Statement 1 is correct)**
- The ULPIN system adheres to international standards, including those established by the Electronic Commerce Code Management Association (ECCMA) and the Open Geospatial Consortium (OGC). Compliance with these standards ensures interoperability and uniformity in land record management. **(Statement 2 is correct)**
- ULPIN is being implemented nationwide across all states and union territories as a component of the Digital India Land Records Modernization Programme (DILRMP). This widespread implementation underscores the government's commitment to modernizing land records and minimizing disputes related to land ownership. **(Statement 3 is correct)**

Sources: https://pib.gov.in/PressReleasePage.aspx?PRID=1989671

Q.49) Solution (a)

Explanation:

- The Pradhan Mantri Matru Vandana Yojana (PMMVY) provides a cash incentive of ₹5,000 to pregnant and lactating mothers for their first living child. This amount is disbursed in three installments:
    - First installment (₹1,000): Upon early registration of pregnancy at an Anganwadi Centre (AWC) or approved health facility within 150 days from the Last Menstrual Period (LMP) date.
    - Second installment (₹2,000): After at least one antenatal check-up (ANC) is conducted after six months of pregnancy.
    - Third installment (₹2,000): Post childbirth registration and the child receiving the first cycle of immunizations, including BCG, OPV, DPT, and Hepatitis-B.
- Additionally, beneficiaries are entitled to receive cash incentives under the Janani Suraksha Yojana (JSY) for institutional delivery, ensuring that, on average, a woman receives ₹6,000. **(Statement 1 is correct)**
- Under PMMVY, a cash incentive of ₹6,000 is provided for the second child only if the second child is a girl. This provision aims to promote positive behavioural change

towards the girl child and improve the Sex Ratio at Birth by discouraging female feticide. **(Statement 2 is incorrect)**

Sources: https://wcdhry.gov.in/schemes-for-women/pradhan-mantri-matru-vandhana-yojna/

Q.50) Solution (d)

Explanation:

- The Atal Pension Yojana (APY) is open to all citizens of India aged between 18 and 40 years. This age criterion ensures that subscribers have a minimum contribution period of 20 years before they start receiving the pension at 60 years of age. **(Statement 1 is correct)**
- Under APY, subscribers can choose a fixed monthly pension of ₹1,000, ₹2,000, ₹3,000, ₹4,000, or ₹5,000, which they will start receiving after attaining the age of 60 years. The contribution amount varies based on the chosen pension amount and the age at which the subscriber joins the scheme. **(Statement 2 is correct)**
- The contributions made under APY are invested as per the investment guidelines prescribed by the Pension Fund Regulatory and Development Authority (PFRDA). This ensures that the funds are managed prudently to provide the guaranteed pension benefits. **(Statement 3 is correct)**
- Effective from October 1, 2022, any citizen who is or has been an income-tax payer is not eligible to join APY. This measure aims to target the benefits of the scheme towards individuals in the unorganized sector and those who are not covered by any statutory social security schemes. **(Statement 4 is correct)**

Sources: https://jansuraksha.gov.in/Files/APY/ENGLISH/APY.pdf

Q.51) Solution (a)

Explanation:

- The Earth's atmosphere is heated more by terrestrial radiation than by incoming solar radiation. While incoming solar radiation (insolation) passes through the atmosphere and warms the Earth's surface, the surface then emits this energy back as longwave (infrared) radiation. The atmosphere absorbs this longwave radiation more effectively, leading to its warming. **(Statement 1 is correct)**

- Greenhouse gases, including carbon dioxide and water vapor, are proficient at absorbing longwave radiation emitted by the Earth's surface. This absorbed energy is then re-emitted in all directions, warming both the atmosphere and the surface—a process known as the greenhouse effect. **(Statement 2 is correct)**
- The atmosphere's greater absorption of terrestrial radiation is due to the presence of greenhouse gases that effectively absorb and re-emit longwave radiation. This mechanism is fundamental to the warming of the atmosphere.

Sources: https://science.nasa.gov/ems/13_radiationbudget/

Q.52) Solution (d)

Explanation:

- The troposphere, not the stratosphere, is the atmospheric layer closest to Earth's surface and is where most weather phenomena occur. The troposphere extends from the Earth's surface up to about 8 km at the poles and approximately 18 km at the equator. **(Statement 1 is incorrect)**
- The mesosphere is characterized by decreasing temperatures with altitude. In contrast, the stratosphere, which lies below the mesosphere, experiences increasing temperatures with altitude due to the absorption of ultraviolet radiation by the ozone layer.
- **CO_2 emission in mesosphere cause radiative cooling, unlike CO_2 in troposphere where it acts as green house gas.(Statement 2 is correct)**

Sources: https://www.noaa.gov/jetstream/atmosphere/layers-of-atmosphere

Q.53) Solution (d)

Explanation:

- A volcanic eruption is a geological event that can cause multiple hazards, both locally and globally. These hazards include direct consequences such as lava flows and pyroclastic debris, as well as indirect effects like climatic changes.

1. **Volcanic Lightning:** During an eruption, charged particles in the ash plume collide, generating static electricity, which leads to volcanic lightning.This phenomenon has been observed in eruptions such as Mount Sakurajima (Japan) and Eyjafjallajökull (Iceland).

2. **Lava Bombs:** Also known as volcanic bombs, these are large fragments of molten rock ejected during an eruption.These fragments solidify before hitting the ground and can cause destruction within a short radius of the eruption site.
3. **Tsunamis:** While tsunamis are primarily caused by underwater earthquakes, volcanic eruptions can also generate them.Submarine eruptions, volcanic landslides, and caldera collapses can displace large volumes of water, leading to tsunamis.**Example**: The 1883 Krakatoa eruption triggered a tsunami that killed over 36,000 people.
4. **Acid Rain:** Volcanic eruptions release large amounts of sulfur dioxide (SO_2) into the atmosphere.This reacts with water vapor to form sulfuric acid (H_2SO_4), which falls as acid rain.**Example**: The Mount Pinatubo eruption (1991) significantly increased acid rain events in Southeast Asia. **(Option (d) is correct)**

Sources: https://www.noaa.gov/jetstream/tsunamis/tsunami-generation-volcanoes

Q.54) Solution (a)

Explanation:

- In January, isotherms—lines connecting points of equal temperature—exhibit noticeable deviations due to the differential heating of land and water. Over oceans, the temperature remains relatively moderate because water has a high specific heat capacity, meaning it heats and cools more slowly than land. This causes isotherms to bend northward over oceans.
- Conversely, continents experience more extreme cooling during winter months, leading isotherms to bend southward over landmasses. This pattern is particularly evident in the North Atlantic region, where isotherms bend northward over the ocean and southward over Europe. **(Statement 1 is correct)**
- The Gulf Stream and North Atlantic Drift are warm ocean currents, not cold ones. These currents transport warm water from lower latitudes toward higher latitudes, warming the North Atlantic Ocean. This warming effect causes isotherms to bend northward in these regions. Therefore, it is the presence of warm ocean currents, not cold ones, that leads to this northward bending of isotherms.**(Statement 2 is incorrect)**

Sources: https://science.nasa.gov/earth/earth-atmosphere/slowdown-of-the-motion-of-the-ocean/

Q.55) Solution (c)

Explanation:

- Brazil and Vietnam are the top two coffee-producing countries globally, together accounting for more than half of the world's coffee production.
- **Brazil**: Brazil is the world's largest coffee producer, contributing approximately 38% of the global coffee supply. In 2024, Brazil produced around 3,984,000 tonnes of coffee.
- **Vietnam**: Vietnam is the second-largest coffee producer globally, responsible for about 17% of the world's coffee production. In 2024, Vietnam produced approximately 1,806,000 tonnes of coffee. **(Option (c) is correct)**

Sources: https://www.fao.org/faostat/en/#data/QCL

Q.56) Solution (c)

Explanation:

- The east-flowing rivers of Peninsular India drain into the Bay of Bengal, and their geographical order from north to south is as follows:

1. Subarnarekha River:
    - Origin: Chhota Nagpur Plateau (Jharkhand)
    - Course: Flows through Odisha and Jharkhand before joining the Bay of Bengal.
    - Notable Feature: It is a relatively small river compared to the others in this list.
2. Mahanadi River:
    - Origin: Sihawa hills, Chhattisgarh
    - Course: Flows through Chhattisgarh and Odisha before draining into the Bay of Bengal.
    - Notable Feature: Forms a delta, one of the largest in India.
3. Godavari River:
    - Origin: Trimbak Plateau, Maharashtra
    - Course: Flows through Maharashtra, Telangana, Andhra Pradesh before entering the Bay of Bengal.
    - Notable Feature: It is the second-longest river in India after the Ganga and is often called the "Dakshin Ganga."
4. Krishna River:
    - Origin: Mahabaleshwar, Maharashtra
    - Course: Flows through Maharashtra, Karnataka, Telangana, and Andhra Pradesh before draining into the Bay of Bengal.

    - Notable Feature: It has significant tributaries like Tungabhadra and Bhima rivers.
- Thus, the correct north-to-south sequence of these rivers is Subarnarekha – Mahanadi – Godavari – Krishna. **(Option (c) is correct)**

Sources: https://www.isro.gov.in/River_Basin_Atlas.html

Q.57) Solution (b)

Explanation:

- Soil erosion is primarily caused by natural forces such as wind and water.Running water leads to sheet erosion, rill erosion, and gully erosion, while wind causes deflation and abrasion, particularly in arid regions.This process removes the top layer of fertile soil, affecting agricultural productivity. **(Statement 1 is correct)**
- Deforestation and overgrazing are human-induced activities that accelerate soil erosion.Tree roots help bind the soil, preventing it from being washed or blown away. Removing vegetation (due to deforestation) makes the soil more vulnerable to erosion.Similarly, overgrazing by livestock removes protective grass cover, leading to desertification in extreme cases. **(Statement 2 is correct)**
- While soil erosion can sometimes be controlled and reversed through afforestation, contour plowing, and terracing, in extreme cases, it leads to irreversible damage such as desertification or loss of arable land.For example, areas experiencing severe gully erosion may lose soil to such an extent that recovery is impractical. **(Statement 3 is correct)**

Sources: https://www.fao.org/soils-portal/soil-degradation-restoration/en/

Q.58) Solution (c)

Explanation:

- The Black Sea is a large inland sea connected to the Mediterranean through the Bosporus Strait, Sea of Marmara, and the Dardanelles Strait. It is bordered by six countries: Ukraine, Romania, Bulgaria, Turkey, Georgia, and Russia.
- Ukraine has a significant coastline along the northwestern Black Sea.Major Ukrainian port cities on the Black Sea include Odesa, Mykolaiv, and Sevastopol (Crimea). **(Statement 1 is correct)**

- Romania has a coastline along the western Black Sea, with Constanța being its largest port. **(Statement 2 is correct)**
- Georgia borders the eastern Black Sea, with ports like Batumi and Poti serving as major trade hubs. **(Statement 3 is correct)**
- Hungary is a landlocked country in Central Europe and does not have any coastline along the Black Sea. **(Statement 4 is incorrect)**

Sources: https://www.un.org/geospatial/

Q.59) Solution (a)

Explanation:

- Jim Corbett National Park, the oldest national park in India, is located inUttarakhand.The Ramganga River flows through this park, supporting its rich biodiversity. **(Pair 1 is correct)**
- Kaziranga National Park, a UNESCO World Heritage Site, is in Assam and is famous for the one-horned rhinoceros.The Brahmaputra River, not Barak, flows through this park.The Barak River is located in southern Assam and does not pass through Kaziranga. **(Pair 2 is incorrect)**
- The Sundarbans, a mangrove forest ecosystem, is located in West Bengal and Bangladesh.The major river system in the Sundarbans includes the Ganges, Brahmaputra, and Meghna.The Hooghly River does not directly flow through Sundarbans. Instead, the distributaries of the Ganga River, such as the Matla and Raimangal, dominate this region. **(Pair 3 is incorrect)**

Sources: https://moef.gov.in/wildlife

Q.60) Solution (c)

Explanation:

- The Atacama Desert is not in North America but in South America (Chile and Peru).It is one of the driest places on Earth, with very little rainfall.It is classified as a cold desert because of the cold ocean currents (Humboldt Current) that limit precipitation. **(Pair 1 is incorrect)**
- The Kalahari Desert is in southern Africa, covering Botswana, Namibia, and South Africa.It is classified as a hot desert due to its high temperatures and low precipitation. **(Pair 2 is correct)**

- The Gobi Desert is located in China and Mongolia.It is classified as a cold desert because it experiences extremely cold winters with temperatures dropping below -40°C. **(Pair 3 is correct)**
- The Great Victoria Desert is the largest desert in Australia.It is a hot desert, characterized by arid conditions and high temperatures. **(Pair 4 is correct)**

Sources: https://www.un.org/en/observances/environment-day

Q.61) Solution (d)

Explanation:

1. **Axolotl (Ambystoma mexicanum):**The **axolotl** is a **neotenic amphibian**, meaning it retains its larval features throughout its life. It is native to **Mexico**, where it inhabits freshwater lakes and canals. Unlike most amphibians, it does **not undergo metamorphosis** and remains aquatic with external gills.
2. **Olm (Proteus anguinus):**The **olm** is a blind, cave-dwelling amphibian found in **karst cave systems** of **Slovenia, Italy, and the Balkans**.It is also neotenic, meaning it retains larval characteristics such as external gills throughout life.It has adapted to **dark, subterranean habitats**, relying on highly developed senses of smell and electroreception.
3. **Mudpuppy (Necturus maculosus):**The **mudpuppy** is a fully aquatic salamander found in **North America**.Like the axolotl, it retains **external gills** throughout its life.It is mostly nocturnal and inhabits **freshwater lakes and rivers**. **(Option (d) is correct)**

Sources: https://naturalhistory.si.edu/research/vertebrate-zoology/amphibians-reptiles

Q.62) Solution (a)

Explanation:

- Many wet wipes, commonly used for personal hygiene and cleaning, are non-biodegradable and contribute to environmental pollution.When disposed of improperly, they clog sewage systems, pollute water bodies, and harm marine life.The UK government, for instance, has been considering a ban on plastic-based wet wipes due to their role in "fatbergs" that block sewage pipes. **(Statement 1 is correct)**
- Many commercial wet wipes contain plastic-based fibers such as polypropylene and polyester.Unlike natural materials, these fibers do not break down easily and persist in the environment, contributing to microplastic pollution.Because they contain plastic,

they do not disintegrate like toilet paper and lead to serious environmental concerns. **(Statement 2 is correct)**

Sources: https://www.gov.uk/government/news/uk-wide-ban-on-wet-wipes-containing-plastic-to-be-put-into-law

Q.63) Solution (a)

Explanation:

- The Snow Leopard (Panthera uncia) is found in the high-altitude Himalayas of India, particularly in Ladakh, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.India is home to a significant population of these elusive big cats, and conservation efforts such as the Project Snow Leopard have been launched. **(Pair 1 is correct)**
- The Kakapo (Strigopshabroptilus) is not found in Australia, but is endemic to New Zealand.It is a large, flightless, nocturnal parrot and one of the world's rarest birds, critically endangered due to habitat destruction and introduced predators. **(Pair 2 is incorrect)**
- The Okapi (Okapia johnstoni) is found only in the rainforests of the Democratic Republic of Congo (DRC), Central Africa.It is closely related to the giraffe and is not naturally found in South Africa. **(Pair 3 is incorrect)**

Sources:https://www.wwfindia.org/about_wwf/priority_species/snow_leopard/about_snow_leopard/#:~:text=In%20the%20IUCN%2DWorld%20Conservation,leopard%20is%20listed%20as%20Vulnerable.

Q.64) Solution (b)

Explanation:

- The Global Handwashing Partnership (GHP) is not a United Nations agency but a coalition of organizations, including non-profits, governments, and private sector entities, working to promote handwashing as a key public health intervention.It was initially known as the Global Public-Private Partnership for Handwashing (PPPHW) before rebranding as the Global Handwashing Partnership. **(Statement 1 is incorrect)**
- Global Handwashing Day (October 15) was established by the Global Handwashing Partnership in 2008 and later recognized by the United Nations.The initiative aims to

increase awareness about handwashing with soap as an effective and affordable way to prevent diseases, particularly among children. **(Statement 2 is correct)**

- The GHP does not provide direct funding for handwashing infrastructure but rather focuses on advocacy, research, and policy guidance to support hygiene initiatives globally.Instead of funding, the organization works with governments, schools, and health organizations to promote better hand hygiene through education and behavior change strategies. **(Statement 3 is incorrect)**

Sources: https://globalhandwashing.org/about-us/

Q.65) Solution (c)

Explanation:

- Tigers are solitary in nature, unlike lions, which live and hunt in prides.While leopards and jaguars are also solitary, they occasionally scavenge or interact with other individuals.Tigers, however, rely solely on solitary hunting and mark their large territories to avoid encounters with other tigers. **(Statement 1 is correct)**
- Jaguars (Panthera onca) are native to the Americas, primarily found in South and Central America, particularly in the Amazon rainforest.Leopards (Panthera pardus), not jaguars, are found in Africa and parts of Asia. **(Statement 2 is incorrect)**
- Unlike lions, tigers, leopards, and jaguars, snow leopards (Panthera uncia) cannot roar.This is due to differences in their hyoid bone structure, which prevents them from producing the deep, reverberating sounds of other big cats.Instead, snow leopards make chuffing, mewing, and yowling sounds to communicate. **(Statement 3 is correct)**

Sources: https://www.catsg.org/living-species-jaguar

Q.66) Solution (a)

Explanation:

- The AgriFood Innovation Alliance is a global initiative focused on accelerating the transition to sustainable food production and consumption.
- It aims to promote climate-friendly agriculture, reduce food waste, and enhance farmer incomes by leveraging technology, policy reforms, and collaborative efforts among stakeholders.

- The platform brings together governments, private sector organizations, and research institutions to develop and scale innovative solutions for food security and sustainable agriculture. **(Option (a) is correct)**

Sources: https://agriculture-food-sustainability.uq.edu.au/research/groups/uq-agri-food-innovation-alliance

Q.67) Solution (d)

Explanation:

- Distributed Energy Resources (DERs) are small-scale power generation or storage technologies that are located close to the point of use, often on the consumer side of the electricity meter. These resources help to improve energy reliability, efficiency, and sustainability.
- A microgrid is a localized energy system that can operate independently or connect to the main power grid.It integrates solar panels, batteries, and generators, making it a DER that enhances energy resilience. **(Statement 1 is correct)**
- Small-scale wind turbines (both onshore and offshore) can be installed near homes, businesses, or communities, making them DERs.These systems can generate electricity independently and reduce dependence on centralized power grids. **(Statement 2 is correct)**
- Geothermal heat pumps use the Earth's stable underground temperature to provide heating and cooling for homes and businesses.Since they are installed locally at the point of consumption, they are classified as DERs. **(Statement 3 is correct)**
- Fuel cells generate electricity through electrochemical reactions using hydrogen, making them a clean energy source.Small-scale fuel cell systems are used in homes, businesses, and transportation, qualifying them as DERs. **(Statement 4 is correct)**

Sources: https://www.energy.gov/topics/distributed-energy-resources

Q.68) Solution (b)

Explanation:

- Sandalwood (Santalum album) is a semi-parasitic plant but does not rely on a single bird species for seed dispersal.It obtains nutrients from host tree roots but does not form an exclusive relationship with any bird for propagation.

- Parasitic mistletoe plants have a unique coevolutionary relationship with certain bird species, such as the mistle thrush (Turdus viscivorus).The mistle thrush exclusively feeds on the berries of mistletoe and disperses its seeds by excreting them onto tree branches where they can germinate.
- The sticky seeds of mistletoe need to be attached to host tree branches, and without the mistle thrush or other specialized birds, the mistletoe plant would struggle to propagate.This is an example of obligate mutualism, where both the plant and the bird depend on each other for survival. **(Option (b) is correct)**
- Sal trees (Shorea robusta) reproduce mainly through wind dispersal of seeds and do not have a specific dependency on a bird species.
- Neem (Azadirachta indica) trees produce seeds that are mainly dispersed by mammals and wind, and do not require an exclusive bird disperser.

Sources: https://education.nationalgeographic.org/resource/plant-and-animal-reproduction/5th-grade/

Q.69) Solution (c)

Explanation:

- **Mounjaro** (tirzepatide), **Ozempic**, and **Wegovy** (both semaglutide) are medications that have gained attention for their effectiveness in managing **obesity and weight loss**. These drugs function as **GLP-1 receptor agonists**, which help regulate appetite and food intake, leading to significant weight reduction in individuals with obesity or overweight conditions.
- **Mounjaro** is approved for the treatment of type 2 diabetes and has shown substantial weight loss benefits. **Wegovy** is specifically approved for chronic weight management in adults with obesity or overweight conditions. **Ozempic**, while primarily approved for type 2 diabetes, is often used off-label for weight loss due to its similar mechanism of action.
- These medications are not designed for enhancing memory, treating neurodegenerative diseases, cancer, or tuberculosis.

Sources: https://www.bbc.com/news/articles/cy75dk8kjr1o

Q.70) Solution (b)

Explanation:

- Teak is native to India, Myanmar, Thailand, and Laos.It is one of the most valuable timber trees found in moist deciduous forests of central and southern India.States where teak is found: Madhya Pradesh, Maharashtra, Tamil Nadu, Kerala, and Karnataka. **(Statement 1 is correct)**
- Rubber trees are native to the Amazon Rainforest in South America.They were introduced to India by the British in the early 20th century for commercial plantation.Today, Kerala is the largest producer of natural rubber in India. **(Statement 2 is incorrect)**
- Sandalwood trees are native to southern India.Karnataka and Tamil Nadu are the major sandalwood-producing states.The tree is highly valued for its fragrant heartwood used in perfumes, cosmetics, and religious rituals. **(Statement 3 is correct)**

Sources: https://www.fao.org/forestry/en

Q.71) Solution (a)

Explanation:

- Noida International Airport (also known as Jewar Airport) is being developed as a Greenfield airport in Uttar Pradesh.It is planned to reduce congestion at Delhi's Indira Gandhi International Airport and enhance air connectivity in North India. **(Statement 1 is correct)**
- Manohar International Airport (Mopa Airport) in Goa is a Greenfield airport developed to accommodate growing air traffic in the state.Unlike Dabolim Airport, which is a naval airbase, Mopa is fully civilian and built from scratch. **(Statement 2 is correct)**
- Chennai International Airport is one of India's busiest airports, but it is not a Greenfield project.The airport is undergoing major modernization and expansion, but since it is built over an existing site, it is classified as a Brownfield project rather than a Greenfield project. **(Statement 3 is incorrect)**

Sources: http://civilaviation.gov.in/node/3614

Q.72) Solution (d)

Explanation:

- Ozone (O_3) is mainly found in the stratosphere, not the troposphere.The ozone layer, located 15-35 km above Earth's surface, plays a crucial role in absorbing harmful UV radiation from the Sun.While tropospheric ozone does exist, it is mostly a pollutant and contributes to smog rather than UV absorption. **(Statement 1 is incorrect)**
- The highest concentration of ozone is found in the tropical stratosphere due to higher solar radiation.However, ozone accumulates over the poles due to atmospheric circulation, but this does not mean the highest concentration is always there.Moreover, the Antarctic Ozone Hole, caused by CFC emissions, has led to significant ozone depletion over the South Pole. **(Statement 2 is incorrect)**

Sources:https://science.nasa.gov/mission/aura/ozone/#:~:text=Ozone%20protects%20life%20on%20Earth,of%20stratospheric%20ozone%20over%20Antarctica.

Q.73) Solution (a)

Explanation:

- Tropical Monsoon Climate Characteristics:
  - Found in regions influenced by monsoon winds.
  - Heavy summer rainfall (due to monsoon winds bringing moisture from the ocean).
  - Short dry season in winter.
  - High annual temperatures with a small annual temperature range.
  - Found in India, Bangladesh, Myanmar, Thailand, Vietnam, parts of the Philippines, and northern Australia. **(Option (a) is correct)**
- The Mediterranean climate has dry summers and wet winters (opposite to monsoon climates).Found in Southern Europe, California, South Australia, and parts of Chile.

Sources: https://mausam.imd.gov.in/imd_latest/contents/monsoon.php

Q.74) Solution (c)

Explanation:

- Jet streams are narrow bands of strong winds in the upper troposphere, typically at altitudes of 9-16 km (30,000–52,000 feet).They flow from west to east due to the Earth's rotation and the Coriolis effect.The most important jet streams include:
    - Polar Jet Streams (between 50°-60° latitudes)
    - Subtropical Jet Streams (near 30° latitudes). **(Statement 1 is correct)**
- Jet streams act as a steering mechanism for weather systems, including cyclones, depressions, and storms.The Subtropical Westerly Jet (SWJ) influences the formation of Western Disturbances that impact winter rainfall in North India.The Easterly Jet Stream plays a role in shaping the Indian monsoon by shifting pressure zones. **(Statement 2 is correct)**

Sources: https://mausam.imd.gov.in/

Q.75) Solution (b)

Explanation:

- On December 22, the Earth is tilted such that the Southern Hemisphere is inclined towards the Sun.The Sun's direct rays fall on the Tropic of Capricorn (23.5°S), leading to summer in the Southern Hemisphere and winter in the Northern Hemisphere.Areas south of the Equator receive more than 12 hours of daylight, while areas north of the Equator receive less than 12 hours of daylight.
- The Equator always receives approximately 12 hours of daylight year-round, as the Sun's position shifts slightly between the Tropics.It does not receive more than 12 hours of sunlight. **(Statement 1 is incorrect)**
- Since the Sun is directly overhead at the Tropic of Capricorn (23.5°S) on December 22, it receives more than 12 hours of daylight. **(Statement 2 is correct)**
- Located at 23.5°N, the Tropic of Cancer is in the Northern Hemisphere, which experiences winter during December 22.Days are shorter than 12 hours, and nights are longer. **(Statement 3 is incorrect)**
- The Antarctic Circle (66.5°S) and regions south of it experience continuous daylight (Midnight Sun) on December 22.This happens because the South Pole is tilted towards the Sun, leading to 24 hours of daylight in Antarctica. **(Statement 4 is correct)**

Sources: https://www.nasa.gov/blogs/watch-the-skies/2021/12/20/december-solstice-brings-winter-summer-

seasons/#:~:text=Solstices%20come%20twice%20a%20year,the%20planet%20you're%20on.

Q.76) Solution (b)

Explanation:

- Located in Florida, USA, the Everglades is a large wetland, not the largest mangrove forest.
- The Sundarbans is the largest mangrove forest in the world, spanning India and Bangladesh.This region serves as a major carbon sink, absorbing large amounts of CO_2 and helping mitigate climate change.Mangrove trees in the Sundarbans store carbon in their roots and soil, making them critical for global carbon sequestration.
- The Sundarbans also act as a natural barrier against cyclones and storm surges, protecting millions of people in coastal South Asia. Deforestation, rising sea levels, and increasing salinity pose significant threats to this ecosystem. **(Option (b) is correct)**
- While home to extensive mangroves, the Mekong Delta does not surpass the Sundarbans in size or carbon storage capacity.
- The Mississippi Delta is a coastal wetland system but not a significant mangrove forest region.

Sources:
https://whc.unesco.org/en/list/798/#:~:text=The%20Sundarbans%20is%20of%20universal,for%20Panthera%20tigris%20tigris%20species.

Q.77) Solution (d)

Explanation:

- Microplastics have been detected in various sources, including bottled water, tap water, seafood, and food packaging materials. Studies have shown that bottled water can contain significant amounts of microplastic particles, likely originating from the bottling process and packaging materials. **(Statement 1 is correct)**
- Due to their polymeric nature, microplastics are highly resistant to environmental degradation processes. This persistence allows them to accumulate in various ecosystems, including oceans, rivers, and soils, leading to long-term environmental contamination. **(Statement 2 is correct)**
- Microplastics can be ingested by various organisms, from plankton to fish and birds, leading to bioaccumulation in their tissues. This accumulation can cause physical

harm, such as intestinal blockage, and potential chemical harm due to the leaching of toxic substances associated with the plastics. **(Statement 3 is correct)**

Sources: https://www.nature.com/articles/s41591-024-03453-1

Q.78) Solution (c)

Explanation:

- A soil-dwelling bacterium that produces toxins harmful to certain insects, particularly larvae of moths and butterflies. It's widely used as a microbial insecticide in integrated pest management programs. **(Statement 1 is correct)**
- A beneficial fungus known for its antagonistic properties against various plant pathogens. It colonizes plant roots, enhancing resistance to diseases and promoting growth. **(Statement 2 is correct)**
- Commonly known as the tobacco plant, it contains nicotine, which has insecticidal properties. However, due to its toxicity to humans and non-target organisms, it's not commonly used as a biopesticide in sustainable agriculture. **(Statement 3 is incorrect)**
- Also known as the neem tree, it produces azadirachtin, a compound effective against a wide range of pests. Neem-based products are extensively used in organic farming due to their biodegradability and low toxicity to non-target organisms. **(Statement 4 is correct)**

Sources:
https://static.pib.gov.in/WriteReadData/specificdocs/documents/2024/dec/doc20241220475001.pdf

Q.79) Solution (a)

Explanation:

- Cinnamon belongs to the Lauraceae family, which includes aromatic trees and shrubs. It is an important spice obtained from the inner bark of trees in the Cinnamomum genus. **(Statement 1 is correct)**
- Clove does not belong to the Lauraceae family; it is a member of the Myrtaceae family. Cloves are dried flower buds from the Syzygium aromaticum tree and are widely used for culinary and medicinal purposes. **(Statement 2 is incorrect)**

- Cardamom belongs to the Zingiberaceae family, the same family as ginger. It is a popular spice used in cooking and traditional medicine, particularly in India. **(Statement 3 is incorrect)**

Sources:
https://bsi.gov.in/uploads/userfiles/file/Rare%20Books/Report%20Of%20The%20Survey%20Of%20India%20For%201922-23.pdf

Q.80) Solution (b)

Explanation:

- In states like Bihar, Maharashtra, and Uttarakhand, the Nilgai has been declared as vermin due to its tendency to raid and trample crop fields, causing significant damage to agriculture.
- As per Section 62 of the Wild Life (Protection) Act, 1972, the central government can declare certain wild animals as "vermin" in specific regions if they cause excessive damage to crops or become a threat to human livelihoods.
- The Nilgai is known to raid farmlands in large herds, trampling crops and causing economic losses to farmers, leading to its classification as vermin in some states.However, this classification applies only in designated areas and does not extend across the entire country. **(Statement 1 is correct)**
- The Nilgai (Boselaphustragocamelus) is the largest Asian antelope, commonly found across the northern Indian subcontinent.It is endemic to the Indian subcontinent, primarily found in India, Nepal, and parts of Pakistan.
- Nilgai are diurnal herbivores, mainly feeding on grasses, shrubs, and agricultural crops, which is a reason for their conflict with farmers. **(Statement 2 is correct)**
- While both statements are correct, Statement-II does not provide the reason for Statement-I.Statement-I talks about the legal classification of Nilgai as vermin due to its conflict with agriculture, whereas Statement-II is a biological fact about its size and distribution.The classification of Nilgai as vermin is due to its impact on crops, not because it is the largest antelope.

Sources: https://india.mongabay.com/2024/01/domestication-trials-in-bihar-aim-to-mitigate-farmer-nilgai-conflict/#:~:text=Following%20the%20request%20of%20the,mass%20killing%20of%20the%20animal.

Q.81) Solution (b)

Explanation:

- The dependency ratio is an important demographic indicator that measures the burden on the productive population in an economy. It is calculated as:

$$\text{Dependency Ratio} = \frac{\text{Population aged 0-14 and 65+}}{\text{Population aged 15-64}} \times 100$$

- A high dependency ratio indicates greater economic pressure on the working population to support dependents. **(Option (b) is correct)**
- The dependency ratio is crucial for policy-making in healthcare, pensions, education, and employment generation.It affects government spending on social security and retirement benefits as the aging population grows.

Sources: https://pib.gov.in/PressReleseDetail.aspx?PRID=2028240

Q.82) Solution (a)

Explanation:

- The RBI mandates that all loan documents in digital lending processes must be executed using digital signatures compliant with the Information Technology Act. This requirement ensures the authenticity and legal enforceability of digital loan agreements. **(Statement 1 is correct)**
- According to RBI guidelines, DLAs linked to regulated entities are restricted from storing borrowers' biometric information, such as fingerprints or facial recognition data, to protect customer privacy and data security. **(Statement 2 is correct)**
- While the RBI permits DLG arrangements in digital lending to mitigate credit risks, it explicitly prohibits their application to loans facilitated through NBFC-P2P platforms. This exclusion aims to maintain the distinct operational framework and risk profile of P2P lending. **(Statement 3 is incorrect)**

Sources: https://www.rbi.org.in/commonman/english/scripts/FAQs.aspx?Id=3413

Q.83) Solution (d)

Explanation:

- The Carbon Credit Market in India allows industries and organizations to trade emission allowances or credits to incentivize lower carbon emissions. Under India's updated Carbon Credit Trading Scheme (CCTS) 2023, several sectors can participate in carbon trading.
- Power plants and electricity generation companies that use fossil fuels (such as coal, oil, or gas) are major contributors to carbon emissions.These companies are subject to carbon pricing mechanisms, allowing them to purchase or sell carbon credits depending on their emissions. **(Statement 1 is correct)**
- Industries like steel, cement, chemicals, and textiles have a high carbon footprint.These industries can participate in carbon trading by reducing their emissions and earning credits or buying credits to offset emissions. **(Statement 2 is correct)**
- While agriculture is not traditionally a direct participant in carbon markets, agricultural cooperatives can earn carbon credits through sustainable farming practices, such as:
    - Afforestation & Reforestation projects
    - Methane reduction in rice farming
    - Organic farming and biochar use
- Farmers' groups can sell carbon credits generated through climate-friendly agricultural techniques. **(Statement 3 is correct)**

Sources: https://pib.gov.in/PressReleasePage.aspx?PRID=2082528

Q.84) Solution (d)

Explanation:

- The Digital Rupee is a central bank digital currency (CBDC) issued by the Reserve Bank of India (RBI). It serves as legal tender in a digital form, enabling electronic transactions without the need for physical cash. **(Statement 1 is correct)**
- UPI is an instant real-time payment system developed by the National Payments Corporation of India (NPCI). It allows users to link multiple bank accounts to a single mobile application, facilitating seamless fund transfers and merchant payments. **(Statement 2 is correct)**
- Credit cards are widely used digital payment instruments issued by banks and financial institutions. They enable users to borrow funds within a predefined credit limit for making purchases or cash withdrawals, with the obligation to repay the borrowed amount at a later date. **(Statement 3 is correct)**

Sources: https://www.indiabudget.gov.in/economicsurvey/doc/echapter.pdf

Q.85) Solution (c)

Explanation:

- Fisheries and aquaculture involve the harvesting of aquatic organisms, which falls under the primary sector since it involves direct extraction of natural resources. **(Pair 1 is incorrect)**
- IT-enabled services (such as BPO, software development, and cloud computing) fall under the tertiary sector since they provide services rather than goods.The tertiary sector includes trade, banking, communication, education, healthcare, and tourism. **(Pair 2 is correct)**
- Refining crude oil is a manufacturing process, transforming raw materials (crude oil) into usable products such as petrol and diesel.This activity is classified under the secondary sector, as it involves industrial processing. **(Pair 3 is correct)**
- Quarrying involves the extraction of minerals, stones, and sand, which is a direct exploitation of natural resources, placing it under the primary sector.Activities like mining, fishing, forestry, and agriculture also belong to the primary sector. **(Pair 4 is correct)**

Sources: https://www.indiabudget.gov.in/economicsurvey/doc/echapter.pdf

Q.86) Solution (d)

Explanation:

- Sustainable Aviation Fuel (SAF) is produced from renewable feedstocks that reduce carbon emissions compared to conventional jet fuel. The following feedstocks are recognized under international standards and recent policy frameworks:
- Algae is a promising feedstock due to its high lipid content and ability to grow in non-arable land. It is approved under pathways like Hydro-processed Esters and Fatty Acids (HEFA) for SAF production.The International Energy Agency (IEA) highlights algae's potential in decarbonizing aviation. **(Statement 1 is correct)**
- Classified under "waste oils and fats," used cooking oil is a widely adopted feedstock for HEFA-SAF. India's National Biofuels Policy (2018, amended 2022) promotes its use to avoid competition with food crops. **(Statement 2 is correct)**
- MSW, including organic and non-recyclable materials, can be converted to SAF via gasification followed by the Fischer-Tropsch process.The Global Biofuels Alliance

(2023) and ASTM International's D7566 standard recognize MSW-derived SAF. **(Statement 3 is correct)**

- Agricultural residues like paddy straw are classified as 2G (second-generation) feedstocks. They are processed through biochemical (e.g., fermentation) or thermochemical (e.g., pyrolysis) methods.India's SATAT scheme incentivizes paddy straw utilization to address stubble burning and SAF production. **(Statement 4 is correct)**

Sources:
https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2043042#:~:text=The%20National%20Policy%20on%20Biofuels,%2C%20bagasse%20etc.)%2C%20sugar

Q.87) Solution (c)

Explanation:

- Fixed capital refers to physical assets used for long-term production. Solar panels are a long-term investment that generates electricity for several years. **(Pair 1 is correct)**
- Working capital includes short-term inputs and consumables used in production. Biofuel stock (such as ethanol or biodiesel) is consumed in the energy production process, making it part of working capital. **(Pair 2 is correct)**
- Wind turbines are long-term assets that generate electricity for decades. They are considered fixed capital, not working capital. **(Pair 3 is incorrect)**
- Lithium-ion batteries, used in energy storage systems and electric vehicles, have a long lifespan and are considered fixed capital due to their extended usage in power storage and supply. **(Pair4 is correct)**

Sources: https://ncert.nic.in/textbook/pdf/iess202.pdf

Q.88) Solution (b)

Explanation:

- Cloud Computing: Involves storing and processing data over the internet rather than on local devices.
- Blockchain is a decentralized and distributed ledger technology that records transactions across multiple nodes in a network, ensuring transparency and immutability. Each block in the chain contains a cryptographic hash of the previous block, a timestamp, and transaction data.This technology underpins cryptocurrencies

like Bitcoin and Ethereum, as well as applications in supply chain management, finance, and secure voting systems. **(Option (b) is correct)**

- Quantum Cryptography: Uses principles of quantum mechanics to create secure communication channels, but it is not a public ledger system.
- Neural Networks: A subset of artificial intelligence that mimics human brain function to process data and recognize patterns, unrelated to transaction recording.

Sources:
https://www.thehindu.com/sci-tech/technology/what-to-expect-crypto-blockchain-2024/article67721972.ece

Q.89) Solution (c)

Explanation:

- The RBI mandates that foreign banks wishing to operate as Wholly Owned Subsidiaries (WOS) in India must have an initial minimum paid-up voting equity capital of ₹5 billion. This requirement ensures that the subsidiary has a substantial capital base to support its operations and maintain financial stability. **(Statement 1 is correct)**
- To ensure effective governance and alignment with local interests, the RBI stipulates specific criteria for the board composition of a WOS:
    - Non-Executive Directors: At least two-thirds of the board should consist of non-executive directors.
    - Independent Directors: A minimum of one-third of the directors should be independent of the management of the subsidiary in India, its parent, or associates.
    - Indian Representation: Not less than 50% of the directors should be Indian nationals, Non-Resident Indians (NRIs), or Persons of Indian Origin (PIOs), with at least one-third of the directors being Indian nationals resident in India.
- These guidelines aim to ensure that the WOS operates in line with India's financial and regulatory environment while maintaining robust governance standards. **(Statement 2 is correct)**

Sources: https://www.rbi.org.in/upload/content/images/Annexure.html

Q.90) Solution (a)

Explanation:

- As per SEBI's Listing Obligations and Disclosure Requirements (LODR) Regulations, 2015, all listed companies must appoint at least one woman director, and in cases where board independence is required, she must be an independent director.This aims to improve gender diversity and corporate governance in Indian companies. **(Statement 1 is correct)**
- In 2022, SEBI withdrew the mandatory requirement for separating the roles of Chairperson and Managing Director (MD)/CEO for listed companies. Instead, it made the provision voluntary.The reason for withdrawal was industry resistance and concerns over compliance challenges for family-owned businesses. **(Statement 2 is incorrect)**

Sources:
https://www.sebi.gov.in/sebi_data/meetingfiles/mar-2022/1646214623121_1.pdf

Q.91) Solution (a)

Explanation:

- SMRs are advanced nuclear reactors designed for scalability, safety, and cost-effectiveness. They use passive safety mechanisms, reducing operational risks. **(Statement 1 is correct)**
- These reactors are ideal for decentralized power supply, supporting mining, desalination, and grid stability alongside renewable energy sources. **(Statement 2 is correct)**
- While SMRs are under development, large-scale deployment has yet to occur. Few prototypes, like China's Linglong One, are progressing, but global adoption remains limited. **(Statement 3 is incorrect)**

Sources: https://www.iaea.org/topics/small-modular-reactors

Q.92) Solution (d)

Explanation:

- **Statement-I is incorrect** because neutron stars are not primarily composed of protons and electrons. Instead, they are made up almost entirely of neutrons due to the immense gravitational pressure that forces electrons and protons to merge, forming neutrons.
- **Statement-II is correct** because neutron stars form when massive stars (typically more than 8 times the mass of the Sun) undergo a supernova explosion. The core collapses under gravity, leading to an incredibly dense object primarily composed of neutrons.

Sources:
https://science.nasa.gov/universe/neutron-stars-are-weird/#:~:text=Neutron%20stars%20are%20the%20strongest%20known%20magnets&text=Clouds%20of%20charged%20particles%20move,rotation%20of%20the%20neutron%20star.

Q.93) Solution (c)

Explanation:

- Acetylcholine is a neurotransmitter involved in muscle activation and various brain functions, but it does not directly cause vasodilation.
- Dopamine isa neurotransmitter that regulates mood, reward, and motor functions; it has complex effects on blood vessels but is not primarily responsible for vasodilation.
- Nitric oxide is a molecule synthesized in the human body that functions as a neurotransmitter and a vasodilator. It relaxes blood vessels, increasing blood flow and reducing blood pressure. **(Option (c) is correct)**
- Serotonin is a neurotransmitter that regulates mood, appetite, and sleep; it can cause both vasoconstriction and vasodilation, depending on the context, but it is not primarily recognized for vasodilation.

Sources: https://www.thehindu.com/news/national/karnataka/iisc-research-suggests-ways-to-make-non-responsive-cancer-cells-respond-to-immunotherapy/article67627253.ece

Q.94) Solution (b)

Explanation:

- Radar is not typically used for mineral exploration. Instead, geologists rely on seismic surveys, magnetic surveys, and electromagnetic methods to detect underground mineral deposits. **(Statement 1 is incorrect)**
- Radar technology, particularly Synthetic Aperture Radar (SAR), is used to track tectonic plate movements.Space-based radar systems, such as those used by NASA and ESA, monitor ground displacement and help predict earthquakes. **(Statement 2 is correct)**
- Radar satellites, such as Sentinel-1 and NASA's NISAR, detect changes in forest cover, even under cloud cover.Governments and conservation groups use radar imagery to track illegal logging activities in tropical rainforests. **(Statement 3 is correct)**

Sources:
https://www.earthdata.nasa.gov/learn/earth-observation-data-basics/remote-sensing

Q.95) Solution (a)

Explanation:

- Stealth drones are designed with low radar cross-section (RCS), advanced coatings, and aerodynamic shapes to evade enemy radar detection.
- MQ-9 Reaper is not a stealth drone. It is a long-endurance, medium-altitude hunter-killer UAV developed by the U.S. It is used for intelligence gathering and precision strikes. **(Statement 1 is incorrect)**
- Bayraktar TB2 is not a stealth drone. Developed by Turkey, the TB2 is a widely used tactical drone, but it lacks stealth capabilities. **(Statement 2 is incorrect)**
- RQ-170 Sentinel is a stealth drone. It is a highly classified UAV developed by Lockheed Martin for the U.S. Air Force.It features advanced stealth technology for covert surveillance missions. **(Statement 3 is correct)**

Sources:
https://www.newindianexpress.com/magazine/2022/Jul/30/game-of-drones-unveiling-the-new-era-of-war-and-conflict-2481707.html

Q.96) Solution (c)

Explanation:

- Aerogels are widely used by NASA and other space agencies for thermal insulation in spacecraft and space suits.Their low thermal conductivity makes them highly effective for extreme temperature environments in space. **(Statement 1 is correct)**
- Aerogels, particularly silica-based ones, have been developed to absorb oils and hydrophobic substances while repelling water.They are highly porous and lightweight, making them useful in environmental cleanup efforts. **(Statement 2 is correct)**
- Aerogels are being researched and used in advanced filtration systems to remove contaminants from water.Graphene-based aerogels, for instance, can efficiently filter heavy metals and organic pollutants. **(Statement 3 is correct)**

Sources: https://www.sciencedirect.com/topics/engineering/aerogels

Q.97) Solution (b)

Explanation:

- Hydrogen Internal Combustion Engine Vehicles (HICEVs) burn hydrogen in an internal combustion engine similar to traditional petrol or diesel engines.Unlike Fuel Cell Electric Vehicles (FCEVs), which produce only water vapor, HICEVs operate at high temperatures, leading to the production of Nitrogen Oxides (NO_x) due to the reaction between nitrogen and oxygen in the air. **(Option (b) is correct)**
- Carbon dioxide (CO_2) and methane (CH_4) are not produced since hydrogen combustion does not involve carbon-based fuels.Sulfur dioxide (SO_2) is typically associated with fossil fuels like coal and diesel, not hydrogen combustion.

Sources:
https://www.iea.org/energy-system/low-emission-fuels/hydrogen#:~:text=Transport%20and%20storage%20infrastructure%20for,the%20need%20for%20transport%20infrastructure.

Q.98) Solution (c)

Explanation:

- Supercapacitors provide rapid charging and discharging but lack the capacity for long-duration energy storage.
- Solid-state batteries offer high energy density but are primarily aimed at electric vehicles and consumer electronics rather than multi-day storage.
- Iron-air batteries are gaining attention as a multi-day energy storage solution. These batteries store energy through a reversible rusting process—oxidizing iron during discharge and reducing it back to iron during charging. They can store electricity for extended periods (ranging from 100 hours to several days), making them ideal for balancing renewable energy grids.**(Option (c) is correct)**
- Thermal energy storage systems store energy in heat form, commonly used in solar power plants, but are not as scalable as iron-air batteries for long-term grid storage.

Sources: https://www.pbs.org/wgbh/nova/article/iron-air-battery-renewable-grid/

Q.99) Solution (b)

Explanation:

- Solid Oxide Fuel Cells (SOFCs)are high-temperature fuel cells that generate electricity by oxidizing fuels like hydrogen or methane.They do not use biological processes.
- Microbial Fuel Cells (MFCs)use bacteria to break down organic matter and generate electricity as part of a bio-electrochemical reaction. They are being explored for wastewater treatment and low-power bioenergy applications. **(Option (b) is correct)**
- Supercapacitors store and release energy rapidly but do not generate electricity through bio-electrochemical reactions.
- Proton Exchange Membrane Fuel Cells (PEMFCs)generate electricity by using hydrogen as fuel but do not involve microbial processes.

Sources: https://www.energy.gov/eere/fuelcells/hydrogen-production-microbial-biomass-conversion

Q.100) Solution (b)

Explanation:

- *Kanyasulkam* is a **Telugu play** written by **Gurajada Apparao** in **1892**. It is widely regarded as **one of the first modern Indian plays** that critiqued prevailing **social evils** such as **child marriage**, **dowry (bride price)**, and **female exploitation**.
- The play is notable for using **colloquial Telugu** instead of classical literary forms, making it revolutionary for its time. ***(Option (b) is correct)***
- **Kandukuri Veeresalingam** was a pioneering Telugu reformer and writer but did not author *Kanyasulkam*.
- **Rabindranath Tagore** and **Bankim Chandra Chattopadhyay** were renowned Bengali writers, known for *Gitanjali* and *Anandamath* respectively, but not associated with Telugu drama. **Sources:** Wikipedia – Kanyasulkam