Q1. Consider the following statements regarding the COSPAR Vikram Sarabhai Medal:

1. It is conferred jointly by the **Committee on Space Research (COSPAR)** and the **Indian Space Research Organisation (ISRO)**.
2. The medal is presented annually to recognize researchers working in developing nations.
3. Professor **Annapurni Subramaniam** is the first recipient of the COSPAR Vikram Sarabhai Medal from India.

How many of the above statements are correct?

A. Only one
B. Only two
C. All three
D. None

Answer: A. Only one

Explanation

The **COSPAR Vikram Sarabhai Medal**, instituted in **1990**, commemorates the legacy of Dr. Vikram Sarabhai and recognizes distinguished contributions to space research, particularly those benefiting developing countries.

- **Statement 1 – Correct:** The medal is jointly conferred by the **Committee on Space Research (COSPAR)** and the **Indian Space Research Organisation (ISRO)**.
- **Statement 2 – Incorrect:** The medal is awarded **biennially** (once every two years) during the COSPAR Scientific Assembly, not annually. It is open to outstanding scientists worldwide whose work contributes to the advancement of space research in developing nations.
- **Statement 3 – Incorrect:** Professor **Annapurni Subramaniam** is **not** the first Indian recipient. Earlier Indian awardees include **U.R. Rao (1996)**, **Gurbax Singh Lakhina (2014)**, and **Anil Bhardwaj (2024)**. She is, however, the **first Indian woman** to receive the medal.

Q2. With reference to the geographical location and boundaries of Uzbekistan, consider the following statements:

1. Uzbekistan is a landlocked country bounded by the **Caspian Sea** along its western frontier.
2. It shares land borders with **Afghanistan** and **Kazakhstan**.
3. The country lies geographically between the **Amu Darya** and **Syr Darya** rivers.

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

A. Only one
B. Only two
C. All three
D. None

Answer: A. Only one

Explanation

Uzbekistan is a **doubly landlocked** country in Central Asia, meaning it is surrounded entirely by landlocked countries.

- **Statement 1 – Incorrect:** Uzbekistan **does not border the Caspian Sea**. Its western boundary is shared with **Turkmenistan**, while Kazakhstan lies to the north.
- **Statement 2 – Correct:** Uzbekistan shares land borders with **Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan,** and **Turkmenistan**.
- **Statement 3 – Correct:** Much of Uzbekistan lies in the historic region of **Transoxiana (Mawarannahr)**, situated between the **Amu Darya** and **Syr Darya** rivers.

Q3. Consider the following statements:

Statement-I: Vehicle-to-Vehicle (V2V) communication systems can warn drivers about road hazards even when such hazards are hidden behind large vehicles, buildings, or sharp bends.

Statement-II: Vehicle-to-Vehicle (V2V) technology relies primarily on direct line-of-sight optical sensors mounted on vehicles to detect surrounding traffic conditions.

Which one of the following is correct?

A. Both Statement-I and Statement-II are correct, and Statement-II is the correct explanation for Statement-I.
B. Both Statement-I and Statement-II are correct, but Statement-II is not the correct explanation for Statement-I.
C. Statement-I is correct, but Statement-II is incorrect.
D. Statement-I is incorrect, but Statement-II is correct.

Answer: C. Statement-I is correct, but Statement-II is incorrect.

Explanation

Vehicle-to-Vehicle (V2V) communication enables connected vehicles to exchange real-time information, significantly improving road safety.

- **Statement-I – Correct:** V2V systems provide **360-degree situational awareness**, allowing vehicles to receive warnings about hazards beyond the driver's line of sight, including around corners or behind obstacles.
- **Statement-II – Incorrect:** V2V communication **does not depend on optical sensors**. Instead, it uses **wireless communication technologies**, such as **Cellular Vehicle-to-Everything (C-V2X)** or Dedicated Short-Range Communications (DSRC), through which vehicles continuously exchange information such as position, speed, direction, and braking status.

Q4. With reference to the Clouded Leopard (Neofelis nebulosa), consider the following statements:

1. It is classified as **Vulnerable** on the **IUCN Red List**.

2. It is listed under **Schedule I** of the **Wildlife (Protection) Act, 1972**, providing the highest level of legal protection in India.

Which of the statements given above is/are correct?

A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: C. Both 1 and 2

Explanation

The **Clouded Leopard (Neofelis nebulosa)** is a medium-sized wild cat inhabiting tropical and subtropical forests of South and Southeast Asia.

- **Statement 1 – Correct:** It is categorized as **Vulnerable** on the **IUCN Red List** due to habitat loss, fragmentation, and poaching.
- **Statement 2 – Correct:** In India, the species is protected under **Schedule I of the Wildlife (Protection) Act, 1972**, which provides the highest degree of legal protection against hunting and trade.

Q5. Which of the following geographical features are located within or extend into the territory of Uzbekistan?

1. Kyzylkum Desert
2. Ustyurt Plateau
3. Fergana Valley
4. Beshtor Peak

Select the correct answer using the code given below:

A. 1 and 3 only
B. 2 and 4 only
C. 1, 2 and 3 only
D. 1, 2, 3 and 4

Answer: D. 1, 2, 3 and 4

Explanation

All the listed physical features are associated with the geography of Uzbekistan.

- **Kyzylkum Desert:** One of Central Asia's largest deserts, covering much of western and central Uzbekistan.
- **Ustyurt Plateau:** A vast limestone plateau extending across western Uzbekistan, Kazakhstan, and Turkmenistan.

- **Fergana Valley:** A fertile intermontane basin shared by Uzbekistan, Kyrgyzstan, and Tajikistan, and one of the most densely populated regions in Central Asia.
- **Beshtor Peak:** Located in the **Western Tien Shan** mountain system, it is the **highest point of Uzbekistan**, with an elevation of about **4,299 metres**.

Q6. Consider the following statements regarding the Closing Auction Session (CAS) on Indian stock exchanges:

1. The Closing Auction Session applies uniformly to all equity shares listed on the stock exchange, irrespective of whether they are part of the derivatives segment.
2. During the Closing Auction Session, buy and sell orders are accumulated to determine a single equilibrium closing price.
3. Advanced order types such as stop-loss and iceberg orders are permitted during the Closing Auction Session to maximize trade execution.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: B. 2 only

Explanation

The **Closing Auction Session (CAS)** is an auction-based mechanism introduced by Indian stock exchanges to improve the transparency and efficiency of determining the official closing price of eligible securities.

- **Statement 1 – Incorrect:** CAS is **not applicable to all equity stocks**. It has been introduced by **SEBI in a phased manner**, initially covering **F&O (derivative)-eligible securities**, while other stocks continue under the existing closing price mechanism.
- **Statement 2 – Correct:** During the auction period, eligible buy and sell orders are accumulated without immediate execution. The system identifies a **single equilibrium price** at which the maximum executable quantity can be matched, ensuring fair price discovery.
- **Statement 3 – Incorrect:** Only specified order types are permitted during CAS. **Stop-loss, iceberg, and other advanced order types are not allowed**, ensuring a transparent and orderly auction process.

Q7. Consider the following statements regarding First Information Reports (FIRs) under the Bharatiya Nagarik Suraksha Sanhita (BNSS):

1. Registration of an FIR is the primary legal mechanism that initiates a police investigation into a cognizable offence.

2. A State Cabinet may cancel or expunge an FIR through an executive resolution without judicial approval.
3. A High Court can exercise its inherent powers to quash an FIR in order to prevent abuse of the judicial process.
4. An FIR constitutes conclusive substantive evidence during a criminal trial, even in the absence of corroborative evidence.

How many of the above statements are correct?

A. Only one
B. Only two
C. Only three
D. All four

Answer: B. Only two

Explanation

An **FIR (First Information Report)** is the first formal record of information relating to the commission of a cognizable offence and forms the basis for police investigation.

- **Statement 1 – Correct:** Registration of an FIR enables the police to commence investigation into a cognizable offence without requiring prior judicial approval.
- **Statement 2 – Incorrect:** An FIR **cannot be cancelled or expunged through executive action**. Such action requires judicial intervention in accordance with the law.
- **Statement 3 – Correct:** Under **Section 528 of the Bharatiya Nagarik Suraksha Sanhita (BNSS)**, High Courts possess inherent powers to quash an FIR or criminal proceedings to prevent abuse of the legal process or to secure the ends of justice.
- **Statement 4 – Incorrect:** An FIR is **not substantive evidence**. It serves only as the earliest version of the incident and must be supported by evidence and witness testimony during trial.

Q8. Consider the following statements regarding India's indigenous African Swine Fever (ASF) vaccine:

1. India's indigenous African Swine Fever vaccine enables cost-effective and scalable large-scale manufacturing.
2. The vaccine is a live-attenuated vaccine developed through targeted deletion of virulence-associated genes, allowing it to induce immunity without causing disease.

Which of the above statements is/are correct?

A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Answer: C. Both 1 and 2

Explanation

India's indigenous **African Swine Fever (ASF) vaccine** has been developed by **ICAR–National Institute of High Security Animal Diseases (ICAR-NIHSAD), Bhopal**.

- **Statement 1 – Correct:** The vaccine is the **world's first ASF vaccine** developed using the **MA-104 continuous cell line**, replacing dependence on primary cell cultures. This enables **cost-effective, standardized, and scalable commercial production**.
- **Statement 2 – Correct:** It is a **live-attenuated vaccine** developed by deleting specific virulence-associated genes from the ASF virus. These modifications reduce disease-causing ability while preserving the virus's capacity to stimulate a strong protective immune response.

Q9. Consider the following statements regarding the Clouded Leopard Conservation Action Plan (CAP):

1. The Action Plan identifies priority conservation landscapes across Northeast India as well as the northern parts of West Bengal and Bihar.
2. It promotes non-invasive monitoring methods such as environmental DNA (eDNA), camera trapping, and genetic sampling to establish population baselines.
3. It encourages transboundary cooperation with neighbouring range countries such as Bhutan, Nepal, and Myanmar.

How many of the above statements are correct?

A. Only one
B. Only two
C. All three
D. None

Answer: C. All three

Explanation

The **Clouded Leopard Conservation Action Plan (CAP)** provides a scientific framework for conserving one of India's most elusive and threatened wild cats.

- **Statement 1 – Correct:** The Action Plan identifies important conservation landscapes across **Northeast India**, while also covering the species' distribution in the **northern regions of West Bengal and Bihar**, including the Valmiki landscape.
- **Statement 2 – Correct:** It recommends **non-invasive monitoring techniques**, including **camera traps, environmental DNA (eDNA), genetic analysis, and occupancy surveys**, for reliable population estimation and long-term monitoring.

- **Statement 3 – Correct:** Since clouded leopard habitats extend across international boundaries, the Action Plan promotes **transboundary conservation** with **Bhutan, Nepal, and Myanmar** to maintain habitat connectivity and improve coordinated conservation efforts.

Q10. With reference to Vehicle-to-Vehicle (V2V) communication technology in India, consider the following statements:

1. V2V communication depends entirely on continuous connectivity with cellular towers and cloud servers for data transmission.
2. The onboard processor continuously analyses real-time vector data received from nearby vehicles to assess collision risks.
3. V2V technology operates on a licensed spectrum reserved exclusively for defence communications.

Which of the statements given above is/are correct?

A. 1 and 2 only
B. 2 and 3 only
C. 1 and 3 only
D. 2 only

Answer: D. 2 only

Explanation

Vehicle-to-Vehicle (V2V) communication enables direct exchange of safety-related information between nearby vehicles, improving road safety and collision avoidance.

- **Statement 1 – Incorrect:** V2V communication operates through a **direct peer-to-peer wireless network** between nearby vehicles. It **does not rely on cellular towers or cloud servers** for real-time safety communication.
- **Statement 2 – Correct:** Each vehicle's **On-Board Unit (OBU)** transmits information such as speed, position, and direction. The onboard processor compares these vectors with its own trajectory to calculate potential collision risks within milliseconds and alerts the driver.
- **Statement 3 – Incorrect:** In India, the **Department of Telecommunications (DoT)** has made the **5.875–5.925 GHz spectrum band licence-exempt** for C-V2X operations under **AIS-230**. It is **not reserved exclusively for defence communications**.

Q11. Consider the following statements with reference to trademark law in India:

Statement-I: Under the Trade Marks Act, 1999, names of military operations do not receive automatic trademark protection unless they are formally registered.

Statement-II: The Registrar of Trademarks may refuse registration of a trademark if it is likely to offend public sentiment or falsely suggest an association with the Government.

Which one of the following is correct?

A. Both Statement-I and Statement-II are correct, and Statement-II is the correct explanation for Statement-I.
B. Both Statement-I and Statement-II are correct, but Statement-II is not the correct explanation for Statement-I.
C. Statement-I is correct, but Statement-II is incorrect.
D. Statement-I is incorrect, but Statement-II is correct.

Answer: B. Both Statement-I and Statement-II are correct, but Statement-II is not the correct explanation for Statement-I.

Explanation

India's **Trade Marks Act, 1999** governs the registration and protection of trademarks and lays down the conditions under which a trademark may be accepted or refused.

- **Statement-I – Correct:** Names of military operations are **not automatically protected** under trademark law. Unless such names are formally registered, the Ministry of Defence does not enjoy exclusive trademark rights over them.
- **Statement-II – Correct:** Under **Sections 9 and 11 of the Trade Marks Act, 1999**, the Registrar has the authority to reject applications that are deceptive, contrary to public policy, hurt public sentiment, or falsely imply a connection with the Government.
- **Explanation:** Although both statements are correct, **Statement-II does not explain Statement-I**. The absence of automatic protection is a matter of the legal framework governing trademark registration, whereas the Registrar's powers relate to scrutiny of applications during the registration process.

Q12. Which of the following are potential applications of two-dimensional (2D) metals, such as atomically thin bismuth and lead?

1. Development of low-energy, high-speed quantum computing systems.
2. Fabrication of wearable sensors and flexible electronic devices.
3. Production of high-efficiency LEDs and photodetectors for optoelectronic applications.
4. Improving the sensitivity of medical diagnostic biosensors.

Select the correct answer using the code given below.

A. 1 and 2 only
B. 2, 3 and 4 only
C. 1 and 3 only
D. 1, 2, 3 and 4

Answer: D. 1, 2, 3 and 4

Explanation

Two-dimensional (2D) metals are metallic materials only one or a few atoms thick. Their unique quantum properties arise from electron confinement within an atomically thin layer.

- **Statement 1 – Correct:** Their tunable conductivity and nonlinear Hall effect make them promising materials for **energy-efficient quantum computing**.
- **Statement 2 – Correct:** Their flexibility, mechanical strength, and atomic-scale thickness make them suitable for **wearable electronics, flexible transistors, and smart sensors**.
- **Statement 3 – Correct:** Their exceptional electronic and optical properties enable more efficient **LEDs, lasers, and photodetectors** in optoelectronic devices.
- **Statement 4 – Correct:** Their high surface-area-to-volume ratio provides exceptional sensitivity, making them ideal for **medical biosensors** capable of detecting trace biomolecules.

Q13. Consider the following pairs regarding Ramsar Sites in India:

Ramsar Site	Location	Distinctive Feature
1. Menar	Rajasthan	Known as the "Bird Village"
2. Khichan	Gujarat	Major wintering site for Demoiselle cranes
3. Chilika Lake	Odisha	One of the first Ramsar sites designated in India

Which of the pairs given above are correctly matched?

A. 1 and 3 only
B. 3 only
C. 2 and 3 only
D. 1, 2 and 3

Answer: A. 1 and 3 only

Explanation

India currently has the **largest number of Ramsar Sites in Asia**, reflecting its commitment to wetland conservation.

- **Pair 1 – Correct: Menar**, located in **Udaipur district, Rajasthan**, is popularly known as the **"Bird Village"** because of long-standing community-led conservation efforts.
- **Pair 2 – Incorrect: Khichan** is indeed famous for **Demoiselle cranes**, but it is located in **Phalodi district of Rajasthan**, **not Gujarat**.
- **Pair 3 – Correct: Chilika Lake (Odisha)**, along with **Keoladeo National Park (Rajasthan)**, became one of **India's first Ramsar Sites in 1981** under the Ramsar Convention.

Q14. Consider the following statements regarding the International Air Transport Association (IATA):

1. It was established following the 1944 Chicago Convention as the successor to the International Air Traffic Association.
2. It is the global trade association representing the majority of the world's commercial airline traffic.
3. Although it develops technical aviation standards, it has never played any role in regulating commercial airfares.

How many of the above statements are correct?

A. Only one
B. Only two
C. All three
D. None

Answer: B. Only two

Explanation

The **International Air Transport Association (IATA)** is the principal trade association representing airlines worldwide.

- **Statement 1 – Correct:** IATA was established in **1945 in Havana, Cuba**, following the **Chicago Convention (1944)**, and succeeded the **International Air Traffic Association (1919)**.
- **Statement 2 – Correct:** IATA represents approximately **317 airlines across more than 120 countries**, accounting for nearly **82% of global air traffic**.
- **Statement 3 – Incorrect:** In its early decades, IATA actively coordinated **international fare-setting and tariff conferences** before the airline industry gradually moved toward deregulation.

Q15. With reference to the SEBI framework for ESG (Environmental, Social and Governance) debt securities, what does the Independent Review Mechanism require?

A. Mandatory auditing of ESG projects by the Comptroller and Auditor General of India (CAG).
B. Annual verification of ESG projects by the Ministry of Environment, Forest and Climate Change.
C. Appointment of independent third-party reviewers to verify ESG alignment and enhance transparency.
D. Quarterly monitoring of the issuing company's share price by SEBI officials.

Answer: C. Appointment of independent third-party reviewers to verify ESG alignment and enhance transparency.

Explanation

Under SEBI's operational framework for **ESG debt securities**, the **Independent Review Mechanism** is intended to strengthen investor confidence and prevent greenwashing.

- Issuers are required to appoint **independent third-party reviewers or certifiers** to assess whether the proposed debt instruments and the projects they finance comply with recognised ESG standards.
- The review improves **transparency, credibility, and investor confidence** by ensuring that funds raised are genuinely used for environmentally or socially beneficial purposes.
- The mechanism complements SEBI's disclosure requirements regarding project eligibility, utilisation of proceeds, and post-issuance reporting, while aligning India's ESG market with international best practices.