

Q1. Consider the following statements regarding the revamped Khelo India Scheme:

1. It establishes a '**Grassroots → Khelo India → Target Olympic Podium Scheme (TOPS)**' pathway for athlete development.
2. The revamped scheme is aligned with the **National Education Policy (NEP) 2020** and **Khelo Bharat Niti 2025**.
3. It includes **school-level initiatives, athlete development programmes, and coaching-governance reforms** to strengthen the sports ecosystem.

Which of the statements given above are correct?

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

Answer: D. 1, 2 and 3

Explanation

The Union Cabinet approved the **revamped Khelo India Scheme** with the objective of creating a comprehensive sports development ecosystem that nurtures athletes from the grassroots level to international competition.

Statement 1 is correct:

The revamped scheme creates an integrated athlete development pathway beginning with **grassroots talent identification**, progressing through **Khelo India Athletes (KIAs/E-KIAs)**, and culminating in the **Target Olympic Podium Scheme (TOPS)** to prepare elite athletes for global sporting events.

Statement 2 is correct:

The scheme is aligned with the **National Education Policy (NEP) 2020**, which promotes the integration of sports into education, and supports the objectives of the **Khelo Bharat Niti 2025** for strengthening India's sporting ecosystem.

Statement 3 is correct:

The scheme incorporates multiple institutional reforms, including:

- **Khelo India Feeder Schools** and **Utkrishta Vidyalayas** for early talent identification,
- Expanded athlete development through regional and national training centres,
- Strengthened **coaching governance**, sports science, technology, and high-performance support systems.

Hence, **all three statements are correct.**

Q2. With reference to the Pradhan Mantri Kisan Samman Nidhi (PM-KISAN), consider the following statements:

1. PM-KISAN is a **Central Sector Scheme** fully financed by the Government of India and implemented by the **Ministry of Agriculture and Farmers Welfare**.
2. The identification and verification of eligible beneficiary farmer families are carried out by the respective **State and Union Territory Governments**.

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 Union Cabinet approved the continuation of the **PM-KISAN Scheme** for the period **2026–27 to 2030–31** with an approved outlay of **₹3.15 lakh crore**.

Statement 1 is correct:

PM-KISAN is a **100% Centrally funded Central Sector Scheme** implemented by the **Ministry of Agriculture and Farmers Welfare**. Under the scheme, eligible farmer families receive **₹6,000 annually** in three equal instalments of **₹2,000** each through the **Direct Benefit Transfer (DBT)** mechanism.

Statement 2 is correct:

The responsibility for identifying and verifying eligible beneficiary farmer families rests with the **State and Union Territory Governments**, which upload verified beneficiary and land records to the PM-KISAN portal for DBT.

Hence, **both statements are correct**.

Q3. Consider the following statements regarding the Raygun framework and Protein Language Models (PLMs):

1. Raygun is a **generative Artificial Intelligence (AI) framework** built upon **Protein Language Models (PLMs)**.
2. It has been developed to **miniaturise proteins** while preserving their biological function.
3. **ProtGPT2** and **ProGen** are examples of **Protein Language Models**.

Which of the statements given above are correct?

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

Answer: D. 1, 2 and 3

Explanation

Researchers at **Duke University** developed the **Raygun** framework to redesign proteins using generative AI, with potential applications in gene therapy and protein engineering.

Statement 1 is correct:

Raygun is a **generative AI framework** that leverages **Protein Language Models (PLMs)** to generate probabilistic protein representations and redesign protein sequences while maintaining structural integrity.

Statement 2 is correct:

The framework is specifically designed to **shrink (miniaturise), modify, and optimise proteins**, making them small enough to fit into delivery systems such as **Adeno-Associated Virus (AAV)** vectors used in gene therapy.

Statement 3 is correct:

ProtGPT2 and **ProGen** are well-known **Protein Language Models** capable of generating novel protein sequences and are widely used in computational protein design.

Hence, **all three statements are correct.**

Q4. Vizhinjam International Seaport is primarily intended to serve which one of the following purposes?

- A. Developing a **deep-water international container transshipment hub** located close to major global shipping routes.
- B. Establishing a coastal bulk-cargo terminal primarily for coal and petroleum imports.
- C. Creating a regional passenger port connecting India with nearby island territories.
- D. Building a naval logistics base exclusively for defence and maritime surveillance.

Answer: A. Developing a deep-water international container transshipment hub close to major global shipping routes.

Explanation

Vizhinjam International Seaport, located near **Thiruvananthapuram, Kerala**, is India's first **greenfield deep-water international container transshipment port**.

The port has been developed to reduce India's dependence on foreign transshipment hubs such as **Colombo, Singapore, and Salalah**.

Key features include:

- Located approximately **10 nautical miles** from the busy **East–West international shipping corridor**.
- Natural draft of **18–20 metres**, allowing it to accommodate **Ultra Large Container Vessels (ULCVs)** without extensive dredging.

- Designed primarily as a **container transshipment hub**, improving India's position in global maritime trade and logistics.

Therefore, **Option A** is correct.

Q5. Consider the following statements regarding the Basel Framework:

1. The Basel Framework is developed by the **Basel Committee on Banking Supervision (BCBS)**.
2. Its primary objective is to strengthen the **regulation, supervision, capital adequacy, liquidity, and risk management** of banks.
3. The Basel Framework is **legally binding** on all member countries.

Which of the statements given above are correct?

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

Answer: A. 1 and 2 only

Explanation

The **Reserve Bank of India (RBI)** has postponed the implementation of its revised **Basel III disclosure framework** to **1 April 2027**, allowing banks additional time to upgrade reporting systems.

Statement 1 is correct:

The **Basel Framework** (Basel I, Basel II, Basel III, and subsequent reforms) is formulated by the **Basel Committee on Banking Supervision (BCBS)** under the **Bank for International Settlements (BIS)** in Basel, Switzerland.

Statement 2 is correct:

Its principal objective is to promote **global financial stability** by strengthening banking regulation, supervision, capital adequacy, liquidity standards, and risk management practices.

Statement 3 is incorrect:

The Basel standards are **international recommendations** and **do not have legal force**. Individual jurisdictions, including India, adopt and implement them through their own domestic laws and regulatory frameworks.

Hence, **Statements 1 and 2 are correct, while Statement 3 is incorrect.**

Q6. With reference to inclusive procurement initiatives on the Government e-Marketplace (GeM), consider the following statements:

1. GeM provides dedicated sections for products offered by Micro and Small Enterprises (MSEs), women entrepreneurs, and tribal artisans.

2. Central Ministries and Central Public Sector Enterprises (CPSEs) are required to procure at least **25%** of their annual purchases from Micro and Small Enterprises (MSEs), including prescribed sub-targets for **SC/ST-owned** and **women-owned** enterprises.

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

Statement 1 is Correct

The Government e-Marketplace (GeM) has introduced several **inclusive procurement initiatives** to encourage participation from underrepresented groups.

These include:

- **Womaniya** – A dedicated initiative to promote products and services offered by **women entrepreneurs** and **Women Self-Help Groups (SHGs)**.
- **GeM Outlet Stores** – Dedicated sections showcasing products of **artisans, weavers, and tribal communities**, including integration with **TRIFED**.
- Dedicated categories for **Micro and Small Enterprises (MSEs)** to improve their visibility and participation in government procurement.

These initiatives aim to make public procurement more inclusive and accessible.

Statement 2 is Correct

The **Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012**, as amended in **2018**, mandates that:

- **Central Ministries, Departments, and Central Public Sector Enterprises (CPSEs)** must procure **at least 25%** of their annual purchases from **Micro and Small Enterprises (MSEs)**.

This overall target includes mandatory sub-targets:

- **4%** of procurement from **SC/ST-owned MSEs**.
- **3%** of procurement from **women-owned MSEs**.

The policy promotes inclusive economic growth by enhancing market access for socially disadvantaged and women entrepreneurs.

Q7. Consider the following assertion:

Pellet guns are classified as less-lethal weapons, but their use raises serious legal and human-rights concerns.

Which of the following statements support the above assertion?

1. They are **12-bore pump-action shotguns** used for crowd control and dispersal.
2. Each cartridge can release **hundreds of pellets** over a wide area.
3. They may cause **permanent blindness, ocular trauma, and internal injuries** when fired above the waist or at close range.

Select the correct answer using the code given below.

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

Answer: D. 1, 2 and 3

Explanation

Statement 1 Supports the Assertion

Pellet guns used by Indian security forces are generally **12-bore pump-action shotguns** loaded with pellet cartridges. They are categorized as **less-lethal weapons** and are primarily employed for **crowd control** in situations involving violent protests or public disorder.

Statement 2 Supports the Assertion

A standard pellet cartridge contains approximately **400–500 small lead pellets**. When fired, these pellets disperse over a **wide area**, making the weapon less precise than conventional firearms.

This broad dispersion increases the likelihood of unintended injuries.

Statement 3 Supports the Assertion

Despite being classified as less-lethal, pellet guns can inflict **severe injuries**, particularly when fired at close range or above the waist.

Documented consequences include:

- Permanent blindness
- Ocular trauma
- Facial disfigurement
- Penetrating soft-tissue injuries
- Internal organ damage

These risks have generated significant **legal, constitutional, and human-rights concerns** regarding the proportional use of force.

Q8. Consider the following statements about the design of Samudra Manthan:

1. Deepwater and ultra-deepwater drilling may receive government support covering up to **50% of drilling costs**.
2. The scheme targets **previously unexplored frontier basins** and former **no-go offshore zones**.
3. The scheme prohibits indigenous equipment production under the **Make in India** initiative.

Which of the following inferences can be drawn from the above statements?

1. The scheme attempts to lower capital risk in offshore exploration.
2. It seeks to expand exploration into underexplored offshore areas.
3. It discourages domestic manufacturing of offshore energy equipment.

Select the correct answer using the code given below.

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

Answer: A. 1 and 2 only

Explanation

Inference 1 is Correct

The scheme provides government support of up to **50% of eligible drilling costs** (subject to prescribed limits).

This substantially reduces the financial risk associated with expensive offshore exploration and encourages greater private participation.

Inference 2 is Correct

Samudra Manthan specifically focuses on:

- Frontier offshore basins
- Former no-go offshore areas that have now been opened for exploration

Hence, the scheme is intended to expand hydrocarbon exploration into previously underexplored regions.

Inference 3 is Incorrect

The third statement is factually incorrect.

Rather than discouraging domestic manufacturing, the scheme promotes **Make in India** by establishing **Oil & Gas Manufacturing and Services Zones** to strengthen indigenous capabilities.

Therefore, the inference that the scheme discourages domestic manufacturing is invalid.

Q9. Which of the following statements regarding the Western Ghats Ecologically Sensitive Area (ESA) debate is/are correct?

1. The Western Ghats extend across **Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu**.
2. The ESA proposal seeks to restrict environmentally destructive activities such as mining, quarrying, and large infrastructure projects in ecologically fragile areas.
3. Ecologically Sensitive Areas (ESAs) are notified under the **Indian Forest Act, 1927**.

Select the correct answer using the code given below.

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

Answer: B. 1 and 2 only

Explanation

Statement 1 is Correct

The **Western Ghats** stretch across **six Indian States**:

- Gujarat
- Maharashtra
- Goa
- Karnataka
- Kerala
- Tamil Nadu

It is one of the world's most significant biodiversity hotspots.

Statement 2 is Correct

The ESA proposal is intended to conserve ecologically fragile landscapes by restricting activities such as:

- Mining
- Quarrying
- Sand extraction
- Red-category industries
- Large infrastructure and thermal power projects

The objective is to balance development with environmental conservation.

Statement 3 is Incorrect

Ecologically Sensitive Areas (ESAs) are notified under:

- **Section 3 of the Environment (Protection) Act, 1986, and**
- **Rule 5 of the Environment (Protection) Rules, 1986**

They are **not** notified under the **Indian Forest Act, 1927**.

Q10. With reference to the regulatory framework governing Miniratna Central Public Sector Enterprises (CPSEs), consider the following statements:

1. The Miniratna scheme was introduced to provide greater operational autonomy and enhanced financial powers to profit-making CPSEs functioning without direct government financial support.
2. To qualify for **Category-I Miniratna** status, a CPSE must have earned a **net profit for the previous three consecutive years**, including a **pre-tax profit of at least ₹30 crore in one of those years**.
3. Once a CPSE is granted Miniratna status, its Board can automatically exercise enhanced financial powers without any governance restructuring.

Which of the statements given above are correct?

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

Answer: A. 1 and 2 only

Explanation

Statement 1 is Correct

The **Miniratna Scheme**, introduced in **1997**, grants greater operational flexibility and financial autonomy to well-performing CPSEs that operate without relying on direct government financial assistance.

Its objective is to improve efficiency and competitiveness.

Statement 2 is Correct

For **Category-I Miniratna** status, a CPSE must:

- Earn **net profits for three consecutive years**.
- Record a **pre-tax profit of at least ₹30 crore** in one of those three years.
- Maintain a **positive net worth**.
- Have **no default** in repayment of government loans or interest.

Statement 3 is Incorrect

Enhanced financial powers are **not granted automatically** upon Miniratna designation.

Before exercising these powers, the CPSE's Board must be **restructured to include at least three independent (non-official) directors**.

Therefore, governance restructuring is a mandatory precondition for exercising delegated autonomy.

Q11. With reference to Microplastics, consider the following statements:

1. Microplastics are plastic particles measuring **less than 5 millimetres** in size.
2. The greater weight of batteries in electric vehicles increases tyre abrasion, making tyre wear a significant source of microplastic pollution.
3. Cigarette filters, made of **cellulose acetate**, are a major global source of toxic plastic pollution.

How many of the above statements are correct?

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

Answer: C. All three

Explanation

Statement 1 is Correct

Microplastics are conventionally defined as **plastic particles smaller than 5 millimetres**. They originate either as:

- **Primary microplastics**, intentionally manufactured in small sizes (e.g., microbeads in cosmetics), or
- **Secondary microplastics**, formed by the fragmentation of larger plastic items through weathering and degradation.

These particles are persistent pollutants found in terrestrial, freshwater, and marine ecosystems.

Statement 2 is Correct

Tyre wear is one of the largest sources of **non-point microplastic pollution** worldwide.

Electric vehicles (EVs) generally weigh more than conventional vehicles because of their large battery packs. The additional weight increases:

- Tyre-road friction,
- Tyre abrasion, and

- Release of synthetic rubber particles into the environment.

These particles eventually enter soil, rivers, and oceans as microplastics.

Statement 3 is Correct

Most cigarette filters are manufactured using **cellulose acetate**, a semi-synthetic plastic.

Discarded cigarette butts:

- Persist in the environment for years,
- Release microplastic fibres,
- Leach toxic chemicals such as nicotine and heavy metals, and
- Represent one of the world's most common forms of plastic litter.

Q12. Consider the following pollutants:

1. Carbon monoxide (CO)
2. Oxides of Nitrogen (NO_x)
3. Lead (Pb)
4. Ground-level Ozone (O₃)

Which of the above are classified as **Criteria Pollutants** under India's **National Ambient Air Quality Standards (NAAQS)**?

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

Answer: D. 1, 2, 3 and 4

Explanation

All four listed pollutants are included among the **Criteria Pollutants** notified under the **National Ambient Air Quality Standards (NAAQS), 2009**, issued by the **Central Pollution Control Board (CPCB)**.

The twelve pollutants regulated under NAAQS include:

Particulate Matter

- PM₁₀
- PM_{2.5}

Gaseous Pollutants

- Sulphur dioxide (SO₂)

- Nitrogen dioxide (NO₂)
- Carbon monoxide (CO)
- Ozone (O₃)
- Ammonia (NH₃)

Toxic Metals

- Lead (Pb)
- Arsenic (As)
- Nickel (Ni)

Organic Pollutants

- Benzene (C₆H₆)
- Benzo(a)pyrene [BaP]

Significance of the Listed Pollutants

- **Carbon monoxide (CO):** Produced mainly from incomplete combustion in vehicles and industries; reduces oxygen-carrying capacity of blood.
- **Oxides of Nitrogen (NO_x):** Major contributors to respiratory diseases, acid rain, and photochemical smog.
- **Lead (Pb):** A potent neurotoxin, particularly harmful to children despite significant reductions following the phase-out of leaded petrol.
- **Ground-level ozone (O₃):** A secondary pollutant formed by photochemical reactions involving nitrogen oxides and volatile organic compounds (VOCs); causes respiratory problems and damages vegetation.

Q13. Consider the following types of Bioremediation and their corresponding descriptions:

Type	Description
I. Phytoextraction	1. Using plants to accumulate pollutants in their tissues for later disposal
II. Mycoremediation	2. Using fungi to degrade or absorb environmental contaminants
III. Bioaugmentation	3. Injecting air into contaminated soil to stimulate indigenous microorganisms

Which of the above pairs are correctly matched?

- A. I and II only
- B. II and III only
- C. I and III only
- D. I, II and III

Answer: A. I and II only

Explanation

Bioremediation is an environmentally friendly technique that uses **living organisms** such as microorganisms, plants, fungi, or enzymes to remove, degrade, or detoxify environmental pollutants.

Pair I is Correct – Phytoextraction

Phytoextraction involves:

- Using **hyperaccumulator plants** to absorb heavy metals and other pollutants from contaminated soil or water.
- The pollutants accumulate within plant tissues.
- The plants are subsequently harvested and safely disposed of.

Pair II is Correct – Mycoremediation

Mycoremediation uses **fungi**, especially their mycelial networks, to:

- Break down hydrocarbons,
- Degrade pesticides,
- Absorb heavy metals, and
- Detoxify industrial pollutants.

It is particularly effective in degrading complex organic contaminants.

Pair III is Incorrect – Bioaugmentation

Bioaugmentation refers to:

- The deliberate introduction of selected microorganisms into contaminated environments to enhance pollutant degradation.

The process described in Pair III—**injecting air into soil to stimulate native microorganisms**—is known as:

- **Bioventing** (unsaturated soils), or
- **Biosparging** (groundwater),

not bioaugmentation.

Q14. With reference to Mercury Poisoning in the environment, consider the following statements:

1. Inorganic mercury is converted into **methylmercury** by bacteria present in aquatic sediments.
2. Methylmercury undergoes **bioaccumulation** and **biomagnification**, reaching high concentrations in edible fish.

3. Advanced mercury poisoning can result in kidney damage and severe deterioration of the central nervous system.

How many of the above statements are correct?

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

Answer: C. All three

Explanation

Mercury is a highly toxic heavy metal that contaminates ecosystems through atmospheric deposition and industrial activities.

Major sources include:

- Coal-fired thermal power plants,
- Artisanal and small-scale gold mining,
- Industrial effluents,
- Improper disposal of mercury-containing products.

Statement 1 is Correct

In aquatic environments, **anaerobic bacteria** convert elemental and inorganic mercury into **methylmercury**, which is:

- Highly toxic,
- Easily absorbed by living organisms, and
- More mobile within ecosystems.

Statement 2 is Correct

Methylmercury is readily accumulated by aquatic organisms.

As it moves up the food chain:

- Small organisms accumulate mercury,
- Larger fish consume these organisms,
- Mercury concentration progressively increases through **biomagnification**.

Consequently, predatory fish often contain the highest mercury concentrations.

Statement 3 is Correct

Mercury is a potent **neurotoxin**.

Severe mercury poisoning, including **Minamata disease**, can cause:

- Sensory impairment,
- Loss of coordination,
- Vision and hearing defects,
- Kidney damage,
- Central nervous system degeneration,
- Paralysis and death in extreme cases.

Q15. With reference to Soil Pollution, consider the following statements:

1. Naturally occurring soil pollution may result from the accumulation of compounds such as **perchlorate anions** in arid ecosystems.
2. Acid rain contributes to soil pollution by lowering soil pH and promoting the leaching of essential nutrients.

Which of the above statements are **incorrect**?

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

Answer: D. Neither 1 nor 2

Explanation

Statement 1 is Correct

Soil pollution is not exclusively caused by human activities.

Natural geological and atmospheric processes can also contaminate soils.

In **arid and semi-arid regions**, **perchlorate anions** may accumulate naturally because:

- Atmospheric deposition introduces perchlorates,
- Low rainfall prevents their leaching,
- They remain concentrated in soil and groundwater.

Perchlorates can interfere with iodine uptake in the thyroid gland and pose risks to crops and human health.

Statement 2 is Correct

Acid rain forms when **sulphur dioxide (SO₂)** and **nitrogen oxides (NO_x)** react with atmospheric moisture to produce sulphuric and nitric acids.

When deposited on land, acid rain:

- Lowers soil pH,
- Leaches essential nutrients such as calcium, magnesium, and potassium,
- Mobilises toxic metals like aluminium,
- Reduces soil fertility,
- Disrupts beneficial microbial activity.

These effects contribute significantly to soil degradation and soil pollution.

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