Environment & Ecology

DAILY PRACTICE 28/11/2026 · UPSC CSE · Environment & Ecology

Q1.

In the context of elephant migration across State boundaries in southern India, which of the following best explains the ecological significance of wildlife corridors?

A. They restrict the movement of elephants to designated national parks.

B. They connect fragmented habitats and facilitate seasonal movement between forest landscapes.

C. They eliminate the need for human settlements near forest areas to relocate.

D. They prevent all forms of human-wildlife interaction by creating permanent barriers.

Correct answer: Option B — They connect fragmented habitats and facilitate seasonal movement between forest landscapes.

Explanation

Correct Answer: (b) — They connect fragmented habitats and facilitate seasonal movement between forest landscapes.

1. **Habitat connectivity:** Wildlife corridors connect isolated forest patches and allow animals to move between habitats.

2. **Genetic diversity:** Movement between populations supports gene flow and reduces the risks associated with isolated populations.
3. **Resource availability:** Elephants use connected landscapes to access food, water and suitable habitats across seasons.
4. **Conflict reduction:** Protecting corridors and establishing early-warning systems can help reduce unexpected encounters between elephants and human settlements.

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Q2.

A wild bird is found dead near a poultry farm and subsequently tests positive for avian influenza. Which of the following measures would be most appropriate to minimise the risk of transmission?

A. Allowing unrestricted movement of poultry to prevent economic losses

B. Handling dead birds directly for sample collection without protective equipment

C. Strengthening surveillance, reporting unusual bird deaths and enforcing biosecurity measures

D. Administering antibiotics to all birds in the surrounding area

Correct answer: Option C — Strengthening surveillance, reporting unusual bird deaths and enforcing biosecurity measures

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Explanation

Correct Answer: (c) — Strengthening surveillance, reporting unusual bird deaths and enforcing biosecurity measures.

1. **Surveillance:** Early detection of infected birds helps identify outbreaks and enables timely containment.
2. **Reporting:** Unusual bird deaths should be promptly reported to the relevant veterinary authorities.
3. **Biosecurity:** Restricting access, disinfecting equipment and controlling movement of birds can reduce transmission.

4. **Safe handling:** Sick or dead wild birds should not be handled without appropriate protective equipment. Antibiotics do not treat viral infections such as avian influenza.

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Q3.

A freshwater lake receives excessive quantities of nitrogen and phosphorus from agricultural runoff. Which of the following sequences best describes the likely ecological consequences?

A. Nutrient enrichment → increased algal growth → decomposition of dead algae → dissolved oxygen depletion

B. Nutrient enrichment → reduced algal growth → increased dissolved oxygen → fish population decline

C. Nutrient enrichment → increased water transparency → reduced microbial activity → oxygen enrichment

D. Nutrient enrichment → increased aquatic vegetation → permanent improvement in water quality

Correct answer: Option A — Nutrient enrichment → increased algal growth → decomposition of dead algae → dissolved oxygen depletion

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Explanation

Correct Answer: (a) — Nutrient enrichment → increased algal growth → decomposition of dead algae → dissolved oxygen depletion.

1. **Nutrient enrichment:** Excess nitrogen and phosphorus enter freshwater ecosystems through fertilisers, sewage and agricultural runoff.

2. **Algal bloom:** Increased nutrient availability stimulates rapid growth of algae and phytoplankton.

3. **Decomposition:** When excessive algal biomass dies, microorganisms decompose the organic matter and consume dissolved oxygen.

4. **Oxygen depletion:** Reduced dissolved oxygen can cause hypoxia, fish mortality and deterioration of aquatic biodiversity.

5. **Eutrophication:** This nutrient-driven enrichment and associated ecological changes are collectively known as eutrophication. It can occur naturally but is often accelerated by human activities.

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Q4.

Arsenic contamination of transboundary rivers is a concern for environmental security. Consider the following statements:

1. Arsenic is a naturally occurring metalloid that can enter water bodies through both geological processes and human activities.
2. Mining activities can release arsenic into surface water and groundwater.
3. Long-term exposure to arsenic-contaminated drinking water can cause skin lesions and increase the risk of certain cancers.
4. Arsenic contamination can be removed completely through ordinary boiling of drinking water.

Which of the statements given above are correct?

A. 1, 2 and 3 only

B. 1 and 4 only

C. 2 and 4 only

D. 1, 2, 3 and 4

Correct answer: Option A — 1, 2 and 3 only

Explanation

Correct Answer: (a) — Statements 1, 2 and 3 are correct.

1. **Statement 1 is correct:** Arsenic occurs naturally in rocks and minerals. Industrial activities, mining and agricultural practices can also contribute to its release into the environment.

2. **Statement 2 is correct:** Mining and mineral processing can expose arsenic-bearing minerals, allowing arsenic to contaminate nearby rivers, lakes and groundwater.

3. **Statement 3 is correct:** Chronic exposure to inorganic arsenic through drinking water is associated with skin disorders, cardiovascular effects and cancers, particularly of the skin, bladder and lungs.

4. **Statement 4 is incorrect:** Ordinary boiling does not remove arsenic. Appropriate treatment technologies, such as adsorption, coagulation-filtration and specialised membrane processes, are required.

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Q5.

Mercury contamination in skin-lightening cosmetics can cause systemic toxicity. Which of the following mechanisms best explains the potential damage to the human body from prolonged exposure to inorganic mercury compounds?

A. Selective destruction of red blood cells, resulting in iron-deficiency anaemia.

B. Accumulation in body tissues, causing kidney damage and neurological disturbances.

C. Inhibition of vitamin D synthesis, resulting exclusively in bone disorders.

D. Excessive stimulation of insulin production, resulting in chronic hypoglycaemia.

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Correct answer: Option B — Accumulation in body tissues, causing kidney damage and neurological disturbances.

Explanation

Correct Answer: (b) — Accumulation in body tissues, causing kidney damage and neurological disturbances.

1. **Renal toxicity:** Inorganic mercury compounds can accumulate in the kidneys and damage renal tissues, potentially causing proteinuria and impaired kidney function.

2. **Neurological effects:** Prolonged mercury exposure can affect the nervous system, producing symptoms such as tremors, memory problems and behavioural changes.
3. **Routes of exposure:** Mercury-containing cosmetics can expose users through skin absorption, particularly with repeated application.
4. **Public health concern:** Unlabelled and unregulated products increase the risk of prolonged exposure without consumers being aware of the toxic ingredients.

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Q6.

The Pradhan Mantri Ujjwala Yojana (PMUY) seeks to reduce household air pollution by promoting clean cooking energy. Which of the following best explains why access to an LPG connection alone may not ensure a complete transition away from traditional biomass fuels?

A. LPG produces higher indoor particulate emissions than firewood under normal cooking conditions.

B. The absence of electricity connections prevents households from using LPG cylinders.

C. The recurring cost of LPG refills and household practices can encourage continued use of solid fuels.

D. LPG cannot be used for cooking in rural households because of safety regulations.

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Correct answer: Option C — The recurring cost of LPG refills and household practices can encourage continued use of solid fuels.

Explanation

Correct Answer: (c) — Refill affordability and household practices can sustain biomass use.

1. **Affordability:** Although an LPG connection reduces the initial access barrier, recurring refill expenses may discourage regular consumption among low-income households.

2. **Fuel stacking:** Some households continue using firewood, dung cakes or crop residues alongside LPG rather than completely switching to clean fuels.
3. **Health implications:** Incomplete transition sustains exposure to household air pollutants, including fine particulate matter (PM2.5).
4. **Environmental significance:** Reduced biomass combustion can lower household emissions and pressure on local forest resources.

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Q7.

The spread of infectious diseases from domestic animals to wildlife is an important concern in biodiversity conservation. Which of the following best explains the ecological significance of this phenomenon?

A. It represents biological magnification of persistent chemical pollutants across trophic levels.

B. It represents reverse zoonotic transmission, in which pathogens move from humans to animals.

C. It represents disease spillover from domestic animals to wildlife, often intensified by contact at shared grazing and water resources.

D. It represents genetic introgression between domesticated and wild animal populations.

Correct answer: Option C — It represents disease spillover from domestic animals to wildlife, often intensified by contact at shared grazing and water resources.

Explanation

Correct Answer: (c) — Disease spillover from domestic animals to wildlife.

1. **Disease spillover:** Pathogens circulating in domestic animal populations can cross species barriers and infect wildlife.
2. **Canine distemper:** This viral disease can cause severe outbreaks among susceptible carnivores, including wild dogs and other mammals.

3. **Rabies:** A viral zoonotic disease transmitted mainly through infected animal bites and capable of affecting numerous mammalian species.
4. **Foot-and-mouth disease:** A highly contagious viral disease affecting cloven-hoofed animals, including cattle, goats and several wild ungulates.

Shared grazing grounds, water sources and forest edges increase opportunities for pathogen transmission.

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Q8.

Sheshnag Lake, located along the Amarnath Yatra route, is part of a fragile high-altitude Himalayan ecosystem. Which of the following ecological processes is most likely to be adversely affected by extensive road construction in such a region?

A. Increased soil stability due to removal of natural vegetation.

B. Disruption of alpine habitats, slope stability and natural drainage systems.

C. Permanent elimination of glacial meltwater from the region.

D. Enhanced biodiversity due to increased human accessibility.

Correct answer: Option B — Disruption of alpine habitats, slope stability and natural drainage systems.

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Explanation

Correct Answer: (b) — Disruption of alpine habitats, slope stability and natural drainage systems.

1. **Alpine habitat disturbance:** Road construction fragments habitats and disturbs specialised high-altitude flora and fauna.
2. **Slope instability:** Excavation and vegetation removal can increase erosion, landslides and slope failures.
3. **Drainage disruption:** Construction can obstruct natural water channels and alter local hydrological processes.
4. **Tourism pressure:** Improved accessibility may increase visitor numbers, waste generation and pressure on limited ecological

resources.

High-altitude ecosystems recover slowly because of short growing seasons, low temperatures and fragile soils.

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Q9.

A district-level bird survey records several resident and migratory species across wetlands, forests and urban habitats. Which of the following ecological conclusions can reasonably be drawn from such a survey?

1. Bird diversity can provide an indication of habitat quality and ecological conditions.
2. Wetland bird populations may reflect changes in water availability and habitat degradation.
3. A single survey is sufficient to establish long-term population trends of all recorded species.
4. Repeated surveys can help identify changes in species distribution and seasonal migration patterns.

Select the correct answer using the code given below:

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A. 1 and 2 only

B. 1, 2 and 4 only

C. 2, 3 and 4 only

D. 1, 2, 3 and 4

Correct answer: Option B — 1, 2 and 4 only

Explanation

Correct Answer: (b) — Statements 1, 2 and 4 are correct.

1. **Statement 1 is correct:** Birds respond to habitat changes and can serve as indicators of ecosystem health.
2. **Statement 2 is correct:** Wetland-dependent birds are affected by water quality, hydrological changes and habitat availability.
3. **Statement 3 is incorrect:** A single survey provides a snapshot, not reliable long-term population trends.
4. **Statement 4 is correct:** Repeated seasonal monitoring helps track migration, distribution and population changes.

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Q10.

With reference to the United Nations Framework Convention on Climate Change (UNFCCC) and the global climate negotiation framework, consider the following statements:

1. The Conference of the Parties (COP) is the supreme decision-making body of the UNFCCC.
2. The Paris Agreement aims to hold the increase in global average temperature to well below 2°C and pursue efforts to limit it to 1.5°C above pre-industrial levels.
3. All decisions under the UNFCCC must be adopted through a simple majority vote.
4. The principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) recognises differences in countries' historical contributions and capacities to address climate change.

Which of the statements given above are correct?

A. 1, 2 and 4 only

B. 1 and 3 only

C. 2 and 3 only

D. 1, 2, 3 and 4

Correct answer: Option A — 1, 2 and 4 only

Explanation

Correct Answer: (a) — 1, 2 and 4 only

1. **Statement 1 is correct:** The COP reviews implementation of the UNFCCC and takes decisions necessary to promote its effective implementation.
2. **Statement 2 is correct:** The Paris Agreement establishes the well-below 2°C goal while pursuing efforts to limit warming to 1.5°C.
3. **Statement 3 is incorrect:** UNFCCC decisions are generally adopted by consensus; the Convention does not prescribe a universal simple-majority voting procedure.
4. **Statement 4 is correct:** CBDR-RC recognises that countries have common climate responsibilities but differ in historical emissions, national circumstances and capacities.

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