Test Series Paper – 06-01-2024 (Environment + Ecology)

Q1. Consider the following statements regarding Bio - magnification:
1. It refers to the tendency of pollutant to concentrate as it moves from one trophic level to the next.
2. A pollutant must be short lived and soluble in water.
3. It is used to measure pollutant in fatty tissues.

How many of the above statements is/are ***incorrect*****?**
(a) Only one
(b) Only two
(c) All three
(d) None

Ans: (a)
Explanation:

- **Statement 1 is correct:** Bio-magnification refers to the tendency of pollutants to concentrate as they move from one trophic level to the next. Hence, there is an increase in concentration of a pollutant from one link in a food chain to another.
- **Statement 2 is incorrect:** In order for bio-magnification to occur, the pollutant must be long-lived, mobile, soluble in fats and biologically active. They are not typically soluble in water.
- **Statement 3 is correct:** Bio-magnification can be checked by measuring the number of pollutants in fatty tissues of organisms such as fish. In mammals, we often test the milk produced by females, since the milk has a lot of fat in it are often more susceptible to damage from toxins (poisons)

Q2. Consider the following statements regarding the Niche in ecology:

1. Fundamental niche represents the entire range of environmental conditions where a species can exist.
2. Realized niche is always broader than the fundamental niche.
3. Competitive exclusion principle suggests that two species with identical niches can coexist in a stable environment.

How many of the above statements are *incorrect*?
(a) Only one
(b) Only two
(c) All three
(d) None

Ans: (b)

Explanation:

- **Statement 1 is correct:** The fundamental niche indeed denotes the complete range of environmental conditions, such as temperature, humidity, and resources, where a species could theoretically survive and reproduce. However, in reality, other factors like competition and predation might restrict a species to a smaller realized niche.

- **Statement 2 is incorrect:** The realized niche is often narrower than the fundamental niche due to interactions with other species. Predation, competition, and other ecological factors can limit a species to a subset of its fundamental niche.
- **Statement 3 is incorrect:** The competitive exclusion principle states that two species with identical niches cannot stably coexist in the same habitat. One species is likely to outcompete the other, leading to the exclusion of the less competitive species. This principle underscores the importance of niche differentiation for coexistence.

Q3. In India, the coral reefs are found in which of the following regions:
1. The Netrani Island
2. Angria Bank
3. Malwan

Select the correct answer using code given below:
(a) Only 1 and 2
(b) Only 2 and 3
(c) Only 1 and 3
(d) 1, 2 and 3

Ans: (d)
Explanation:

- Netrani Island is located in the Arabian Sea off the coast of Karnataka, is known for its coral reefs.
- Angria Bank is a shallow sunken atoll on the continental shelf off the west coast of India. It has a platform type coral reef.
- Malwan is located on the Sindhudurg coast, Malwan is home to several coral reefs.
- **So, option (d) is correct.**

Q4. Consider the following statements regarding the "co-evolution"

1. It is the process where two or more species reciprocally influence each other's evolution.

2. It only leads to a mutualistic relationship between the interacting species.

3. Antagonistic co-evolution involves positive interactions between species.

Which of the statements given above is/are correct?

(a) Only 1

(b) Only 2 and 3

(c) Only 1 and 3

(d) 1, 2, and 3

Ans: (a)
Explanation:

- **Statement 1 is correct:** Coevolution involves the reciprocal evolutionary changes between interacting species. This can occur in various forms, including mutualistic relationships, antagonistic interactions (such as predator-prey dynamics), or even competitive relationships.

- **Statement 2 is incorrect:** Coevolution can lead to diverse outcomes. While some interactions result in mutualistic relationships (where both species benefit), others may lead to antagonistic relationships, such as the coevolutionary arms race between predators and prey.
- **Statement 3 is incorrect:** Antagonistic coevolution involves interactions where one species evolves traits to counteract or exploit traits in another species. It typically arises in predator-prey or host-parasite relationships.

Q5. Consider the following statements regarding "Ecological pyramids":

1. Pyramid of numbers is always upright in grassland ecosystems.

2. Pyramid of biomass may be inverted in aquatic ecosystems.

3. Pyramid of energy is a direct measure of the productivity of different trophic levels.

How many of the above statements is/are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

Ans: (c)
Explanation:

- **Statement 1 is correct:** In grassland ecosystems, the pyramid of numbers is typically upright because a large number of herbivores are supported by a relatively smaller number of primary producers (grasses). This is a characteristic pyramid of numbers pattern.
- **Statement 2 is correct:** In aquatic ecosystems, the pyramid of biomass may be inverted due to the high biomass of phytoplankton (primary producers) supporting a smaller biomass of herbivores and carnivores.
- **Statement 3 is correct:** The pyramid of energy represents the flow of energy through trophic levels. It provides a more accurate depiction of ecosystem productivity as it accounts for the fact that energy is lost at each trophic level, typically in the form of heat through metabolic processes.

Q6. Which of the following is *incorrect* about Carbon Border Tax?
(a) A carbon border adjustment tax is a duty on imports based on the amount of carbon emissions resulting from the production of product in question.
(b) It involves imposing an import duty on a product manufactured in a country with more lax climate rules than the one buying it.
(c) Carbon adjustment tax was proposed by the G-7 countries
(d) Carbon adjustment tax was opposed by consortium of countries that includes India at the COP27 conference in Sharm-al-sheikh.

Ans: (c)
Explanation:

- **Statement 1 is correct:** A carbon border adjustment tax is a duty on imports based on the amount of carbon emissions resulting from the production of product in question.

- **Statement 2 is correct:** It involves imposing an import duty on a product manufactured in a country with more lax climate rules than the one buying it.
- **Statement 3 is incorrect:** Carbon adjustment border tax was proposed as a part of the European Commission's European green deal that endeavours to make Europe the first climate neutral continent by 2050.
- **Statement 4 is correct:** Carbon adjustment tax was opposed by consortium of countries that includes India at the COP27 conference in Sharm-al-sheikh.

Q7. Consider the following statements:

1. Due to increased deforestation, the net sequestration of atmospheric carbon by the terrestrial ecosystem has become almost zero while marine ecosystems have net positive carbon sequestration capacity.

2. The coastal ecosystems of mangroves, tidal marshes and seagrass meadows contain large stores of carbon deposited by vegetation.

Which of the given statements is/are correct?

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (a)

Explanation:

- **Statement 1 is correct:** The coastal ecosystems of mangroves, tidal marshes and seagrass meadows contain large stores of carbon deposited by vegetation and various natural processes over centuries. These ecosystems sequester and store more carbon – often referred to as 'blue carbon' – per unit area than terrestrial forests.
- **Statement 2 is incorrect:** Terrestrial ecosystems account for the fixation of approx. 30% of the anthropogenic carbon.

Q8. Which one of the following has not been constituted under the Environment (Protection) Act, 1986?
(a) Genetic Engineering and Appraisal Committee
(b) Central Pollution Control Board
(c) Eco-Sensitive Zones
(d) National Ganga River Basin Authority

Ans: (b)
Explanation

- The Central Pollution Control Board (CPCB), statutory organization, was constituted in September, 1974 under the Water (Prevention and Control of Pollution) Act, 1974. Further, CPCB was entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981. It serves as a field formation and also provides technical services to the

Ministry of Environment and Forests of the provisions of the Environment (Protection) Act, 1986.

- **So, option (b) is correct.**

Q9. Biological Oxygen Demand (BOD) is a standard criterion for

(a) Measuring oxygen levels in blood

(b) Computing oxygen levels in forest ecosystems

(c) Pollution assay in aquatic ecosystems

(d) Assessing oxygen levels in high-altitude regions

Ans: (c)

Explanation

- Biological oxygen demand (BOD) is the amount of dissolved oxygen needed (i.e., demanded) by aerobic micro-organisms to break down organic material present in a given water sample. Higher Biological oxygen demand (BOD) indicates more oxygen is required, signifying lower water quality.
- **So, option (c) is correct.**

Q10. With reference to the Hotspots and cool spots, consider the following statements:
1. Western Ghats is recognized as one of the world's 'hottest hotspots' of biological diversity.
2. "Cool spots" are a term used for marine areas.

Select the correct option from the codes given below:
(a) Only 1
(b) Only 2
(c) Both 1 and 2
(d) Neither 1 nor 2

Ans: (c)
Explanation:

- **Statement 1 is correct:** The Western Ghats of India is older than the great Himalayan Mountain chain, and are geomorphic feature of immense global importance. A significant characteristic of the Western Ghats is the exceptionally high level of biological diversity and endemism. This mountain chain is recognized as one of the world's eight hottest hotspots of biological diversity.
- **Statement 2 is correct:** "Cool spots" are a term used for marine areas with unique and ecologically important underwater habitats teeming with diverse wildlife. These areas are crucial for the health of the ocean and often require special protection from destructive activities

Q11. Consider the following:

1. Nutrient storage and recycling

2. Pollution breakdown and absorption

3. Contribution to climate stability

4. Medicinal resources

5. cultural values

Which of the given above is/are part of ecosystem services of biodiversity?

(a) Only 1, 2 and 3

(b) Only 2, 3 and 4

(c) Only 1, 3 and 5

(d) Only 2, 4 and 5

Ans: (a)

Explanation:

Ecosystem services of Biodiversity:

- Ecosystem services
- Protection of water resources
- Soils formation and protection
- Nutrient storage and recycling
- Pollution breakdown and absorption
- Contribution to climate stability
- Maintenance of ecosystems
- Recovery from unpredictable events

So, option (a) is correct.

Q12. Consider the following statements regarding Bathyal zone:
1. Photosynthesis does not take place in this region.
2. Light doesn't penetrate in this region across different latitudes.
3. The level of oxygen concentration is extremely low in this region.

Select the correct answer using the code given below:
(a) Only 1 and 2
(b) Only 2 and 3
(c) Only 1 and 3
(d) 1, 2 and 3

Ans: (c)
Explanation:

- Bathyal zone is a marine ecologic realm extending down from the edge of the continental shelf to the depth at which the water temperature is 4°C (39°F).
- **Statement 1 is correct:** The Bathyal zone, also known as the midnight zone, lacks sunlight, preventing photosynthesis-driven primary production.
- **Statement 2 is incorrect:** The Bathyal zone is generally dark, but in the clear, virtually lifeless waters of the tropics, small amounts of sunlight can penetrate as deeply as 600 m.
- **Statement 3 is correct:** At bathyal depths, currents are exceedingly slow, and in many areas, bathyal waters deeper than 1,000 m are essentially stagnant, resulting in low oxygen concentrations.

Q13. Consider the statements regarding Ecological footprint:

1. It is a measure of the total area of land and water required to sustain an individual or population.
2. A lower ecological footprint indicates a lower level of sustainability.

Which of the statements given above is/are correct?

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (a)

Explanation:

- **Statement 1 is correct**: The ecological footprint is indeed a measure of the total area of land and water needed to support human activities, including resource consumption and waste assimilation.
- **Statement 2 is incorrect:** A lower ecological footprint implies that human activities are within the planet's ecological capacity, contributing to greater sustainability and reduced environmental impact.

Q14. Consider the following statements:

1. Exponential growth occurs when a population grows at a constant rate over time.

2. Logistic growth accounts for limiting factors that restrict population growth.

3. In an ideal environment, a population will always exhibit exponential growth.

How many of the above statements is/are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)

Explanation:

- **Statement 1 is correct:** Exponential growth occurs when a population grows at a constant rate over time. This is accurate as exponential growth results in a J-shaped curve, representing rapid population increase without limiting factors.
- **Statement 2 is correct:** Logistic growth accounts for limiting factors that restrict population growth. This is correct because logistic growth considers factors like resource availability, leading to a sigmoid or S-shaped growth curve.

- **Statement 3 is incorrect:** In an ideal environment, a population will always exhibit exponential growth. This statement is incorrect as ideal conditions rarely persist in nature. Populations are often constrained by limiting factors, leading to logistic growth.

Q15. With reference to the biodiversity hotspots, consider the following statements:

1. It can be defined as the area with high species diversity and high levels of endemism.

2. Conservation of biodiversity hotspots is crucial for protecting a significant portion of the Earth's species.

Which of the above statements is/are correct?

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (c)

Explanation:

- **Statement 1 is correct:** Biodiversity hotspots are areas with high species diversity and high levels of endemism. This statement accurately describes biodiversity hotspots, highlighting their significance in terms of both the variety of species and the presence of unique, endemic species.
- **Statement 2 is correct:** Conservation of biodiversity hotspots is crucial for protecting a significant portion of the Earth's species. This statement is accurate. Biodiversity hotspots concentrate a large proportion of the world's species, and their conservation is crucial for preserving global biodiversity. Efforts to protect hotspots contribute significantly to global conservation goals.

Q16. Consider the following organisms:

1. Nostoc

2. Spirogyra

3. Agaricus

How many of the above is/are used as biofertilizer/biofertilizers?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (a)

Explanation:

- Biofertilizers are cultured micro-organisms which have easy application in the field, acting as a critical input in agriculture. Well-known biofertilizers are Rhizobium, Azotobacter, Phosphate Solubilizers, Blue-Green Algae, Azolla, Mycorrhizae, etc.
- Spirogyra (genus Spirogyra) is a member of a genus of some 400 species of free-floating green algae (division Chlorophyta) found in freshwater environments which are commonly used in laboratory demonstrations.
- Agaricus is a genus of mushrooms containing both edible and poisonous species, with possibly over 300 members worldwide.
- **So, option (a) is correct.**

Q17. Consider the following statements regarding 'Eco-Sensitive Zones':

1. Eco-Sensitive Zones are the areas that are declared under the Wildlife (Protection) Act, 1972.

2. The purpose of the declaration of Eco Sensitive Zones is to prohibit all kinds of human activities in those zones except agriculture.

Which of the above statements is/are incorrect?

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (c)

Explanation:

- **Statement 1 is incorrect:** Eco-Sensitive Zones are declared under the Environment (Protection) Act, 1968.
- **Statement 2 is incorrect:** Not all types of human activities are banned. Apart from agriculture, activities like horticulture, scientific research, rainwater harvesting etc. are also undertaken.

Q18. From the ecological point of view, which one of the following assumes importance in being a good link between the Eastern Ghats and the Western Ghats?

(a) Sathyamangalam Tiger Reserve

(b) Nallamala Forest

(c) Nagarhole National Park

(d) Seshachalam Biosphere Reserve

Ans: (a)

Explanation

- The Sathyamangalam Tiger Reserve encompass forests of Erode and Sathyamangalam Divisions.

- Located in the Erode district of Tamil Nadu, the Sathyamangalam Tiger Reserve is the largest wildlife sanctuary in the state. The reserve is a part of the Nilgiri Biosphere Reserve and lies between the Western Ghats and the rest of the Eastern Ghats.
- **So, option (a) is correct.**

Q19. Consider the following statements in respect of Trade Related Analysis of Fauna and Flora in Commerce (TRAFFIC):

1. TRAFFIC is a bureau under United Nations Environment Programme (UNEP).

2. The mission of TRAFFIC is to ensure that trade in wild plants and animals is not a threat to the conservation of nature.

Which of the statements given above is/are correct?

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (b)

Explanation

- **Statement 1 is incorrect:** Trade Related Analysis of Fauna and Flora in Commerce (TRAFFIC) is a joint program of the World Wildlife Fund (WWF) and the International Union for Conservation of Nature (IUCN).
- **Statement 2 is correct:** TRAFFIC focuses on preserving biodiversity and sustainable legal wildlife trade while working against unsustainable illegal wildlife trade. It responds to the growing threats posed by illegal wildlife trade and overexploitation.

Q20. Consider the following statements:
1. Ocean acidification caused primarily by uptake of carbon dioxide (CO_2) from the atmosphere.
2. A fall in pH helps calcifying organisms such as oysters, crabs, sea urchins to build their shell.
Which of the statements given above is/are correct?
(a) Only 1
(b) Only 2
(c) Both 1 and 2
(d) Neither 1 nor 2

Ans: (a)
Explanation:

- **Statement 1 is correct:** Ocean acidification refers to a reduction in the pH of the ocean over an extended period of time, caused primarily by uptake of carbon dioxide (CO_2) from the atmosphere.
- **Statement 2 is incorrect:** For marine ecosystems, ocean acidification presents a two-fold challenge higher acidity and lower availability of carbonate ions. Calcifying organisms such as

oysters, crabs, sea urchins, lobsters and coral need carbonate ions to build and maintain their shells and skeletons. Furthermore, studies suggest marine shells and skeletons may dissolve more easily as pH decreases.

Q21. Consider the following statement regarding Energy flow in Ecosystem:
1. The amount of energy decreases at successive trophic levels in an ecosystem.
2. The green plants are able to capture only fifty percent of the Photo synthetically Active Radiation, which in turn is ten percent of the total incident solar radiation.
3. In a grazing food chain, more than fifty percent of energy is transferred from a lower trophic level to its higher trophic level.

How many of the above statements is/are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

Ans: (a)
Explanation:

- **Statement 1 is correct:** In any ecosystem, the flow of energy declines as it passes from lower to higher trophic level. Each successive trophic level has less total energy. This is because energy is lost as metabolic heat during the transfer of energy.
- **Statement 2 is incorrect:** Plants capture only 10% of the photosynthetically active radiation and this small amount of energy sustains the entire living world.
- **Statement 3 is incorrect:** In a grazing food chain, energy is transferred from plants to herbivores, then to carnivores. However, only about 10 percent of the total energy stored in organisms at one trophic level is transferred to organisms at the next trophic level.

Q22. Consider the following statements:

1. Carrying capacity is the maximum population size that a habitat can support indefinitely.

2. The carrying capacity of a habitat remains constant over time.

3. Human activities cannot influence the carrying capacity of a habitat.

Which of the statements given above is/are correct?

(a) Only 1 and 2

(b) Only 2 and 3

(c) Only 1 and 3

(d) 1, 2, and 3

Ans: (a)

Explanation:

- **Statement 1 is correct:** Carrying capacity is the maximum population size that a habitat can support indefinitely. This statement accurately defines carrying capacity, representing the threshold beyond which the environment cannot sustain a population without degradation.

- **Statement 2 is correct:** The carrying capacity of a habitat remains constant over time. This statement is incorrect. Carrying capacity is dynamic and can change due to various factors such as environmental changes, resource availability, and human activities. Natural events or human interventions can influence the carrying capacity.
- **Statement 3 is incorrect:** Natural events or human interventions can influence the carrying capacity.

Q23. Which of the following organisations is/are considered as International Organization Partners (IOPs) of the Ramsar Convention:
1. Birdlife International
2. International Union for Conservation of Nature (IUCN)
3. International Water Management Institute (IWMI)
4. World Wide Fund for Nature (WWF)

How many of the above statements is/are correct?
(a) Only one
(b) Only two
(c) Only three
(d) All four

Ans: (d)
Explanation:

- The Ramsar Convention on Wetlands is an international treaty for "the conservation and sustainable use of wetlands". It is also known as the Convention on Wetlands. It is named after the city of Ramsar in Iran.
- The Ramsar Convention works closely with six organizations known as International Organization Partners (IOPs). These are:
  - ❖ Birdlife International
  - ❖ International Union for Conservation of Nature (IUCN)
  - ❖ International Water Management Institute (IWMI)
  - ❖ Wetlands International
  - ❖ World Wide Fund for Nature (WWF)
  - ❖ International Wildfowl & Wetlands Trust (WWT).

So, option (d) is correct.

Q24. Consider the following statements:
1. High biodiversity ensures resistance to diseases and pests in a population.
2. species richness measures the proportion of species at a given site.
Which of the statements given above is/are correct?

(a) Only 1
(b) Only 2
(c) Both 1 and 2
(d) Neither 1 nor 2
Ans: (a)

Explanation:

- **Statement 1 is correct:** High biodiversity can indeed provide natural resistance to diseases and pests in a population. In diverse ecosystems, various species may act as checks and balances, preventing the rapid spread of diseases or pests.
- **Statement 2 is incorrect**: Species evenness measures the proportion of species at a given site, e.g. low evenness indicates that a few species dominate the site.

Q25. Which among the following are examples of natural pesticides:
1. Nicotine
2. Rotenone
3. Pyrethrum
4. Dieldrin

Select the correct answer using the code given below:
(a) Only 1 and 2
(b) Only 1, 2 and 3
(c) Only 2, 3 and 4
(d) Only 1 and 4

Ans: (b)
Explanation:

- Natural pesticides are pesticides that come from natural sources-generally plant or mineral derivatives. Nicotine (extracted from tobacco), Pyrethrum (extracted from chrysanthemum flowers), and Rotenone (extracted from the tuber Derris elliptica) are plant-derived.
- Organochlorine (OC) pesticides are synthetic pesticides widely used all over the world. The most widely known organochlorine pesticide is dichlorodiphenyltrichloroethane, i.e., the insecticide DDT, the uncontrolled use of which raised many environmental and human health issues. Dieldrin, endosulfan, heptachlor, dicofol, and methoxychlor are some other organochlorines used as pesticides.
- **So, option (b) is the correct answer.**

Q26. Consider the following pairs:

Wetlands	Rivers
1. Harike	Beas and Sutlej
2. Keoladeo Ghana	Banas and Chambal
3. Sundarbans	Bhagirathi Hooghly

How many of the pairs given above is/are correctly matched?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)

Explanation:

Wetlands	Rivers
1. Harike	Beas and Sutlej
2. Keoladeo Ghana	Gambhir and Banganga
3. Sundarbans	Bhagirathi Hooghly

Q27. Consider the following statements:

Statement I: Bioresources have remained an integral part of the lifestyle followed by indigenous populations of the world, but now there is a severe threat to such lifestyles.

Statement II: Over-exploitation of the bioresources is inherent to the indigenous life of the people, and it needs to be regulated to conserve bioresources.

Which of the following is correct with respect to the above statements?

(a) Both Statements I and II are correct and Statement II is the correct explanation of Statement I

(b) Both Statements I and II are correct and Statement II is not the correct explanation of Statement I

(c) Statement I is correct and Statement II is incorrect

(d) Statement I is incorrect and Statement II is correct

Ans: (c)

Explanation:

- Most of the indigenous population has long history and tradition and a rich body of knowledge of co-habiting with the nature around them, and utilizing the natural resources especially bioresources in a manner and extent that these resources do not get exhausted.
- Unless affected by the modern demand for the products derived from bioresources, overexploitation of bioresources is almost unknown to the indigenous population across the world.
- **So, option (c) is correct.**

Q28. Which of the following best describes the term "Arctic amplification"?
(a) Warming of Arctic twice to three times as fast as the rest of the planet.
(b) Accumulation of more ice by the Arctic
(c) Conservation efforts to protect biodiversity of arctic by the NASA
(d) Efforts to make arctic more habitable

Ans: (a)
Explanation:

- The Arctic is warming twice to three times as fast as the rest of the planet due to sea ice loss this phenomenon known as Arctic amplification.

- As sea ice declines, it becomes younger and thinner, and therefore more vulnerable to further melting. When the ice melts entirely, darker land or ocean surfaces can absorb more energy from the Sun, causing additional heating .
- Arctic amplification is driving ice sheet melt, sea level rise, more intense Arctic fire seasons, and permafrost melt. A growing body of research also shows that rapid Arctic warming is contributing to changes in mid-latitude climate and weather.
- So, option (a) is correct.

Q29. In the context of solving pollution problems, what is/are the advantage/advantages of bioremediation technique?

1. It is a technique for cleaning up pollution by enhancing the same biodegradation process that occurs in nature.

2. Any contaminant with heavy metals such as cadmium and lead can be readily and completely treated by bioremediation using microorganisms.

3. Genetic engineering can be used to create microorganisms specifically designed for bioremediation.

Select the correct answer using the code given below:

(a) Only 1

(b) Only 2 and 3

(c) Only 1 and 3

(d) 1, 2 and 3

Ans: (c)

Explanation

- **Statement 1 is correct:** Bioremediation is an attractive and successful cleaning technique to remove toxic waste from polluted environment. Bioremediation is highly involved in degradation, eradication, immobilization or detoxification diverse chemical wastes and physical hazardous materials.
- **Statement 2 is incorrect:** Heavy metals such as cadmium and lead are not readily absorbed or captured by microorganisms. So, these metals can't be treated by bioremediation.
- **Statement 3 is correct:** Genetic engineering can be used to create microorganisms for bioremediation. It is safer and more cost-effective to use engineered microorganisms rather than alternative methods.

Q30. According to the Wildlife (Protection) Act, 1972, which of the following animals cannot be hunted by any person except under some provisions provided by law?

1. Gharial

2. Indian wild ass

3. Wild buffalo

Select the correct answer using the code given below:

(a) Only 1

(b) Only 2 and 3

(c) Only 1 and 3

(d) 1, 2 and 3

Ans: (d)

Explanation

- Gharial (Gravialis gangeticus), Indian Wild Ass (Equus hemionus khur) and Wild Buffalo (Bubalus bubalis) are all mentioned under Schedule I for the Wildlife (Protection) Act, 1972. Species listed in this Schedule are forbidden from being hunted in India, unless they pose a threat to human life. **So, option (d) is correct.**

Q31 With reference to the Eco sensitive zones (ESZ), consider the following statements:
1. It is declared under the Environment (Protection) Act, 1986.
2. These zones are demarcated up to 10km around a Protected Area.
3. Activities like felling of trees are strictly prohibited inside an ESZ.

Select the correct answer using the code given below:
(a) Only 1 and 2
(b) Only 1 and 3
(c) Only 2 and 3
(d) 1, 2 and 3

Ans: (a)
Explanation:

- **Statement 1 is correct:** Ecologically Sensitive Zones (ESZs) are notified by the Central Government through the Ministry of Environment Forests and Climate Change under the Environment Protection Act 1986.
- **Statement 2 is correct:** The Environmental Protection Act of 1986 requires state governments to designate land within 10 kilometers of the borders of national parks and wildlife sanctuaries as eco-fragile zones or Eco-Sensitive Zones (ESZs)1. However, if areas exceeding 10 km contain bigger ecologically significant "sensitive corridors," the Union government may additionally declare those areas to be ESZs.
- **Statement 3 is incorrect:** While certain activities like the establishment of industries, the use of commercial timber, mining, and tourism are prohibited in these Zones, not all activities like felling of trees are strictly prohibited. Some activities can be done in ESZ with some regulations.

Q32. Consider the following statement regarding Marsupials:
1. They are a group of mammals commonly known as pouched mammals.
2. They have long gestation times like placental mammals.

Select the correct answer using the code given below:
(a) Only 1
(b) Only 2

(c) Both 1 and 2
(d) Neither 1 nor 2

Ans: (a)
Explanation:

- **Statement 1 is correct:** Marsupials are the group of mammals commonly thought of as pouched mammals (like the wallaby and kangaroo). A distinctive characteristic common to most of these species is that the young are carried in a pouch. Marsupials include opossums, Tasmanian devils, kangaroos, koalas, wombats, wallabies, bandicoots, and the extinct thylacine. They give birth to relatively undeveloped young that often reside in a pouch located on their mothers' abdomen for a certain amount of time.
- **Statement 2 is incorrect:** They do not have long gestation times like placental mammals. The short gestation time is due to having a yolk-type placenta in the mother marsupial.

Q33. The outer shell of algae zooxanthellae which live inside the corals, made from which of the following component?

(a) Sodium carbonate

(b) Calcium carbonate

(c) Chromium carbonate

(d) Iron carbonate

Ans:(b)

Explanation:

- Coral reefs are important ocean habitats and offer a compelling case of the risks of climate change. Reefs provide a large fraction of Earth's biodiversity—they are called "the rain forests of the seas."
- Corals live with algae in a type of relationship called symbiosis. The algae, called zooxanthellae, live inside the corals, which provide a tough outer shell made from calcium carbonate.
- In return for that protection, the algae provide their host with food produced through photosynthesis. Zooxanthellae also provide corals with their striking colors.
- **So, option (b) is correct.**

Q34. Consider the following pairs:

National Parks	**State**
1. Tadoba	Madhya Pradesh
2. Bandhavgarh	Maharashtra
3. Dachigam	Arunachal Pradesh
4. Simlipal	Orissa

How many of the pairs given above is/are correctly matched?
(a) Only one
(b) Only two
(c) Only three
(d) All four

Ans: (a)
Explanation:

- **Pair 1 is incorrect:** Tadoba National Park is located in Chandra Pur district of Maharashtra. It supports the populations of tiger, sambhar, sloth beer, lion, chital, chinkara, barking deer, blue bull, four horned deer, langur, pea foul and crocodile.
- **Pair 2 is incorrect**: Bandhav Garh National Park is located in MadhyaPradesh. The principal animal kept in this park is the White Tiger.
- **Pair 3 is incorrect**: Dachigam National Park was notified in the year 1981 in the Jammu and Kashmir (India). Some of the animals protected in this park are Kashmiri Stag and Hangul.
- **Pair 4 is correct**: Simlipal National Park is located in the district Mayurbhanj in Odisha. This National Park comprises dense Sal Forest due to which this park has been chosen for the Project Tiger.

Q35. Consider the following statements:
1. The nitrates are a part of the plant's metabolism, which helps in forming new plant proteins.
2. The carnivorous animals are primary consumers as they live on the producers.
Which of the statements given above is/are correct?

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans:(a)

Explanation:

- **Statement 1 is correct**: Nitrogen is an essential macronutrient for plant growth and development and plays an important role in the whole life process of plants. The nitrates are a part of the plant's metabolism, which helps in forming new plant proteins. This is used by animals that feed on the plants.
- **Statement 2 is incorrect**: The herbivorous animals are primary consumers as they live on the producers.

Q36. Consider the following with reference to 'fly ash' produced by the power plants using the coal as fuel:

1. It can be used in the production of bricks for building construction.

2. It can be used as a replacement for some of the Portland cement contents of concrete.

3. It is made up of silicon dioxide and calcium oxide only, and does not contain any toxic elements

How many of the above statements is/are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)

Explanation:

- **Statement 1 is correct:** Fly ash can be used in the production of bricks for building construction.
- **Statement 2 is correct:** Fly ash can be used as a replacement for some of the Portland cement contents of concrete.
- **Statement 3 is incorrect:** Fly ash is a pollutant, and it contains acidic, toxic, and radioactive matter. This ash can contain lead, arsenic, mercury, cadmium, and uranium.

Q37. What is Turquoise Hydrogen?

(a) Hydrogen captured by oceans and coastal ecosystems.

(b) Hydrogen in forest biomass and agricultural soils.

(c) Hydrogen contained in petroleum and natural gas.

(d) Hydrogen made using a process called methane pyrolysis to produce hydrogen and solid carbon.

Ans: (d)

Explanation:

- Turquoise hydrogen is made using a process called methane pyrolysis to produce hydrogen and solid carbon.
- In the future, turquoise hydrogen may be valued as a low-emission hydrogen, dependent on the thermal process being powered with renewable energy and the carbon being permanently stored or used.

So, Option (d) is correct.

Q38. If you want to see gharials in their natural habitat, which one of the following is the best place to visit?

(a) Bhitarkanika Mangroves

(b) Chambal River

(c) Pulicat Lake

(d) Deepor Beel

Ans: (b)
Explanation:

- Gharials were once widely distributed in the large rivers that flow in the northern part of the Indian subcontinent. Today, their major population occur in the Chambal River.

- Gharials reside exclusively in river habitats with deep, clear, fast-flowing waters and steep, sandy banks. Adult gharials prefer still, deep pools, formed at sharp river-bends and river confluences and use sandy banks for basking and breeding. **So, option (b) is correct.**

Q39. In India, if a species of tortoise is declared protected under Schedule I of the Wildlife (Protection) Act, 1972, what does it imply?

(a) It enjoys the same level of protection as the tiger.

(b) It no longer exists in the wild, a few individuals are under captive protection; and now it is impossible to prevent its extinction.

(c) It is endemic to a particular region of India.

(d) Both (b) and (c) stated above are correct in this context.

Ans: (a)

Explanation

Schedule I of the Wildlife (Protection) Act, 1972,

- Hunting and trade is strictly prohibited.
- Severe penalties are imposed for violations, including imprisonment.
- Special permission is required for any scientific research or captive breeding.
- **So, option (a) is correct.**

Q40. With reference to the "Energy Transition Index 2023", consider the following statements:

1. This Index is published by International monetary fund (IMF).

2. For the first time, this Index evaluated countries' "transition momentum".

3. France is the only G20 country featured in the top 10.

How many of the above statements is/are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)
Explanation:

- **Statement 1 is incorrect:** Energy transition index is published by the World economic forum (WEF). The Energy Transition Index benchmarks 120 countries on their current energy system performance and on the readiness of their enabling environment.
- **Statement 2 is correct:** In 2023, the ETI used an updated framework reflecting emerging shifts in the global energy landscape. This edition also evaluated countries' "transition momentum" for the first time to highlight the urgency of consistent progress on timely and effective transition.

- **Statement 3 is correct:** World Economic Forum (WEF) has ranked India at the 67th place globally on Energy Transition Index (ETI). Sweden leads the global rankings, followed by Denmark and Norway. France is the only G-20 country features in the top 10.

Q41. Consider the following statements regarding water contamination:
1. Animals are not as sensitive to arsenic contamination as humans.
2. The occurrence of the fluoride in groundwater is predominantly geogenic.
3. Uranium contamination leads to Bio magnification in humans.

How many of the above statements is/are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

Ans: (b)
Explanation:

- **Statement 1 is correct:** Animals are not as sensitive to arsenic as humans, owing to differences in gastrointestinal absorption. The excess arsenic may cause sufficient damage to human health and these may be respiratory distress due to irritation of mucous membranes, resulting into laryngitis, bronchitis or rhinitis, myocardial depolarization and cardiac arrhythmias that may lead to heart failure.
- **Statement 2 is correct:** Fluoride enrichment in groundwater takes place mainly through leaching and weathering of the Fluoride bearing minerals present in the rocks and sediments which depends on several factors such as the origin of water, composition of water bearing medium, the length of time the water has been in contact with the medium, the temperature and pressure conditions, ion-exchange, rate of recharge and discharge etc.
- **Statement 3 is incorrect:** In ancient times uranium was used to produce yellow glazes in ceramic. Water containing low amounts of uranium is usually safe to drink. Because of its nature, uranium is not likely to accumulate in groundwater, in fish or vegetables uranium that is absorbed and enter in human body is eliminated quickly through urine and faeces. Hence it does not lead to bio magnification.

Q42. Consider the following statements about the food pyramid:

1. The food pyramid has a large base of plants called ‘producers.
2. The pyramid has a narrower middle section that depicts the number and biomass of carnivorous animals, which are called fourth-order consumers.
3. The apex depicts the large biomass of carnivorous animals called fourth-order consumers.

How many of the statements given above is/are ***incorrect***?
(a) Only one
(b) Only two
(c) All three
(d) None

Ans:(b)
Explanation:

- **Statement 1 is correct:** The pyramid is divided into trophic levels similar to those in a food chain. At the pyramid base are the producers, autotrophic organisms that make their own food from inorganic substances. Hence statement 1 is correct. All of the other organisms in the energy pyramid are consumers.
- **Statements 2 and 3 are incorrect:** The pyramid has a narrower middle section that depicts the number and biomass of herbivorous animals, which are called 'first order consumers. The apex depicts the small biomass of carnivorous animals called 'second order consumers.

Q43. Which of the following are the most likely places to find the Great Indian Bustards in its natural habitat.
1. Desert National Park Sanctuary
2. Rollapadu Wildlife Sanctuary
3. Karera Wildlife Sanctuary

Select the correct answer using the code given below:
(a) Only 1 and 2
(b) Only 2 and 3
(c) Only 1
(d) 1, 2 and 3

Ans: (a)
Explanation:

- **Statement 1 is correct**: The Desert National Park Sanctuary in Rajasthan is known for being a habitat of the Great Indian Bustard.
- **Statement 2 is correct:** The Rollapadu Wildlife Sanctuary in Andhra Pradesh is known as a habitat of the Great Indian Bustard. However, the species has suffered a drastic fall in its numbers in the sanctuary in recent years.
- **Statement 3 is incorrect:** The Karera Wildlife Sanctuary in Madhya Pradesh was established to protect the Great Indian Bustard, but the bird has not been spotted in the sanctuary since 1994.

Q44. Which of the following is the correct sequence of the successive stages in Ecological succession?

(a) Serel stages -> Pioneer stage -> climax stage.

(b) Climax stage -> seral stages -> pioneer stage.

(c) Pioneer stage -> seral stages-> climax stage.

(d) Climax stage -> pioneer stage -> seral stages.

Ans: (c)
Explanation:

- Ecological succession is a process through which ecosystems tend to change over a period of time. Succession can be related to seasonal environmental changes, which create changes in the community of plants and animals living in the ecosystem.
- Developmental stages in the ecosystem thus consist of a pioneer stage, a series of changes known as seral stages, and finally a climax stage.

- The successive stages are related to the way in which energy flows through the biological system.
- **So, option (c) is correct.**

Q45. Consider the following pairs of newly created Elephant Reserves and the States they belong to:

	Elephant Reserve	**State**
1.	Dandeli	Tamil Nadu
2.	Singphan	Mizoram
3.	Lemru	Jharkhand

How many of the pairs given above is/are correctly matched:
(a) Only one
(b) Only two
(c) Only three
(d) None

Ans: (d)
Explanation:

- India has 31 Elephant Reserves. In the last 3 years,
  - Dandeli Elephant Reserve has been notified by the state of Karnataka.
  - Singphan Elephant Reserve by Nagaland.
  - Lemru Elephant Reserve in Chhattisgarh.
- This has brought the total area under Elephant Reserves in India to about 76,508 sqkm across 14 states of the country.
- **So, option(d) is correct.**

Q46. With reference to 'palm oil', consider the following statements:

1. The palm oil is a raw material for some industries producing lipstick and perfumes.

2. India is heavily dependent on palm oil imports from Indonesia.

3. The palm oil can be used to produce biodiesel.

How many of the statements given above is/are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (c)
Explanation:

- Palm oil is a valuable source for biodiesel as methyl esters are derived from palm oil through a process known as 'transesterification'. Among a wide range of its application, it also includes cosmetics products like lipstick and perfumes and other cleaning products as well.
- More than 80% of India's palm oil import demand is met at the expense of Indonesian rainforests as India currently has suboptimal production capacity.

- **So, option (c) is correct.**

Q47. Consider the following statements:

Once the Central Government notifies an area as a 'Community Reserve'-

1. The Chief Wildlife Warden of the State becomes the governing authority of such forest.

2. Hunting is not allowed in such area.

3. People of such area are allowed to collect non-timber forest produce.

4. People of such area are allowed traditional agricultural practices.

How many of the above statements is/are correct?

(a) Only one

(b) Only two

(c) Only three

(d) All four

Ans: (c)

Explanation:

- **Statement 1 is correct:** The Chief Wildlife Warden of the State becomes the governing authority of such forest
- **Statement 2 is correct:** Hunting is not allowed in such area.
- **Statement 3 is correct:** People of such area are allowed to collect non-timber forest produce.
- **Statement 4 is incorrect:** People are prohibited to use community reserves for traditional agricultural practices such as jhum cultivation

Q48. It is possible to produce algae-based biofuels, but what is/are the likely limitation(s) of developing countries in promoting this industry?

1. Production of algae-based biofuels is possible in seas only and not on continents.

2. Setting up and engineering the algae-based biofuels production requires high level of expertise/ technology until the construction is complete.

3. Economically viable production necessitates the setting up of large-scale facilities which may raise ecological and social concerns.

Select the correct answer using the code given below:

(a) Only 1 and 2

(b) Only 2 and 3

(c) Only 3

(d) 1, 2 and 3

Ans: (b)

Explanation

- **Statement 1 is incorrect:** Production of algal biofuel is possible both in seas and on continents. Algae can grow on marginal or non-crop land, so they don't compete with valuable agricultural land.
- **Statement 2 is correct:** Developing and engineering Algae Based Biofuels technology requires a high level of expertise until construction is finished.
- **Statement 3 is correct:** Algal based biofuel concepts require significant capital investment economically advantageous, large-scale facilities often come at the cost of greater social and environmental burdens.

Q49. In which of the following regions of India are you most likely to come across the 'Great Indian Hornbill' in its natural habitat?

(a) Sand deserts of northwest India
(b) Higher Himalayas of Jammu and Kashmir
(c) Salt marshes of western Gujarat
(d) Western Ghats

Ans: (d)

Explanation

- Hornbills are large and wide-ranging birds and most species are dependent on tropical forest habitats that contain large and tall trees. India has nine hornbill species, of which four are found in the Western Ghats: Indian Grey Hornbill (endemic to India), the Malabar Grey Hornbill (endemic to the Western Ghats), Malabar Pied Hornbill (endemic to India and Sri Lanka)
- Great Indian Hornbills the magnificent birds which were a common sight in the evergreen rain forests of the Western Ghats are now forced, due to deforestation, to adapt themselves to hollows in silver oak trees which form part of thick coffee plantation. **So, option (d) is correct.**

Q50. Recently, a species names "Atlantic menhaden" was in news, it is one of the species of:

(a) Fish

(b) Birds

(c) Butterfly

(d) Tortoise

Ans: (a)

Explanation:

- Atlantic menhaden, Brevoortia tyrannus, are small, nutrient-packed fish that are central to the Chesapeake Bay's food chain and support commercial fisheries on the Atlantic coast.

- Menhaden have been called the “most important fish in the sea.” In the Bay, they create a vital connection between the bottom and top of the food chain. They eat tiny plants and animals, called plankton, by filtering them from the water.
- So, option (a) is correct.

Q51. Consider the following statements:

Statement I: At each linkage in the food chain, a major part of the energy from the food is lost for daily activities.

Statement-II: Approximately 90 percent of the food energy that enters a trophic level is “lost” as heat by organisms to power the normal activities of life; the remaining 10 percent is stored in the various organisms’ tissues.

Which one of the following is correct in respect of the above statements?

(a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I

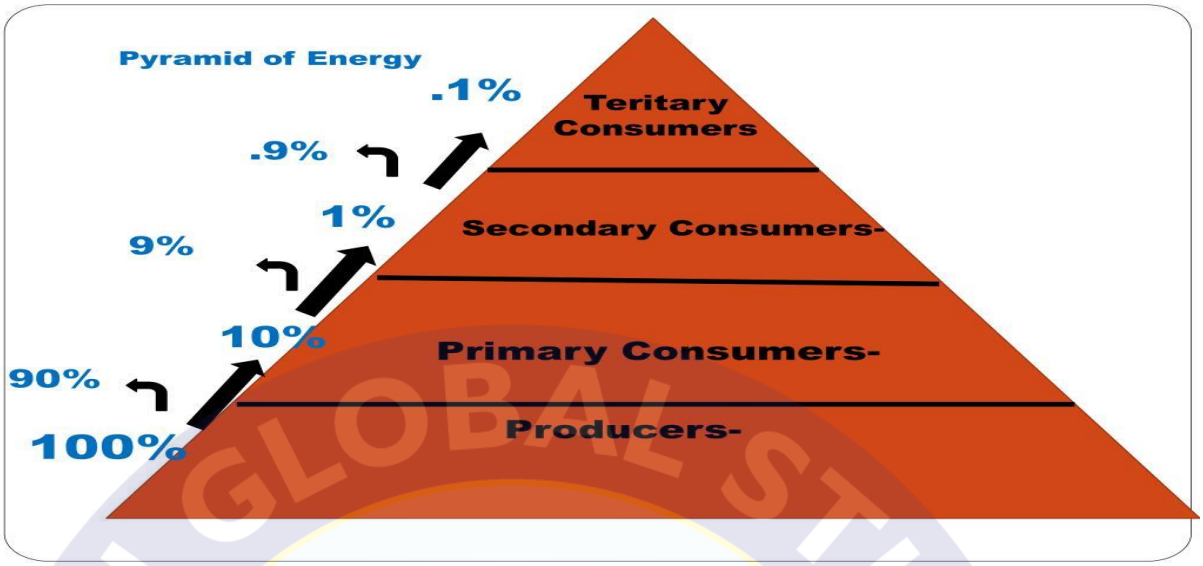
(b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I

(c) Statement-I is correct but Statement-II is incorrect

(d) Statement-I is incorrect but Statement-II is correct

Ans:(a)
Explanation:

- The shape of an energy pyramid shows that the amount of food energy that enters each trophic level is less than the amount that entered the level below.
- Approximately 90 percent of the food energy that enters a trophic level is “lost” as heat when it is used by organisms to power the normal activities of life such as breathing and digesting food; the remaining 10 percent is stored in the various organisms’ tissues. It is this latter energy that is available to be passed to the next trophic level. Thus, the higher the trophic level on the pyramid, the lower the amount of available energy.
- The number of organisms at each level decreases relative to the level below because there is less energy available to support those organisms. The top level of an energy pyramid has the fewest organisms because it has the least amount of energy. Eventually, there is not enough energy left to support another trophic level; thus most ecosystems only have four trophic levels.
- **So, option(a) is correct.**



Q52. Which of the following ingredients can be commonly found in microbeads:

1. Polyethylene (PE)
2. Polyethylene terephthalate (PET)
3. Nylon (PA)

Select the correct answer using codes given below:
(a) Only 1 and 2
(b) Only 2 and 3
(c) Only 1 and 3
(d) 1, 2 and 3

Ans: (d)
Explanation:

- Microbeads are plastic microscopic microspheres used as exfoliating agents in cosmetics and personal care products such as toothpaste, body scrubs, and face wash.
- These beads are used as a replacement for previously used natural exfoliating materials such as pumice, oatmeal, or walnut husks. Common microbead ingredients:
    - Polyethylene (PE)
    - Polyethylene terephthalate (PET)
    - Nylon (PA)
    - Polypropylene (PP)
    - Polymethyl methacrylate (PMMA)

So, option (d) is correct.

Q53. Consider the following pairs:

List I	**List II.**
1. Himalayan Coniferous	Avicenia
2. Dry Deciduous	Teak, Ain, Terminalia
3. Mangrove delta forest	Pine, deodar

How many of the pairs given above is/are correctly matched?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans:(a)
Explanation:

Forest type	Plants Examples
1. Himalayan Coniferous	1. Pine, deodar
2.Deciduous – Dry	2.Teak, Ain, Terminalia
3. Deciduous – Moist	3. Sal
4. Mangrove Delta forest	4. Avicenia

- **So, Option (a) is correct.**

Q54. Recently, Lifestyle for Environment (LIFE) campaign was in news. Consider the following statement:
1. It was launched by India at COP26 in Glasgow in 2021.
2. It recognises small individual actions can tip the balance in the planet's favour

Select the correct answer using the code given below:
(a) Only 1
(b) Only 2
(c) Both 1 and 2
(d) Neither I nor 2

Ans: (c)
Explanation:

- **Statement 1 is correct:** The Lifestyle for Environment (LIFE) campaign was launched by Prime Minister Narendra Modi at COP26 in Glasgow in 2021. The prime minister called upon global leaders to join the movement for safeguarding the environment by adopting environment-friendly lifestyle.
- **Statement 2 is correct:** It recognises small individual actions can tip the balance in the planet's favour. But we need guiding frameworks, information sharing and the scale of a global movement. It recognises that accountability is relative to contribution.

Q55. Consider the following:
1. Non-flowering plants
2. Reproductive system in cones
3. Needle-like leaves
4. Triploid tissue

How many of the above is/are characteristics of angiosperms?

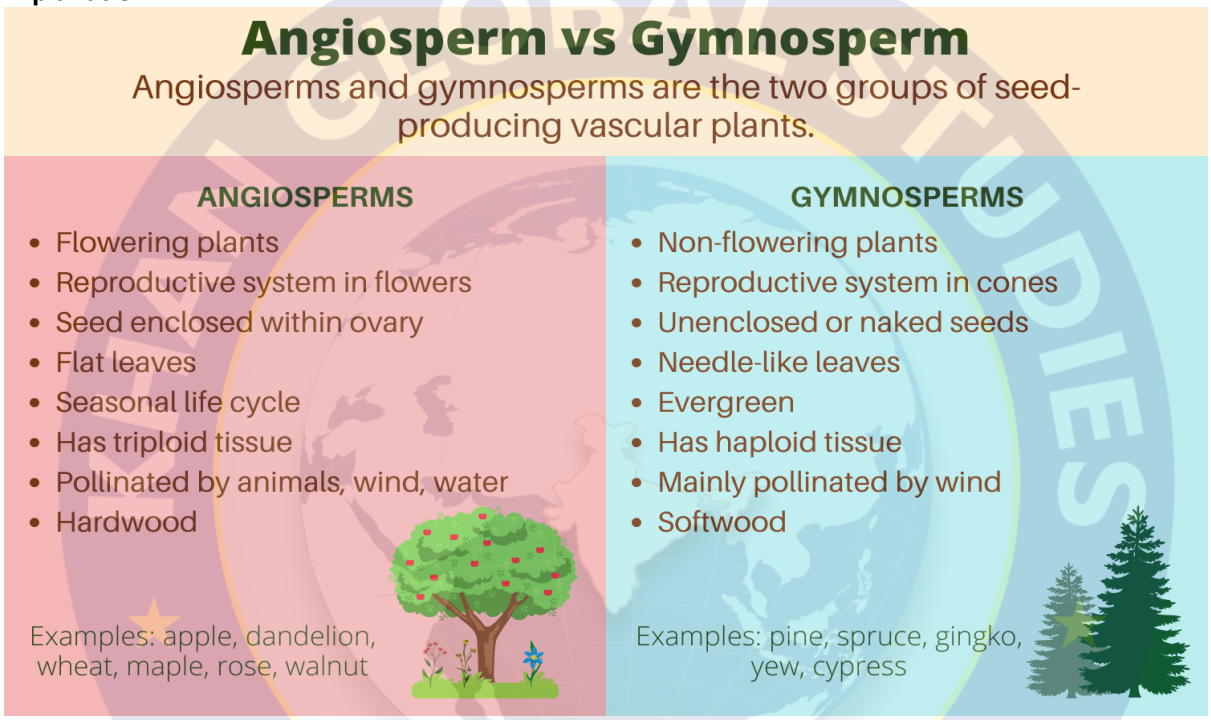
(a) Only one

(b) Only two

(c) Only three

(d) All four

Ans:(a)
Explanation:



- **So, option (a) is correct.**

Q56.Consider the following statements regarding air pollution and pollutants:
Statement I: Using biofuels (like biodiesel and bioethanol) instead of fossil fuel is considered less polluting, although both produce CO_2.
Statement II: The net CO_2 released by the biofuels is negligible because they recycle atmospheric CO_2 during their production process.

Which of the following is correct with respect to the above statements?
(a) Both Statements I and II are correct and Statement II is the correct explanation of Statement I
(b) Both Statements I and II are correct and Statement II is not the correct explanation of Statement I
(c) Statement I is correct and Statement II is incorrect
(d) Statement I is incorrect and Statement II is correct

Ans (a)
Explanation

- Due to the cycling of atmospheric CO2 during the production of biofuels and burning it, the use of biofuels does not release any carbon to the atmosphere that was part of a long-term carbon reserve such as petroleum oil. Because of this cyclic transformation of carbon in the

case of biofuels, these are considered as for of 'green energy. In the case of fossil fuel, the transformation of carbon is linear (from oil/coal reserves to the atmosphere) and atmospheric carbon cannot be fixed in the form of fossil fuel in a short period.

- **So, option(a) is correct.**

Q57. Which of the following is incorrect about the nutrient state and aquatic life in freshwater bodies like ponds and lakes?

(a) Originally, water bodies like ponds and lakes are in an oligotrophic state and support a very small/no aquatic life.

(b) The major limiting nutrients in an unpolluted freshwater body are phosphate and nitrates.

(c) 'Algal bloom' predominantly consists of red-brown algae which are not consumed by zooplankton.

(d) The dissolved oxygen (DO) level of water bodies containing algal bloom goes down due to decaying of algal mass.

Ans: (c)

Explanation:

- Eutrophication (addition of excess nutrients) through sewage waste and agricultural run-off causes 'algal-bloom'. Algal bloom predominantly contains cyanobacteria (or blue-green algae) because it is a prokaryotic organism and has an extremely high growth rate if pressures like the 'nutrient limitation' and 'consumption by heterotrophs' are removed. It can outcompete any other photosynthetic organism in such conditions and dominate the ecosystem.
- **So, option (c) is correct.**

Q58. Consider the following pairs:

List I	**List II**
1. Annex-I Countries	Cartagena Protocol
2. Certified Emissions Reduction	Nagoya Protocol
3. Clean Development Mechanisms	Kyoto Protocol

Which of the pairs given above is/are correctly matched?

(a) Only 1 and 2

(b) Only 2 and 3

(c) Only 3

(d) 1, 2 and 3

Ans: (c)

Explanation

- **Pair 1 is incorrect:** Annex-I countries are parties to the Kyoto Protocol. It is not related to the Cartagena protocol.
- **Pair 2 is incorrect:** The Nagoya Protocol access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (the Protocol) is a global agreement that implements the access and benefit-sharing obligations of the Convention on

Biological Diversity (CBD). Certified emissions reductions are not related to the Nagoya protocol.

- **Pair 3 is correct:** The Clean Development Mechanism (CDM), created multilaterally under the UNFCCC is one of the mitigation instruments under the Kyoto Protocol.

Q59. 'Gadgil Committee Report' and 'Kasturirangan Committee Report', are related to

(a) Ground water

(b) Ganga Action Plan

(c) Linking of rivers

(d) Protection of Western Ghats

Ans: (d)

Explanation

- The Kasturirangan Committee on Western Ghats, also known as the High Level Working Group on Western Ghats, was formed by the Ministry of Environment and Forests, Government of India, in August 2012. Its main objective was to review the recommendations of the Western Ghats Ecology Expert Panel (WGEEP), headed by Madhav Gadgil, and suggest a more balanced and practical approach for the conservation and development of the Western Ghats region.
- **So, option (d) is correct.**

Q60. Sponge city' is closely related to which of the following?

(a) A city which has the capacity to absorb air pollution.

(b) A city in which measures to prevent noise pollution have been adopted.

(c) Method of disposal of organic waste

(d) A city that is capable of storing, treating and reusing rainwater

Ans: (d)

Explanation:

Sponge City:

- Sponge city: A city that is designed to passively absorb, clean, and use rainfall in an ecologically friendly way that reduces dangerous and polluted runoff.
- In early 2000s, Chinese architect Kongjian Yu created the concept of "sponge city".
- Concept incorporates green roofs, rain gardens, and permeable pavements to absorb and filter water.
- So, option (d) is correct.

Q61. Consider the following Statements about hardwood:
1. Pine and spruce are examples of hardwood.
2. They have long types of fibres.

Which one of the statements given above is/are ***incorrect***?
(a) Only 1
(b) Only 2
(c) Both 1 and 2
(d) Neither 1 nor 2

Ans:(d)
Explanation:

- **Statement 1 is correct:** Pine and spruce are examples of softwood whereas Oaks, beeches, maples are examples of hardwood.
- **Statement 2 is correct:** Hardwood has short types of fibres whereas softwood has long types of fibres.

Q62. Consider the following:
1.Nitrogen oxides
2.Nitric acid
3.Sulfuric acid
4.Sulphur oxides
How many of the given above is/are primary pollutants?
(a) Only one
(b) Only two
(c) Only three
(d) All four

Ans:(b)
Explanation:

- Pollutants that are emitted directly from identifiable sources are produced both by natural events (for example, dust storms and volcanic eruptions) and human activities (emissions from vehicles, industries, etc.). These are called primary pollutants. There are five primary pollutants that together contribute about 90 percent of the global air pollution.
- These are carbon oxides (CO and CO2), nitrogen oxides, sulfur oxides, volatile organic compounds (mostly hydrocarbons) and suspended particulate matter.
- Pollutants that are produced in the atmosphere when certain chemical reactions take place among the primary pollutants are called secondary pollutants. E.g. sulfuric acid, nitric acid, carbonic acid, etc.
- **So, option (b) is correct.**

Q63. Consider the following statements regarding "Ecotone":

1. It can be defined as a zone of junction between two or more diverse ecosystems.

2. Being a transitional zone, it cannot exist in aquatic system.

3. A well-developed ecotones contain some organisms which are entirely different from that of the adjoining communities.

How many of the above statements is/are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)

Explanation:

- **Statement 1 is correct:** Ecotone is a zone of junction between two or more diverse ecosystems. For e.g. the mangrove forests represent an ecotone between marine and terrestrial ecosystem. Other examples are – grassland, estuary and river bank.
- **Statement 2 is incorrect:** Ecotones can occur in both terrestrial and aquatic systems, and cover several spatial scales, from large spatial-scale ecotones, where biomes meet to local-scale transitions, such as mountain treelines.
- **Statement 3 is correct:** A well-developed ecotones contain some organisms which are entirely different from that of the adjoining communities.

Q64. With reference to "Ecological hierarchy", consider the following statements:

1. It can be defined as the synergy of organisms with their environment and leads to the formation of a grouping of organisms.

2. The basic unit of the ecological hierarchy is population.

3. Population refers to a group of organisms consisting of many different species that live in an area and interact with each other.

How many of the above statements is/are incorrect?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)

Explanation:

- **Statement 1 is correct**: Ecological hierarchy refers to the synergy of organisms with their environment and leads to the formation of a grouping of organisms.
- **Statement 2 is incorrect:** The basic unit of ecological hierarchy is the individual organism. It is focused on how each individual creature develops physiologically, morphologically, and biologically in response to its natural environment.
- **Statement 3 is incorrect:** Community can be defined as a group of organisms consisting of many different species that live in an area and interact with each other while population is group of individuals of the same species living in a particular geographical area.

Q65. With reference to the "Ecological succession", consider the following statements:

1. The final stage of succession is known as the Pioneer community.

2. It is characterised by the increased productivity, increased diversity of organisms with increased niche development.

Which of the statements given above is/are correct?

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (b)

Explanation:

- **Statement 1 is incorrect:** The first plant to colonize an area is called the pioneer community. The final stage of succession is called the climax community.
- **Statement 2 is correct:** Succession is characterised by the following: increased productivity, the shift of nutrients from' the reservoirs, increased diversity of organisms with increased niche development, and a gradual increase in the complexity of food webs.

Q66. How many of the following statements regarding pollution and its mitigation is/are correct?

1. According to the standards set by the Ministry of Environment and Forests, the Biochemical Oxygen Demand (BOD) of treated effluents should not exceed 30 mg/ml (during 3 days, at 27°C).

2. In Biomagnification, highly unstable and reactive pollutants are found in increasing concentration as we go up in trophic levels.

3. In India, Air Quality Index (AQI) is reported by CPCB using the levels of Benzopyrenes, Benzene, and Ammonia in the ambient air.

Select the correct options from the codes given below:
(a) Only one
(b) Only two
(c) All three
(d) None

Ans: (b)
Explanation:

- **Statement 1 is correct:** According to the standards set by the Ministry of Environment and Forests, the Biochemical Oxygen Demand (BOD) of treated effluents should not exceed 30 mg/ml (during 3 days, at 27°C).
- **Statement 2 is incorrect:** Biomagnification is the characteristic property of stable and less reactive pollutants e.g. DDT.
- **Statement 3 is correct:** In India, Air Quality Index (AQI) is reported by CPCB using the levels of Benzopyrenes, Benzene, and Ammonia in the ambient air.

Q67. Which of the following is correct regarding the biodiversity hotspots across the globe?

1. One of the criteria for a site to be considered as a biodiversity hotspot is, 'any region having more than 1500 endemic species of plants and have lost at least half of its vegetation.'
2. Approximately 2 billion people live in 36 biodiversity hotspots across the globe.

Select the correct options from the codes given below:
(a) Only 1
(b) Only 2
(c) Both 1 and 2
(d) Neither 1 nor 2

Ans (b)
Explanation:

- **Statement 1 is incorrect:** To qualify as a biodiversity hotspot, an area must meet two strict criteria:
- Contain at least 1,500 species of vascular plants found nowhere else on Earth (known as "endemic" species).
- Have lost at least 70 percent of its primary native vegetation.
- **Statement 2 is correct:** Approximately 2 billion people live in 36 biodiversity hotspots across the globe.

Q68. What is 'Greenhouse Gas Protocol'?

(a) It is an international accounting tool for government and business leaders to understand, quantify and manage greenhouse gas emissions.

(b) It is an initiative of the United Nations to offer financial incentives to developing countries to reduce greenhouse gas emissions and to adopt eco-friendly technologies

(c) It is an intergovernmental agreement ratified by all the member countries of the United Nations to reduce greenhouse gas emissions to specified levels by the year 2022

(d) It is one of the multilateral REDD+ initiatives hosted by the World Bank.

Ans: (a)

Explanation:

- The Greenhouse Gas Protocol (GHG Protocol) is a set of internationally recognized standards for measuring, reporting and managing greenhouse gas (GHG) emissions.
- It provides a framework for organizations to:
  - Quantify their GHG emissions
  - Report their emissions
  - Manage their emissions

So, option (a) is correct.

Q69. With reference to an initiative called 'The Economics of Ecosystems and Biodiversity (TEEB)', which of the following statements is/are correct?

1. It is an initiative hosted by UNEP, IMF and World Economic Forum.

2. It is a global initiative that focuses on drawing attention to the economic benefits of biodiversity. 3. It presents an approach that can help decision-makers recognize, demonstrate, capture the value of ecosystems and biodiversity.

Select the correct answer using the code given below.

(a) Only 1 and 2

(b) Only 3

(c) Only 2 and 3

(d) 1, 2 and 3

Ans: (c)

Explanation

- **Statement 1 is incorrect:** The Economics of Ecosystems and Biodiversity (TEEB) was launched in 2007 by the European Commission, with the support of the United Nations Environment Programme (UNEP). It is now a global initiative with a network of partners from governments, businesses, NGOs, and research institutions.
- **Statement 2 is correct:** TEEB employs various valuation methods to quantify the economic contributions of ecosystems and biodiversity. This includes the value of natural resources like food, water, and medicine, as well as the services provided by ecosystems, such as climate regulation, pollination, and flood protection.
- **Statement 3 is correct:** The Economics of Ecosystems and Biodiversity (TEEB) is a global initiative focused on mainstreaming the values of biodiversity and ecosystem services into decision-making at all levels.

Q70. Consider the following statements with reference to the "ocean census":

1. Ocean census is a global alliance founded by the UNEP.
2. Scientists estimate that only about 10% of marine species have been formally described.
3. The participation of common man is mandatory to achieve desired goals of ocean census.

How many of the above statements is/are correct?

(a) Only one
(b) Only two
(c) All three
(d) None

Ans: (a)

Explanation:

- **Statement 1 is incorrect:** Ocean census is a global alliance founded by the Nippon Foundation and Nekton, the alliance is dedicated to finding and protecting ocean life.
- **Statement 2 is correct:** Scientists believe that around two million species remain undiscovered (that's about 90% of all sea life) and Ocean Census aims to identify at least 100,000 of them in its first decade.
- **Statement 3 is incorrect:** The Ocean Census seeks to bring together many partners from science institutes, businesses, civil society organizations and media to achieve its goals. Participation of common man is not mandatory.

Q71. Which of the following best describes the term "Neuston"?

(a) Group of organisms found living in the bottom of the water mass.

(b) Organisms which remain attached to stems and leaves of rooted plants.

(c) Land based community which rely on dead organisms.

(d) Unattached organisms which live at the air water interface such as floating plants, etc.

Ans: (d)

Explanation:

- Neuston are unattached organisms which live at the air water interface such as floating plants, etc.
- Some organisms spend most of their lives on top of the air-water interface such as water striders, while others spend most of their time just beneath the air-water interface and obtain most of their food within the water.
- E.g., beetles and back-swimmers.
- **So, option (d) is correct.**

Q72. With reference to the "Eutrophication", consider the following statements:

1. It can be defined as syndrome of ecosystem, response to the addition of artificial or natural nutrients.

2. The growth of green algae which is seen on the lake surface is the physical identification of a Eutrophication.

3. It is beneficial for aquatic ecosystem and its organisms.

How many of the above statements is/are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)

Explanation:

- **Statement 1 is correct:** Eutrophication is a syndrome of ecosystem, response to the addition of artificial or natural nutrients such as nitrates and phosphates through fertilizer, sewage, etc that fertilize the aquatic ecosystem.
- **Statement 2 is correct:** The growth of green algae which we see in the lake surface layer is the physical identification of a Eutrophication. Some algae and blue-green bacteria thrive on the excess ions and a population explosion covers almost entire surface layer is known as algal bloom. This growth is unsustainable.
- **Statement 3 is incorrect:** It eventually leads to degradation of aquatic ecosystem and death of its organisms.

Q73. Consider the following:

1. Maintenance of stream flow

2. Buffer shorelines against erosion

3. Ground water recharging

4. Nutrients recycling

5. Genetic reservoir for various species of plants

Which of the given above is/are functions of wetlands?

(a) Only 1, 2, 3 and 4

(b) Only 2, 3, 4 and 5

(c) Only 1, 3, 4 and 5

(d) 1, 2, 3, 4 and 5

Ans: (d)

Explanation:

Functions of wetlands:

- Habitat to aquatic flora and fauna, as well as numerous species of birds, including migratory species.
- Filtration of sediments and nutrients from surface water
- Nutrients recycling
- Water purification
- Floods mitigation
- Maintenance of stream flow

- Ground water recharging
- Provide drinking water, fish, fodder, fuel, etc
- Control rate of runoff in urban areas
- Buffer shorelines against erosion
- Genetic reservoir for various species of plants

Q74. Consider the following pairs:

List I	List II
1. Competition	Both species are harmed by the interaction
2. Amensalism	No net benefit or harm to either species
3. Commensalism	One species benefits, the other is unaffected
4. Predation	One species benefits, the other is harmed

How many of the above pairs is/are correctly matched?

(a) Only one

(b) Only two

(c) Only three

(d) All four

Ans: (c)

- **Pair 1 is correct:** In Competition both species are harmed by the interaction. Example: if two species eat the same food, and there isn't enough for both, both may have access to less food than they would if alone. They both suffer a shortage of food.
- **Pair 2 is incorrect:** In Amensalism, one species is harmed; the other is unaffected. Example: A large tree shades a small plant, retarding the growth of the small plant. The small plant has no effect on the large tree.
- **Pair 3 is correct:** In Commensalism, one species benefit, the other is unaffected. Example: cow dung provides food and shelter to dung beetles. The beetles have no effect on the cows.
- **Pair 4 is correct:** In Predation one species benefits, the other is harmed.

Q75. Consider the following pairs:

Sacred Groves	States
Devrai	Uttarakhand
Maw-Bukhars	Meghalaya
Sarnas	Chhattisgarh
Kava	Karnataka
Rajbanshi	West Bengal

How many of the above pairs is/are correct?

(a) Only two
(b) Only three
(c) Only four
(d) All five

Ans: (b)
Explanation:

Sacred Groves	States
Devrai	Maharashtra
Maw-Bukhars	Meghalaya
Sarna	Chhattisgarh
Kava	Kerala
Rajbanshi	West Bengal

- **So, option (b) is correct.**

Q76. Proper design and effective implementation of the UNREDD+ Programme can significantly contribute to

1. protection of biodiversity

2. resilience of forest ecosystems

3. poverty reduction

Select the correct answer using the code given below.

(a) Only 1 and 2

(b) Only 3

(c) Only 2 and 3

(d) 1,2 and 3

Ans: (c)

Explanation

- UN-REDD+ stands for "Reducing Emissions from Deforestation and Forest Degradation in developing countries." It's a climate change mitigation strategy that aims to protect forests and their carbon storage capacity. Forests play a critical role in absorbing carbon dioxide from the atmosphere, so preventing their loss or degradation is essential for combating climate change.
- It contributes to protection of biodiversity, resilience of forest ecosystems, poverty reduction for reducing emissions. **So, option (d) is correct.**

Q77. Which of the following best describes/describe the aim of 'Green India Mission' of the Government of India?

1. Incorporating environmental benefits and costs into the Union and State Budgets thereby implementing the 'green accounting'.

2. Launching the second green revolution to enhance agricultural output so as to ensure food security to one and all in the future

3. Restoring and enhancing forest cover and responding to climate change by a combination of adaptation and mitigation measures.

Select the correct answer using the code given below.

(a) Only 1

(b) Only 2 and 3

(c) Only 3

(d) 1, 2 and 3

Ans: (c)

Explanation

- The Green India Mission, also known as the National Mission for a Green India, is a large-scale environmental initiative launched by the Indian government in 2014. It is one of the eight Missions outlined under the National Action Plan on Climate Change (NAPCC). It aims to significantly improve India's forest cover and address climate change issues through a multi-pronged approach. It is not related to Green Accounting.
- **So, option (c) is correct.**

Q78. With reference to 'Agenda 21', sometimes seen in the news, consider the following statements:

1. It is a global action plan for sustainable development.

2. It originated in the World Summit on Sustainable Development held in Johannesburg in 2002.

Which of the statements given above is/are correct?

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (a)

Explanation

- Agenda 21 is a comprehensive action plan for sustainable development adopted at the 1992 Earth Summit in Rio de Janeiro, Brazil. It's a non-binding agreement that outlines the principles and recommendations for global, national, and local action to address environmental and social challenges while promoting economic growth.
- So, option (a) is correct.

Q79. Consider the following statements with reference to the "Silvopasture System":

1. It is the deliberate integration of trees and grazing livestock operations on the same land.

2. Due to integration of trees and livestock it negatively hampers the wildlife diversity.

3. It helps in controlling soil erosion with tree root systems.

How many of the above statements is/are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)

Explanation:

- **Statement 1 is correct:** Silvopasture is the deliberate integration of trees and grazing livestock operations on the same land. These systems are intensively managed for both forest products and forage, providing both short- and long-term income sources .
- **Statement 2 is incorrect:** Silvopastures can increase wildlife diversity and improve water quality. The forage protects the soil from water and wind erosion, as well as adds organic matter to improve soil properties.
- **Statement 3 is correct:** It helps in controlling soil erosion with tree root systems, improving soil health. Silvopastures provide an attractive landscape with an aesthetically pleasing "park-like" setting.

Q80. Which of the following statements is incorrect regarding the protected area categories described by the IUCN?

(a) National parks are large forest reserve areas where limited or moderate levels of commercial activities are permitted.

(b) Botanical gardens are a form of ex-situ mode of conservation.

(c) "Protected landscapes" are the protected areas but non-destructive activity is permitted.

(d) Strict Nature Reserves are kept as much undisturbed by human activities as possible, with some exceptions like scientific research and monitoring activities.

Ans: (a)

Explanation:

- In National parks, only scientific, educational and recreational (non-destructive) activities are generally permitted but any commercial activity is strictly prohibited in these areas.

So, option (a) is correct.

Q81. With reference to 'dugong', a mammal found in India, which of the following statements is/are correct?

1. It is a herbivorous marine animal.

2. It is found along the entire coast of India.

3. It is given legal protection under Schedule I of the Wildlife (Protection) Act, 1972.

Select the correct answer using the codes given below.

(a) Only 1 and 2

(b) Only 2

(c) Only 1 and 3

(d) Only 3

Ans: (c)

Explanation

- **Statement 1 is correct:** Dugongs have a dolphin fluke-like tail. Dugong is strictly a marine mammal. Commonly known as "sea cows," dugongs graze peacefully on sea grasses in shallow coastal waters of the Indian and western Pacific Oceans. The dugong, like all sea cows, is herbivorous. It primarily grazes on sea grasses and therefore spends most of its time in sea grass beds.
- **Statement 2 is incorrect:** Dugongs are found in Gulf of Mannar, Palk Bay, Gulf of Kutch and Andaman and Nicobar Islands. They are not found along the entire coast of India.
- **Statement 3 is correct:** Legal protection has been provided to wild animals against hunting and commercial exploitation under the provisions of the Wild Life (Protection) Act, 1972. According to the conservation and threat status, wild animals are placed in different schedules of the Act. Dugongs are included in Schedule I of the Act, which affords it the highest degree of protection under the Act.

Q82. Which of the following statements regarding 'Green Climate Fund' is/are correct?

1. It is intended to assist the developing countries in adaptation and mitigation practices to counter climate change.

2. It is founded under the aegis of UNEP, OECD, Asian Development Bank and World Bank.

Select the correct answer using the codes given below.

(a) Only 1

(b) Only 2

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (a)

Explanation:

- **Statement 1 is correct:** The Green Climate Fund (GCF) – a critical element of the historic Paris Agreement - is the world's largest climate fund, mandated to support developing

countries raise and realize their Nationally Determined Contributions (NDC) ambitions towards low-emissions, climate-resilient pathways. It assists the developing countries in adaptation and mitigation practices to counter climate change.

- **Statement 2 is incorrect:** The Green Climate Fund was established by 194 countries party to the UN Framework Convention on Climate Change in 2010 Under United Nations Framework Convention on Climate Change (UNFCCC).

Q83. What are the different clearances integrated into 'PARIVESH Portal':

1. Environmental Clearance

2. Coastal regulatory zone

3. Wildlife Clearance

Select the correct answer using the options given below:

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (c)

Explanation:

- Pro-Active Responsive Facilitation by Interactive and Virtuous Environmental Single window Hub (PARIVESH) is a web based, role based workflow application which has been developed for online submission and monitoring of the proposals submitted by the proponents for seeking Environment, Forest, Wildlife and Coastal Regulatory Zone (CRZ) Clearances from Central, State and district level authorities.
- Four types of clearances can be obtained using 'PARIVESH Portal':
    - Environmental Clearance (EC)
    - Forest Clearance (FC)
    - Coastal Regulatory Zone (CRZ) clearance,
    - Wildlife (WL) clearance.
- **So, option (c) is correct.**

Q84. Consider the following statements regarding features of Battery Waste Management Rules, 2022:

1. Extended Producer Responsibility (EPR)

2. It is consumers responsibility to dispose waste batteries by giving it to an entity engaged in collection, refurbishment or recycling.

3. Online portal for return filing of waste batteries.

Select the correct answer using the options given below:

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (c)

Explanation:

- **Statement 1 is correct:** Extended Producer Responsibility (EPR): The producers of batteries have to ensure the collection, recycling, and refurbishment of the Waste Batteries
- **Statement 2 is correct:** The Consumers should ensure:
    a. Discarding waste battery separately from other types of waste.
    b. Dispose waste batteries by giving it to an entity engaged in collection, refurbishment, or recycling.
- **Statement 3 is correct:** The Central Pollution Control Board (CPCB) will create a centralised online portal for the registration and return filing of waste batteries. The online portal will facilitate the generation and exchange of the EPR certificates between the producers and recyclers/refurbishers to meet the producer's obligations.

Q85. Consider the following government initiatives:
1. PM e-bus Sewa
2. FAME Scheme
3. AMRUT
4. Smart Cities Mission

Which one of the following is common to them all?
(a) They are all launched by the Ministry of Housing and Urban Affairs.
(b) They are all Central Sector Schemes.
(c) They all deal with sustainable mobility in some way.
(d) They are falling short of participation and are on the verge of failure.

ANS: (c)
Explanation:

PM-eBus Sewa

- The 'PM-eBus Sewa' scheme, under which 10,000 electric buses will be provided to 169 cities under a public-private partnership (PPP) model.
- The scheme will cover cities of Three lakh and above population as per census 2011 including all the Capital cities of Union Territories, North Eastern Region and Hill States. Under this scheme priority will be given to cities having no organized bus service.
- The scheme has two segments -- augmenting city bus services in 169 cities and green urban mobility initiatives in 181 cities.
- The e-buses will be made available in cities with a population between three lakh and 40 lakh. The scheme will support bus operations for 10 years.

FAME

- 'Faster Adoption and Manufacturing of Electric Vehicles in India (FAME) for promotion of Electric Mobility in the country.
- The main objective of the scheme is to encourage Faster adoption of Electric and hybrid vehicle by way of offering upfront Incentive on purchase of Electric vehicles and also by way of establishing a necessary charging Infrastructure for electric vehicles. The scheme will help in addressing the issue of environmental pollution and fuel security.

AMRUT

- Atal Mission for Rejuvenation and Urban Transformation (AMRUT) was launched on 25th June 2015 in selected 500 cities and towns across the country.
- The Mission focuses on development of basic infrastructure, in the selected cities and towns, in the sectors of water supply; sewerage and septage management; storm water drainage; green spaces and parks; and non-motorized urban transport. A set of Urban Reforms and Capacity Building have been included in the Mission.

Smart Cities Mission

- Smart Cities Mission was launched on 25 June, 2015. The main objective of the Mission is to promote cities that provide core infrastructure, clean and sustainable environment and give a decent quality of life to their citizens through the application of 'smart solutions'.
- The Mission aims to drive economic growth and improve quality of life through comprehensive work on social, economic, physical and institutional pillars of the city. **So, option (c) is correct**

Q86. Consider the following statements:

Statement I: Single-use plastics were banned via the Plastic Waste Management Amendment Rules, 2021 brought by the Ministry of Environment, Forest and Climate Change.

Statement II: They are not easily biodegradable, leading to the formation of microplastics which adversely impact biodiversity and human life**.**

Which of the following is correct with respect to the above statements?

(a) Both Statements I and II are correct and Statement II is the correct explanation of Statement I

(b) Both Statements I and II are correct and Statement II is not the correct explanation of Statement I

(c) Statement I is correct and Statement II is incorrect

(d) Statement I is incorrect and Statement II is correct

Ans (a)

Explanation:

- Single-Use Plastics were banned via the Plastic Waste Management Amendment Rules, 2021 brought by the Ministry of Environment, Forest and Climate Change, in an effort to reduce the harmful impacts they have as durable pollutants. Since they are not easily biodegradable, they lead to the formation of microplastics which adversely impact biodiversity and human life.
- **So, option (a) is correct.**

Q87. 'Biocarbon Fund Initiative for Sustainable Forest Landscapes' is managed by the

(a) Asian Development Bank

(b) International Monetary Fund

(c) United Nations Environment Programme

(d) World Bank

Ans: (d)

Explanation

- The BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) is a multilateral fund, supported by donor governments and managed by the World Bank. It promotes reducing greenhouse gas emissions from the land sector, including efforts to reduce deforestation and forest degradation in developing countries (REDD+), sustainable agriculture, as well as smarter land-use planning, policies and practices. **So, option (d) is correct.**

Q88. With reference to an organization known as 'Birdlife International', which of the following statements is/are correct?

1. It is a Global Partnership of Conservation Organizations.

2. The concept of 'biodiversity hotspots' originated from this organization.

3. It identifies the sites known/referred to as 'Important Bird and Biodiversity Areas'.

Select the correct answer using the code given below.

(a) Only 1

(b) Only 2 and 3

(c) Only 1 and 3

(d) 1, 2 and 3

Ans: (c)
Explanation

- **Statement 1 is correct:** Birdlife International is a global Partnership of over 100 national conservation organisations with a focus on birds and working together on shared priorities, policies and programmes of conservation exchanging skills, achievements and information, and so growing in ability, authority and influence.
- **Statement 2 is incorrect:** In 1989, just one year after scientist Norman Myers wrote the paper that introduced the biodiversity hotspots concept, Conservation International adopted the idea of protecting these incredible places as the guiding principle of our investments.
- **Statement 3 is correct:** The BirdLife Partnership has works to identify and protect the places of greatest significance for the conservation of the world's birds and the wildlife they need to thrive.

Q89. Among the following crops, which one is the most important anthropogenic source of both methane and nitrous oxide?

(a) Cotton

(b) Rice

(c) Sugarcane

(d) Wheat

Ans: (b)

Explanation:

- Two significant greenhouse gases are nitrous oxide and methane. They have an impact on global warming. Landfills, burning biomass, cattle, wet rice fields, and animal waste are significant human sources of biogenic methane.
- Rice is a potential source of anthropogenic nitrous oxide (N2O) emission. In rice, both the soil and the rice plants emit N2O into the atmosphere. The rice plant in the paddy is considered to act as a channel between the soil and the atmosphere for N2O emission.
- **So, option (b) is correct.**

Q90. Consider the following statements regarding Indian Green Building Council (IGBC):

1. Council was part of Quality Council of India (QCI).

2. In construction of green buildings environmentally friendly construction materials is used.

3. Council was the founding member of World Green Building Council.

How many of the statements given above is/are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)

Explanation:

- **Statement 1 is incorrect:** The Indian Green Building Council (IGBC), part of the Confederation of Indian Industry (CII) was formed in the year 2001. The Confederation of Indian Industry works to create and sustain an environment conducive to the development of India.
- **Statement 2 is correct:** Green buildings incorporate measures that are environmentally friendly and resource-efficient across the building lifecycle. The green buildings concept aims to comprehensively minimize the negative impact and maximize the positive impact a building has on its natural environment and human occupants.
- **Statement 3 is correct:** Indian Green Building Council (IGBC) is the founding member of World Green Building Council discussing global issues at COP and similar global platforms.

Q91. Certain species of which one of the following organisms are well known as cultivators of fungi?

(a) Ant

(b) Cockroach

(c) Crab

(d) Spider

Ans: (a)

Explanation:

- A diverse range of agricultural practices are employed by the more than 200 species of attine ants to cultivate mutualistic fungi in fungus gardens.
- The fungus cultivated by the leaf-cutters are completely dependent on the ants for their propagation, unlike those cultivated by lesser attines, who have lost the ability to grow freely. In addition, these fungi produce nutrient-dense swellings that, like the fruits and vegetables humans grow, the ants consume. The ants have, in a sense, domesticated them.
- **So, option (a) is correct.**

Q92. Consider the following pairs:

Bird Species	IUCN Status
1. Jerdon's Courser	Critically Endangered
2. Himalayan Quail	Endangered
3. Manipur Bush Quail	Vulnerable

How many of the above pairs is/are correctly matched?

(a) Only one

(b) Only two
(c) All three
(d) None

Ans (a)
Explanation:

Bird Species	IUCN Status
Jerdon's Courser	Critically Endangered
Himalayan Quail	Critically Endangered
Manipur Bush Quail	Endangered

Manipur Bush Quail (Perdicula manipurensis)

- The Manipur bush quail (Perdicula manipurensis) belongs to the family, Phasianidae. These quails are distributed in the Indian states of West Bengal, Assam, Nagaland, Manipuru and Meghalaya.

Himalayan Quail (Ophrysia superciliosa)

- The Himalayan quail is a medium-sized bird belonging to the pheasant family, with distinctive red or yellow bill and legs, and prominent white spots around the eyes. It has a long covert tail which is longer than most other quails. Males are dark grey with bleak streaks and a white forehead, and females are grayish brown with dark streaks. Since they were last seen more than 125 years ago, very little is known about their behaviour and characteristics.

Jerdon's Courser (Rhinoptilus bitorquatus)

- Jerdon's courser, known locally as Kali Kodi, a nocturnal bird believed to be extinct and was later sighted in Sri Lankamalleswara Wildlife Sanctuary in Kadapa district of Andhra Pradesh. **So, option (a) is correct.**

Q93. Consider the following regarding the Peninsular Rock Agama:
1. It is a common species of lizard found on rocky hills in south India.
2. Their IUCN status is 'Least Concern'.

Which of the statements given above is/are incorrect?
(a) Only 1
(b) Only 2
(c) Both 1 and 2
(d) Neither 1 nor 2

Ans (d)
Explanation:

- **Statement 1 is correct.** The Peninsular Rock Agama is a type of garden lizard has a strong presence in southern India.
- **Statement 2 is correct.** Their IUCN status is 'Least Concern'.

Q94. With reference to India, consider the following statements:

1. Monazite is a source of rare earths.

2. Monazite contains thorium.

3. Monazite occurs naturally in the entire Indian coastal sands in India.

4. In India, Government bodies only can process or export monazite.

Which of the statements given above are correct?

(a) Only 1, 2 and 3

(b) Only 1, 2 and 4

(c) Only 3 and 4

(d) 1, 2, 3 and 4

Ans: (b)

Explanation:

- **Statement 1 is correct:** The brown, crystalline mineral known as monazite is made up of thorium, cerium, lanthanum, and other rare earth elements. Typically, monazite is found in tiny, solitary crystals or grains that accumulate in soil due to their resistance to weathering. Rare earth elements are abundant in monazite.
- **Statement 2 is correct:** Monazite ore can be used to extract thorium (Th) in addition to the rare-earth elements. Like uranium, thorium is a somewhat radioactive metal.
- **Statement 3 is incorrect:** 11.93 million tonnes of monazite resources are thought to exist in beach sand mineral placer deposits throughout India's coastal regions, according to estimates made by the Atomic Minerals Directorate for Exploration and Research (AMD). But it is doubtful that it occurs naturally in the entire Indian coastal sands in India.
- **Statement 4 is correct:** Monazite exports without an AERB license are prohibited by the 2004 Atomic Energy (Radiation Protection) Rules. The only company authorized to produce and process monazite for both domestic and export use is Indian Rare Earths Limited (IREL), a fully owned Public Sector Undertaking of the Government of India (GOI) under DAE.

Q95. Consider the following:

1. Carbon monoxide
2. Nitrogen oxide
3. Ozone
4. Sulphur dioxide

Excess of which of the above in the environment is/are cause(s) of acid rain?

(a) Only 1, 2 and 3

(b) Only 2 and 4

(c) Only 4

(d) Only 1, 3 and 4

Ans: (b)

Explanation:

- The pollutants, sulphur dioxide, nitrogen oxide which are released by burning of coal and petroleum products combine with moisture in 'the air and rain water and produce sulphuric acid and nitric acid respectively and fall along with the rain called as acid rain.

- The acid rain pollute soil, water and reduces the growth of crops and fishes in river, streams, canals and ponds. It stops the growth of plants and destroys: the buildings made of marble and stones and statues made up of metals, Acid rain can cause respiratory problems such as asthma, bronchitis and emphysema.
- **So, option (b) is correct.**

Q96. Consider the following statements regarding Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):

1. Convention is a non-governmental organisation, involve in protecting endangered animal and plant species.

2. Its Secretariat is administered by World wide fund for nature (WWF).

3. It is legally binding on the Parties.

How many of the statements given above is/are incorrect?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans: (b)

Explanation:

- **Statement 1 is incorrect:** CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.
- **Statement 2 is incorrect:** The CITES Secretariat is administered by UNEP and is located at Geneva, Switzerland.
- **Statement 3 is correct:** CITES is an international agreement to which States and regional economic organizations adhere voluntarily. States that have agreed to be bound by the Convention ('joined' CITES) are known as Parties. Although CITES is legally binding on the Parties (in other words they have to implement the Convention) it does not replace national laws.

Q97. Which of the following are detritivores?

1. Earthworms
2. Jellyfish
3. Millipedes
4. Seahorses
5. Woodlice

Select the correct answer using the code given below.

(a) Only 1, 2 and 4

(b) Only 2, 3, 4 and 5

(c) Only 1, 3 and 5

(d) 1, 2, 3, 4 and 5

Ans: (c)

Explanation:

- Detritivores are heterotrophs that obtain nutrients by consuming detritus. Detritivores should be distinguished from other decomposers, such as many species of bacteria, fungi and protists, which are unable to ingest discrete lumps of matter.
- Earthworms, Millipedes and Woodlice are detritivores. Detritivores include microorganisms such as bacteria and fungi; invertebrate insects such as mites, beetles, butterflies and flies, mollusks such as slugs and snails; or soil-dwelling earthworms, millipedes and woodlice.
- Jellyfish is carnivorous and Sea horse is also primarily a carnivorous animal.
- **So, option (c) is correct.**

Q98. Consider the following statements regarding the Endemic Species:

1. They restricted mostly to a particular geographical location and are naturally not found anywhere else in the world.

2. They exist in a confined habitat and relatively small population.

3. They are highly vulnerable to extinction.

How many of the statements given above is/are correct?

(a) Only one

(b) Only two

(c) All three

(d) None

Ans (c)

Explanation:

- **Statement 1 is correct:** They restricted mostly to a particular geographical location and are naturally not found anywhere else in the world.
- **Statement 2 is correct:** They exist in a confined habitat and relatively small population.
- **Statement 3 is correct:** They are highly vulnerable to extinction.

Q99. Consider the following statements:

1. Asiatic Cheetahs have a very small population base and are listed as Critically Endangered species in the (IUCN) Red List of Threatened Species.

2. They have been introduced into Kuno National Park under the Cheetah Reintroduction Project.

3. They were brought from Namibia under Project Cheetah, which is world's first inter-continental large wild carnivore translocation project.

4. Cheetahs enjoy natural habitat in India and existed since a long time back, however their numbers had deteriorated, necessitating such a plan.

How many of the above statements is/are correct?

(a) Only one

(b) Only two

(c) Only three

(d) All four

Ans (c)

Explanation:

- **Statement 1 is correct:** Asiatic Cheetahs have a very small population base and are listed as Critically Endangered species in the (IUCN) Red List of Threatened Species.
- **Statement 2 is correct:** They have been introduced into Kuno National Park under the Cheetah Reintroduction Project.
- **Statement 3 is correct:** They were brought from Namibia under Project Cheetah, which is world's first inter-continental large wild carnivore translocation project.
- **Statement 4 is incorrect:** The cheetah was declared extinct from India in 1952.

Q100. Consider the following statements with reference to the "UNFCCC COP-28":

1. The first-ever global stocktake concluded which recognizes the science that indicates global greenhouse gas emissions need to be cut 43% by 2030.

2. The Loss and Damage Fund was recently announced for the first time, with a $500 million mandate from each nation, at the end of COP-28 in Dubai.

3. The COP28 Presidency spearheaded the Global Cooling Pledge which commits the countries to reduce their cooling emissions by at least 68% by 2050.

How many of the above statements are correct?
(a) Only one
(b) Only two
(c) All three
(d) None

Ans: (b)
Explanation:

- UN Climate Change conferences (or COPs) take place every year, and are the world's only multilateral decision-making forum on climate change with almost complete membership of every country in the world.
- **Statement 1 is correct**: The first-ever global stocktake is concluded at the UN Climate Change Conference (COP28) at the end of this year. The stocktake recognizes the science that

indicates global greenhouse gas emissions need to be cut 43% by 2030, compared to 2019 levels, to limit global warming to 1.5°C.

- **Statement 2 is incorrect**: The Loss and Damage fund was first announced at the conclusion of COP-27 in Sharm El-Sheikh, Egypt, but this year it got position where countries could unanimously agree on a text that was then passed in COP-28. To be based at the World Bank but managed by an independent secretariat, commitments worth at least $450 million have already been made by countries though billions of dollars are still needed to meet its purpose.
- **Statement 3 is correct:** The COP28 Presidency is spearheading the Global Cooling Pledges. It is a voluntary Pledge intends to raise ambition and international cooperation through collective targets on improving energy efficiency and climate friendly approaches. The Global Cooling Pledge commits the countries to reduce their cooling emissions by at least 68% by 2050 and outlines several strategies to tackle them. These kinds of emissions now account for 7% of global greenhouse gas emissions and are expected to triple by 2050.

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