

**IAS BABA**



**60**



**60 DAY RAPID REVISION**

**(RARE) SERIES**

**UPSC/IAS Prelims 2023**

**ENVIRONMENT**  
**PART -1 COMPILATION**

**Q. 1) Consider the following statements**

1. Ecosystem refers to everything around us including living organisms and non-living beings such as soil, air, water.
2. Environment refers to a community of living species and their interactions with non-living elements of the environment.
3. Ecology is the study of the relationships between living organisms, including humans, and their physical environment.

Choose the correct code:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 3 only

Q.1) Solution (d)

**Explanation:**

- Environment is everything around us including living organisms and non-living beings such as soil, air, water while ecosystem is a much broader term of which environment is a part of. **Hence, statement 1 is incorrect.**
- The primary difference between environment and ecosystem is that the environment relates to the immediate surroundings, whereas the ecosystem refers to a community of living species and their interactions with non-living elements of the environment. **Hence, statement 2 is incorrect.**
- Ecology is the study of the relationships between living organisms, including humans, and their physical environment; it seeks to understand the vital connections between plants and animals and the world around them. **Hence, statement 3 is correct.**

**Q. 2) Consider the following statements about the Biosphere**

1. It includes all living organisms on earth, exclusive of the dead organic matter produced by them.
2. The biosphere is absent at extremes of the North and South poles.
3. Occasionally metabolically active spores of fungi and bacteria do occur at a height beyond 8,000 metres

Choose the correct code:



- a) 1 and 3 only
- b) 2 only
- c) 2 and 3 only
- d) 1, 2 and 3

Q.2) Solution (b)

**Explanation:**

- It includes all living organisms on earth, inclusive of the dead organic matter produced by them. **Hence, statement 1 is incorrect.**
- The biosphere is absent at extremes of the North and South poles, the highest mountains and the deepest oceans since existing hostile conditions there do not support life (life is the characteristic feature of the biosphere). **Hence, statement 2 is correct.**
- Occasionally spores of fungi and bacteria do occur at a great height beyond 8,000 metres, but they are metabolically inactive, and hence represent only dormant life. **Hence, statement 3 is incorrect.**

**Q. 3) Consider the following statements**

1. A grazing food chain is a food chain that starts with green plants as the main source of energy.
2. The grazing food chain is absent in the aquatic ecosystem as the primary source of energy is dead organic matter.
3. The grazing food chain and the detritus food chain are independent of each other.
4. A detritus food chain is a food chain that starts with the either green plants or dead remains of organisms as a main source of energy.

Which of the above given statements are *incorrect*?

- a) 1, 2 and 3 only
- b) 2, 3 and 4 only
- c) 3 and 4 only
- d) 1, 2, 3 and 4

Q.3) Solution (b)

**Explanation:**

- A grazing food chain is a food chain that starts with green plants as the main source of energy. **Hence, statement 1 is correct.**
- The **food chain** is a feeding hierarchy in which organisms in an ecosystem are grouped into trophic levels and are shown in a succession to represent the flow of food energy and

the feeding relationships between them. The **grazing food chain is present in both the terrestrial ecosystem (green plants) and the aquatic ecosystem (phytoplankton)** as the primary source of energy. **Hence, statement 2 is incorrect.**

- The grazing food chain and the detritus food chain are linked to each other as the **initial energy source for the detritus food chain is the waste materials and dead organic matter from the grazing food chain. Hence, statement 3 is incorrect .**
- A detritus food chain is a food chain that starts with the dead remains of organisms(not green plants) as a main source of energy. **Hence, statement 4 is incorrect**

**Q. 4) Consider the following statements**

1. Bioaccumulation is any concentration of a toxin, such as pesticides, in the tissues of tolerant organisms at successively higher levels in a food chain.
2. Biomagnification is the gradual accumulation of substances, such as pesticides or other chemicals, in an organism.
3. When bioaccumulation takes place entirely due to absorption directly from water then it is termed as bioconcentration.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) 3 only
- d) None of the above

Q.4) Solution (c)

**Explanation:**

- **Biomagnification** is any concentration of a toxin, such as pesticides, in the tissues of tolerant organisms at successively higher levels in a food chain. **Hence, statement 1 is incorrect.**
- **Bioaccumulation** is the gradual accumulation of substances, such as pesticides or other chemicals, in an organism. **Hence, statement 2 is incorrect.**
- Bioaccumulation often occurs in two ways, simultaneously: by eating contaminated food, and by absorption directly from water. This second case is specifically referred to as bioconcentration. **Hence, statement 3 is correct.**

**Q. 5) Consider the following statements**

1. The process by which communities of plant and animal species in an area are replaced or changed into another over a time is known as ecological succession.



2. The pioneer community is stable, mature, more complex, and long-lasting as compared to climax community
3. Primary succession is the sequential development of biotic communities after the complete or partial destruction of the existing community.
4. Secondary succession takes place an where no community has existed previously.

Choose the correct code:

- a) Only one statement is correct
- b) Two statements are correct
- c) Three statements are correct
- d) Four statements are correct

Q.5) Solution (a)

**Explanation:**

- The process by which communities of plant and animal species in an area are replaced or changed into another over some time is known as **ecological succession**. Hence, **statement 1 is correct**.
- The **climax community is stable, mature, more complex, and long-lasting**. Hence, **statement 2 is incorrect**.
- The first plant to colonize an area is called the **pioneer community**.
- The final stage of succession is called the **climax community**.
- Secondary succession is the sequential development of biotic communities **after the complete or partial destruction of the existing community**. Hence, **statement 3 is incorrect**.
- **Primary succession takes place an where no community has existed previously**. The stage leading to the climax community is called the successional stage or seres. Each transitional community that is formed and replaced during succession is called a stage in succession or a seral community. Hence, **statement 4 is incorrect**.

**Q. 6) Consider the following statements**

1. No two species can have the exact same niche.
2. A habitat is a place of an ecosystem occupied by a particular organism.
3. The amount of space an animal uses on a regular basis is called its home range.

Choose the correct code:

- a) 1 and 3
- b) 2 and 3
- c) 1 and 2

d) 1, 2 and 3

Q.6) Solution (d)

**Explanation:**

- In general, species that have narrow or limited niches are considered to be specialist species. Koalas (*Phascolarctos cinereus*), which feed only on leaves from eucalyptus trees in Australia, are an example of a specialist species. Species with broader niches, like coyotes (*Canis latrans*) or raccoons (*Procyon lotor*), are considered generalists. No two species can have the exact same niche, otherwise they would be in direct competition for resources with one another. If this occurs, then one species will outcompete the other. If the losing species then does not adapt, it would lead to its extinction. **Hence, statement 1 is correct.**
- A **habitat** is a place of an ecosystem occupied by a particular organism. It reflects the living place of an organism. **Hence, statement 2 is correct.**
- The amount of space an animal uses on a regular basis is called its home range. Home ranges can stretch for many miles or they can be only a few feet. The size of a home range often depends on the size of an animal. Large animals, like the moose, need more space to survive than smaller animals like the chipmunk. **Hence, statement 3 is correct.**

**Q. 7) Consider the following statements about Ecoline**

1. It is a transition zone between two biomes where organisms can survive.
2. It is determined by physiochemical factors such as humidity, temperature, rainfall, and chemicals.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.7) Solution (b)

**Explanation:**

- **Ecotone** is a transition zone between two biomes where organisms can survive. Ex: mangroves. **Hence, statement 1 is incorrect.**
- Ecoline can be defined as the zone where there is a continuous change from an ecosystem to another ecosystem when there is no proper boundary present between two different species present in that ecosystem. The flow that governs the ecoline is environmental

gradients like changes in abiotic factors gradually. It is determined by physiochemical factors such as humidity, temperature, rainfall, and chemicals. **Hence, statement 2 is correct.**

- **Note: Ecoline includes both ecosystem as well as the transition zone, whereas eco tone includes only transition zone.**

**Q. 8) Consider the following statements**

1. The Carrying Capacity refers to the maximum rate at which a population can increase when resources are unlimited and environmental conditions are ideal.
2. The maximum number of a given species that can be sustained by resources in a given environment is the species' biotic potential.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.8) Solution (d)

**Explanation:**

- The **Biotic Potential** refers to the maximum rate at which a population can increase when resources are unlimited and environmental conditions are ideal.
- The **Carrying Capacity** refers to the maximum number of individuals of a given species that an area's resources can sustain indefinitely without significantly depleting those resources. **Hence, statement 1 is incorrect.**
- The maximum number of a given species that can be sustained by resources in a given environment is the species' carrying capacity, a concept often discussed alongside biotic potential. When a population is nearing its carrying capacity, the amount of resources used is equal to the amount of resources being produced. It is at this time individuals start competing; some may die and others may not reproduce because of the lack of resources. Conditions are no longer ideal and as a result, these individuals cannot reach their full biotic potential. **Hence, statement 2 is incorrect .**

**Q. 9) Consider the following statements**

1. India is home to the largest number of organic farmers.
2. In India, Madhya Pradesh has the largest Area under organic farming.
3. Australia has the largest area under organic farming in the world.



Choose the correct code:

- a) 1 and 3
- b) 2 and 3
- c) 1 and 2
- d) 1, 2 and 3

Q.9) Solution (d)

**Explanation:**

- India continues to be the country with the highest number of producers (13,66,000), followed by Uganda (2,10,000), and Ethiopia (2,04,000). Most small-scale producers are certified in groups based on an internal control system. (FiBL Survey 2021) **Hence, statement 1 is correct.**
- Organic farming is in a nascent stage in India. About 2.30 million hectares of farmland was under organic cultivation as of March 2019. This is two per cent of the 140.1 million ha net sown area in the country. A few states have taken the lead in improving organic farming coverage, as a major part of this area is concentrated only in a handful of states. Madhya Pradesh tops the list with 0.76 million ha of area under organic cultivation — that is over 27 per cent of India's total organic cultivation area. **Hence, statement 2 is correct.**
- Organic agriculture is practiced in 187 countries, and 72.3 million hectares of agricultural land were managed organically by at least 3.1 million farmers. With the most organic agricultural land in Australia (35.69 m hectares) followed by Argentina (3.63 m hectares) and the Spain (2.35 m hectares). **Hence, statement 3 is correct .**

Q. 10) Match the following

Ecological Interactions	Examples
1. Commensalism	a) Lion and Cheetah for similar preys
2. Mutualism	b) Lice on the human Scalp
3. Competition	c) Sea anemone attached to a hermit crab
4. Predation	d) Suckerfish attached to a shark





5. Parasitism

e) Owl eating mice

Choose the correct code:

- a) 1-d; 2-c; 3-e; 4-a; 5-b;
- b) 1-c; 2-d; 3-a; 4-e; 5-b;
- c) 1-d; 2-c; 3-b; 4-e; 5-a;
- d) 1-d; 2-c; 3-a; 4-e; 5-b;

Q.10) Solution (d)

**Explanation:**

Ecological Interactions	Examples
1. Commensalism	Suckerfish are small tiny fish that are of length three feet. They have an organ on their head which is modified into a suction cup. This organ acts as a sucker and helps in the attachment of the fish to the sharks' belly. The attachment of these fishes to the sharks benefits them greatly in terms of providing food. They feed on the leftover food eaten by the sharks. Hence, they don't need to hunt and eat food. They also feed on the parasites growing on the body of the shark helping them in having clear skin. As the fishes are benefitted from the attachment and the sharks are neither benefitted nor are at a loss such type of association is known as commensalism.
2. Mutualism	Sea anemones have stinging cells which are useful for both stunning prey as well as for protection against possible predators. Hermit crab also benefits as it gets protection from predators with sea anemone attached to its shell. At the same time, sea anemone feeds on the prey that floats or swims into its tentacles. As the crab moves sea anemone has a greater chance of utilizing different food sources.
3. Competition	In the African Savanna, there are cats that hunt the same prey species. For example, the lion and the cheetah both hunt zebras, antelopes, gazelles, and wildebeest. To compete for this resource,

	lions have adapted to hunt in packs and through teamwork. Cheetahs use speed to succeed in catching prey.
4. Predation	Owls are an example of predator organisms. They feed on smaller organisms such as mice. The mice therefore serve as prey for the owls. As predators, owls occur high in a food chain of forest organisms.
5. Parasitism	Lice on the scalp is an example of a parasitic relationship, as the lice benefit from feeding on the blood of the host (human) while the host is harmed by the lice's presence and feeding activities.

**Q. 11) Consider the following statements**

1. The biogeochemical cycles in which the nutrients are replaced as fast as they are utilized are called the perfect nutrient cycle.
2. All sedimentary cycles are examples of perfect nutrient cycles.
3. The Phosphorus cycle and the Carbon cycle are examples of the perfect nutrient cycle.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) 3 only
- d) None

Q.11) Solution (a)

**Explanation:**

- The biogeochemical cycles in which the nutrients are replaced as fast as they are utilized are called the **perfect nutrient cycle**. Hence, **statement 1 is correct**.
- **Most gaseous cycles are perfect nutrient cycles**. Most **sedimentary cycles are imperfect nutrient cycles** i.e. some nutrients are lost from the cycles and get stored in the sediments. Hence, **statement 2 is incorrect**.
- The **Nitrogen cycle and Carbon cycle** are examples of the **perfect nutrient cycle**. **Phosphorus cycle is totally sedimentary in nature**. Hence, **statement 3 is incorrect**.

**Q. 12) Consider the following statements**

1. Th Ecotopes are the smallest ecologically distinct landscape features in a landscape mapping and classification system.
2. The Ecosystem consists of a community of living beings and a physical environment both interacting and exchanging materials between them.



3. A population is a group of individuals of the same species living in the same area at the same time.

Choose the correct code:

- a) 1 and 3
- b) 1 and 2 only
- c) 1, 2 and 3
- d) 2 and 3 only

Q.12) Solution (c)

**Explanation:**

- The Ecotopes are the smallest ecologically distinct landscape features in a landscape mapping and classification system. As such, they represent relatively homogeneous, spatially explicit landscape functional units that are useful for stratifying landscapes into ecologically distinct features for the measurement and mapping of landscape structure, function and change. Like ecosystems, ecotopes are identified using flexible criteria, in the case of ecotopes, by criteria defined within a specific ecological mapping and classification system. Just as ecosystems are defined by the interaction of biotic and abiotic components, ecotope classification should stratify landscapes based on a combination of both biotic and abiotic factors, including vegetation, soils, hydrology, and other factors.. **Hence, statement 1 is correct.**
- The **Ecosystem** consists of a community of living beings and a physical environment both interacting and exchanging materials between them. **Hence, statement 2 is correct.**
- A population is a group of individuals of the same species living in the same area at the same time. Populations are dynamic and can change in size and composition over time. **Hence, statement 3 is correct.**

**Q. 13) Consider the following statements**

1. The Edge Effect refers to a lower density of organisms within an ecotone as compared to adjacent ecosystems
2. The Ecological Amplitude refers to a specific range within which a species can tolerate ecological changes.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2



d) Neither 1 nor 2

Q.13) Solution (b)

**Explanation:**

- The **Edge Effect** refers to a **higher density of organisms** and diversity of species within an ecotone. The organisms which occur most abundantly in this zone are called edge species. **Hence, statement 1 is incorrect.**
- The **Ecological Amplitude** refers to a specific range within which a species can tolerate ecological changes. **Hence, statement 2 is correct.**

**Q. 14) Consider the following statements**

1. The flow of energy from heterotrophs to autotrophs is called energy flow.
2. The energy flow in the ecosystem is always unidirectional.
3. In a four level pyramid, only 0.1% of fixed energy ultimately reaches the top.

Choose the correct code:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 2 only
- d) 1, 2 and 3

Q.14) Solution (b)

**Explanation:**

- The flow of energy from **producers(Autotrophs) to consumers(Heterotrophs)** is called **energy flow**. **Hence, statement 1 is incorrect.**
- The energy flow is always **unidirectional**. The energy always flows from lower to higher trophic levels and it never flows in the reverse direction. **Hence, statement 2 is correct.**
- In a four level pyramid, only 0.1% of fixed energy ultimately reaches the top. In all ecosystem, first base level of pyramid will be occupied by producers, consumers occupy higher trophic levels. Energy is lost when it is transferred from one trophic level to the next. Approximately 10% of the stored energy of a trophic level could be transferred to the consumers of next level. Thus very less number of individuals could be supported at the top level. **Hence, statement 2 is correct.**

**Q. 15) Consider the following statements about Ecological Pyramids**

1. The saprophytes are not considered in any of the pyramids
2. These pyramids are applicable only to complex food chains



3. This system does not take into account food webs.

Choose the correct code:

- a) 1 and 3 only
- b) 2 and 3 only
- c) 1 and 2 only
- d) 1, 2 and 3

Q.15) Solution (a)

**Explanation:**

#### Limitations of Ecological Pyramid

- The saprophytes are not considered in any of the pyramids even though they form an important part of the various ecosystem. **Hence, statement 1 is correct.**
- These pyramids are applicable only to simple food chains, which usually do not occur naturally. **Hence, statement 2 is incorrect.**
- These pyramids do not deliver any concept in relation to variations in season and climate.
- They do not consider the possibility of the existence of the same species at different levels.
- More than one species may occupy multiple trophic levels as in case of the food web. Thus, this system does not take into account food webs. **Hence, statement 3 is correct.**

#### Q. 16) Consider the following statements

1. Gross Primary Productivity describes how much glucose is produced during photosynthesis and its value is always comparatively higher than Net Primary Productivity.
2. The Net Primary Productivity of an ecosystem is the available biomass for consumption by herbivores and carnivores.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 or 2

Q.16) Solution (c)

**Explanation:**

- Gross Primary Productivity refers to the amount of organic substance synthesized by the producers in unit time per unit area. It describes how much glucose is produced during

photosynthesis. The value of GPP is always comparatively higher than NPP . **Hence, statement 1 is correct .**

- The **Net Primary Productivity** of an ecosystem is the available biomass for consumption by herbivores and carnivores. Net Primary Productivity = Gross Primary Productivity - Respiration losses (R). It describes how much glucose is produced excluding the amount of energy utilized for respiratory processes. The value of NPP is always comparatively lower than GPP. **Hence, statement 2 is correct .**

**Q. 17) Consider the following statements about the Food Web**

1. It includes at maximum two food chains only.
2. It is a representation of all possible paths of energy flow in an ecosystem.
3. Food webs are static and cannot change in response to changes in the environment.

Choose the *Incorrect* code:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

Q.17) Solution (c)

**Explanation:**

- The **Food Web** includes multiple interlinked food chains. **Hence, statement 1 is incorrect.**
- It is a representation of all possible paths of energy flow in an ecosystem. **Hence, statement 2 is correct.**
- It has **more than one alternative for food for most of the organisms** as a result it increases the chances of survival. Ex: Grass may serve as food for deer, rabbit, or cow.
- Food webs are dynamic and can change in response to changes in the environment, such as the introduction or removal of a species or changes in climate. **Hence, statement 3 is incorrect.**

**Q. 18) Consider the following statements about the Nitrogen Cycle**

1. Nitrogen fixation is a process where nitrogen is converted into ammonia with the help of bacteria such as Clostridium and Rhodospirillum.
2. Ammonification converts organic nitrogenous matter from living organisms into ammonium.

3. Nitrate present in the soil is reduced to elemental nitrogen by the process of denitrification

Choose the correct code:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

Q.18) Solution (d)

**Explanation:**

- Nitrogen fixation is a process where nitrogen is converted into ammonia with the help of bacteria such as Clostridium and Rhodospirillum. **Hence, statement 1 is correct.**
- Ammonification converts organic nitrogenous matter from living organisms into ammonium. **Hence, statement 2 is correct.**
- Nitrate present in the soil is reduced to nitrogen by the process of denitrification. In the soil as well as oceans there are special denitrifying bacteria (Pseudomonas and Thiobacillus), which convert the nitrates/nitrites to elemental nitrogen. This nitrogen escapes into the atmosphere, thus completing the cycle. **Hence, statement 3 is correct.**

**Q. 19) Consider the following statements about the processes involved in decomposition**

- 1. The detritivores break down detritus into smaller particles in a process called leaching.
- 2. The bacterial and fungal enzymes degrade detritus into simpler inorganic substances in a process called catabolism.
- 3. The accumulation of a dark-colored amorphous substance called humus during decomposition in the soil in a process called humification.

Choose the correct code:

- a) 1 and 3
- b) 1 and 2
- c) 1, 2 and 3
- d) 2 and 3

Q.19) Solution (d)

**Explanation:**

- The detritivores break down detritus into smaller particles in a process called **fragmentation**. Hence, **statement 1 is incorrect**.
- The bacterial and fungal enzymes degrade detritus into simpler inorganic substances in a process called **catabolism**. Hence, **statement 2 is correct**.
- The accumulation of a dark-colored amorphous substance called humus during decomposition in the soil in a process called **humification**. Hence, **statement 3 is correct**.

**Q. 20) Which of the following statement is 'incorrect' regarding the Sulphur Cycle?**

- a) It is a gaseous cycle.
- b) The sulphur reservoir is found in pyrite rock and soil.
- c) The decomposition of organic matter releases sulphur.
- d) The volcanic eruptions emit sulphur into the atmosphere.

Q.20) Solution (a)

**Explanation:**

The question asks for an incorrect option.

Sulphur also has a small gaseous phase as sulphur dioxide, but is not considered a gaseous cycle because the biggest sulphur reservoir is the ocean. Thus the Sulphur Cycle is a sedimentary cycle.

**Hence, option a is incorrect.**

**Q. 21) Consider the following statements about various types of biomes**

1. Boreal biomes are characterised by acidic and mineral deficient soils
2. The predominant vegetation in the Tundra biome is evergreen coniferous trees.
3. Ebony and mahogany species are prominent in the tropical rainforest biome.

Which of the statements given above are correct?

- a) 1 only
- b) 2 and 3
- c) 3 only
- d) 1 and 3



Q.21) Solution (d)

**Explanation:**

- Boreal biome soils are characterized by thin podzols which are acidic and mineral deficient. It is because the weathering of rocks proceeds slowly in cold environments and the litter is decomposed very slowly. The soil is acidic because of a large amount of water movement through the soil without a significant amount of evaporation and essential nutrients are leached beyond the reach of roots. **Hence statement 1 is correct.**
- The predominant vegetation in the Taiga biome is evergreen coniferous trees. Due to permafrost in Tundra, it is devoid of trees. **Hence statement 2 is incorrect.**
- Epiphytes along with ebony and mahogany are seen in the tropical rainforest biome. **Hence statement 3 is correct.**
- Epiphytes are plants that grow harmlessly upon another plant and derive their nutrients and moisture from air, rain, and debris accumulating around it.

**Q. 22) Consider the following statements about various types of forests in India**

1. The main species of tropical moist deciduous forests are neem, cactus, and spurge
2. The main species of tropical thorn forests are teak, sal, rosewood, and jamun.
3. The main species of sub-tropical pine forests are chir, oak, pine, and rhododendron.
4. The main species of tropical dry deciduous forests are acacia, red sanders, and satinwood.

Choose the correct code:

- a) Only one statement is correct
- b) Two statements are correct
- c) Three statements are correct
- d) Four statements are correct

Q.22) Solution (b)

**Explanation:**

- The main species of tropical moist deciduous forests are teak, sal, rosewood, and jamun. **Hence statement 1 is incorrect.**

- The main species of tropical thorn forests are neem, cactus, and spurge. **Hence statement 2 is incorrect.**
- The main species of sub-tropical pine forests are chir, oak, pine, and rhododendron. **Hence statement 3 is correct.**
- The main species of tropical dry deciduous forests are acacia, red sanders, and satinwood. **Hence statement 4 is correct.**
- The main species of tropical wet evergreen forests are white cedar, mahogany, and meusa.
- The main species of tropical semi-evergreen forests are laurel, rosewood, and thorny bamboo.

**Q.23) Which of the following contributes majorly to tropical deforestation?**

- a) Logging
- b) Small-holder agriculture
- c) Large-scale agriculture
- d) Cattle pasture

Q.23) Solution (b)

**Explanation:**

Deforestation is the felling of trees as a result of urbanization, industrialization, mining, use of wood for domestic purposes, shifting cultivation, etc.

Logging – 10 – 15%

Small-holder agriculture – 35 – 45%

Large-scale agriculture – 15 – 20%

Cattle pasture – 20 – 25%

Other – 5%

**Hence option b is correct.**

**Q.24) Consider the following statements**



1. Bonn Challenge is a global goal to restore 1500 million hectares of degraded land by 2030.
2. More than 50% of India's geographical area is affected by land degradation
3. Sustainable Development Goal 15 has provisions related to Land Degradation Neutrality.

Choose the correct code:

- a) 2 and 3
- b) 3 only
- c) 1 and 3
- d) 1 and 2 only

Q.24) Solution (b)

**Explanation:**

- Bonn Challenge is a global goal to restore 150 million hectares of degraded land by 2020 and 350 million hectares by 2030. **Hence statement 1 is incorrect.**
- Bonn Challenge was launched by the Government of Germany and IUCN in 2011.
- India joined the challenge in 2015 and it has set the target of restoring 26 million hectares by 2030.
- State of India's Environment 2019 shows that 30% of India's total geographical area is being affected by land degradation. 82% of these degraded land lies in just nine states: Rajasthan, Maharashtra, Gujarat, Jammu & Kashmir, Karnataka, Jharkhand, Odisha, Madhya Pradesh and Telangana. **Hence statement 2 is incorrect.**
- LDN is a state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems.
- Sustainable Development Goal 15 (SDG 15 or Global Goal 15) is about "Life on land". One of the 17 Sustainable Development Goals established by the United Nations in 2015, the official wording is: "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss" **Hence statement 3 is correct.**

**Q. 25) Consider the following statements regarding the Indian State of Forest Report 2021**

1. It for the first time recorded the forest cover in tiger reserves and the Gir forest area.



2. Arunachal Pradesh has the largest area-wise forest cover.
3. The Forest Survey of India conducts this exercise every 5 years.
4. Nagaland has the highest forest cover in percentage terms

Which of the statements given above are correct?

- a) 3 and 4
- b) 1 only
- c) 1 and 2 only
- d) 2 and 3

Q.25) Solution (b)

**Explanation:**

- The Indian State of Forest Report 2021 for the first time has recorded the forest cover in tiger reserves, tiger corridors, and the Gir forest area. The Total Forest and Tree cover is 24.62% of the geographical area of the country. The total forest cover is 7,13,789 sq km which is 21.71% of the geographical area of the country. The tree cover is 2.91% of the geographical area of the country. Forest cover in tiger corridors has increased by 0.32% between 2011-2021. Forest cover in tiger corridors has decreased by 0.04% between 2011-2021. **Hence statement 1 is correct.**
- Madhya Pradesh has the largest area-wise forest cover. Madhya Pradesh > Arunachal Pradesh > Chhattisgarh > Odisha > Maharashtra – Area-wise forest cover. **Hence statement 2 is incorrect.**
- The Forest Survey of India (FSI) conducts this exercise every two years. **Hence statement 3 is incorrect.**
- **The Forest Survey of India**, is an organization under the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.
- Mizoram with 84.53 % has the highest percentage wise forest cover, while Nagaland is 5<sup>th</sup> with 73.90% . **Hence statement 4 is incorrect.**

**Q. 26) Consider the following statements**

1. Lentic ecosystems include all ecosystems with static or still water.
2. Lotic ecosystems include all fast-moving water bodies.

3. Lentic ecosystems are also called the riverine ecosystem.
4. Lotic ecosystems are also called the lacustrine ecosystem.

Which of the statements given above are correct?

- a) 1 and 4
- b) 2 and 3
- c) 2 and 4
- d) 1 and 2

Q.26) Solution (d)

**Explanation:**

- Lentic ecosystems include all ecosystems with static or still water. Ex: Lakes and Ponds. **Hence statement 1 is correct.**
- Lotic ecosystems include all fast-moving water bodies. Ex: Rivers and Streams. **Hence statement 2 is correct.**
- Lentic ecosystems are also called the lacustrine ecosystem. **Hence statement 3 is incorrect.**
- Lotic ecosystems are also called the riverine ecosystem. **Hence statement 4 is incorrect.**

**Q. 27) Consider the following statements about Biorock**

1. It refers to the substance formed by the electro-accumulation of minerals dissolved in seawater.
2. Its production can be powered by renewable energy.
3. Biorock technology can help in coral restoration.

Which of the statements given above are correct?

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.27) Solution (d)

**Explanation:**

- Biorock refers to the substance formed by the electro-accumulation of minerals dissolved in seawater. It is also known as Seacrete or Seament. **Hence statement 1 is correct.**
- Biorock projects **can be powered by** renewable energy like windmills, photovoltaic solar panels, and tidal current generators. This enables their construction in areas where conventional electric power is unavailable. **Hence statement 2 is correct.**
- Biorock technology helps in coral restoration.
- It is a method that applies safe, **low-voltage electrical currents** through seawater, causing **dissolved minerals to crystallize** on structures, growing into a white limestone (CaCo<sub>3</sub>) similar to that which naturally makes up coral reefs and tropical white sand beaches. **Hence statement 3 is correct.**

**Q. 28) Consider the following statements**

1. Cultural Eutrophication is also known as natural eutrophication.
2. When compared to anthropogenic eutrophication, the natural eutrophication process is substantially slower.
3. Eutrophication leads to the transformation of the water body from a terrestrial ecosystem to an aquatic ecosystem.

Choose the correct code:

- a) 1 and 2
- b) 1 and 3
- c) 2 only
- d) 1, 2 and 3

Q.28) Solution (c)

**Explanation:**

- Eutrophication is the enrichment of natural waters with inorganic nutrients, increasing the production of algae and macrophytes.

- Anthropogenic or "cultural eutrophication" is often a much more rapid process in which nutrients are added to a water body from a wide variety of polluting inputs including untreated or partially treated sewage **Hence statement 1 is incorrect.**
- When compared to anthropogenic eutrophication, the natural eutrophication process is substantially slower. **Hence statement 2 is correct.**
- Eutrophication leads to the transformation of the water body from an aquatic ecosystem to a terrestrial ecosystem. It leads to excess growth of algae blooms in the water body. Algal blooms obstruct sunlight penetration, resulting in the mortality of aquatic plants and, as a result, oxygen replenishment. It also leads to an increase in invasive species in the water bodies due to an increase in nutrient levels in the water bodies. **Hence statement 3 is incorrect.**

**Q. 29) Consider the following statements**

1. Coral reefs in India are found only in the Andaman & Nicobar, and Lakshadweep Islands.
2. India has all three major prevailing types of coral reefs – atolls, fringing reefs, and barrier reefs.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.29) Solution (b)

**Explanation:**

- Coral reefs in India are found in a lot of areas including the Gulf of Kutch, Gulf of Mannar, Palk Bay, Andaman & Nicobar, and Lakshadweep Islands.
- Patches of coral reefs are also found in Ratnagiri, Malvan, Redi, South Bombay, and at the Gaveshani Bank located in the west of Mangalore. **Hence statement 1 is incorrect.**
- India has all three major prevailing types of coral reefs – atolls, fringing reefs, and barrier reefs. **Hence statement 2 is correct.**

- Fringing reefs evolve and develop near the continent and remain close to the coastline. These reefs are separated from the coastline by small, shallow lagoons. They are the most commonly found reefs in the world.
- Barrier reefs are found offshore on the continental shelf. They usually run parallel to the coastline at some distance. A deep and wide lagoon is located between the coastline and the barrier reef.
- Atolls are formed on mid-oceanic ridges. They are shaped circularly or elliptically and are surrounded by seas on all four sides and have shallow waters in the center called a lagoon.

**Q. 30) Consider the following statements about the estuary ecosystem**

1. It is an area where a river meets the sea
2. It is devoid of tidal variations and are calm zones
3. It is biologically the most productive area where diverse animals are found.

Choose the correct code:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

Q.30) Solution (c)

**Explanation:**

- The estuary ecosystem is an area where a river meets the sea and is subject to tidal variations. It is a place where freshwater mixes with salty ocean water. It is formed due to various factors like rising sea levels, glacial processes, and tectonic processes. **Hence statement 1 is correct.**
- Estuaries are greatly influenced by tidal action. They are periodically washed by sea water once or twice a day based on the number of tides. In some narrow estuaries, tidal bores are significant. Tidal bores cause great damage to the estuarine ecology. **Hence statement 2 is incorrect.**
- It is biologically the most productive area where diverse animals are found as it gets nutrients from both fresh and marine water. **Hence statement 3 is correct.**



**Q. 31) Consider the following statements about the Mangrove ecosystem**

1. They form the best example of a ecotone.
2. They are halophytes adapted to anoxic conditions.
3. The Mangroves for the Future initiative is led by the UNEP.

Choose the correct code:

- a) 1 and 2
- b) 1 and 3
- c) 2 and 3
- d) 1, 2 and 3

Q.31) Solution (a)

**Explanation:**

- The mangrove ecosystem forms the best example of ecotone as they grow in estuaries, low-lying coasts, and mudflats. **Hence statement 1 is correct.**
- An ecotone is an area that acts as a boundary or a transition between two ecosystems.
- They are halophytes adapted to anoxic conditions. **Hence statement 2 is correct.**
- Halophytes mean salt-tolerant trees and anoxic mean low oxygen conditions of waterlogged mud.
- They produce pneumatophores to overcome the respiration problem.
- The Mangroves for the Future initiative is led by the IUCN and UNDP. It promotes investment in coastal ecosystem conservation and India is part of it. **Hence statement 3 is incorrect.**

**Q. 32) Consider the following statements**

1. Black corals can be found growing only in shallow waters.
2. Hard corals extract calcium carbonate from seawater to build coral exoskeletons.
3. Soft coral does not produce a rigid calcium carbonate skeleton.

Choose the correct code:

- a) 1 and 2



- b) 1 and 3
- c) 2 and 3
- d) 1, 2 and 3

Q.32) Solution (c)

**Explanation:**

- Black corals can be found growing **both in shallow and deep waters. They can live for over 4,000 years and** are branched and look like feathers, fans, or bushes, while others are straight like a whip. Black corals are filter feeders and eat tiny **zooplankton that is abundant in deep waters. Hence statement 1 is incorrect.**
- Hard corals extract calcium carbonate from seawater to build coral exoskeletons. Hard corals produce a rigid skeleton made of calcium carbonate ( $\text{CaCO}_3$ ) in a crystal form called aragonite. They are the primary reef-building corals. Hard corals that form reefs are called hermatypic corals. **Hence statement 2 is correct.**
- Soft coral does **not produce a rigid calcium carbonate skeleton.** They do not form reefs, though they are present in a reef ecosystem. Soft corals are also mostly colonial; what appears to be a single large organism is a colony of individual polyps combined to form a larger structure. Visually, soft coral colonies tend to resemble trees, bushes, fans, whips, and grasses. **Hence statement 3 is correct.**

**Q. 33) Consider the following statements about the International Coral Reef Initiative (ICRI)**

1. It is a intergovernmental group under the aegis of UNEP
2. It was announced at the First Conference of the Parties of the Convention on Biological Diversity in 1994
3. India is a founding member of this initiative

Choose the correct code:

- a) 1 and 2 only
- b) 2 only
- c) 2 and 3 only
- d) 1, 2 and 3

Q.33) Solution (b)

**Explanation:**

- The International Coral Reef Initiative (ICRI) is an informal partnership among nations, international organisations and non-government organisations to help protect coral reefs globally. It aims to implement Chapter 17 of Agenda 21, Aichi Target 10 of the Convention on Biological Diversity's 10-year Strategic Plan, and other relevant internationally agreed objectives and targets **Hence statement 1 is incorrect.**
- It was launched at the First Conference of the Parties of the Convention on Biological Diversity, held in the Bahamas in December 1994, and subsequently announced at the high level segment of the Intersessional Meeting of the United Nations Commission on Sustainable Development in April 1995 **Hence statement 2 is correct.**
- ICRI was established in 1994 at the initiative of eight founding nations: Australia, France, Japan, Jamaica, the Philippines, Sweden, the United Kingdom, and the United States .ICRI now has more than 60 members including India. **Hence statement 3 is incorrect.**

**Q. 34) Consider the following statements**

1. India has seven UNESCO-designated natural world heritage sites.
2. Khangchendzonga National Park is one of the natural world heritage sites.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.34) Solution (a)

**Explanation:**

- India has seven UNESCO-designated natural world heritage sites. **Hence statement 1 is correct.**
- **Khangchendzonga National Park** is the only mixed world heritage site in India. **Hence statement 2 is incorrect.**
- **The Natural World Heritage Sites in India-**
  1. **Great Himalayan National Park Conservation Area**

2. Kaziranga National Park (1985)
3. Keoladeo National Park (1985)
4. **Manas Wildlife Sanctuary (1985)**
5. **Nanda Devi and Valley of Flowers National Parks (1988, 2005)**
6. Sundarban National Park (1987)
7. Western Ghats (2012)

**Q. 35) Consider the following statements**

1. Lakes are never part of an Ocean
2. The Aral Sea is an endorheic lake
3. Lakes are temporary in nature and get eliminated eventually

Choose the correct code:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

Q.35) Solution (d)

**Explanation:**

- Lakes are never a part of the ocean they are defined as aquatic systems on land. Even lagoons are excluded from this definition. **Hence statement 1 is correct.**
- The lakes which do not have any outflow and rather lose their water with evaporation are known as endorheic lakes. The aral sea and the Caspian sea both are such lakes. **Hence statement 2 is correct.**
- Lakes are a temporary feature and get eventually eliminated due to silting and draining. **Hence statement 3 is correct.**

**Q. 36) Consider the following**

Ramsar Sites	State
1. Chandra Taal	a) Himachal Pradesh
2. Deepor Beel	b) Assam
3. Tampara Lake	c) Kerala
4. Shallbugh Wetland	d) Odisha

How many pairs are correctly matched?

- a) One pair
- b) Two pairs
- c) Three pairs
- d) Four pairs

Q.36) Solution (b)

**Explanation:**

Ramsar Sites	State
1. Chandra Taal	a) Himachal Pradesh
2. Deepor Beel	b) Assam
3. Tampara Lake	c) Odisha
4. Shallbugh Wetland	d) Jammu and Kashmir
5. Hygam Wetland	e) Jammu and Kashmir
6. Thane Creek	f) Maharashtra

7. Kanjirankulam Bird Sanctuary	g) Tamil Nadu
8. Vaduvur Bird Sanctuary	h) Tamil Nadu
9. Ansupa Lake	i) Odisha

Hence option b is correct.

**Q. 37) Consider the following statements about Montreux Record**

1. It is a register of wetland sites in which changes in ecological character are occurring.
2. It is maintained as part of the Ramsar List.
3. Chilika lake of Odisha is on the list.

Choose the correct code:

- a) 1 and 2
- b) 1 and 3
- c) 2 and 3
- d) 1, 2 and 3

Q.37) Solution (a)

**Explanation:**

- Montreux Record is a **register of wetland sites in which changes in ecological character are occurring, have occurred, or are likely to occur**. Hence statement 1 is correct.
- It is maintained as part of the Ramsar List. **Hence statement 2 is correct.**
- **Chilika lake of Odisha was on the list but it's removed now**. Hence statement 3 is incorrect.
- Currently, two wetlands of India are in Montreux record: Keoladeo National Park (Rajasthan) and Loktak Lake (Manipur).

**Q. 38) Consider the following statements about layers of the ocean**

1. The layer from the surface to 200 meters is known as the mesopelagic zone.
2. The layer from 200 meters to 1,000 meters is known as the epipelagic zone.
3. The layer from 1,000 meters to 4,000 meters is known as the bathypelagic zone.
4. The layer from 4,000 meters to 6,000 meters is known as the abyssal zone.

Choose the correct code:

- a) 1 and 3
- b) 2 and 4
- c) 3 and 4
- d) 2 and 3

Q.38) Solution (c)

**Explanation:**

- The layer from the **surface to 200 meters** is known as the epipelagic zone. It is also known as the sunlight zone because this is where most of the visible light exists. **Hence statement 1 is incorrect.**
- The layer from **200 meters to 1,000 meters** is known as the **mesopelagic zone**. It is sometimes referred to as the twilight zone or the midwater zone. **Hence statement 2 is incorrect.**
- The layer from **1,000 meters to 4,000 meters** is known as the **bathypelagic zone**. It is referred to as the midnight zone or the dark zone. **Hence statement 3 is correct.**
- The layer from **4,000 meters to 6,000 meters** is known as the **abyssal zone**. **Hence statement 4 is correct.**
- The layer from 6,000 meters to the bottom of the deepest parts of the ocean is known as the **hadalpelagic zone**.

**Q. 39) Which of the following are artificial lakes?**

1. Sambhar Lake
2. Chembarambakkam Lake
3. Bhojtal Lake



4. Wular Lake
5. Hussain Sagar Lake

Choose the correct code:

- a) 2, 4 and 5
- b) 1, 3 and 4
- c) 1, 3 and 5
- d) 2, 3 and 5

Q.39) Solution (d)

**Explanation:**

- Artificial lakes are often built by diverting a part of a river and storing the water in a reservoir behind a dam. They are also constructed by digging land or by using dykes to enclose the water.
- The artificial lakes in India –
  - ✓ Chembarambakkam Lake
  - ✓ Bhojtal Lake
  - ✓ Hussain Sagar Lake
  - ✓ Gobind Sagar Lake
  - ✓ Jaisamand Lake

Hence option d is correct.

**Q. 40) Consider the following statements about the grassland ecosystem**

1. They are found only in temperate areas.
2. They are an intermediate stage in ecological succession.
3. Jaguars, African wild dogs, pronghorns, and black-footed ferrets are found in grasslands.

Choose the correct code:

- a) 1 and 2





- b) 1 and 3
- c) 2 and 3
- d) 1, 2 and 3

Q.40) Solution (c)

**Explanation:**

- The grassland ecosystem is found in both tropical and temperate climates where the rainfall is insufficient to support tree growth. **Hence statement 1 is incorrect.**
- They are an intermediate stage in ecological succession as they encompass a portion of the land at all altitudes and latitudes when climatic and soil conditions prevent tree growth. **Hence statement 2 is correct.**
- Jaguars, African wild dogs, pronghorns, plains bison, mountain plover, African elephant, Sunda tiger, black rhinos, white rhinos, savanna elephants, bigger one-horned rhinos, Indian elephants, swift foxes, and black-footed ferrets are found in grasslands. **Hence statement 3 is correct.**

**Q. 41) Consider the following statements regarding levels of biodiversity**

1. Genetic diversity ensures the survival of the population.
2. Species diversity refers to variety of living and non-living things in a surrounding.
3. Ecosystem diversity is influenced by the nature of the ecosystem.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.41) Solution (c)

**Explanation:**

- Genetic diversity ensures the survival of the population as it ensures the survival of individuals. It aims to ensure that some species survive drastic changes and thus carry on desirable genes.
- It is concerned with the variation in genes within a particular species. It allows species to adapt to changing environments. **Hence statement 1 is correct.**

- Species diversity refers to the variety of living organisms on earth. Species differ from one another, especially in their genetic makeup, and do not interbreed in nature. It is the ratio of one species' population over the total number of organisms across all species in the given biome. Zero represents infinite diversity and one represents only one species present. **Hence statement 2 is incorrect.**
- Ecosystem diversity refers to different types of habitats.
- A habitat is the cumulative factor of the climate, vegetation, and geography of a region. Ex: Grasslands and Corals.
- Ecosystem diversity is influenced by the nature of the ecosystem because the climate changes are accompanied by the change in vegetation as well and each species adapts itself to a particular kind of environment. Hence, the diversity of species in the ecosystem is influenced by the nature of the ecosystem. **Hence statement 3 is correct.**

**Q. 42) Consider the following statements**

1. Species richness is the proportion of species at a given site.
2. Alpha diversity is a comparison of diversity between ecosystems.
3. Beta diversity is the diversity within a particular ecosystem.
4. Gamma diversity is the overall diversity of the different ecosystems in a region.

Choose the correct code:

- a) Only one statement is correct
- b) Two statements are correct
- c) Three statements are correct
- d) Four statements are correct

Q.42) Solution (a)

**Explanation:**

- Species richness is the measure of the number of species found in a community.
- The species richness of an ecosystem is taken into account as one of the most popular methods for estimating biodiversity.
- Species richness is the measurement of all the species that are present in a given area.
- The ecosystem will be more stable if there are more species since more species mean more species richness.
- Increased species diversity will eventually boost biodiversity, which is a crucial component of preserving biodiversity.
- Species evenness is the proportion of species at a given site. **Hence statement 1 is incorrect.**

- Alpha diversity is a comparison of diversity between ecosystems.
- The number of species found in the area of concern is how alpha diversity is expressed.
- As a result, species richness in that particular ecosystem is provided by alpha diversity.
- Compared to beta and gamma diversity, alpha diversity is a small-scale indicator. **Hence statement 2 is incorrect.**
- Beta diversity is the diversity within a particular ecosystem.
- When species diversity varies between groups or ecosystems, it is referred to as beta diversity.
- Therefore, beta diversity enables the comparison of ecosystem biodiversity.
- The number of species that are particular to each system is measured in beta diversity. **Hence statement 3 is incorrect.**
- Gamma diversity is the overall diversity of the different ecosystems in a region.
- It is a measurement for assessing a large area's total biodiversity.
- As a result, it calculates the total diversity of all the ecosystems in that area.
- The average species diversity in an ecosystem and the variation in species diversity between those habitats are the two factors that determine total diversity.
- Geographic-scale species diversity is one sort of gamma diversity. **Hence statement 4 is correct.**

**Q.43) Which of the following forms the Supporting Services of Ecosystem provided by biodiversity?**

1. Production of Atmospheric Oxygen
2. Recreation and tourism
3. Soil Formation
4. Food and wood products
5. Nutrient Cycling
6. Research and education

Choose the correct code:

- a) 1, 2 and 5
- b) 3, 4 and 5
- c) 4, 5 and 6
- d) 1, 3 and 5

Q.43) Solution (d)

**Explanation:**

The Millennium Ecosystem Assessment (MA) has classified the ecosystem services in four categories as listed below

- **Provisioning services are:** The products obtained from ecosystems, including, for example, genetic resources, **food and fiber**, and fresh water.
- **Regulating services are:** The benefits obtained from the regulation of ecosystem processes, including, for example, the regulation of climate, water, and some human diseases.
- **Cultural services are:** The non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, **recreation and tourism**, and aesthetic experience, including, e.g., **knowledge systems(Research and Education)**, social relations, and aesthetic values.
- **Supporting services are:** Ecosystem services that are necessary for the production of all other ecosystem services. Some examples include biomass production, **production of atmospheric oxygen, soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat**
- **Hence option d is correct.**

**Q. 44) Consider the following statements about Mega Diverse Countries**

1. It is identified by the United Nations Environment Programme.
2. The countries must have at least 5,000 of the world's plants as endemics.
3. The countries must have marine ecosystems within their borders.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.44) Solution (d)

**Explanation:**

- Mega Diverse Countries is identified by the World Conservation Monitoring Centre (WCMC) of the United Nations Environment Program to promote awareness of biodiversity conservation. Seventeen countries have been identified as megadiverse countries.
- They account for 70% of the total biodiversity present on Earth.
- These include most tropical rainforests, coral reefs, and other biodiversity-rich ecosystems.

- They are - Australia, the United States, India, China, South Africa, Brazil, Mexico, Madagascar, Congo, Indonesia, Malaysia, Ecuador, Philippines, Venezuela, Peru, Colombia, and Papua New Guinea. **Hence statement 1 is correct.**
- The major criterion is -
  - ✓ The countries must have at least 5,000 of the world's plants as endemics. **Hence statement 2 is correct.**
  - ✓ The countries must have marine ecosystems within their borders. **Hence statement 3 is correct.**

**Q. 45) Consider the following statements**

1. Flagship species act as an icon for a defined habitat campaign or environmental cause.
2. Sentinel species are organisms used to detect risks to humans by providing advance warning of a danger.
3. Almost all examples of keystone species are plants that have a huge influence on food webs.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.45) Solution (a)

**Explanation:**

- **Flagship species** act as an icon for a defined habitat campaign or environmental cause. By conserving this species the status of many other species will improve.
  - ✓ Ex: Bengal Tiger. **Hence statement 1 is correct.**
- **Sentinel species** are organisms, often animals, used to detect risks to humans by providing advance warning of a danger. The terms primarily apply in the context of environmental hazards rather than those from other sources. Sentinel species are a sensitive indicator of environmental problems. Its presence or absence indicates a specific environmental condition.  
Ex: Lichens are sensitive to SO<sub>2</sub> pollution. **Hence statement 2 is correct.**
- A keystone species is an organism that helps define an entire ecosystem. Without its keystone species, the ecosystem would be dramatically different or cease to exist altogether.

- Keystone species have low functional redundancy. This means that if the species were to disappear from the ecosystem, no other species would be able to fill its ecological niche. The ecosystem would be forced to radically change, allowing new and possibly invasive species to populate the habitat.
- Any organism, from plants to fungi, may be a keystone species; they are not always the largest or most abundant species in an ecosystem. However, almost all examples of keystone species are animals that have a huge influence on food webs. The way these animals influence food webs varies from habitat to habitat. Ex: Wolves. **Hence statement 3 is incorrect.**

**Q. 46) Consider the following statements about climate forcings**

1. Human-caused positive forcings are what is pushing the climate to change is the major concern with global warming
2. Aerosols are categorised under negative climate forcing

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.46) Solution (c)

**Explanation:**

- Climate forcing refers to the factors that affect the balance of energy in the Earth's climate system, causing it to either warm or cool. Human activities, such as the burning of fossil fuels, deforestation, and land-use changes, have significantly increased the concentration of greenhouse gases in the atmosphere, leading to a positive forcing that is causing the climate to warm. This is the major concern with global warming because it is causing a range of negative impacts, including sea-level rise, extreme weather events, and changes in precipitation patterns.
- **Hence statement 1 is correct.**
- The second statement is also correct. Aerosols, which are small particles suspended in the atmosphere, can either warm or cool the planet depending on their properties and concentrations. However, on average, they have a cooling effect, and therefore are classified as a negative forcing. This is because they reflect sunlight back into space and also increase the amount of clouds, which reflect more sunlight. The cooling effect of aerosols has partially offset the warming effect of greenhouse gases, but it is also causing

other environmental issues such as air pollution and acid rain. Hence statement 2 is correct .

**Q. 47) Consider the following statements about modes of conservation**

1. In-situ conservation is conservation in their natural habitat.
2. Ex-situ conservation is conservation outside their natural habitat.
3. Zoological parks are examples of in-situ conservation.
4. National parks are examples of ex-situ conservation.

Choose the correct code:

- a) 1 and 3
- b) 2 and 4
- c) 1 and 2
- d) 3 and 4

Q.47) Solution (c)

**Explanation:**

- In-situ conservation is conservation in their natural habitat.
- It is the on-site conservation of genetic resources in natural populations of plant or animal species. **Hence statement 1 is correct.**
- Ex-situ conservation is conservation outside their natural habitat.
- In this approach, threatened animals and plants are taken out of their natural habitat and placed in a special setting where they can be protected and given special care. **Hence statement 2 is correct.**
- Zoological parks, botanical gardens, wildlife safari parks, and seed banks are examples of ex-situ conservation. **Hence statement 3 is incorrect.**
- **Biosphere reserves, national parks, sanctuaries, reserved forests, protected forests, and nature reserves** are examples of in-situ conservation. **Hence statement 4 is incorrect.**

**Q. 48) Consider the following statements about the Biodiversity Hotspots**

1. It must contain at least 15,000 species of vascular plants as endemics.
2. It has to have lost at least 70% of its original habitat.
3. The Western Ghats along with Sri Lanka are listed as biodiversity hotspots

Choose the correct code:

- a) 1 and 3
- b) 2 and 3



- c) 1 and 2
- d) 1, 2 and 3

Q.48) Solution (b)

**Explanation:**

- Biodiversity Hotspots are regions with high species richness and a high degree of endemism.
- The British biologist Norman Myers coined the term “biodiversity hotspot” in 1988 as a biogeographic region characterized both by exceptional levels of plant endemism and by serious levels of habitat loss.
- Conservation International (CI) adopted Myers’ hotspots and in 1996, the organization decided to undertake a reassessment of the hotspots concept.
- According to CI, to qualify as a hotspot a region must meet two strict criteria:
- **It must contain at least 1,500 species of vascular plants as endemics. Hence statement 1 is incorrect.**
- **It has to have lost at least 70% of its original habitat. Hence statement 2 is correct.**
- Biodiversity Hotspots of India -
- Himalaya: Includes the entire Indian Himalayan region (and that falls in Pakistan, Tibet, Nepal, Bhutan, China, and Myanmar).
- Indo-Burma: Includes entire North-eastern India, except Assam and Andaman group of Islands (and Myanmar, Thailand, Vietnam, Laos, Cambodia, and southern China)
- **Western Ghats and Sri Lanka:** Includes the entire Western Ghats (and Sri Lanka).
- **Sundalands:** Includes Nicobar group of Islands (and Indonesia, Malaysia, Singapore, Brunei, and the Philippines). **Hence statement 3 is correct.**

**Q. 49) Consider the following statements about Project Tiger**

1. It is a centrally sponsored scheme of the Ministry of Environment, Forests, and Climate Change.
2. It was launched when Morarji Desai was the Prime Minister.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.49) Solution (a)

**Explanation:**



- Project Tiger is a **centrally sponsored scheme of the Ministry of Environment, Forests, and Climate Change providing central assistance to the tiger States** for tiger conservation in designated tiger reserves. **Hence statement 1 is correct.**
- **Project Tiger is a tiger conservation programme launched in November 1973 by the Government of India during Prime Minister Indira Gandhi's tenure. The project aims at ensuring a viable population of the Bengal tiger in its natural habitats, protecting it from extinction, and preserving areas of biological importance as a natural heritage that represent the diversity of ecosystems across the tiger's range in the country. Hence statement 2 is incorrect.**

**Q. 50) Consider the following statements**

1. Wildlife Sanctuaries protect historical antics, plants, and animals under the complete ecosystem.
2. National Parks can be under the government or owned by private entities.
3. In core zones of Biosphere Reserves, human activities are strictly prohibited.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) 3 only
- d) 1, 2 and 3

Q.50) Solution (c)

**Explanation:**

Wildlife sanctuary	Biospheres	National parks
<b>The wildlife sanctuaries protect only wild animals.</b>	Biospheres protect entire diversity, including the various plants and animals found in that area. It empowers the tribal habitat of a particular area.	<b>The national parks protect historical antics, plants and animals under the complete ecosystem.</b>
The boundaries of the wildlife sanctuaries are not fixed.	Biospheres have fixed boundaries.	The boundaries are fixed as per the government regulations.
<b>These can be under the government or owned under private entities.</b>	The government owns the biosphere.	<b>Government has complete power over the national parks.</b>

The wildlife sanctuaries own a small area.	Comparatively to both, they have a large area.	National parks cover small region.
Human activities are permitted with minor restrictions compared to the other two.	<b>Human activities are strictly prohibited in core zone.</b>	Partial restrictions are applied, and no activities are permitted in core regions of the national park.

Hence option c is correct.

**Q. 51) Consider the following statements about Biochemical Oxygen Demand (BOD)**

1. It is the amount of oxygen required to oxidise organic and inorganic compounds in the water.
2. It is expressed in milligrams of oxygen per litre of water.
3. Higher BOD indicates lower water quality.

Choose the correct code:

- a) 1 and 2
- b) 2 only
- c) 3 only
- d) 2 and 3

Q.51) Solution (d)

**Explanation:**

- Biochemical Oxygen Demand (BOD) is the **amount of dissolved oxygen needed by bacteria** in decomposing the organic wastes present in water.
- Water pollution by organic wastes is measured in terms of Biochemical Oxygen Demand (BOD).
- BOD is **limited to biodegradable materials**.
- Chemical Oxygen Demand (COD) measures the amount of oxygen in parts per million required to oxidise **organic (biodegradable and non-biodegradable)** and **oxidizable inorganic** compounds in the water sample. **Hence statement 1 is incorrect.**
- It is expressed in milligrams of oxygen per litre of water. **Hence statement 2 is correct.**
- Higher BOD indicates more oxygen is required, which is less for oxygen-demanding species to feed on, and signifies lower water quality. Inversely, low BOD means less oxygen is being removed from the water, so water is generally purer. **Hence statement 3 is correct.**

**Q. 52) Honolulu Strategy is related to**

- a) Mercury pollution
- b) Plastic pollution
- c) Nitrogen pollution
- d) Water pollution

Q.52) Solution (b)

**Explanation:**

- Honolulu Strategy is related to plastic pollution. National Oceanic and Atmospheric Administration (NOAA) in the United States and UNEP created the Honolulu Strategy—a planning tool to reduce plastic pollution and its impacts.
- The Honolulu Strategy is a framework for a comprehensive and global collaborative effort to reduce the ecological, human health, and economic impacts of marine debris worldwide. **Hence option b is correct.**

**Q. 53) Consider the following statements regarding air pollutants**

1. The primary air pollutants are directly emitted from the source to the atmosphere.
2. The secondary air pollutants are a result of chemical reactions of primary pollutants.
3. Primary pollutants are stable whereas secondary pollutants are unstable.
4. Acid rain is an example of a primary air pollutant.

Choose the correct code:

- a) 1 and 2
- b) 1, 2 and 3
- c) 3 and 4
- d) 1, 2 and 4

Q.53) Solution (a)

**Explanation:**

- The primary air pollutants are directly emitted from the source to the atmosphere.
- They can be controlled by reducing anthropogenic emissions. **Hence statement 1 is correct.**
- The secondary air pollutants are a result of chemical reactions of primary pollutants.
- They are difficult to stop because of the interlinked chemical reactions. **Hence statement 2 is correct.**

- Primary pollutants are unstable whereas secondary pollutants are stable or inert. **Hence statement 3 is incorrect.**
- Acid rain is caused by a chemical reaction that begins when compounds like sulfur dioxide and nitrogen oxides are released into the air. These both are themselves secondary pollutants. These substances can rise very high into the atmosphere, where they mix and react with water, oxygen, and other chemicals to form more acidic pollutants, known as acid rain. **Hence statement 4 is incorrect.**

**Q. 54) Consider the following statements regarding the provisions of Solid Waste Management Rules, 2016**

1. The waste collectors are responsible to segregate waste into dry, wet, and domestic hazardous waste.
2. All manufacturers of disposable products shall provide necessary financial assistance to local authorities for waste management.
3. The bio-degradable waste should be treated through composting or bio-methanation.
4. New townships should develop in-house waste handling for biodegradable wastes.

Choose the correct code:

- a) 1, 2 and 4
- b) 2, 3 and 4
- c) 1, 3 and 4
- d) 1, 2, 3 and 4

Q.54) Solution (b)

**Explanation:**

- Solid waste **refers to** all non-liquid wastes that include Solid as well as semi-solid wastes, but excluding Human and Animal excreta.
- Solid waste can create very serious health problems and an unpleasant living environment if not disposed of properly and safely, such waste may then also provide breeding sites for insect vectors, pests, snakes, and vermin that increase the risk of disease transmission.
- The Solid Waste Management Rules, 2016 was announced by the Union Ministry of Environment, Forests, and Climate Change (MoEF&CC). These will replace the Municipal Solid Wastes (Management and Handling) Rules, 2000, which have been in effect for the previous 16 years. Its provisions are:
- **The waste generators are responsible** to segregate waste into dry, wet, and domestic hazardous waste. **Hence statement 1 is incorrect.**



- All manufacturers of **disposable products** shall **provide necessary financial assistance to local authorities** to establish waste management system. **Hence statement 2 is correct.**
- It has made it essential for the producers to supply a bag or wrapper for disposal whenever they sell their items to the consumer in order to handle sanitary waste like diapers and sanitary pads appropriately.
- The bio-degradable waste should be treated through **composting or bio-methanation** as much as possible on the premises. **Hence statement 3 is correct.**
- New townships should develop in-house waste handling for biodegradable wastes. **Hence statement 4 is correct.**
- It requires all industrial units that use fuel and are located within 100 kilometers of a solid waste-based Refuse-Derived Fuel (RDF) plant to make arrangements to replace at least 5% of their fuel requirement with RDF produced within six months of notification of these rules.
- The government also established the Central Monitoring Committee, chaired by the Secretary of the MoEF&CC, to oversee overall law enforcement. The Committee of various central and state government stakeholders will meet once a year to track the enforcement of these laws.

**Q. 55) Consider the following statements regarding e-waste regulations**

1. India's first e-waste clinic has been set up in Bengaluru, Karnataka.
2. The Nairobi Declaration of the Basel Convention is related to the management of electronic waste.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.55) Solution (b)

**Explanation:**

- India's first e-waste clinic has been set up in Bhopal, Madhya Pradesh. It is used for segregating, processing, and disposal of waste from household and commercial units.
- The Central Pollution Control Board will provide technical support at the unit and the collected hazardous waste will then be sent to Bengaluru for recycling.

- This would ensure the scientific handling and disposal of electronic waste generated from households and commercial establishments. **Hence statement 1 is incorrect.**
- The **Nairobi Declaration** of the Basel Convention is related to the management of electronic waste.
- It was adopted at COP9 of the Basel Convention on the Control of the Transboundary Movement of Hazardous Waste. It aimed at creating innovative solutions for the environmentally sound management of electronic waste. **Hence statement 2 is correct.**

**Q. 56) Consider the following statements regarding Central Pollution Control Board (CPCB)**

1. It is a statutory organization formed under the Water (Prevention and Control of Pollution) Act of 1974.
2. The CPCB is also entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.56) Solution (c)

**Explanation:**

- The Central Pollution Control Board (CPCB) of India is a statutory organization under the Ministry of Environment, Forest and Climate Change (Mo.E.F.C.C.). It was established in 1974 under the Water (Prevention and Control of pollution) Act, 1974. The CPCB is also 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 under the provisions of the Environment (Protection) Act, 1986. It coordinates the activities of the State Pollution Control Boards by providing technical assistance and guidance and also resolves disputes among them. It is the apex organization in country in the field of pollution control, as a technical wing of MoEFCC. **Hence Both Statement 1 and 2 are correct**

**Q. 57) Consider the following statements about Apis Karinjodian**

1. It is a honeybee endemic to the Western Ghats.
2. It is classified as endangered on the IUCN list.
3. It is found in Kerala, Karnataka, Goa, and Tamil Nadu.



Choose the correct code:

- a) 1 and 3
- b) 2 and 3
- c) 1 and 2
- d) 1, 2 and 3

Q.57) Solution (a)

**Explanation:**

- Apis Karinjodian has evolved from Apis cerana morphotypes that got acclimatised to the hot and humid environment of the Western Ghats.
- Its common name is Indian Black Bee.
- Indian black honeybees can produce thicker honey which allows for increased honey production.
- To date, only a single species, Apis cerana was noted across the plains of central and southern India and Sri Lanka as a 'fairly uniform population' in the Indian subcontinent.
- It is a honeybee endemic to the Western Ghats. **Hence statement 1 is correct.**
- It is classified as near threatened on the IUCN list. **Hence statement 2 is incorrect.**
- The distribution of Apis karinjodian ranges from the central Western Ghats and Nilgiris to the southern Western Ghats, covering the States of Goa, Karnataka, Kerala, and parts of Tamil Nadu. **Hence statement 3 is correct.**

**Q. 58) Consider the following statements about algal bloom**

1. They occur when colonies of algae grow out of control and produce toxins.
2. They are not influenced by temperature and turbidity.
3. Nitrogen testing & modeling helps in mitigating it.

Choose the correct code:

- a) 2 and 3
- b) 1 and 3
- c) 1 and 2
- d) 1, 2 and 3

Q.58) Solution (b)

**Explanation:**

- Algal bloom occurs **when colonies of algae grow out of control and produce toxins.**
- They produce extremely dangerous toxins that can sicken or kill people and animals.

- Fish contaminated with the algae and eaten by other organisms, including humans, can be harmful to them.
- Algal blooms can also impact aquaculture or the farming of marine life.
- There have also been complaints of respiratory distress in humans due to it. **Hence statement 1 is correct.**
- They are influenced by temperature, turbidity, and eutrophication.
- Blooms are more likely to happen in summer or fall but can occur at any time of year.
- Turbidity is caused by the presence of suspended particles and organic matter in the water column.
- When turbidity is low, more light can penetrate through the water column. This creates optimal conditions for algal growth.
- Nutrients promote and support the growth of algae and Cyanobacteria. The Eutrophication i.e. nutrient enrichment of waterways is considered a major factor. **Hence statement 2 is incorrect.**
- **Nitrogen testing & modeling helps in mitigating it.**
- N-Testing is a technique to find the optimum amount of fertilizer required for crop plants. It will reduce the amount of nitrogen lost to the surrounding area. **Hence statement 3 is correct.**

**Q. 59) Consider the following statements about the Climate & Clean Air Coalition**

1. It is committed to protecting the climate by reducing short-lived climate pollutants.
2. It is a unique initiative of the G-20 group of countries.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.59) Solution (a)

**Explanation:**

- The Climate & Clean Air Coalition is committed to protecting the climate by reducing short-lived climate pollutants.
- It is the only global effort that unites governments, civil society, and the private sector, committed to improving air quality and protecting the climate in the next few decades by reducing short-lived climate pollutants across sectors.



- The Coalition's initial focus is on methane, black carbon, and HFCs. **Hence statement 1 is correct.**
- It is an initiative of Bangladesh, Mexico, Sweden, Ghana, Canada, and the USA along with the UNEP. **Hence statement 2 is incorrect.**

**Q. 60) Consider the following statements about Background radiation**

1. It is a measure of the level of ionizing radiation present in the environment at a particular location which is not due to deliberate introduction of radiation sources.
2. For those who work in nuclear plants shouldn't be exposed to over 30 milli-Sievert of radiation every year

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.60) Solution (c)

**Explanation:**

- Background radiation is the natural radiation that is always present in the environment. Background radiation is a measure of the level of ionizing radiation present in the environment at a particular location which is not due to deliberate introduction of radiation sources..
- It includes cosmic radiation which comes from the sun and stars, terrestrial radiation which comes from the Earth, and internal radiation which exists in all living things. **Hence statement 1 is correct.**
- Public exposure shouldn't exceed 1 milli-Sievert every year, those who work in nuclear plants or are by virtue of their occupation come contact with radiation shouldn't be exposed to over 30 milli-Sievert every year.
- Generally it is measured in nanogray per second. A (nGy/s) is a decimal fraction of the SI-derived unit of ionizing radiation absorbed dose rate. They can be emitted from monazite sands with thorium, granite, and basaltic volcanic rock. **Hence statement 2 is correct.**

**Q.61) Consider the following statements regarding the Wildlife (Protection) Amendment Act of 2022**

1. The number of schedules has been increased from four to six.
2. States can declare areas adjacent to national parks as a conservation reserves.
3. It entrusts the Chief Wildlife Warden to control and maintain all sanctuaries in a state.

4. It provides to voluntarily surrender any captive animals, without any compensation.

Which of the following statements is correct?

- a) 1, 3 and 4
- b) 2, 3 and 4
- c) 1, 2 and 3
- d) 1, 2, 3 and 4

Q.61) Solution (b)

**Explanation:**

- The Wildlife (Protection) Amendment Act of 2022 seeks to **conserve and protect wildlife** through better **management** of protected areas and **rationalise schedules** that list out species under the Wildlife (Protection) Act, of 1972.
- The number of schedules has been decreased from six in the Wildlife (Protection) Act, of 1972 to four.

<b>Schedule I</b>	Animal species that will enjoy the highest level of protection
<b>Schedule II</b>	Animal species that will be subject to a lesser degree of protection
<b>Schedule III</b>	Protected Plant species
<b>Schedule IV</b>	Specimens listed in the Appendices under CITES (scheduled specimens)

Hence statement 1 is incorrect.

- **States can declare areas adjacent** to National parks and Sanctuaries as **Conservation Reserve**, for protecting flora and fauna, and their habitat. **Hence statement 2 is correct.**
- It entrusts the Chief Wildlife Warden to control and maintain all sanctuaries in a state. The Chief Wildlife Warden is appointed by the state. **Hence statement 3 is correct.**
- For general violations (increases to Rs 1,00,000 from Rs25,000) and specially protected animals (increases to 25,000 from Rs 10,000).

- People possessing live specimens of scheduled animals must obtain a registration certificate from the Management Authority.
- It provides to voluntarily surrender any captive animals, without any compensation. **Hence statement 4 is correct.**

**Q. 62) Consider the following statements regarding the Indian Antarctic Act of 2022**

1. It will apply to any person, vessel, or aircraft that is part of an Indian expedition to Antarctica under a permit issued under the act.
2. The Ministry of Environment, Forest and Climate Change will establish a Committee on Antarctic Governance and Environmental Protection.
3. It prohibits nuclear explosion or disposal of radioactive wastes and the introduction of non-sterile soil in Antarctica.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.62) Solution (c)

**Explanation:**

- The Indian Antarctic Act of 2022 seeks to give effect to the Antarctic Treaty, the Convention on the Conservation of Antarctic Marine Living Resources, and the Protocol on Environmental Protection to the Antarctic Treaty.
- It also seeks to protect the Antarctic environment and regulate activities in the region.
- The provisions of the Bill will apply to any person, vessel, or aircraft that is part of an Indian expedition to Antarctica under a permit issued under the Bill. **Hence statement 1 is correct .**
- The Central Government will establish a Committee on Antarctic Governance and Environmental Protection. The Committee will be chaired by the Secretary of the Ministry of Earth Sciences.
- **Hence statement 2 is incorrect.**
- The functions of the Committee include:

- ✓ granting permits for various activities,
  - ✓ implementing and ensuring compliance with relevant international laws for the protection of the Antarctic environment,
  - ✓ obtaining and reviewing relevant information provided by parties to the Treaty, Convention, and Protocol, and
  - ✓ negotiating fees/charges with other parties for activities in Antarctica.
- The permit will be required for various activities such as:
    - ✓ an Indian expedition to enter or remain in Antarctica,
    - ✓ a person to enter or remain in an Indian station in Antarctica,
    - ✓ a vessel or aircraft registered in India to enter or remain in Antarctica,
    - ✓ a person or vessel to drill, dredge or excavate for mineral resources, or collect samples of mineral resources,
    - ✓ activities that may harm native species, and
    - ✓ waste disposal by a person, vessel, or aircraft in Antarctica.
  - Before a permit is granted by the Committee, the applicant has to carry out an environmental impact assessment of the proposed activities.
  - Moreover, a permit must not be granted unless a waste management plan has been prepared for the expedition by the Committee.
  - It prohibits nuclear explosion or disposal of radioactive wastes, the introduction of non-sterile soil, **and the** discharge of garbage, plastic, or other substance into the sea which is harmful to the marine environment in Antarctica. **Hence statement 3 is correct.**

**Q. 63) Consider the following statements regarding the Geo-heritage sites**

1. It refers to the geological features which are culturally significant offering insight into the earth's evolution.
2. In India, it is declared by the Geological Survey of India (GSI)
3. The Siwalik Fossil Park in Himachal Pradesh is one of the Geo-heritage sites.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3



- c) 1 and 3
- d) 1, 2 and 3

Q.63) Solution (d)

**Explanation:**

- Geo-heritage refers to the geological features which are inherently or culturally significant offering insight into earth's evolution or history to earth science or that can be utilized for education. **Hence statement 1 is correct.**
- The Geological Survey of India (GSI) is the parent body that is making efforts toward the identification and protection of geo-heritage sites/national geological monuments in the country.
- **GSI** was set up in 1851 primarily to find coal deposits for the Railways. Presently, GSI is an attached office to the Ministry of Mines.
- The main functions of the GSI relate to the creation and updation of national geoscientific information and mineral resource assessment.
- It is headquartered in Kolkata. **Hence statement 2 is correct.**
- There are **34 Geological Heritage Sites in India.**
- **The Siwalik Fossil Park in Himachal Pradesh is one of the Geo-heritage sites.**
- It displays a rich collection of vertebrate fossils recovered from the Siwalik rocks of the area of Plio-Pleistocene age (2.6 million to 11,700 years ago).
- The deposition of Siwalik sediments took place in the narrow linear depression, called the 'fore deep', which started developing in front of the Himalayas since the inception of its uplift in the middle Miocene (23 million years to 2.6 million years ago). **Hence statement 3 is correct.**

Q. 64) Match the following

Ramsar Sites	States
1. Chandra Taal	a) Goa
2. Hokera Wetland	b) Tripura
3. Nanda Lake	c) Himachal Pradesh

4. Rudrasagar Lake	d) Kerala
5. Sasthamkotta lake	e) Jammu & Kashmir

Choose the correct code:

- a) 1-b;2-e;3-a;4-c;5-d;
- b) 1-c;2-e;3-d;4-a;5-b;
- c) 1-c;2-e;3-a;4-b;5-d;
- d) 1-d;2-a;3-e;4-b;5-c;

Q.64) Solution (c)

**Explanation:**

Ramsar Sites	States
Chandra Taal	Himachal Pradesh
Hokera Wetland	Jammu & Kashmir
Ropar Wetland	Punjab
Rudrasagar Lake	Tripura
Sasthamkotta lake	Kerala
Sirpur Wetland	Madhya Pradesh
Ranganathittu Bird Sanctuary	Karnataka
Nanda Lake	Goa
Satkosia Gorge	Odisha
Udhayamarthandapuram Bird Sanctuary	Tamil Nadu

Vedanthangal Bird Sanctuary	Tamil Nadu
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Hence option c is correct.

**Q. 65) Consider the following statements regarding the Battery Waste Management Rules, 2022**

1. It has included portable batteries and automotive batteries but not electric vehicle batteries.
2. There is a centralized online portal for the exchange of Extended Producer Responsibility certificates between producers and recyclers.
3. It has made mandatory to recover minimum percentage of materials from waste batteries.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.65) Solution (b)

**Explanation:**

- The Ministry of Environment, Forest and Climate Change published the Battery Waste Management Rules, 2022 to ensure environmentally sound management of waste batteries and replace the Batteries (Management and Handling) Rules, 2001.
- It has included portable batteries, industrial batteries, electric vehicle batteries, and automotive batteries. **Hence statement 1 is incorrect.**
- **Producers (including importers)** of batteries are responsible for the collection and **recycling/refurbishment of waste** batteries and the use of recovered materials from waste into new batteries.
- Setting up new industries and entrepreneurship in the collection and recycling/refurbishment of waste batteries.
- There is a **centralized online portal** for the exchange of **Extended Producer Responsibility certificates** between producers and recyclers. **Hence statement 2 is correct.**

- The use of a certain amount of recycled materials for new batteries will reduce the dependency on new raw materials and save natural resources
- Online registration & reporting, auditing, and a committee to monitor and implement rules and to take measures required for removal of difficulties.
- Environmental compensation will be imposed for non-fulfillment of Extended Producer Responsibility targets, responsibilities, and obligations set out in the rules.
- The funds collected under environmental compensation shall be utilized in the collection and refurbishing or recycling of uncollected and non-recycled waste batteries.
- It has a **mandatory minimum percentage of recovery of materials from waste batteries.**
- It will bring new technologies and investment in the recycling and refurbishment industry and create new business opportunities. **Hence statement 3 is correct.**

**Q. 66) Consider the following statements regarding the Lifestyle for the Environment (LiFE) Movement**

1. It plans to create and nurture a global network of individuals, namely 'Pro-Planet People'(P3).
2. It was launched by the USA during the COP 26 of the United Nations Climate Change Framework Convention (UNFCCC).
3. It promotes an environmentally conscious lifestyle that focuses on 'mindful and deliberate utilisation'.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.66) Solution (c)

**Explanation:**

- The Lifestyle for the Environment (LiFE) Movement plans to create and nurture a global network of individuals, namely '**Pro-Planet People'(P3)**.
- P3 will have a shared commitment to adopt and promote environmentally friendly lifestyles.



- Through the P3 community, the mission seeks to create an ecosystem that will reinforce and enable environmentally friendly behaviours to be self-sustainable.
- It seeks to leverage the strength of social networks to influence social norms surrounding climate. **Hence statement 1 is correct.**
- It was launched by India during the COP 26 of the **United Nations Climate Change Framework Convention (UNFCCC)** in Glasgow in 2021. **Hence statement 2 is incorrect.**
- It **promotes an environmentally conscious lifestyle** that focuses on 'mindful and deliberate utilisation' instead of 'mindless and wasteful consumption.
- With the launch of the Mission, the prevalent "use-and-dispose" economy governed by mindless and destructive consumption will be replaced by a circular economy, defined by conscious and deliberate consumption. **Hence statement 3 is correct.**

**Q. 67) Consider the following statements regarding various species-specific enforcement operations led by the Wildlife Crime Control Bureau (WCCB)**

1. Operation Save Kurma to tackle the illegal trade of live turtles and tortoises.
2. Operation Softgold to tackle the illegal trade in Shahtoosh Shawl.
3. Operation Freely to tackle the illegal trade of live birds.
4. Operation Wetmark to ensure the prohibition of the sale of meat of wild animals.

Choose the correct code:

- a) Only one statement is correct
- b) Two statements are correct
- c) Three statements are correct
- d) Four statements are correct

Q.67) Solution (d)

**Explanation:**

- The Wildlife Crime Control Bureau (WCCB) is a statutory organization established by the Indian government under the Ministry of Environment, Forests, and Climate Change to combat organized wildlife crime.
- The Bureau's headquarters are in New Delhi, and it also maintains five regional offices in addition to ones in Kolkata, Mumbai, Chennai, and Jabalpur.



- **Various species-specific enforcement operations led by the Wildlife Crime Control Bureau (WCCB)**
- Operation Save Kurma to tackle the illegal trade of live turtles and tortoises. **Hence statement 1 is correct.**
- **Operation Softgold** to tackle the illegal trade in **Shahtoosh Shawl**. **Hence statement 2 is correct.**
- Operation Freely to tackle the illegal trade of live birds. **Hence statement 3 is correct.**
- **Operation Wetmark** to ensure the **prohibition of the sale of meat of wild animals**. **Hence statement 4 is correct.**
- Operation Birbil was launched to curb illegal trade in wild cats and wild bird species.
- Operation Wildnet aimed to draw the attention of the enforcement agencies within the country to focus their attention on the ever-increasing illegal wildlife trade over the internet using social media platforms.
- Operation Turtshield was taken up to tackle the illegal trade of live turtles.
- Operation Lesknow was launched to gain the attention of enforcement agencies toward the illegal wildlife trade in lesser-known species of wildlife.
- Operation Clean Art was launched to drag the attention of enforcement agencies toward the illegal wildlife trade in Mongoose hair brushes.

**Q. 68) Consider the following statements regarding the Forest (Conservation) Rules 2022**

1. It will allow private developers to clear forests without first seeking the permission of the forest dwellers.
2. It constitutes the Forest Advisory Committee (FAC) to approve diverting of forest land.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.68) Solution (a)

**Explanation:**

- The Forest (Conservation) Rules 2022 deal with the implementation of the **Forest Conservation Act (FCA), 1980**. They prescribe the **procedure to be followed for forest land** to be diverted for non-forestry uses such as road construction, highway development, railway lines, and mining.
- It will allow private developers to clear forests without first seeking the permission of the forest dwellers.
- It means that the Union government has the right to permit the clearance of a forest without informing its authentic residents.
- Residents won't have any claim over their forest area in case of any diversion to non-forestry activities.
- The rules make a provision for private parties to cultivate plantations and sell them as land to companies who need to meet compensatory forestation targets. **Hence statement 1 is correct.**
- The **Forest Conservation Act (FCA), 1980** constitutes the **Forest Advisory Committee (FAC)** to approve diverting forest land and not the forest conservation rules 2022.
- For forest land beyond **five hectares**, approval for diverting land must be given by the Central government to states. This is via a specially constituted committee, called the **Forest Advisory Committee (FAC)**.
- under the new rules that a project, once approved by the FAC, will then be passed on to the State authorities who will collect the compensatory fund and land, and process it for final approval.
- Previously consent of gram sabha, or the governing body in villages in the area, was required to give written consent to the diversion of the forest. **Hence statement 2 is incorrect.**

**Q. 69) Consider the following statements regarding the World Forestry Congress**

1. It is held every three years.
2. The Seoul Declaration was adopted at XV World Forestry Congress.
3. India hosted the first Congress in Asia.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) 3 only

d) None

Q.69) Solution (b)

**Explanation:**

- The World Forestry Congress **provides a forum for inclusive discussion** on the key challenges and way forward for the forestry sector.
- It is held every six years. **Hence statement 1 is incorrect.**
- The **Seoul Declaration** was adopted at **XV World Forestry Congress 2022.**
- **It was signed by 141 participant countries.**
- **It was** hosted by the Republic of Korea and co-organized with FAO and was the second congress held in Asia.
- The theme for 2022 was “Building a Green, Healthy, and Resilient”.
- It urges that **responsibility for forests should be shared and integrated across institutions**, sectors, and stakeholders.
- It reports investment in forest and landscape restoration globally needs to triple by 2030 to meet internationally agreed commitments and targets on restoring degraded land. **Hence statement 2 is correct.**
- Indonesia hosted the **first Congress in Asia in 1978. Hence statement 3 is incorrect.**

**Q. 70) Consider the following statements regarding the Stockholm Convention**

1. It is a global treaty to protect human health and the environment from persistent organic pollutants (POPs).
2. The Global Environmental Facility (GEF) provides financial assistance to the convention.
3. Recently, it listed chlorpyrifos as a persistent organic pollutant (POPs).

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.70) Solution (a)

**Explanation:**

- The Stockholm Convention is a global treaty to protect human health and the environment from persistent organic pollutants (POPs).
- It focuses on eliminating or reducing releases of POPs. It sets up a system for tackling additional chemicals identified as unacceptably hazardous.
- Over 152 countries ratified the Convention and it entered into force in 2004. **Hence statement 1 is correct.**
- The Global Environmental Facility (GEF) provides financial assistance to the convention. **Hence statement 2 is correct.**
- Recently, the United Nations Environment Programme (UNEP)'s proposal to list chlorpyrifos as POP was resisted by India. However, chlorpyrifos got nominated as a persistent organic pollutant. **However it is still not included in POPs**
- The convention currently regulates 31 chemicals as POPs under three annexes named Annex A (Elimination), Annex B (Restriction), and Annex C (Unintentional production).
- Chlorpyrifos was registered under the Insecticide Act of 1968 since 1977 and Anupam Verma Committee recommended its review for continued use in 2015.
- Chlorpyrifos was approved for agricultural use in 2021, which includes its use as a pesticide against pests affecting Bengal gram, rice, and cotton. It was approved for 18 crops in India.
- China and India are among the largest producers of chlorpyrifos. **Hence statement 3 is incorrect.**

**Q. 71) Consider the following statements regarding the Globally Important Agricultural Heritage Systems (GIAHS)**

1. They focus on agricultural practices that provide livelihoods in rural areas by combining biodiversity and tradition.
2. It is led by the United Nations Environment Programme.
3. India does not have any recognised Globally Important Agricultural Heritage Systems (GIAHS) yet.

Choose the incorrect code:



- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.71) Solution (b)

**Explanation:**

Here the question is asking to choose 'incorrect' statements.

- The Globally Important Agricultural Heritage Systems (GIAHS) focus on agricultural practices that provide livelihoods in rural areas by combining biodiversity and tradition.
- They are home to communities that have complex links to their surroundings.
- These dynamic locations are resilient ecosystems with exceptional agrobiodiversity, traditional knowledge, priceless cultures, and landscapes that are sustainably maintained by farmers, herders, fishermen, and forest dwellers in ways that support their livelihoods and food security. **Hence statement 1 is correct.**
- Over 60 sites have been recognized by the Food and Agriculture Organization of the United Nations through the Globally Important Agricultural Heritage Systems Programme. **Hence statement 2 is incorrect.**
- Koraput Traditional Agriculture (Odisha), Below Sea Level Farming System in Kuttanad (Kerala), and Pampore Saffron Heritage (Jammu & Kashmir) are recognised as GIAHS in India. **Hence statement 3 is incorrect.**

**Q. 72) Consider the following statements regarding the Ambition on Melting Ice (AMI) Group**

1. It aims to ensure impacts of cryosphere loss are understood by everyone throughout the world.
2. Chile, India, Peru, and the Czech Republic are among their founding members.
3. It was launched at the COP 27 of the United Nations Framework Convention on Climate Change (UNFCCC).

Choose the correct code:

- a) 1 and 2
- b) 2 and 3



- c) 1 and 3
- d) 1, 2 and 3

Q.72) Solution (c)

**Explanation:**

- The Ambition on Melting Ice (AMI) Group aims to ensure impacts of cryosphere loss are understood by political leaders and the public, not only within the mountain and polar regions but throughout the planet.
- Cryosphere encompasses all the parts of the Earth system where water is in solid form, including ice sheets, ice shelves, glaciers, snow cover, permafrost (frozen ground), sea ice, and river and lake ice. **Hence statement 1 is correct.**
- Its founding members are Chile, Iceland, Peru, Czech Republic, Nepal, Finland, Senegal, Kyrgyz Republic, Samoa, Georgia, Switzerland, New Zealand, Monaco, Vanuatu, Sweden, Tanzania, Liberia, Norway, and Mexico.
- India is not its founding member. **Hence statement 2 is incorrect.**
- It was launched at the COP 27 of the United Nations Framework Convention on Climate Change (UNFCCC). It was held in Sharm El-Sheikh. **Hence statement 3 is correct.**

**Q. 73) Consider the following statements regarding the Mangrove Alliance for Climate**

1. It is an intergovernmental alliance that works voluntarily.
2. It is an intergovernmental alliance that works voluntarily as there are no real checks and balances to hold members accountable.
3. India is a member of this alliance.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.73) Solution (d)

**Explanation:**

- The Mangrove Alliance for Climate seeks to educate and spread awareness worldwide on the role of mangroves in curbing global warming and its potential as a solution for climate change.
- It is an **intergovernmental alliance that works voluntarily** which means that there are no real checks and balances to hold members accountable.
- Instead, the parties will decide their commitments and deadlines regarding the planting and restoring mangroves.
- The members will also share expertise and support each other in researching, managing, and protecting coastal areas. **Hence statement 1 is correct.**
- It was launched by **the UAE and Indonesia** during the **COP27 climate summit** in Sharm El Sheikh, Egypt. **Hence statement 2 is correct.**
- It includes UAE, Indonesia, India, Sri Lanka, Australia, Japan, and Spain.
- India is a member of this alliance. **Hence statement 3 is correct.**

**Q. 74) Consider the following statements regarding the Global Environment Facility**

1. Initially, it was established by the World Bank to provide funding to protect the global environment.
2. It is headquartered in Geneva, Switzerland.
3. It serves as a financial mechanism only for Convention on Biological Diversity (CBD).

Choose the correct code:

- a) 1 only
- b) 2 and 3
- c) 3 only
- d) 1, 2 and 3

Q.74) Solution (a)

**Explanation:**

- The Global Environment Facility is a financial mechanism established as per Article 11 of the UNFCCC for convention implementation that will operate under the supervision and accountability of the UNFCCC COP.



- The World Bank established the Global Environment Facility (GEF) in 1991 in collaboration with the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP) to provide funding to protect the global environment.
- At the Rio Earth Summit in 1992, the GEF was restructured and separated from the World Bank system to become a permanent, separate institution.
- However, since 1994, the World Bank has served as a Trustee of the GEF Trust Fund and has provided administrative services. **Hence statement 1 is correct.**
- It is headquartered in Washington, DC, USA. **Hence statement 2 is incorrect.**
- The GEF provides funding to developing countries to help them meet the goals of international environmental treaties.
- Five conventions rely on the GEF as a "financial mechanism":
  - Convention on Biological Diversity (CBD)
  - UN Framework Convention on Climate Change (UNFCCC)
  - The United Nations Convention to Combat Desertification (UNCCD)
  - Stockholm Convention on Persistent Organic Pollutants (POPs)
  - Minamata Mercury Convention. **Hence statement 3 is incorrect.**

**Q. 75) Consider the following statements regarding the India Cooling Action Plan (ICAP)**

1. It was launched by the Ministry of Environment, Forests, and Climate Change.
2. It seeks to reduce cooling demand across sectors by 40% by 2037-38.
3. It seeks to reduce cooling energy requirements by 25% to 40% by 2037-38.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.75) Solution (c)

**Explanation:**

- The India Cooling Action Plan (ICAP) provides a **20-year perspective and outlines actions** needed to provide access to sustainable cooling.
- It was launched by the **Ministry of Environment, Forests, and Climate Change** in March 2019. **Hence statement 1 is correct.**
- It seeks to **reduce refrigerant demand** by 25% to 30% by 2037-38.
- It seeks to reduce cooling demand across sectors by 20% to 25% by 2037-38. **Hence statement 2 is incorrect.**
- It seeks to recognise cooling and related areas as a thrust area of research under the National Science and Technology Programme
- It seeks to **reduce cooling energy requirements** by 25% to 40% by 2037-38. **Hence statement 3 is correct.**

**Q. 76) Consider the following statements regarding the Montreal Protocol**

1. It is an agreement to stop the production of substances causing ozone depletion.
2. It is the only UN treaty ever that has been ratified by all UN Member States.
3. India is not a member of this protocol.

Choose the correct code:

- a) 1 and 3
- b) 1 only
- c) 3 only
- d) 1 and 2

Q.76) Solution (d)

**Explanation:**

- The **Montreal Protocol** is an **agreement to stop the production of substances causing ozone depletion.**
- It was adopted on 16 September 1987.
- It has led to the phase-out of 99% of ozone-depleting chemicals in refrigerators, air-conditioners, and many other products. **Hence statement 1 is correct.**

- It is the **only UN treaty ever that has been ratified by all UN Member States. Hence statement 2 is correct.**
- India is a party to the Montreal Protocol since June 1992. **Hence statement 3 is incorrect.**

**Q. 77) Consider the following statements regarding the AWARe Initiative**

1. It is an initiative of the United Nations Framework Convention on Climate Change.
2. It will have an Africa-first focus, especially on drought-ravaged populations in the Horn of Africa.
3. It focuses on cooperation and interlinkages between water and climate action.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.77) Solution (b)

**Explanation:**

- The AWARe Initiative will catalyze inclusive cooperation to address water as a key to climate change adaptation and resilience including partnerships for early warning systems and early action.
- It is an initiative of the African Union (AU), Water and Climate Coalition Leaders, the World Meteorological Organization (WMO), and the African Ministers' Council on Water (AMCOW). **Hence statement 1 is incorrect.**
- It will have an Africa-first focus, especially on drought-ravaged populations in the Horn of Africa. **Hence statement 2 is correct.**
- It focuses on decreasing water losses worldwide and improving water supply, proposing and supporting implementing policies for cooperative water-related adaptation action, and cooperation and interlinkages between water and climate action. **Hence statement 3 is correct.**

**Q. 78) Consider the following statements**

1. Clean Energy Ministerial is a high-level global forum to promote clean energy technology.
2. The Global Clean Energy Action Forum was hosted for the first time by the US.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.78) Solution (c)

**Explanation:**

- **Clean Energy Ministerial** is a **high-level global forum to promote clean energy** technology, **share lessons learned and best practices**, and encourage the transition to a global clean energy economy.
- It was established in December 2009 at the UN's Framework Convention on Climate Change conference of parties in Copenhagen. **Hence statement 1 is correct.**
- The **Global Clean Energy Action Forum** was **hosted for the first time by the US.**
- It is a joint convening of the 13th Clean Energy Ministerial (CEM 13) and the 7th Mission Innovation Ministerial (MI-7), in September 2022.
- The theme for CEM13/MI-7 is Rapid Innovation and Deployment.
- This means accelerating the pace and scale of innovation through collaboration and shared strategies for the deployment of clean energy technologies.
- Mission Innovation (MI) is a **global initiative catalysing a decade of action and investment** in research, development, and demonstration to make clean energy affordable, attractive, and accessible for all. **Hence statement 2 is correct.**

**Q.79) Consider the following statements regarding the Global Alliance for Industry Decarbonisation**

1. It provides a platform for industries to exchange ideas toward net zero carbon emission.
2. The World Bank is the organisational agency for this alliance.



Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.79) Solution (a)

**Explanation:**

- The Global Alliance for Industry Decarbonisation provides a platform for industries to exchange ideas toward net zero carbon emission.
- It aims to accelerate net-zero ambitions and decarbonisation of industrial value chains in pursuit of the 2015 Paris Agreement climate goals.
- It was formed under the Bali Declaration adopted during IRENA's Investment Forum on Energy Transitions held in Bali, Indonesia.
- It will strengthen dialogue and coordinate action by industrial stakeholders from across the public and private sectors. **Hence statement 1 is correct.**
- The International Renewable Energy Agency (IRENA) is the organisational agency for this alliance.
- It will be co-chaired by Siemens Energy, which was a major driver for its creation.
- Its founding members includes IRENA, Siemens Energy Enel Green Power, TAQA Arabia, Eni, Technip Energies, EDF Renewables, JSW (India), Tata Steel (India), Sable Chemicals, Tatanga Energy, Roland Berger, Repsol, Equinor and TAQA. **Hence statement 2 is incorrect.**

**Q. 80) Consider the following statements regarding the Convention on Biological Diversity (CBD)**

1. It is a legally binding treaty to conserve biodiversity.
2. Its secretariat is based in Montreal, Canada.
3. Cartagena Protocol on Biosafety is one of its supplementary agreements.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3



- c) 1 and 3
- d) 1, 2 and 3

Q.80) Solution (d)

**Explanation:**

- The Convention on Biological Diversity (CBD) is a legally binding treaty to conserve biodiversity that has been in force since 1993 and has been ratified by 196 nations.
- It sets out guidelines for countries to protect biodiversity, ensure sustainable use, and promote fair and equitable benefit sharing. **Hence statement 1 is correct.**
- Its **secretariat is based in Montreal, Canada. Hence statement 2 is correct.**
- **Cartagena Protocol on Biosafety is one of its supplementary agreements.**
- **It was** adopted in 2000. It came into force on 11th September 2003.
- The Protocol seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology. **Hence statement 3 is correct.**

**Q. 81) Consider the following statements regarding the Direct Seeding of Rice (DRS)**

1. In this method, farmers prepare nurseries where the paddy seeds are first sown.
2. This technique can help save 15% to 20% of water compared to traditional methods.
3. It requires spraying of herbicides simultaneously along with sowing, and the first irrigation.

Choose the correct code:

- a) 1 and 2
- b) 2 only
- c) 2 and 3
- d) 3 only

Q.81) Solution (c)

**Explanation:**

- In the **Direct Seeding of Rice (DSR)**, the pre-germinated seeds are directly drilled into the field by a tractor-powered machine.
- There **is no nursery preparation or transplantation involved** in this method.
- In this method, farmers have to only level their land and give one pre-sowing irrigation. **Hence statement 1 is incorrect.**

- With DSR, 15-18 irrigation rounds are required against 25 to 27 irrigation rounds in traditional methods.
- DSR can save 810 to 1,080 billion litres of water every year if the entire rice crop is brought under the technique.
- This technique can help **save 15% to 20% of water compared to traditional methods. Hence statement 2 is correct.**
- DSR can **solve labour shortage problems** because, like the traditional method, it does not require a paddy nursery and transplantation of a 30-day-old paddy nursery into the main puddled field.
- The field should be laser levelled and the spraying of herbicides must be done simultaneously with sowing, and the first irrigation. **Hence statement 3 is correct.**

**Q. 82) Consider the following statements about the oil spill**

1. It refers to any uncontrolled release of crude oil and gasoline into the environment.
2. It can be caused only by an anthropological cause and not by natural causes.
3. It causes hypothermia in birds as crude oil ruins the insulating and waterproofing properties of feathers and fur.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.82) Solution (c)

**Explanation:**

- An oil spill refers to any uncontrolled release of crude oil, gasoline, fuels, or other oil by-products into the environment.
- Oil spills can pollute land, air, or water, though it is mostly used for oceanic oil spills. **Hence statement 1 is correct.**
- It can be caused as a result of intensified petroleum exploration and production on continental shelves and the transport of large amounts of oils in vessels.
- Oil spills that happen in rivers, bays and the ocean most often are caused by accidents involving tankers, barges, pipelines, refineries, drilling rigs, and storage facilities, but also occur from recreational boats and natural disasters.
- Natural disasters like very heavy storms in the oceans, shaking of the sea floor due to earthquakes, and hurricanes have contributed to oil tanker ship accidents or breakage/leakage of underground pipelines thereby causing colossal oil spills.
- Hence it can be caused by both anthropological causes and natural causes. **Hence statement 2 is incorrect.**
- It causes **hypothermia in birds and threats to the aquatic ecosystem.**

- Crude oil ruins the insulating and waterproofing properties of feathers and fur of birds, and thus oil-coated birds and marine mammals may die from hypothermia.
- Hypothermia is a decrease in body temperature to below-normal levels.
- Oil on ocean surfaces is harmful to many forms of aquatic life because it prevents sufficient amounts of sunlight from penetrating the surface, and it also reduces the level of dissolved oxygen. **Hence statement 3 is correct.**

**Q. 83) Consider the following statements about the Coastal Vulnerability Index**

1. It was carried out by the Ministry of Environment, Forest, and Climate Change.
2. It is assessed parameters such as like tidal range, coastal slope, geomorphology, and wave height.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.83) Solution (b)

**Explanation:**

- Coastal vulnerability identifies people and places that are susceptible to disturbances resulting from coastal hazards.
- The Coastal Vulnerability Index has been prepared based on the coastal vulnerability assessment conducted by the **Indian National Centre for Ocean Information Services (INCOIS)**.
- INCOIS is an autonomous organisation under the Ministry of Earth Sciences (MoES).
- It is located in Hyderabad & was established in 1999. It is a unit of the Earth System Science Organisation (ESSO), New Delhi.
- The ESSO operates as an executive arm of the Ministry of Earth Sciences (MoES) for its policies and programmes. **Hence statement 1 is incorrect.**
- It is assessed on parameters such as
  - ✓ **Tidal range**
  - ✓ **Wave height**
  - ✓ **Coastal slope**
  - ✓ Coastal elevation
  - ✓ Shoreline change rate
  - ✓ **Geomorphology**
  - ✓ The historical rate of relative sea-level change. **Hence statement 2 is correct.**

**Q. 84) Consider the following statements about the Landslide Atlas of India**

1. It is based on data of landslides from year 1800-2021.





2. It has assessed all the states and union territories of India.
3. The Indian state of Mizoram topped the list with the highest recorded landslides.

Choose the correct code:

- a) 2 only
- b) 1 and 3
- c) 2 and 3
- d) 3 only

Q.84) Solution (d)

**Explanation:**

- A landslide is defined as the movement of a mass of rock, debris, or earth down a slope.
- They are a type of mass wasting, which denotes any downward movement of soil and rock under the direct influence of gravity. They generally occur in clay-rich soil.
- The **Landslide Atlas of India** is a detailed guide **identifying landslide hotspots in the country and was released under the Indian Space Research Organisation (ISRO)**.
- It used satellite data from ISRO to map all seasonal and event-based landslides like the Kedarnath disaster in 2013 and landslides triggered due to the Sikkim earthquake in 2011.
- The pan-India landslide database classifies landslides into – seasonal (2014, and 2017 monsoon seasons), event-based and route-based (2000 – 2017).
- It was released for the first time in 2023 by assessing the risk based on 80,000 landslides recorded between 1998 and 2022. **Hence statement 1 is incorrect.**
- It has assessed 147 districts in 17 states and two Union Territories to build the Landslide Atlas of the country. **Hence statement 2 is incorrect.**
- Mizoram topped the list, recording 12,385 landslide events in the past 25 years, of which 8,926 were recorded in 2017 alone.
- Mizoram is followed by Uttarakhand (11,219) and Kerala. **Hence statement 3 is correct.**

**Q. 85) Consider the following statements about the Loss and Damage Funding of COP27 of the UNFCCC**

1. Loss and Damage refer to impacts of climate change that can be avoided either by mitigation or adaptation.
2. It includes compensation for the destruction of biodiversity and sites that have cultural importance.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.85) Solution (b)

**Explanation:**

- The Conference of Parties (COP) is the apex decision-making body of the United Nations Climate Change Framework Convention (UNFCCC).
- The Loss and Damage Funding of COP27 of the UNFCCC **refers to impacts of climate change that cannot be avoided either by mitigation or adaptation.**
- It will compensate the most vulnerable countries for their losses due to climate-related disasters.
- Mitigation refers to efforts to reduce or prevent the emission of greenhouse gases.
- Adaptation means taking action to prepare for and adjust to both the current effects of climate change and the predicted impacts in the future.
- **The countries like Canada, Denmark, Germany, New Zealand, Scotland and the Belgian province of Wallonia have expressed interest in it. Hence statement 1 is incorrect.**
- They also include not only economic damage to property but also loss of livelihoods, and the destruction of biodiversity and sites that have cultural importance. This broadens the scope for affected nations to claim compensation. **Hence statement 2 is correct.**

**Q. 86) Consider the following statements about the Global Offshore Wind Alliance (GOWA)**

1. It was set up by India, International Renewable Energy Agency (IRENA) and the Global Wind Energy Council.
2. Offshore wind energy refers to the deployment of wind farms inside the water bodies.
3. The alliance has Belgium, Colombia, and Germany as its members.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.86) Solution (b)

**Explanation:**

- The Global Offshore Wind Alliance (GOWA) was set up by the **International Renewable Energy Agency (IRENA)**, Denmark, and the **Global Wind Energy Council**.
- IRENA) is an intergovernmental organisation, it was officially founded in Bonn, Germany, in January 2009.
- It has 167 members and India is the 77th Founding Member of IRENA.
- It has its headquarters in Abu Dhabi, United Arab Emirates.
- GWEC was established in 2005 to provide a credible and representative forum for the entire wind energy sector at an international level. **Hence statement 1 is incorrect.**

- Wind energy today typically comes in two different types: onshore wind farms which are large installations of wind turbines located on land, and offshore wind farms which are installations located in bodies of water.
- **Offshore wind energy refers to the deployment of wind farms** inside the water bodies. They utilise the sea winds to generate electricity. These wind farms either use fixed-foundation turbines or floating wind turbines. **Hence statement 2 is correct.**
- The alliance has Australia, Belgium, Colombia, Denmark, Germany, Ireland, Japan, the Netherlands, Norway, Portugal, Spain, Saint Lucia, the United Kingdom, and the United States of America as its members. **Hence statement 3 is correct.**

**Q. 87) Consider the following statements about the Sendai Framework for Disaster Risk Reduction**

1. It aims to strengthen social and economic resilience to ease the adverse effects of climate change.
2. It is a successor agreement to the Hyogo Framework for Action.
3. The Sendai Framework Monitor is an online tool that aims to collect data on achieving the targets of the framework.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.87) Solution (d)

**Explanation:**

- The Sendai Framework for Disaster Risk Reduction 2015-2030 is an international agreement that aims to prevent disaster risks across the globe.
- It aims to strengthen social and economic resilience to ease the adverse effects of climate change, manmade disasters and natural hazards.
- It was adopted by UN member states between 14 and 18th March 2015 at the World Conference on Disaster Risk Reduction, which was held in Sendai, Japan. **Hence statement 1 is correct.**
- The Hyogo Framework for Action (HFA) was a 10-year plan (2005-2015) to make the world safer from natural hazards. Priorities such as disaster risk reduction, identification, assessment through legal and policy frameworks, disaster preparedness and use of innovation were adopted.
- The Sendai Framework for Disaster Risk Reduction 2015-2030, is the successor instrument to the Hyogo Framework.
- It is a non-binding agreement, which the signatory nations, including India, will attempt to comply with voluntarily. **Hence statement 2 is correct.**

- The Sendai Framework Monitor is an online tool that aims to collect data on achieving the targets of the framework.
- It was launched by the UN Office for Disaster Risk Reduction (UNISDR). **Hence statement 3 is correct.**

**Q. 88) Consider the following statements about the National Disaster Management Authority (NDMA)**

1. It is the apex constitutional body for disaster management in India.
2. It has Prime Minister as its chairman.
3. It lays down guidelines to be followed by State Authorities in drawing up State Plans.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.88) Solution (b)

**Explanation:**

- The National Disaster Management Authority (NDMA) is the apex **statutory body** for disaster management in India. It is in accordance with the Disaster Management Act of 2005.
- Its primary purpose is to coordinate response to natural or man-made disasters and for capacity-building in disaster resiliency and crisis response. It is also the apex body to lay down policies, plans and guidelines for Disaster Management to ensure a timely and effective response to disasters.
- It is not a constitutional body as it is not mentioned in the Constitution of India. **Hence statement 1 is incorrect.**
- It has Prime Minister as its chairman and nine other members, and one such member to be designated as Vice-Chairperson. **Hence statement 2 is correct.**
- Functions and Responsibilities of NDMA -
  - ✓ Approve the National Disaster Plan
  - ✓ Lay down policies on disaster management
  - ✓ Approve plans prepared by Ministries or Departments of the Central Government in accordance with the National Plan
  - ✓ Lay down guidelines to be followed by State Authorities in drawing up State Plan
  - ✓ Lay down guidelines to be followed by different Ministries or Departments of Central Government for purpose of integrating measures for disaster prevention or mitigation of its effects in their development plans and projects
  - ✓ Coordinate enforcement and implementation of disaster management policy and plan
  - ✓ Recommend provision of funds for the purpose of mitigation

- ✓ Provide such support to other countries affected by major disasters as determined by Central Government
- ✓ Take such other measures for prevention of disasters or mitigation or preparedness and capacity building for dealing with threatening disaster situations or disaster as it may consider necessary
- ✓ Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management

**Hence statement 3 is correct.**

**Q. 89) Consider the following statements about lightning**

1. It is an electrical discharge of very little duration and high voltage between a cloud and the ground.
2. Cloud-to-ground (CG) lightning is dangerous as it can electrocute people.
3. It is a natural disaster covered under the State Disaster Response Fund (SDRF).

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.89) Solution (a)

**Explanation:**

- Lightning is the natural process of **an electrical discharge of very little duration and high voltage** between a cloud and the ground or within a cloud, accompanied by a bright flash, a loud sound, and occasional thunderstorms.
- It is caused by a difference in electrical charge between the top and bottom of a cloud, which generates a huge current of electricity.
- Water vapor in the cloud condenses and rises, generating heat and pushing water molecules further up until they become ice crystals. Collisions between the ice crystals trigger the release of electrons, leading to a chain reaction that results in a positively charged top layer and a negatively charged middle layer in the cloud.

When the difference in charge becomes large enough, a huge current of electricity flows between the layers, producing heat that causes the air column to expand and produce shock waves that create thunder sounds. **Hence statement 1 is correct.**

Cloud-to-ground (CG) lightning is dangerous because it can electrocute people due to its high electric voltage and current. Inter- or intra-cloud lightning is visible and safe. **Hence statement 2 is correct.**

- Currently, cyclones, droughts, earthquakes, fires, floods, tsunamis, hailstorms, landslides, avalanches, cloudbursts, pest attacks, frost, and cold waves are considered disasters that are covered under the State Disaster Response Fund (SDRF), 75% of which is funded by the Centre.

- Lightening is not a natural disaster covered under the **State Disaster Response Fund (SDRF)**. But states are demanding it. Hence statement 3 is incorrect.

**Q. 90) Consider the following statements about the Gross Domestic Climate Risk Report**

1. It was published by the United Nations Environment Programme.
2. China has the highest number of provinces in the climate-risk-prone territories of the world.
3. Bihar is set to be the most climate-vulnerable region in India by 2050.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.90) Solution (b)

**Explanation:**

- **The Gross Domestic Climate Risk Report** was published by **Australia-based Cross Dependency Initiative or XDI**.
- XDI is a part of the **Climate Risk Group of companies** quantifying the costs of climate change.
- The report ranks over 2,600 jurisdictions around the world in 2050 according to modelled projections of **damage to the built environment** from **extreme weather and climate change** including flooding, forest fires, and sea level rise.
- **Built environment refers to** aspects of the surroundings that are built by humans to support human activity like homes and workplaces. **Hence statement 1 is incorrect.**
- China has the highest number of provinces in the top 50 most climate-risk-prone territories of the world, followed by the United States.
- Over half of the provinces in the global top 50 are in China. After China, the US has the most high-risk states with 18 states in the top 100. **Hence statement 2 is correct.**
- According to the report, 14 Indian states are set to remain within the top 100 most climate-risk-prone territories of the world by 2050.
- Bihar is set to be the most climate-vulnerable region in India by 2050 with a global rank of 22nd, according to the report.
- It is followed by Uttar Pradesh and Assam with 25th and 28th ranks respectively. **Hence statement 3 is correct.**

**Q. 91) Consider the following statements about the seismic zones classification of India**

1. Zone II includes areas that are the most seismically active zone.
2. Zone V includes areas that are prone to earthquakes of low intensity.



Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.91) Solution (d)

**Explanation:**

- A seismic zone is an area where there is a high probability of earthquakes due to the area's geology.
- Seismic zonation involves dividing areas based on expected ground motion.
- It assesses the hazards related to earthquakes in such areas to provide inputs for safer constructions and other practices.
- According to the latest version of India's seismic zone map (2002), earthquake-prone regions in the country are divided into four zones (II, III, IV, and V) based on intensity levels during past earthquakes.
- Zone II, which was made by combining areas under zone I and II, indicate areas prone to earthquakes of low-intensity. **Hence statement 1 is incorrect.**
- Zone III includes areas that are prone to earthquakes of moderate intensity.
- Zone IV includes areas prone to earthquakes of severe intensity, and include Patna, Pilibhit, Ludhiana, Roorkee, Gorakhpur, and Amritsar.
- Zone V is the most seismically active zone. This includes
  - ✓ the entire northeast India,
  - ✓ parts of northwestern Bihar,
  - ✓ Kangra Valley in Himachal Pradesh,
  - ✓ Andaman and Nicobar Islands,
  - ✓ the eastern part of Uttarakhand,
  - ✓ Rann of Kutch in Gujarat, and
  - ✓ Srinagar area in Jammu and Kashmir

**Hence statement 2 is incorrect.**

**Q. 92) Consider the following statements about sedimentation in dams**

1. It refers to the accumulation of sand, gravel, and silt, at the bottom of a reservoir created by a dam.
2. Some of the causes include climate change, deforestation, and erosion of upstream areas of dams.
3. It can cause a loss of hydroelectric power generation.

Choose the correct code:

- a) 2 only
- b) 2 and 3
- c) 1 only
- d) 1, 2 and 3

Q.92) Solution (d)

**Explanation:**

- Sedimentation in dams refers to the accumulation of sand, gravel, and silt, at the bottom of a reservoir created by a dam.
- This sediment can build up over time, reducing the overall storage capacity of the reservoir.
- To maintain the capacity of the reservoir, the sediment may need to be removed through a process called dredging.
- Dredging is the process of removing sediments, such as sand, gravel, and silt, that have accumulated at the bottom of a reservoir.
- It can be done using various methods, such as mechanical dredging with a dredging machine or hydraulic dredging with a high-pressure water jet. **Hence statement 1 is correct.**
- Some of the causes include climate change, deforestation, and erosion of upstream areas of dams.
- **Climate change** causes more intense and frequent rainfall events and also causes **snowmelt** earlier which can lead to increased erosion and sediment runoff into the reservoir.
- Trees help to hold the soil together and prevent **erosion**, so when forests are removed or degraded, there is a greater risk of sediment runoff into the reservoir.
- When soil and rock are washed away from the area upstream of the dam, they can be carried downstream and deposited in the reservoir. **Hence statement 2 is correct.**
- It can cause a loss of **hydroelectric power generation** due to **reduced water flow** through the dam. **Hence statement 3 is correct.**

**Q. 93) Consider the following statements about Cirrus cloud thinning (CCT)**

1. It is a kind of technology that involves thinning the wispy, elongated cirrus clouds.
2. Cirrus clouds reflect more sunlight than they absorb
3. This technique can help in reducing the effects of global warming.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.93) Solution (c)

**Explanation:**

- Cirrus cloud thinning (CCT) is a kind of technology that involves thinning the wispy, elongated cirrus clouds.



- It aims to eliminate or thin cirrus clouds to allow heat to escape into space. The wispy, elongated cirrus clouds are found at high altitudes and often absorb more sunlight than they reflect because they form in cold temperatures and consist of ice crystals. If these ice crystals are numerous and small, cirrus clouds prevent long-wave terrestrial radiation from escaping into space and have a climate impact similar to greenhouse gases. **Hence statement 1 is correct.**
- The wispy, elongated “cirrus” clouds are found at high altitudes, and often absorb more sunlight than they reflect, because they form in cold temperatures and consist of ice crystals. If these ice crystals are numerous and small, cirrus clouds prevent long-wave terrestrial radiation from escaping into space, and have a climate impact similar to greenhouse gases. **Hence statement 2 is incorrect.**
- It involves injecting ice nuclei – such as bismuth triiodide or aerosol particles such as sulfuric or nitric acid – into regions where cirrus clouds form. This would produce cirrus clouds with larger ice crystals with shorter life spans, while also reducing their optical depth, which means more long-wave terrestrial radiation would be transmitted into space.
- Thinning the clouds could allow more heat to escape into space. This helps in reducing the effects of global warming. **Hence statement 3 is correct.**

**Q. 94) Consider the following statements about Styrene**

1. It is a sweet-smelling organic liquid that evaporates easily.
2. It is used as the precursor of polystyrene, latex, and rubbers.
3. It is a non-carcinogenic compound.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.94) Solution (a)

**Explanation:**

Context: The Vizag gas leak in Andhra Pradesh resulted in the death of several people and the hospitalization of hundreds more. Many animals including birds and livestock were lost due to the incident. It occurred at the polymer plant- owned by the South Korean LG group.

The gas that leaked was identified to be styrene. At the time of the leak, 1,800 tonnes of the compound was stored at the plant.

- Styrene is a sweet-smelling organic liquid that evaporates easily. **Hence statement 1 is correct.**
- It is used as the precursor of polystyrene, latex, and rubbers.
- It is also found in cigarette smoke, vehicle exhaust, and even in fruits and vegetables. **Hence statement 2 is correct.**
- It is a carcinogenic compound.

- Even short-term exposure causes irritation of the skin and eyes, gastrointestinal problems, etc. Long-term exposure affects the central nervous system- leading to issues like peripheral neuropathy and even coma.
- Symptoms of exposure include difficulty in concentrating, loss of hearing, headache, weakness, etc. **Hence statement 3 is incorrect.**

**Q. 95) Consider the following statements about the Carbon Border Adjustment Mechanism (CBAM)**

1. It is a duty on imports based on the amount of carbon emissions resulting from the production of that product.
2. It has been proposed by the European Union.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.95) Solution (c)

**Explanation:**

- The Carbon Border Adjustment Mechanism (CBAM) is a duty on imports based on the amount of carbon emissions resulting from the production of that product.
- As a price on carbon, it discourages emissions. As a trade-related measure, it affects production and exports.
- It aims to tax products such as cement and steel that are extremely carbon intensive, with effect from 2026. **Hence statement 1 is correct.**
- It has been proposed by the European Union. Its members are Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden. **Hence statement 2 is correct.**

**Q. 96) Consider the following statements about Dvorak Technique**

1. It is a cloud pattern recognition technique (CPRT).
2. It is based on the development and decay of the temperate cyclone.

Choose the correct code:

- a) 1 only
- b) 2 only

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

Q.96) Solution (a)

**Explanation:**

- **Dvorak Technique** is a **cloud pattern recognition technique (CPRT)**.
- It was first developed in 1969 and tested for observing storms in the northwest Pacific Ocean. **Hence statement 1 is correct.**
- In this methodology, available satellite images obtained from polar-orbiting satellites are used to examine the features of developing tropical storms like hurricanes, cyclones, and typhoons.
- During day time, images in the visible spectrum are used while at night, the ocean is observed using infrared images.
- From the satellite images, the technique helps forecasters do a pattern recognition from the observed structure of the storm, locate its eye and estimate the intensity of the storm.
- It is based on the **development and decay** of the **tropical cyclone**. **Hence statement 2 is incorrect.**

**Q. 97) Consider the following statements about the Coalition for Disaster Resilient Infrastructure (CDRI)**

1. It aims to increase the resilience of infrastructure systems to climate and disaster risks.
2. It is a global partnership of national governments, United Nations agencies, and the private sector.
3. It was launched in COP26 of the UNFCCC by India.

Choose the correct code:

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Q.97) Solution (a)

**Explanation:**

- The Coalition for Disaster Resilient Infrastructure (CDRI) aims to increase the resilience of infrastructure systems to climate and disaster risks, thereby ensuring sustainable development.
- It will support countries- developed and developing- to build climate and disaster-resilient infrastructure.
- The Coalition's secretariat, based in Delhi, will facilitate knowledge exchange, provide technical support, and support capacity building. **Hence statement 1 is correct.**

- CDRI is a global partnership of national governments, United Nations agencies and programmes, multilateral development banks and financing mechanisms, the private sector, and academic and research institutions. **Hence statement 2 is correct.**
- It was launched in 2019, at the United Nations Climate Action Summit in New York by India.
- It is the Government of India's second major global initiative after the International Solar Alliance, and it demonstrates India's leadership in climate change and disaster resilience issues.
- The United Nations Climate Action Summit was hosted by the UN Secretary.
- It had the key focus on raising ambition and accelerating action to implement the **Paris Agreement. Hence statement 3 is incorrect.**

**Q. 98) Consider the following pairs:**

Low Pressure Systems	Classification as per Regional Name
1. Asani	Typhoon
2. Noru	Cyclone
3. Aidan	Hurricane
4. Goni	Typhoon

How many pairs are correctly matched?

- a) One pair
- b) Two pairs
- c) Three pairs
- d) Four pairs

Q.98) Solution (b)

**Explanation:**

- Tropical storms are called hurricanes when they develop over the North Atlantic, central North Pacific, and eastern North Pacific.
- These rotating storms are known as cyclones when they form over the South Pacific and Indian Ocean
- These are called typhoons when they develop in the Northwest Pacific.

Name	Type of tropical storm
1. Asani	Cyclone
2. Noru	Typhoon
3. Aidan	Hurricane
4. Goni	Typhoon

Hence option b is correct.

**Q. 99) Consider the following statements about the State Energy and Climate Index (SECI)**

1. It was launched by the Ministry of Environment, Forest and Climate Change (MoEFCC).
2. It is the first index that aims to track the efforts made by states and UTs in the climate and energy sector.
3. Its parameters include clean energy initiatives, energy efficiency, and environmental sustainability.
4. Gujarat, Kerala, and Punjab are the top three performing states in the index.

Choose the correct code:

- a) 1 and 2
- b) 2, 3 and 4
- c) 1 and 3
- d) 1, 2 and 3

Q.99) Solution (b)

**Explanation:**

- The **State Energy and Climate Index (SECI)** was launched by the **NITI AAYOG**. Hence **statement 1 is incorrect**.
- It is the **first index that aims to track the efforts made by states and UTs in the climate and energy sector**.
- **It ranks the states** based on their efforts towards improving energy access, energy consumption, energy efficiency, and safeguarding the environment. **Hence statement 2 is correct**.
- The parameters of the index have been devised keeping in mind India's goals for climate change and clean energy transition.
- The State Energy and Climate Index (SECI) ranks states and UTs on six parameters:
  - Discoms' (power distribution companies) performance
  - Access affordability and reliability of energy
  - Clean energy initiatives

- Energy efficiency
- Environmental sustainability
- New initiatives **Hence statement 3 is correct.**
- Gujarat, Kerala, and Punjab are the top three performing states in the NITI Aayog's SECI.
- The top three performers among smaller states are Goa, Tripura, and Manipur. **Hence statement 4 is correct.**

**Q. 100) Consider the following statements**

1. Lantana Camara and Cestrum diurnum are examples of invasive plant species.
2. Papaya Mealy Bug and Indian Bullfrog are examples of invasive animal species.

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.100) Solution (c)

**Explanation:**

- Invasive alien species are plants, animals, pathogens, and other organisms that are non-native to an ecosystem, and which may cause economic or environmental harm or adversely affect human health.
- They regenerate at an alarming speed and threaten to edge out the indigenous flora and fauna.
- Lantana Camara and Cestrum diurnum are examples of invasive plant species.
- Lantana Camara (common lantana) is a species of flowering plant within the verbena family (Verbenaceae), native to the American tropics.
- Lantanas arrived in India as a decorative shrub during the British colonial period but quickly took over several ecosystems as an invasive plant.
- The shrub can spread on the forest ground, climb over trees a creeper and entangle with other native plants with ease.
- It is a very adaptable species, which can inhabit a wide variety of ecosystems.
- Once it has been introduced into a habitat it spreads rapidly between 45°N and 45°S and more than 1,400 metres (4,600 feet) in altitude.
- Cestrum diurnum or day-blooming jasmine of West Indies origin; otherwise a source of vitamin D3. Once the modalities are finalised, this weed can be turned into a commercial crop for the people in the vicinity of Kaziranga. Pharmaceutical companies need tonnes of dry leaves from this plant periodically. **Hence statement 1 is correct.**
- Papaya Mealy Bug in Assam and Indian Bullfrog in Andaman and Nicobar are examples of invasive animal species. **Hence statement 2 is correct.**