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Q.1) An ecosystem consists of both biotic and abiotic factors. Which of the below are abiotic factors?

1. Protists
2. Light
3. Water
4. Soil or substrates

Choose the correct option from below

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

Q.1) Solution (c)

An ecosystem depends on the interactions of the living and nonliving elements in the system.

Biotic factors	Abiotic factors
Decomposers Plants Herbivores Fungus Protists: Protists generally are one-celled microscopic organisms, Animal-like protists such as paramecia and amoebas eat bacteria and smaller protists, so they form part of the food chain. Fungus-like protists often serve as decomposers in the ecosystem.	Air Soil or substrate Water Light Salinity Temperature

Q.2) Ecology focuses on the larger scales in biology, from the individual organism through populations, communities, ecosystems, and the Biosphere. Match the levels with their properties given below

1. Population	Inter - breeding groups of individuals of the same species, generally living in the same contiguous habitat.
2. Communities	Interacting populations of different species.
3. Ecosystem	They contain both the broad biological community and all the physical processes
4. Biosphere	Includes all the biological and physical processes that allow for and influence life on Earth.

Which of the above is/are correctly matched?

- a) 1 only
- b) 1, 2 and 4 only
- c) 1, 2 and 3 only
- d) All of the above

Q.2) Solution (d)

Levels of organization in ecology	Properties.
Populations	Are interbreeding groups of individuals of the same species, generally living in the same contiguous habitat.
Communities	Are interacting populations of different species
Ecosystems	Are comprised of both the biotic (living) and abiotic (non-living) factors in a given area; they contain both the broad biological community and all the physical processes (such as weather, soil, hydrology, nutrients, energy flow etc.) that influence that community.
Biosphere	Is global in scale, and includes all the biological and physical processes that allow for and influence life on Earth.

Q.3) Natural selection is the driving force of adaptation and evolution, Consider the following statements:

1. Natural selection occurs only on the scale of the individual organism
2. Natural selection means that those heritable traits that increase the fitness of an individual organism have a greater probability of being present in future generations within the population

Which of the above statement is/are correct?

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

Q.3) Solution (b)

Statement-1: Incorrect	Statement-2: correct
Biologists generally agree that natural selection occurs predominantly on the scale of the individual organism (Williams 1966), although some argue	Natural selection means that those heritable traits that increase the fitness of an individual organism have a greater probability of being present in future

that it can theoretically occur at other scales as well (Wilson 1980). Each individual organism acts to maximize its own survival and ability to produce offspring that are in turn able to survive and reproduce (called fitness by biologists), even at the expense of other organisms of the same species.

generations within the population. The fact that selection is nearly always strongest on the scale of the individual organism has important ramifications for understanding ecology (Levin 2002)

Q.4) Level of organisation is important in study of ecosystem, Arrange the following in increasing order in organisation of ecosystem

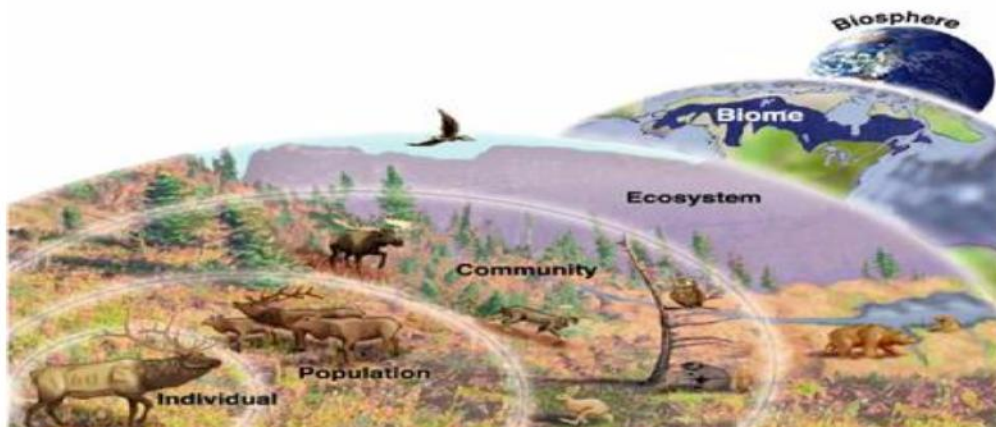
1. Individual
2. Community
3. Population
4. Biome
5. Ecosystem
6. Biosphere

Choose correct option from below:

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



Q.4) Solution c)



Q.5) Consider the following statement about Ecotone:

1. Ecotone is a zone of junction between two or more diverse ecosystems
2. It is non-linear as it shows progressive decrease in species of incoming community from the outgoing species
3. Some organisms in ecotone may be totally different from the adjoining communities

Which of the above statement is/are correct?

- a) 1 only
- b) 2 only
- c) 1 and 3 only
- d) All of the above

Q.5) Solution (c)

Statement-1 and 3: correct	Statement-2: incorrect
<p>An Ecotone describes an area that acts as a transition or boundary between two ecosystems. This could be, for example, an area of marshland between a river and the riverbank, the transition between Arctic Tundra and Forest biomes in Northern Siberia</p> <p>As this area is inevitably Influenced by the two bordering ecosystems, it is therefore a consequence of this that a higher density of organisms and variety of species can be found within an Ecotone.</p>	<p>It is linear as shows progressive increase in species composition of one in coming community and a simultaneous decrease in species of the other outgoing adjoining community</p>

Q.6) Natural ecosystems have been misused by the human being as a result of which the biodiversity and wild life has been threatened. Consider the methods that can be used to protect natural ecosystems

1. Humans should move towards sustainable utilisation of resources
2. Introduction of the species from the other parts of the world and the human interference should be reduced to minimum into natural ecosystems.
3. Making buffer zones or transitional zones around the protected area.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.6) Solution (d)

Protection of natural ecosystem demands management of human use of the biosphere resources such that they give maximum benefits to the present human generation while maintaining its potential to meet the needs of future human generations.

- Introduction of the species from the other parts of the world and the human interference should be reduced to minimum into natural ecosystems.
- Some of the areas should be earmarked as protected or reserve zones. This can be achieved by making buffer or transitional zones around the protected area. (Buffer

zone and transitional zones are where only a limited humans are permitted to enter)

- Species in the detrimental habitats should be shifted to their unexploited natural habitat.

Q.7) Ecosystem services are the direct and indirect contributions of ecosystems to human well-being, Consider the following pairs:

1. Provisioning services	Benefits obtained from the ecosystem processes such as water purification and waste management, pollination or pest control.
2. Regulating services	Products obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources and medicines
3. Habitat services	Highlight the importance of ecosystems to provide habitat for migratory species and to maintain the viability of gene-pools.
4. Cultural services	Include non-material benefits that people obtain from ecosystems such as spiritual enrichment, intellectual development, recreation and aesthetic values.

Which of the above pair is/are incorrect?

- 1 and 2 only
- 2 and 3 only
- 1, 2, and 3 only
- 1, 2, 3 and 4

Q.7) Solution (a)

Provisioning services	Products obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources and medicines.
Regulating services	Defined as the benefits obtained from the regulation of ecosystem processes such as climate regulation, natural hazard regulation, water purification and waste management, pollination or pest control.
Habitat services	Highlight the importance of ecosystems to provide habitat for migratory species

	and to maintain the viability of gene-pools.
Cultural services	Include non-material benefits that people obtain from ecosystems such as spiritual enrichment, intellectual development, recreation and aesthetic values.

Q.8) Food chain and food web play crucial roles in functions of ecosystem, Consider the following statements about them.

1. The distinction between Grazing food chain and Detritus food chain is the source of energy at the first level
2. Grazing and detritus food chains are not interlinked.

Which of the above statement is/are correct?

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

Q.8) Solution (a)

Statement-1: correct	Statement-2: incorrect
In grazing food chain primary source of energy is living plant Biomass. Whereas in detritus it is dead organic matter	Both chains are interlinked: the initial energy source for detritus food chain is the waste materials and dead organic matter from the grazing food chain

Q.9) Consider the following statements with respect to flows in ecosystem:

1. Energy flow in decomposition is bi-directional, where energy is recycled by decomposers
2. The number and energy of organisms gradually decrease with each trophic level in grassland ecosystem.
3. Pyramid of biomass is always upright

Which of the above statement is/are incorrect?

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

Q.9) Solution (c)

Statement-1 and 3 : incorrect	Statement-2: correct
Decomposers which include bacteria, fungi, molds, worms, and insects break down wastes and dead organisms, and	The number, energy gradually decreases with each step from producer level to consumer level in grassland ecosystem.

return the nutrients to the soil, which is then taken up by the producers. Energy is not recycled during decomposition, but it is released- **nutrients are recycled**

In aquatic ecosystem the producers are small organisms with least biomass and the biomass gradually increase towards the apex of the pyramid. Thus the **pyramid of biomass of aquatic ecosystems is inverted in shape.**

Q.10) Consider the following statements about ecological succession:

1. Ecological succession is the observed process of change in the species structure of an ecological community over time
2. Climate change may impact the ecological succession process
3. The climax community represents a stable end product of the successional sequence

Which of the above statement is/are correct?

- a) 1 only
- b) 2 only
- c) 1 and 3 only
- d) All of the above

Q.10) Solution (d)

Ecological succession is the process of change in the species structure of an ecological community over time. The community begins with relatively few pioneering plants and animals and develops through increasing complexity until it becomes stable or self-perpetuating as a climax community. Succession may be initiated either by formation of new, unoccupied habitat, such as from a lava flow or a severe landslide, or by some form of disturbance of a community, such as from a fire, severe windthrow, or logging. Succession that begins in new habitats, uninfluenced by pre-existing communities is called primary succession, whereas succession that follows disruption of a pre-existing community is called secondary succession.

Ecological succession may also occur when the conditions of an environment suddenly and drastically change. A forest fires, wind storms, and human activities like agriculture all greatly alter the conditions of an environment. These massive forces may also destroy species and thus alter the dynamics of the ecological community triggering a scramble for dominance among the species still present.

Q.11) Biotic interactions have marked effect on survival of organisms. Consider the following pairs:

1. Mutualism: positive interaction, both species are benefitted
2. Commensalism: positive interspecies interaction
3. Predation: negative interaction
4. Ammensalism: antagonistic interspecies interaction

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 4 only
- d) All of the above

Q.11) Solution (d)

Mutualism	Commensalism	Predation	Ammensalism
Is the name given to associations between pairs of species that bring mutual benefit	A relationship between individuals of two species in which one species obtains food or other benefits from the other without either harming or benefiting the latter.	Predation is a biological interaction where one organism, the predator, kills and eats another organism, its prey.	Is an interaction where one species suffers and the other interacting species experiences no effect

Q.12) Consider the following statements:

1. Bioaccumulation is concentration of degradable pollutant in the first organism of trophic level
2. In Biomagnification pollutants increase from one trophic level to other
3. In order to biomagnify, pollutant must be long-lived, soluble in fats and biologically active

Which of the above statement is/are correct?

- a) 1 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) All of the above

Q.12) Solution (b)

Statement-1: incorrect	Statement-2 and 3: correct
Bioaccumulation is increase in concentration of a pollutant from the	Biomagnification is increase in concentration of a pollutant from one link

environment to the first organism in a food chain, pollutants should be non-biodegradable	in a food chain to another. In order for biomagnification to occur, the pollutant must be: 1.long-lived 2.mobile 3.soluble in fats 4.biologically active
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Q.13) Which of the bio-geochemical cycle is majorly driven by solar energy?

- Nitrogen cycle
- Water cycle
- Sulphur cycle
- Phosphorus cycle

Q.13) Solution (b)

Hydrological cycle	Nitrogen cycle	Sulphur cycle	Phosphorus cycle
Water cycle is continuous circulation of water in the earth-atmosphere system which is driven by solar energy	This cycle is accomplished in three different ways: By microorganisms, industrial processes and atmospheric phenomenon's like thunder and lighting	It is sedimentary cycle, where sulphur is released by erosion, decomposition etc.	It is sedimentary cycle and enters the cycle from erosion and mining activities

Q.14) Nitrogen is essential constituent of protein and is basic building block of all living tissues.

- Nitrogen has to be converted in to ammonia, nitrites and nitrates before it can be taken by plants
- Nitrosomonas bacteria promote transformation of ammonia into nitrates
- Upon decomposition nitrogen is returned to the soil as nitrogen gas.

Which of the above statement is/are correct?

- 1 only
- 1 and 2 only
- 1 and 3 only
- None of the above

Q.14) Solution (a)

Statement-1: correct	Statement-2 and 3: incorrect
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Nitrogen in the elemental form cannot be directly used by living organisms. Nitrogen needs to be fixed	Nitrosomonas: ammonia to nitrite. Nitrobacter: nitrites into nitrates. During excretion and upon the death of all the organisms nitrogen is returned to the soil in the form of ammonia
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Q.15) The rate of biomass production in an ecosystem is called productivity. Which of the following statements are correct?

1. Net primary productivity (NPP) is less than Gross primary productivity (GPP).
2. Net Primary Productivity (NPP) is the available biomass for the consumption of heterotrophs
3. Ecological succession is characterised by increased productivity

Choose correct option from below:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) All of the above

Q.15) Solution (d)

- Primary production is defined as the amount of biomass or organic matter produced per unit area over a time period by plants during photosynthesis.
- Gross primary productivity of an ecosystem is the rate of production of organic matter during photosynthesis.
- Net primary productivity (NPP): Gross primary productivity minus respiration losses
- Net primary productivity is the available biomass for the consumption to heterotrophs (herbivores and decomposers)
- Ecological succession is characterised by increased productivity as with each seral stage more stable species get a foot hold over the space till climax species is reached.

Q.16) Consider the following statements about the process of secondary succession?

1. Secondary succession is much slower than the primary succession.
2. Secondary succession begins in areas where natural vegetation has been destroyed.

Which of the above statement is/are correct?

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

Q.16) Solution (b)

Statement-1: incorrect	Statement-2: correct
Secondary succession begins in areas where natural biotic communities have been destroyed such as in abandoned farm lands, burned or cut forests, lands that have been flooded. Since some soil or sediment is present, succession is faster than primary succession.	Secondary succession begins in areas where natural biotic communities have been destroyed such as in abandoned farm lands, burned or cut forests, lands that have been flooded.

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Q.17) Consider the following pairs:

1. Autogenic succession: succession in which green plants dominate
2. Allogenic succession: change brought by outside forces
3. Autotrophic succession: succession brought by living inhabitants of community itself
4. Heterotrophic succession: heterotrophs are greater in quantity

Which of the above is/are correctly matched?

- a) 1 and 2 only
- b) 2 and 4only
- c) 2 and 3 only
- d) None of the above

Q.17) Solution (b)

Successional change can be caused by either endogenous or exogenous factors depending upon whether the change is caused by the actions of the plants themselves or by external factors.

Autogenic:	Changes caused by endogenous factors (the living inhabitants themselves
Allogenic succession:	changes caused by exogenous factors are termed allogenic
Autotrophic:	A succession in which green plants or the autotrophs dominate, so that there is a continuous energy flow during the whole process, is known as Autotrophic succession.

Heterotrophic:	succession wherein heterotrophs such as bacteria, fungi, actinomycetes or even animals dominate and there is a continuous decline in the energy flow is known as Heterotrophic succession
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Q.18) Consider the following statements:

1. Niche is the unique functional role of a species in ecosystem.
2. Niche plays an important role in the conservation of organisms

Which of the above statement is/are correct?

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

Q.18) Solution (c)

An **ecological niche** is the role and position a species has in its environment; how it meets its needs for food and shelter, how it survives, and how it reproduces.

For a species to maintain its population, its individuals must survive and reproduce. Certain combinations of environmental conditions are necessary for individuals of each species to tolerate the physical environment, obtain energy and nutrients, and avoid predators. The total requirements of a species for all resources and physical conditions determine where it can live and how abundant it can be at any one place within its range. These requirements are termed abstractly the ecological niche.

Niche plays an important role in conservation of organisms as it tells the ideal conditions in which an organism can sustain a healthy life.

Q.19) Dispersal, colonization and recruitment, establishment, facilitation and inhibition are terms related to:

- a) Primary succession
- b) Secondary succession
- c) Climax community
- d) All of the above

Q.19) Solution (a)

Features of Primary Succession:

- Dispersal getting to the site –Small seeds arrive first, wind blown
- Colonization and Recruitment –N Fixers dominate and facilitate the environment – Recruitment Success, f(soil moisture, temperature, competition (light/soil moisture), herbivory/predation)
- Establishment, Facilitation and Inhibition –making due with the resources you can find or make

Q.20) Consider the following about Tundra Biome:

1. It is devoid of trees except stunted shrubs
2. It is found in near northern and southern poles

Which of the above statement is/are correct?

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

Q.20) Solution (c)

Characteristics of tundra include:

- Extremely cold climate
- Low biotic diversity
- Simple vegetation structure
- Limitation of drainage
- Short season of growth and reproduction
- Energy and nutrients in the form of dead organic material
- Large population oscillations

Q.21) Deep sea – Hydrothermal vents were recently discovered by the scientist.**Consider following statements about Hydrothermal ecosystems?**

1. Only micro organisms can survive in this environment.
2. The organisms are not dependent on sunlight for food production.
3. Bacteria create energy using hydrogen sulphide through the process of chemosynthesis

Which of the above statement is/are correct?

- e) 1 only
- f) 1 and 2 only
- g) 2 and 3 only
- h) 1, 2 and 3.

Q.21) Solution (c)

Deep-sea hydrothermal vents form as a result of volcanic activity on the ocean floor. Water seeps through cracks in the Earth's crust, dissolving metals and minerals as it becomes super-heated from nearby magma.

Many creatures like shrimp, crabs, giant tubeworms, clams, slugs, anemones, and fish thrive in these conditions. These animals depend on chemosynthesis rather than photosynthesis.

Q.22) The physical characteristics that effect ecological diversity are?

1. Interaction of one species with other in ecosystem
2. Temperature
3. Precipitation

4. Topography
5. Taxonomic diversity

Which of the above statement is/are correct?

- e) 1 and 2 only
- f) 1, 2 and 3 only
- g) 2, 3 and 4 only
- h) All of the above.

Q.22) Solution (c)

The physical characteristics of an environment that affect ecosystem diversity are the temperature, precipitation, and topography of the ecosystem. Therefore, there is a general trend for warm tropical ecosystems to be richer in species than cold temperate ecosystems.

Diversity also depends on taxonomic diversity and interaction between species. However, these are **Biotic characteristics**.

Q.23) With respect to changes in ecosystem, Disturbances in ecosystem may lead to

1. Loss of biodiversity.
2. Increase in species richness of ecosystem.

Which of the above statement is/are correct?

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

Q.23) Solution (c)

Environmental disturbance on a variety of temporal and spatial scales can affect the species richness and, consequently, the diversity of an ecosystem. This disturbance can damage the present ecosystem thus leading to loss of biodiversity. Nevertheless, moderate levels of occasional disturbance can also increase the species richness of an ecosystem by creating spatial heterogeneity in the ecosystem, and also by preventing certain species from dominating the ecosystem (Invasive species).

Q.24) Consider the following statements:

1. Physical characteristics of an area will significantly influence the diversity of the species within a community
2. Organisms can also modify the physical characteristics of the ecosystem.

Which of the above statement is/are correct?

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

Q.24) Solution (c)

While the physical characteristics of an area will significantly influence the diversity of the species within a community, the organisms can also modify the physical characteristics of the ecosystem.

For example: Stony corals (Scleractinia) are responsible for building the extensive calcareous structures that are the basis for coral reef ecosystems.

Trees can modify the microclimate and the structure and chemical composition of the soil around them.

Q.25) The limiting factors of terrestrial ecosystem are?

1. Moisture
2. Temperature
3. Soil
4. Altitude

Choose correct option from below:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1, 2 and 3 only
- d) All of the above

Q.25) Solution (d)

There are several fundamental factors that limit ecosystem growth, including temperature, precipitation, sunlight, soil configuration, and soil nutrients. Two important limiting factors are temperature and precipitation.

Q.26) Ecosystems are important to sustain life on earth, they provide?

1. Food, fibre and fuel
2. Pollination
3. Flood control
4. Security against draught

Choose correct option from below:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 3 and 4 only
- d) All of the above

Q.26) Solution (d)

Ecosystems provide goods including food, fiber, and fuel, as well as services such as pollination, flood control and security against draughts. These above services are all necessary for human and wildlife survival.

Q.27) Consider the following pairs:

Type of ecosystem Type of pyramid

1. Forest ecosystem : Inverted for numbers
2. Aquatic ecosystem : Inverted for Biomass
3. Grassland ecosystem : Inverted for energy

Which of the above statement is/are incorrect?

- e) 1 only
- f) 2 and 3 only
- g) 3 only
- h) All of the above

Q.27) Solution (c)

Forest ecosystem	Aquatic ecosystem	Grassland ecosystem
Pyramid of numbers represent the number of organisms at each trophic level. The pyramids of number in a forest ecosystem are inverted. In this, the first trophic level consists of Trees. The number of Trees is least in number.	Marine biomass pyramids show the relative level of biomass at each of the trophic levels for ocean ecosystems. Marine biomass pyramids tend to be inverted due to the dynamics of the producers and consumers. Many marine ecosystems rely on phytoplankton as their primary producer. Phytoplankton are very small, even microscopic. These tiny organisms reproduce and die very quickly. So, at any given moment their biomass is relatively small, even though they supply energy for the entire ecosystem.	An energy pyramid represents the amount of energy at each trophic level and loss of energy at each transfer to another trophic level. Hence the pyramid is always upward, with a large energy base at the bottom.

Q.28) With reference to threat of Desertification across globe. Consider the following statements:

1. Desertification is permanent degradation of land that was once arable
2. The UNCCD has also promoted the Great Green Wall Initiative, to combat desertification.
3. More than 50 percent of Earth's land area is already degraded.

Which of the above statement is/are correct?

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

- c) 1 and 3 only
- d) All of the above

Q.28) Solution (d)

Desertification is the permanent degradation of land that was once arable. More than 75 percent of Earth's land area is already degraded, according to the European Commission's World Atlas of Desertification, and more than 90 percent could become degraded by 2050.

The UNCCD has promoted the Great Green Wall Initiative, an effort to restore 386,000 square miles (100 million hectares) across 20 countries in Africa by 2030.

Q.29) Consider the following pairs:

- | Aquatic organisms | Characteristics |
|-------------------|---|
| 1. Neuston | : These are unattached organisms, living at air-water interface |
| 2. Periphyton | : This group contains animals, which are swimmers |
| 3. Nekton | : Organisms which remain attached to stems and leaves |
| 4. Benthos | : Found living at the bottom of water masses |

Which of the above is/are incorrectly matched?

- e) 1 only
- f) 2 and 4 only
- g) 2 and 3 only
- h) 1, 3 and 4 only

Q.29) Solution (c)

Neustons	The term neuston refers to the assemblage of organisms associated with the surface film of lakes, oceans, and slow-moving portions of streams.
Periphyton	Periphyton is a complex mixture of algae, cyanobacteria, heterotrophic microbes, and detritus that is attached to submerged surfaces in most aquatic ecosystems.
Nektons	Nekton are aquatic animals that can move on their own by "swimming" through the water.
Benthos	Benthos are aquatic organisms that crawl in sediments at the bottom of a body of water.

Q.30) Recently government of India changed coastal regulation zone guidelines. Which of the below statements is/are correct?

1. It was issued under the Environment Protection Act, 1986 by Ministry of Environment and Forests.
2. CRZ-1 is ecologically sensitive area, this lies between high tide line and shore line
3. CRZ-1 and CRZ-IV are approved by states and others by central environmental ministry.

Choose correct option from below:

- a) 1 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) All of the above

Q.30) Solution (a)

Coastal Regulation Zone (CRZ) are the notification for regulation of activities in the coastal area. It was issued under the Environment Protection Act, 1986 by Ministry of Environment and Forests (MoEF).

CRZ I - Ecologically Sensitive Areas .They lie between low and high tide line.

The projects which falls under the CRZ- I and CRZ- IV areas only require the approval of the Environment Ministry. States and the Union territories shall consider all other projects.

Q.31) Bonn challenge is related with?

- a) Land degradation
- b) Migratory species
- c) Biologically hazardous components
- d) Wetland conservation

Q.31) Solution (a)

The Bonn Challenge is a global effort to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020, and 350 million hectares by 2030.

It was launched in 2011 by the Government of Germany and IUCN, and later endorsed and extended by the New York Declaration on Forests at the 2014 UN Climate Summit.

Q.32) Eutrophication is a process that involves:

- a) Increase in concentration of nutrients at each trophic level
- b) Eutrophication is an enrichment of water bodies by nutrient salts
- c) Decrease in ecological footprint in ecosystem
- d) Decrease in biological oxygen demand

Q.32) Solution (b)

Eutrophication is an enrichment of water by nutrient salts that causes structural changes to the ecosystem such as: increased production of algae and aquatic plants,

depletion of fish species, general deterioration of water quality and other effects that reduce and preclude use”.

Harmful algal blooms, dead zones, and fish kills are the results of a process called eutrophication.

Q.33) Factors limiting the productivity of aquatic Habitats are?

1. Sunlight
2. Dissolved oxygen
3. Transparency of water
4. Water temperature

Choose correct option from below:

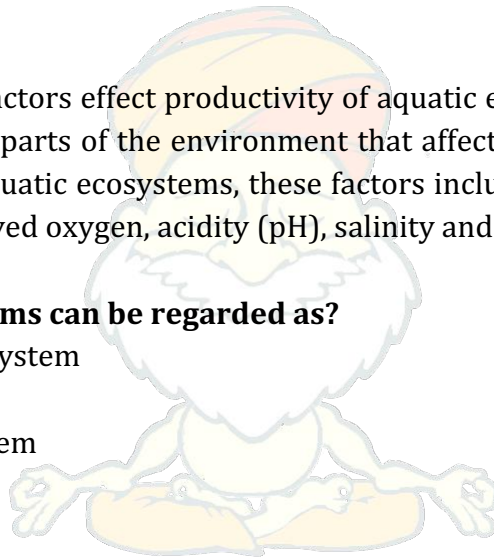
- e) 1 and 2 only
- f) 2 only
- g) 1, 2, and 3 only
- h) All of the above

Q.33) Solution (d)

Both biotic and Abiotic factors effect productivity of aquatic ecosystems. Abiotic factors are physical or chemical parts of the environment that affect the organisms that are in that environment. For aquatic ecosystems, these factors include light levels, water flow rate, temperature, dissolved oxygen, acidity (pH), salinity and depth

Q.34) Wetland ecosystems can be regarded as?

- a) Terrestrial ecosystem
- b) Ecotone
- c) Aquatic ecosystem
- d) Both b) and c)



Q.34) Solution (d)

According to Ramsar convention on wetlands. Areas of marsh, fen, peatland, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish, or salt including areas of marine water, the depth of which at low tide does not exceed 6 meters

As wetlands are transitional ecosystems between terrestrial and aquatic, they act as zone of ecotone.

Q.35) In the context of falling fish stocks in oceans. The unregulated and unscientific fishing is the major cause leading to this situation. Which of the below are harmful practices?

1. Cynide fishing
2. Bottom trawling
3. By catch
4. Dynamite fishing

5. Muro-ami

Choose correct option from below:

- a) 1 and 2 only
- b) 2 only
- c) 3, 4 and 5 only
- d) All of the above.

Q.35) Solution (d)

Bottom trawling	Bottom Trawling is one of the most damaging methods of fishing. It is an industrial technique that uses huge nets weighed down with weighty ballast that get dragged down the sea bed, collecting and squashing everything that is on the way, from fish to aquatic plants.
Muro- ami	This illegal fishing method is mostly used in the Southeast Asia. It involves using a huge encircling net with a number of pounding tools, normally weighty stones or cement blocks attached on the surface to pound fish out of coral reefs. Fishermen pound the coral reefs with the cement blocks scaring the fish out.
Ghost Fishing	Ghost fishing refers to the deliberate or unintentional leaving of fishing objects in a water body. The fishing nets still continue to catch fish and other creatures big and small, the fish eventually die from overtiredness or suffocation after a long struggle to get to the top to breathe.

Q.36) ISFR-2019 has reported increase in forest cover. In this context arrange type of forest given below in descending order of their geographical extent

- 1. Tropical evergreen forests
- 2. Tropical moist deciduous forests
- 3. Tropical dry deciduous forests
- 4. Subtropical dry evergreen forests

Choose correct option from below:

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

Q.36) Solution (c)

Forest Types of India the relative extents of different types of forests in India are presented in the following table:

<i>Forest type</i>	<i>Area (in million hectare)</i>	<i>Percent of total forest area</i>
Tropical moist evergreen	4.5	5.8
Tropical moist semievergreen	1.9	2.5
Tropical moist deciduous	23.3	30.3
Littoral and Swamp	0.7	0.9
Tropical dry evergreen	0.1	0.1
Tropical dry deciduous	29.4	38.2
Tropical Thorn	05.2	6.7
Subtropical broad leaved montane wet forest	0.3	0.4
Subtropical dry evergreen	0.2	0.2
Subtropical pine	3.7	5.0
Montane wet temperate	1.6	2.6
Himalayan moist temperate	2.6	3.4
Himalayan dry temperate	0.2	0.2
Subalpine	3.3	4.3
Moist alpine	—	—
Dry alpine	—	—

Q.37) Mangroves play important role in coastal ecology. Consider the following statements:

1. Mangroves can be found in all tropical, sub-tropical and temperate regions of the world
2. Mangroves extent increased according to ISFR-2019
3. They act as physical barriers against storm surges in coastal areas.

Which of the above statement is/are correct?

- a) 1 and 2 only
- b) 2 only
- c) 2 and 3 only
- d) All of the above

Q.37) Solution (c)

Statement-1: incorrect	Statement-2: correct	Statement-3: correct
A mangrove is a shrub or small tree that grows in coastal saline or brackish water. The term is also used for tropical coastal	Mangrove cover has been separately reported in the ISFR 2019 and the total mangrove cover in the country is 4,975 sq km. An	Mangroves protect shorelines from damaging storm and hurricane winds, waves, and floods. Mangroves also help

vegetation consisting of such species. Mangroves occur worldwide in the tropics and subtropics, mainly between latitudes 25° N and 25° S.	increase of 54 sq Km in mangrove cover has been observed as compared to the previous assessment of 2017. Top three states showing mangrove cover increase are Gujarat (37 sq km) followed by Maharashtra (16 sq km) and Odisha (8 sq km).	prevent erosion by stabilizing sediments with their tangled root systems.
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Q.38) Which of the following statement(s) is/are correct regarding 'Biodiversity Hotspot'?

1. A region to qualify as Biodiversity hotspot must have at least 1,500 vascular plants as endemics and 30% or less of its original natural vegetation.
2. Conservation International was a pioneer in defining and promoting the concept of hotspots. In 1989.

Which of the above statement is/are correct?

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

Q.38) Solution (c)

Statement-1: correct	Statement-2: correct
To qualify as a biodiversity hotspot, a region must meet two strict criteria: It must have at least 1,500 vascular plants as endemics — which is to say, it must have a high percentage of plant life found nowhere else on the planet. A hotspot, in other words, is irreplaceable. It must have 30% or less of its original natural vegetation. In other words, it must be threatened.	Conservation International was a pioneer in defining and promoting the concept of hotspots. In 1989, just one year after scientist Norman Myers wrote the paper that introduced the hotspots concept

Q.39) Corals reefs ecosystem are known for their rich biodiversity. Consider the following statements with respect to coral ecosystem

1. Coral ecosystem is found only in tropical and sub-tropical regions
2. The coral polyps live symbiotically with algae that provides them with their food
3. Disease, temperature extremes and pollution can cause coral bleaching

Which of the above statement is/are correct?

- a) 1 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) All of the above.

Q.39) Solution (b)

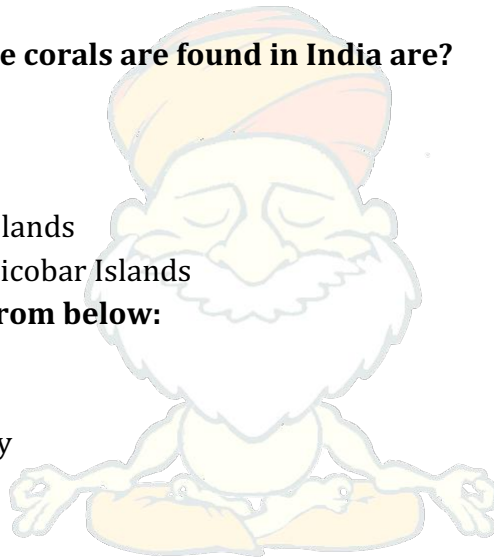
Corals are tiny animals that live in large communities made up of individual polyps that secrete a calcium carbonate substance that hardens and builds up to form the reef structure over time. The coral polyps live symbiotically with algae that provides them with their food. Disease, temperature extremes and pollution can cause corals to expel the algae, leaving only the white calcium carbonate skeleton behind, an event called coral bleaching. Coral bleaching is a worry with global warming heating up the oceans and carbon dioxide causing the oceans to acidify. Although corals exist both in temperate and tropical waters, shallow-water reefs form only in a zone extending from approximately 30° N to 30° S of the equator.

Q.40) The regions where corals are found in India are?

1. Gulf of kutch
2. Gulf of mannar
3. Ganges delta
4. Lakshadweep Islands
5. Andaman and Nicobar Islands

Choose correct option from below:

- a) 1 and 2 only
- b) 1, 2 and 3 only
- c) 1, 3, 4 and 5 only
- d) All of the above

**Q.40) Solution (c)**

Coral reefs play an important role in marine ecosystem and support the habitats of flora and fauna in the sea. Ecologically, coral reefs are important because they are the counterpart to the tropical rain forest in terms of species diversity and biological productivity in the Ocean. Coral reefs are present in the areas of Gulf of Kutch, Gulf of Mannar, Andaman & Nicobar, Lakshadweep Islands and Malvan. Corals do not survive in waters having high sediment load hence they are not found in Ganga delta.

Q.41) Which of the following is/are correct about Solid Wastes Treatment methodologies?

1. Composting is a process where microorganisms decompose degradable waste into humus.
2. Incineration is a process of combustion in absence of oxygen or the material burnt in controlled atmosphere of oxygen.

3. Pyrolysis is a process where huge amount of wastes are burnt in blast furnaces at high temperature.

Choose correct option from below:

- a) 1 and 2 only
- b) 1 only
- c) 2 and 3 only
- d) All of the above

Q.41) Solution (b)

pyrolysis	Pyrolysis is a process of combustion in absence of oxygen or the material burnt in controlled atmosphere of oxygen. It is better than incineration. Gas and liquid thus produced can be used as fuels
Incineration	Incineration is a waste treatment technology, which includes the combustion of waste for recovering energy, in huge blast furnaces. Incineration coupled with high temperature waste treatments are recognized as thermal treatments
Composting	Composting is a easy and natural bio- degradation process that takes organic wastes i.e. remains of plants and garden and kitchen waste and turns into nutrient rich food for your plants. Composting, normally used for organic farming, occurs by allowing organic materials to sit in one place for months until microbes decompose it.

Q.42) With reference to keystone species, consider the following statements:

- 1. A keystone species exhibits disproportionately large effect on its environment relative to its abundance.
- 2. The Keystone species is always a predator.

Which of the above statement is/are correct?

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

Q.42) Solution (a)

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.

A keystone species is often, but not always, a predator. Just a few predators can control the distribution and population of large numbers of prey species. **Herbivores can also be keystone species.** Their consumption of plants helps control the physical and biological aspects of an ecosystem for example elephants.

Q.43) Consider the following statements about keystone mutualists:

- 1. Keystone mutualists are two or more species that engage in mutually

- beneficial interactions
2. A change in one species would not impact the other, and change the entire ecosystem
 3. Pollinators are often keystone mutualists

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.43) Solution (b)

Keystone mutualists are two or more species that engage in mutually beneficial interactions. A change in one species **would impact the other, and change the entire ecosystem**. Keystone mutualists are often pollinators, such as bees. Pollinators often maintain gene flow and dispersal throughout widespread ecosystems.

Q.44) What is meant by the term foundation species?

- a) It is a single species on which many other species depend
- b) It is a species that plays a major role in creating or maintaining a habitat
- c) It is the organism that is very sensitive to environmental changes in its ecosystem
- d) This are the species that acts as a symbol for an environmental habitat

Q.44) Solution (b)

Option-A	Umbrella species	Umbrella species are often conflated with keystone species. Both terms describe a single species on which many other species depend. The key distinction between umbrella species and keystone species is that the value of an umbrella species is tied to its geographic species range.
Option-B	Foundation species	Foundation species are the one which play a major role in creating or maintaining a habitat
Option-C	Indicator species	An indicator species describes an organism that is very sensitive to environmental changes in its ecosystem.
Option-D	Flagship species	A flagship species acts as a symbol for an environmental habitat, movement, campaign, or issue. They can be mascots for entire ecosystems.

Q.45) Which of the following is/are known as criteria pollutants?

1. Carbon dioxide
2. Sulphur dioxide
3. Ozone

4. Nitrogen dioxide

Choose correct option from below:

- a) 1 and 2 only
- b) 2, 3 and 4 only
- c) 1 and 3 only
- d) All of the above

Q.45) Solution (b)

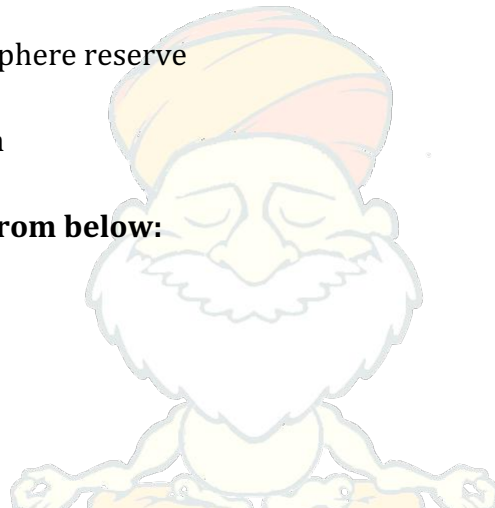
The Clean Air Act (CAA) -1970 of U.S.A, identified six common air pollutants of concern, called criteria pollutants. The criteria pollutants are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Criteria pollutants are the only air pollutants with national air quality standards that define allowable concentrations of these substances in ambient air.

Q.46) Which of the following is/are part of MAB (Man and Biosphere) Project in India

- 1. Pachmarhi Biosphere reserve
- 2. Manas resrve
- 3. Dibru-Saikhowa
- 4. Nokrek

Choose correct option from below:

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



Q.46) Solution (d)

Biosphere Reserves in UNESCO MAB list	Location	Year
Nilgiri	Tamil Nadu, Kerala, Karnataka	2000
Gulf of Mannar	Tamil Nadu	2001
Sunderbans	West Bengal	2001
Nanda Devi	Uttarakhand	2004
Nokrek	Meghalaya	2009
Panchmarhi	Madhya Pradesh	2009
Similipal	Orissa	2009
Achnakmar-Amarkantak	Madhya Pradesh	2012
Great Nicobar	Andaman and Nicobar	
Agasthyamala	Tamil Nadu	2016
Khangchendzonga	Sikkim	2018

Q.47) Consider the following in regard to the National Tiger Conservation**Authority (NTCA):**

1. The National Tiger Conservation Authority is a non-statutory body under the Ministry of Environment, Forests and Climate Change
2. NTCA has mandate within the ambit of the Wildlife (Protection) Act, 1972
3. 'Project Tiger' is a Central sector Scheme of the under ministry of Environment, Forests and Climate Change

Which of the above statement is/are incorrect?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.47) Solution (c)

The National Tiger Conservation Authority is a statutory body under the Ministry of Environment, Forests and Climate Change constituted under enabling provisions of the Wildlife (Protection) Act, 1972, as amended in 2006

'Project Tiger' is a Centrally Sponsored Scheme of the under ministry of Environment, Forests and Climate Change, providing funding support to tiger range States, for in-situ conservation of tigers in designated tiger reserve

Q.48) Biodiversity includes all living beings at different levels. Consider the following statements about different levels of Biodiversity.

1. Genetic diversity is all the different genes contained in all individual plants, animals, fungi, and microorganisms
2. Species diversity is s all the different habitats, biological communities, and ecological processes, as well as variation within individual ecosystems
3. Ecosystem diversity is all the differences within and between populations of species, as well as between different species.

Which of the above statement is/are correct?

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

Q.48) Solution (a)

Biodiversity includes all organisms, species, and populations; the genetic variation among these; and all their complex assemblages of communities and ecosystems.

- Genetic diversity is all the different genes contained in all individual plants, animals, fungi, and microorganisms. It occurs within a species as well as between species.
- Species diversity is all the differences within and between populations of species, as well as between different species.

- Ecosystem diversity is all the different habitats, biological communities, and ecological processes, as well as variation within individual ecosystems

Q.49) Just as there are many different ways to define biodiversity, there are many different measures of biodiversity. Consider the following pairs:

1. Alpha-diversity: Concerned with species richness and involves counting the number of individuals or even families – in a given area.
2. Beta- diversity: Estimates the total biodiversity within an entire region.
3. Gamma- diversity: Describing changes in biodiversity within or between ecosystems

Which of the above statement is/are correct?

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

Q.49) Solution (a)

Alpha-diversity- Measuring the diversity of a species generally incorporates estimates of “richness.” Also referred to as alpha-diversity, species richness is a common way of measuring biodiversity and involves counting the number of individuals – or even families – in a given area.

Beta-diversity - At the ecosystem-level, measures of biodiversity are often used to compare two ecosystems or to determine changes over time in a given region. Describing changes in biodiversity within or between ecosystems is called beta-diversity

Gamma-diversity - Gamma-diversity, on the other hand, estimates the total biodiversity within an entire region. To arrive at a total estimate, researchers may set up sample plots around the region and count all species within the plots.

Q.50) The loss of biodiversity is a significant issue for scientists and policy-makers. What are the threats to Biodiversity?

1. Habitat loss and destruction
2. Alterations in ecosystem composition
3. Introduction of exotic (non-native) species
4. pollution and contamination
5. Global climate change

Choose correct option from below:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 3 and 4 only
- d) All of the above

Q.50) Solution (d)

Species are becoming extinct at the fastest rate known in geological history and most of these extinctions have been tied to human activity.

1. **Habitat loss and destruction**, usually as a direct result of human activity and population growth, is a major force in the loss of species, populations, and ecosystems.
2. **Alterations in ecosystem composition**, such as the loss or decline of a species, can lead to a loss of biodiversity.
3. **The introduction of exotic (non-native)** species can disrupt entire ecosystems and impact populations of native plants or animals. These invaders can adversely affect native species by eating them, infecting them, competing with them, or mating with them.
4. The **over-exploitation** (over-hunting, over-fishing, or over-collecting) of a species or population can lead to its demise.
5. Human-generated **pollution and contamination** can affect all levels of biodiversity.
6. **Global climate change** can alter environmental conditions. Species and populations may be lost if they are unable to adapt to new conditions or relocate.

Q.51) Conservation is the protection, preservation, management, or restoration of wildlife and natural resources. With respect to modes of conservation, consider the following pairs:

1. In-situ Conservation: It is on site conservation or the conservation of genetic resources in natural populations of plant or animal species
2. Ex-Situ Conservation: It is the preservation of components of biological diversity outside their natural habitats

Which of the above pair is/are correctly matched?

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

Q.51) Solution (c)

In-situ conservation is on site conservation or the conservation of genetic resources in natural populations of plant or animal species, such as forest genetic resources in natural populations of tree species. This includes- wildlife sanctuaries, national parks, biosphere reserves.

Ex-situ conservation is the preservation of components of biological diversity outside their natural habitats. This involves conservation of genetic resources, as well as wild and cultivated or species, and draws on a diverse body of techniques and facilities. Such strategies include establishment of botanical gardens, zoos, conservation strands and gene, pollen seed, seedling, tissue culture and DNA banks.

Q.52) Which of the following are protected under Schedule I of Wildlife Protection Act, 1972?

1. Tortoise
2. Snakes
3. Elephants
4. Tigers

Choose correct option from below:

- a) 1 and 2 only
- b) 3 and 4 only
- c) 1 and 4 only
- d) All of the above.

Q.52) Solution (d)

All the above given animals are protected under the act.

There are 909 entries of taxa (including species, genus, families, orders and classes) of animals, birds and plants in the various Schedules of the Wild Life (Protection) Act, 1972. The names of protected species of animals, birds and plants in the Wild Life (Protection) Act, 1972 mentioned at Schedule 1 of Wild Life (Protection) Act, 1972 is available on the Ministry's website -www.moef.nic.in.

Q.53) Consider the following statements about different schedules under wildlife protection act-1972 (WPA)

1. Animals under schedule-1 and 2 have absolute protection
2. Schedule-3 and 4 animals are equally protected, but penalties are lower
3. Animals in schedule-5 are called as vermin, but cannot be hunted
4. Schedule-6 include protected plants and their derivatives

Which of the above statement is/are correct?

- a) 1 and 4 only
- b) 1, 2 and 3 only
- c) 1, 2 and 4 only
- d) None of the above

Q.53) Solution (c)

Statement-1 : correct	Statement-2: correct	Statement-3: incorrect	Statement-4: correct
Schedule I and part II of Schedule II provide absolute protection and offences under these are prescribed the highest penalties.	The penalties for Schedule III and Schedule IV are less and these animals are protected.	Schedule V includes the animals which may be hunted. These are Common crow , Fruit bats, Mice & Rats	Schedule VI contains the plants, which are prohibited from cultivation and planting

Q.54) Which of the following statements is/ are correct about Biosphere Reserve?

1. The entire Biosphere Reserve prohibits the entry of humans
2. Neither existing National Park nor Wildlife Sanctuary can be part of Biosphere Reserve.

Which of the above statement is/are correct?

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

Q.54) Solution (d)

Statement-1: incorrect	Statement-2: incorrect
The transition area is the part of the reserve where the greatest activity is allowed, fostering economic and human development that is socio- culturally and ecologically sustainable	The Indian government has established 18 Biosphere Reserves of India, which protect larger areas of natural habitat (than a National Park or Wildlife Sanctuary). Biosphere Reserves of India often include one or more National Parks or sanctuaries, along with buffer zones that are open to some economic uses

Q.55) Which of the following is/are correct regarding the radioactive wastes?

1. Radioactive waste produces only two types of radiation i.e. alpha and beta rays
2. Effects of radioactive pollutants depend upon half-life of the matter, energy releasing capacity and rate of diffusion.
3. Alpha rays are the strongest rays and can be blocked only through thick concrete.

Choose correct option from below:

- a) 1 only
- b) 2 only
- c) 1 and 4 only
- d) None of the above.

Q.55) Solution (b)

Statement-1: incorrect	Statement-2: correct	Statement-3: incorrect
Ionising radiation takes a few forms: Alpha, beta, and neutron particles, and gamma and X-rays.	Effects of radioactive pollutants depend upon half-life of the matter, energy releasing capacity and rate of diffusion. Lower the half-life, higher	Gamma rays are the strongest rays and can be blocked only through thick concrete.

	will be the rate of radiation. Energy releasing capacity and rate of diffusion directly increases rate of radiation	
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Q.56) Man-animal conflicts are increasing and leading to loss of animals at rapid pace. The causes for increased conflict are?

1. Land use change
2. Increased access in natural reserves
3. Habitat fragmentation
4. Livestock grazing and agri activities near conservation reserves

Choose correct option from below:

- a) 1 and 2 only
- b) 3 and 4 only
- c) 1 and 4 only
- d) All of the above.

Q.56) Solution (d)

The human population growth and expansion, habitat degradation and fragmentation, land use transformation and increasing densities of livestock grazing in protected areas are considered as major causes of man-carnivore conflicts.

Q.57) Consider the following statements about the newly notified Solid Waste Management Rules:

1. The responsibility of segregation lies on the waste collector.
2. These rules only apply to municipal areas and exclude SEZs and defence establishments

Which of the above statement is/are correct?

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

Q.57) Solution (d)

Statement-1: incorrect	Statement-2: incorrect
The Rules are now applicable beyond Municipal areas and extend to urban agglomerations, census towns, notified industrial townships, areas under the control of Indian Railways, airports, airbase, Port and harbour, defence establishments, special economic zones, State and Central government	The onus of segregation lies on the generators. Responsibilities of Generators have been introduced to segregate waste in to three streams, Wet (Biodegradable), Dry (Plastic,

organizations, places of pilgrims, religious & historical importance.

Paper, metal, wood, etc.) and domestic hazardous waste.

Q.58) Consider the following statements about protected area network (PAN) in India.

1. In Sanctuary is Certain rights of people living inside the Sanctuary could be permitted
2. In national parks, No rights of people are allowed
3. The rights of people living inside a Conservation Reserve are affected.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above.

Q.58) Solution (b)

Sanctuary	National parks	Conservation reserve
The Sanctuary is declared for the purpose of protecting, propagating or developing wildlife or its environment. Certain rights of people living inside the Sanctuary could be permitted.	The difference between a Sanctuary and a National Park mainly lies in the vesting of rights of people living inside. Unlike a Sanctuary, where certain rights can be allowed, in a National Park, no rights are allowed.	Conservation Reserves can be declared by the State Governments in any area owned by the Government, particularly the areas adjacent to National Parks and Sanctuaries. The rights of people living inside a Conservation Reserve are not affected.

Q.59) The ministry of Environment, forest and climate change is nodal agency of the following:

1. International centre for integrated mountain development.
2. Global environment facility
3. Economic and social council for Asia and Pacific

Choose correct option from below:

- a) 1 only
- b) 1 and 2 only
- c) 2 only
- d) All of the above.

Q.59) Solution (d)

Explanation: The Ministry of Environment, Forest and Climate Change (MoEF&CC) is the nodal agency in the central government for overseeing the implementation of

India's environment and forest policies and programmes relating to conservation of the country's natural resources.

It is nodal agency for the United Nations Environment Programme (UNEP), International Centre for Integrated Mountain Development (ICIMOD) and the United Nations Conference on Environment and Development (UNCED). The Ministry also coordinates with multilateral bodies, such as the Commission on Sustainable Development (CSD), Global Environment Facility (GEF) and regional bodies such as Economic and Social Council for Asia and Pacific (ESCAP).

Q.60) India recently conducted elephant census. In this context consider the following statements:

1. Project elephant was launched in 1991-92 to protect elephants, Habitats and corridors.
2. India agreed on points of action for trans-boundary conservation of elephants with Bangladesh.
3. Elephant population increased by 5% from census-2012 to census-2017

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.60) Solution (b)

Statement-1: correct	Statement-2: correct	Statement-3: incorrect
Project Elephant (PE) was launched by the Government of India in 1991-92 as a centrally sponsored scheme with the objectives to protect elephants, their habitat and corridors; to address issues of man-animal conflict; and welfare of domesticated elephants	Indian government also Agreed Points of Action on Trans-Boundary Conservation of Elephants by India and Bangladesh and a document titled 'Right of Passage' on elephant corridors in India. A compilation, 'Glimpses of Initiatives Taken for Elephant Conservation in India (2012-2017) based on Parliamentary Questions and Replies' by ENVIS Centre, WWF-India and the Project Elephant Division, MoEF&CC, was also	The union environment ministry released the result of the Elephant Census 2017, which pegged their population at 27, 312 across 23 states. The population has decreased by about 3,000, compared to last census in 2012.

	released.	
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Q.61) According to Greenpeace India report, India is the largest emitter of Sulphur dioxide in the world. Consider the following statements:

1. More than 15 % of all the anthropogenic SO₂ hotspots are in India, as detected by the NASA OMI (Ozone Monitoring Instrument) satellite.
2. Majority of emission is because of coal burning
3. Deadline for the installation of flue-gas desulphurisation (FGD) in power plants has been extended from 2017 to 2025.

Which of the above statement is/are correct?

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

Q.61) Solution (a)

A new report by Greenpeace India shows, India is the largest emitter of sulphur dioxide in the world. The report also includes NASA's data on the largest point sources of sulphur dioxide.

- More than 15% of all the anthropogenic SO₂ hotspots are in India, as detected by the NASA OMI (Ozone Monitoring Instrument) satellite.
- Almost all of these emissions are because of coal-burning.
- To combat pollution levels, the MoEFCC introduced SO₂ emission limits for coal-fired power plants in 2015.
- But the deadline for the installation of flue-gas desulphurisation (FGD) in power plants **has been extended from 2017 to 2022.**

Q.62) As India grows and urbanizes, its water bodies are getting toxic. Which of the below statement is/are correct with respect to water pollution in India.

1. It's estimated that around 70% of surface water in India is unfit for consumption.
2. The Central Pollution Control Board (CPCB), non- statutory organization is entrusted with the responsibility of water pollution control
3. Increased Water pollution can reduce agricultural productivity and the GDP growth of India

Choose the correct option from below:

- a) 1 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) All of the above.

Q.62) Solution (c)

Statement-1: correct	Statement-3: correct	Statement-2: incorrect
It's estimated that around 70% of surface water in India is unfit for consumption. Every day, almost 40 million litres of wastewater enters rivers and other water bodies with only a tiny fraction adequately treated.	A recent World Bank report suggests that such a release of pollution upstream lowers economic growth in downstream areas, reducing GDP growth in these regions by up to a third. Another study estimates that being downstream of polluted stretches in India is associated with a 9% reduction in agricultural revenues and a 16% drop in downstream agricultural yields.	CPCB is statutory body. Principal Functions of the CPCB, as spelt out in the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981, (i) to promote cleanliness of streams and wells in different areas of the States by prevention, control and abatement of water pollution, and (ii) to improve the quality of air and to prevent, control or abate air pollution in the country.

Q.63) Consider the following statements with reference to The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

1. FRA act, address the livelihood security of the people, as well as addresses conservation and management governance in India
2. FRA act recognises Community Rights or rights over common property resources of the communities but not individual rights.
3. FRA secures Right to intellectual property and traditional knowledge related to biodiversity and cultural diversity

Which of the above statement is/are correct?

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

Q.63) Solution (c)

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 is a result of the protracted struggle by the marginal and tribal communities of our country to assert their rights over the forestland over which they were traditionally dependent.

SIGNIFICANCE OF THE ACT: For the first time Forest Rights Act recognises and secures

1. Community Rights or rights over common property resources of the communities in **addition to their individual rights**
2. Rights in and over disputed land Rights of settlement and conversion of all forest

villages, old habitation, un-surveyed villages and other villages in forests into revenue villages

3. Right to protect, regenerate or conserve or manage any community forest resource which the communities have been traditionally protecting and conserving for sustainable use.
4. Right to intellectual property and traditional knowledge related to biodiversity and cultural diversity
5. Rights of displaced communities
6. Rights over developmental activities

Q.64) With reference to the Woods in Good Campaign, consider the following statements:

1. It is to strengthen capacity for REDD (Reducing Emissions from Deforestation and Forest Degradation) implementation in India.
2. It is the initiative of Ministry of Environment, Forest and Climate Change

Which of the above statement is/are incorrect?

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

Q.64) Solution (d)

The Union Ministry of Environment and Forests and Climate Change (MoEFCC) has launched “Wood is Good” Campaign under Partnership for Land Use Science (Forest-Plus).

It was launched on sidelines of two-day conference on “Sustainable landscapes and forest ecosystems: Theory to Practice” in New Delhi.

The purpose of campaign is to promote wood as climate-friendly resource and substitute to materials like steel and plastic as it is carbon neutral unlike others materials which leave carbon footprint in their production.

Q.65) The IPCC has released its Special Report titled “Global Warming of 1.5°C”. Consider the following statements with reference to the report:

1. Human- induced global warming in 2017 has already reached 2°C above pre-industrial levels
2. Coral reefs would decline by 70-90 percent with global warming of 1.5°C, whereas virtually all (> 99 percent) would be lost with 2°C.
3. Oceans have absorbed 90% of the anthropogenic temperature rise.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above.

Q.65) Solution (c)

Key findings of the Report:

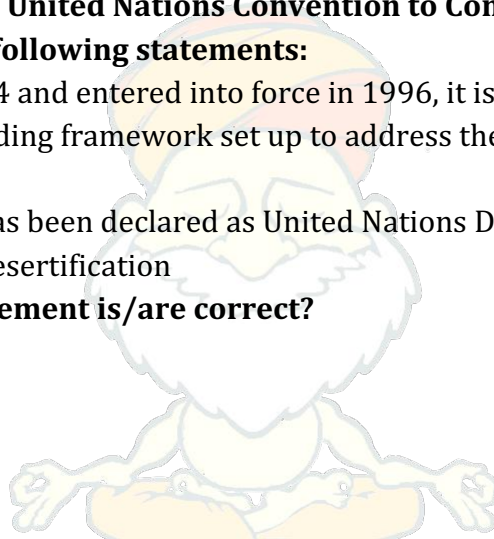
1. Present global warming status: Human- induced global warming in 2017 has already reached 1°C above pre-industrial levels;
2. Impacts of global warming at 1.5°C: World would witness greater sea level rise, increased precipitation and higher frequency of droughts and floods, hotter days and heatwaves, more intense tropical cyclones, and increased ocean acidification and salinity.
3. Coral reefs would decline by 70-90 percent with global warming of 1.5°C, whereas virtually all (> 99 percent) would be lost with 2°C
4. According to IPCC Fifth Report, world's oceans have absorbed 90% of the temperature rise caused by man-made carbon emissions, while only 1% in the atmosphere

Q.66) With reference to United Nations Convention to Combat Desertification (UNCCD), Consider the following statements:

1. Adopted in 1994 and entered into force in 1996, it is the only internationally legally non- binding framework set up to address the problem of desertification
2. 2020 to 2030 has been declared as United Nations Decade for Deserts and the Fight Against Desertification

Which of the above statement is/are correct?

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



Q.66) Solution (d)

United Nations Convention to Combat Desertification (UNCCD):

1. Adopted in 1994 and entered into force in 1996, it is the **only internationally legally binding framework** set up to address the problem of desertification.
2. The Convention addresses specifically the arid, semi-arid and dry sub-humid areas, known as the drylands.
3. UNCCD 2018-2030 Strategic Framework has been launched to improve the condition of affected ecosystems, combat desertification/land degradation and to improve the living conditions of affected populations.
4. **2010 to 2020 has been declared as United Nations Decade** for Deserts and the Fight Against Desertification

Q.67) The conventions under Global environment financial mechanism includes:

1. Minamata convention

2. Montreal protocol
3. The Rotterdam Convention
4. UNCBD
5. UNCCD

Choose correct option from below:

- a) 1 and 3
- b) 2 and 3
- c) 3, 4 and 5
- d) All of the above

Q.67) Solution (d)

Environmental Conventions under GEF financial mechanism:

- Convention on Bio diversity (CBD)
- Convention to combat desertification (UNCCD)
- Framework convention on climate change (UNFCCC)
- Stockholm Convention on Persistent Organic Pollutants
- Minamata Convention
- Montreal Protocol (provides support)
- Basel and the Rotterdam conventions

Q.68) Consider the following statements with respect to Indian Rhino Vision (IRV) 2020:

1. Launched in 2005, with the Assam Forest Department, the Bodoland Territorial Council, the World Wide Fund for Nature (WWF).
2. Indian Rhino Vision 2020 is an ambitious effort to attain a wild population of at least 5,000 greater one-horned rhinos spread over seven protected areas in the Indian state of Assam by the year 2020.

Which of the above statement is/are correct?

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

Q.68) Solution (a)

Launched in 2005, Indian Rhino Vision 2020 is an ambitious effort to attain a wild population **of at least 3,000 greater one-horned rhinos** spread over seven protected areas in the Indian state of Assam by the year 2020.

IRF has partnered with the Assam Forest Department, the Bodoland Territorial Council, the World Wide Fund for Nature (WWF), and the US Fish & Wildlife Service to address the threats facing Indian rhinos. moving rhinos from overcrowded areas, like Kaziranga National Park and Pabitora Wildlife Sanctuary, to other protected areas where they can breed. Along with continuing strict protection and community engagement, spreading

Indian rhinos out among more protected areas will create a larger, safer, and more stable population.

Q.69) Consider the following statements about Green climate fund:

1. It was set up by the United Nations Framework Convention on Climate Change (UNFCCC) in 2015
2. GCF has a crucial role in serving the Paris Agreement, supporting the goal of keeping average global temperature rise well below 2 degrees C
3. GCF launched its initial resource mobilisation in 2014, and rapidly gathered pledges worth USD 10.3 billion.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above.

Q.69) Solution (c)

The Green Climate Fund (GCF) is the world's largest dedicated fund helping developing countries reduce their greenhouse gas emissions and enhance their ability to respond to climate change. It was set up by the United Nations Framework Convention on Climate Change (**UNFCCC**) in **2010**. GCF has a crucial role in serving the Paris Agreement, supporting the goal of keeping average global temperature rise well below 2 degrees C. It does this by channelling climate finance to developing countries, which have joined other nations in committing to climate action.

GCF launched its initial resource mobilisation in 2014, and rapidly gathered pledges worth USD 10.3 billion. These funds come mainly from developed countries, but also from some developing countries, regions, and one city.

Q.70) Consider the following statements:

1. World Wide Fund for Nature is working for the reduction of humanity's footprint on environment.
2. The World Wide Fund for Nature (WWF) is an international governmental organization.
3. The living planet report is published every year by World Wide Fund for Nature.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 4 only
- d) All of the above.

Q.70) Solution (a)

- WWF is an international non-governmental organization founded in 1961.
- It is working in the field of the wilderness preservation, reduce the most pressing threats to the diversity of life on Earth and the reduction of humanity's footprint on the environment.
- Living planet report is published every two years by wwf.

Q.71) Consider the following statements about Energy Conservation Building Code 2017:

1. It is developed by ministry of power and Bureau of energy efficiency
2. It aims to achieve energy neutrality in commercial buildings only
3. Energy Conservation Act 2001 provides legal framework and institutional set-up for energy efficiency policy, including Energy Conservation Building Code.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.71) Solution (d)

Energy Conservation Act 2001 provides legal framework and institutional set- up for energy efficiency policy, including Energy Conservation Building Code

- Applies to new commercial buildings with a connected load of 100 kW & more or contract demand of 120 kVA or more;
- Introduces passive design features such as daylight requirements and shading provisions;
- Introduces provisions of installing Renewable Energy Systems;
- Sets minimum energy efficiency standards for design and construction;
- Encourages energy efficient design or retrofit of buildings;
- Pathway toward Near Zero Energy Buildings

ECBC 2017 sets three Tiers of Building Energy Performance:

1. ECBC (requires 25% less energy than typical building);
2. ECBC+ (requires 35% less energy than typical building);
3. Super ECBC (requires 50% less energy than typical building).

The updated version of ECBC provides current as well as futuristic advancements in building technology to further reduce building energy consumption and promote low-carbon growth.

Q.72) Match the following pairs:

1. Ramsar convention: Conservation of wetlands
2. Bonn Convention: Conservation of migratory species
3. Vienna convention: protection of ozone layer
4. Cartegena protocol: related to trans-boundary movement of hazardous waste
5. Basel convention: safe handling of living modified organisms

Which of the above is/are correctly matched?

- 1 and 2 only
- 2 and 4 only
- 1, 2 and 3 only
- None of the above

Q.72) Solution (c)

Many conventions, protocols and programmes are initiated by many world organizations for conservation of environment.

Ramsar convention:	The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. By UNESCO
Bonn Convention:	The Convention on the Conservation of Migratory Species of Wild Animals aims to “conserve terrestrial, marine and avian migratory species throughout their range.”
Vienna convention:	The convention was adopted on 22nd March, 1985 by the conference of The Vienna Convention for the Protection of the Ozone Layer is a Multilateral Environmental Agreement.
Cartegena protocol:	The main objective of the Protocol is to ensure safe transfer. Handling and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effect on the conservation and sustainable use biological diversity, taking into account risk to human health.
Basel convention:	The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

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Q.73) Government of India has launched many conservation efforts to save Biodiversity. Arrange the following projects in ascending order:

- Project Tiger
- Project Elephant
- Project Cheetah

4. Indian Bustard conservation plan

Choose correct option from below:

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

Q.73) Solution (c)

Project Tiger (1973): It's a centrally Sponsored Scheme for in-situ conservation of wild tigers in designated tiger reserves

Project Cheetah: Launched In 2009 and Kuno Wildlife Sanctuary (MP) and Shahgarh area in Rajasthan were identified as other two sites for cheetah reintroduction plan

Project Elephant: It was launched in the year 1992 as a Centrally Sponsored Scheme. To protect elephants, their habitat & corridors; to address issues of man-animal conflict and welfare of captive elephants.

Indian Bustard conservation: Union Ministry of Environment and Forests (MoEF) prepared a species recovery programme for the Great Indian Bustard in **January 2018**.

Q.74) EnviStats India report is released by:

- a) Ministry of Environment, forest and climate change.
- b) Ministry of Statistics and Programme Implementation
- c) IUCN
- d) CITES

Q.74) Solution (b)

EnviStats India 2019 report by the Ministry of Statistics and Programme Implementation (MOSPI), revealed that India's economic growth took a toll on its natural assets like forests, food and clean air.

The average growth rate of gross state domestic product (GSDP) during 2005-15 for almost all the states was around 7-8 per cent but 11 states registered a decline in their natural capital.

Q.75) Consider the following statements about Biodiversity Act (BDA), 2002:

1. Main objective is conservation, sustainable use and Benefit sharing.
2. Under BDA-2002, a company is required to share 0.5 per cent of its sales post taxes if its annual turnover is above Rs 10 crore.

Which of the above pairs is/are correct?

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

Q.75) Solution (a)

Biodiversity Act (BDA), 2002:

India being a signatory to CBD, enacted the Biodiversity Act in 2002, with three main objectives:

- Conservation of biological diversity.
- Sustainable use of its components.
- Equitable sharing of benefits arising out of the use of biological resources.

Act recognises the role and participation needs of ILCs in conserving the biological resources. Under it, a company is required to share **0.5 per cent** of its sales post taxes if its annual turnover is above **Rs 3 crore**.

It also provides for the involvement of ILCs through biodiversity management committee (BMCs) in preparation of people's biodiversity registers (PBRs) and issuance of mutually agreed terms (MAT)

Q.76) Consider the following statements:

1. Reducing Emission from Deforestation (RED) was introduced by India at COP-12-Nairobi
2. 'Compensated Conservation' policy was Introduced in COP-11, montreal
3. REDD+ framework was agreed at COP-19- Warsaw

Which of the above statement is/are incorrect?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 4 only
- d) All of the above.

Q.76) Solution (b)

COP 11, 2005 at Montreal	Coalition of 9 rainforest nations sought attention to growing threat of deforestation and introduced concept of Reducing Emission from Deforestation (RED)
COP 12, 2006 at Nairobi	'Compensated Conservation' policy introduced by India intended to compensate countries for maintaining and increasing carbon pools of their forests.
COP 13, 2007 at Bali	'Compensated Conservation' policy approach finally recognized
COP 16, 2010 at Cancun	Official entry of REDD as a UNFCCC-enabled mitigation mechanism
COP 19, 2013 at Warsaw	It agreed on Warsaw REDD+ framework

Q.77) protection of plant varieties and farmers' rights (ppv&fr) act, 2001 Aims at:

1. Recognize and protect the rights of farmers and breeders also

2. To accelerate agricultural development in the country
3. Facilitate the growth of seed industry in the country

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.77) Solution (d)

PROTECTION OF PLANT VARIETIES AND FARMERS' RIGHTS (PPV&FR) ACT, 2001

Objective:

- To recognize and protect the rights of farmers in respect of their contributions made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties.
- To accelerate agricultural development in the country, protect plant breeders' rights; stimulate investment for research and development both in public & private sector for the development new of plant varieties.
- Facilitate the growth of seed industry in the country, to ensure the availability of high quality seeds and planting material to the farmers

Q.78) Consider the following:

1. In colonial model of conservation, human presence is taken as threat to nature and denies indigenous peoples' rights and provoked long-term social conflict.
2. Cultural model of Conservation respect the rights of indigenous peoples and other bearers of "traditional knowledge" and prevents social conflicts.
3. World Network of Biosphere Reserve (WNBR) resolution provides international recognition to cultural model of conservation.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.78) Solution (b)

- **Colonial Model of Conservation:** In this model, human presence is taken as threat to nature and denies indigenous peoples' rights and provoked long-term social conflict.
- **Cultural model of Conservation:** It respect for the rights of indigenous peoples and other bearers of "traditional knowledge" and prevents social conflicts.
- **The Kinshasa Resolution of 1975** (under IUCN) provides international recognition to cultural model of conservation.

Q.79) Momentum for Change is initiative of

- a) UNFCCC
- b) IUCN
- c) CITES
- d) World Bank

Q.79) Solution (a)

Momentum for Change is an initiative spearheaded by the UN Climate Change secretariat to shine a light on the enormous groundswell of activities underway across the globe that are moving the world toward a highly resilient, low-carbon future. Momentum for Change recognizes innovative and transformative solutions that address both climate change and wider economic, social and environmental challenges.

Q.80) Consider the following statements:

1. The restructured National Bamboo Mission (NBM) has been launched in 2016-17
2. NBM aims to increase the area under bamboo plantation in forest - Government and private lands.
3. NBM aims to promote product development keeping in view market demand

Which of the above statement is/are incorrect?

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

Q.80) Solution (b)

The restructured National Bamboo Mission (NBM) has been **launched in 2018-19** to focus on the development of complete value chain of bamboo sector and link growers with markets. Major objectives of the Mission are:

- To increase the area under bamboo plantation in **non -forest** Government and private lands to supplement farm income and contribute towards resilience to climate change as well as availability of quality raw material for industries.
- To improve post-harvest management through establishment of innovative primary processing units near the source of production, primary treatment and seasoning plants, preservation technologies and market infrastructure.
- To promote product development keeping in view market demand, by assisting R&D, entrepreneurship & business models at micro, small and medium levels and feed bigger industry.
- To rejuvenate the under developed bamboo industry in India.
- To promote skill development, capacity building, awareness generation for development of bamboo sector from production to market demand.
- To re-align efforts so as to reduce dependency on import of bamboo and bamboo products by way of improved productivity and suitability of domestic raw material for industry, so as to enhance income of the primary producers.

Q.81) Which of the below are atmospheric hazards?

1. Tropical cyclones
2. Thunderstorms
3. Snow avalanches
4. Hailstorms

Choose correct option from below:

- a) 1 and 2 only
- b) 1, 2 and 4 only
- c) 1, 2 and 3 only
- d) All of the above

Q.81) Solution (d)

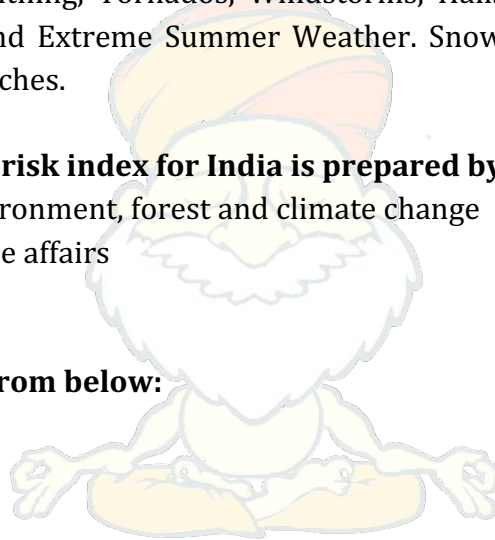
Phenomena associated with certain weather-generated events are grouped as atmospheric hazards. The individual hazards included are: Tropical Cyclones, Thunderstorms and Lightning, Tornados, Windstorms, Hailstorms, Snow Avalanches, Severe Winter storms and Extreme Summer Weather. Snowfall from a severe winter storm can prompt avalanches.

Q.82) National disaster risk index for India is prepared by?

1. Ministry of environment, forest and climate change
2. Ministry of home affairs
3. UNDP
4. NDMA

Choose correct option from below:

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

**Q.82) Solution (b)**

The Union ministry of Home Affairs with the support of United Nations Development Programme (UNDP) have prepared for the first time a national disaster risk index for India. It mapped hazards and vulnerabilities including economic vulnerabilities across 640 districts and all states including UTs. The index factors in exposure of population, agriculture and livestock and environmental risk.

Q.83) Consider the following statements:

1. The Sendai Framework is the successor instrument to the Hyogo Framework for Action (HFA) 2005-2015
2. It aims to prevent, reduce and mitigate only natural disasters
3. The Sendai Framework was the first international, binding agreement adopted within the context of the post- 2015 development agenda.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.83) Solution (a)

Statement-1: correct	Statement-2: incorrect	Statement-3: incorrect
Sendai Framework for Disaster Risk Reduction 2015-2030 (hereafter "Sendai Framework") adopted at the Third UN World Conference in Sendai, Japan, on March 18, 2015 (UNISDR 2015a) as the successor instrument to the Hyogo Framework for Action 2005-2015.	The Sendai framework will apply to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or manmade hazards as well as related environmental, technological and biological hazards and risks. It aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors.	It is a non-binding agreement , which the signatory nations, including India, will attempt to comply with on a voluntary basis.

Q.84) Consider the following statements with respect to State disaster response fund:

1. The Central Government contributes 50% of SDRF allocation for general category States/UTs and 90% for special category States.
2. A State Government may use up to 25 percent of the funds available under the SDRF for providing immediate relief for, they consider to be 'disasters' within the local context in the State and which are not included in the notified list of disasters.

Which of the above statement is/are correct?

- e) 1 only
- f) 2 only
- g) Both 1 and 2
- h) Neither 1 nor 2

Q.84) Solution: (d)

The State Disaster Response Fund (SDRF), constituted under Section 48 (1) (a) of the Disaster Management Act, 2005, is the primary fund available with State Governments

for responses to notified disasters. The Central Government contributes **75% of SDRF** allocation for general category States/UTs and 90% for special category States/UTs (NE States, Sikkim, Uttarakhand, Himachal Pradesh, Jammu and Kashmir).

Local Disaster: A State Government may use up to **10 percent** of the funds available under the SDRF for providing immediate relief to the victims of natural disasters that they consider to be 'disasters' within the local context in the State and which are not included in the notified list of disasters of the Ministry of Home Affairs.

Q.85) Consider the following statements:

1. Disasters covered under SDRF are Cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloudburst, pest attack, frost and cold waves.
2. Ministry of Home affairs monitors relief activities for all the notified disasters

Which of the above statement is/are correct?

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

Q.85) Solution (a)

Disaster (s) covered under SDRF: Cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloudburst, pest attack, frost and cold waves.

Department of Agriculture and Cooperation under **Ministry of Agriculture (MoA)** monitors relief activities for calamities associated with drought, hailstorms, pest attacks and cold wave /frost while rest of the natural calamities are monitored by Ministry of Home Affairs.

Q.86) Advance informed Agreement (AIA) procedure is related with?

- a) Basel convention
- b) Cartagena protocol
- c) Rotterdam convention
- d) Nagoya protocol

Q.86) Solution (b)

The **Cartagena Protocol on Biosafety** to the Convention on Biological Diversity is an international treaty governing the movements of living modified organisms (LMOs) resulting from modern biotechnology from one country to another.

It establishes an advance informed agreement (AIA) procedure for ensuring that countries are provided with the information necessary to make informed decisions before agreeing to the import of such organisms into their territory.

Q.87) The Faith for Earth Initiative is launched by?

- a) IPCC

- b) UN Environment
- c) WHO
- d) FAO

Q.87) Solution (b)

UN Environment launched the Faith for Earth Initiative in November 2017. The goal of Faith for Earth is to strategically engage with faith-based organizations and partner with them to collectively achieve the Sustainable Development Goals (SDG) and fulfill the objectives of the 2030 Agenda.

Faith for Earth has three main goals: to inspire and empower faith organizations and their leaders to advocate for protecting the environment, to green faith-based organizations' investments and assets to support the implementation of SDGs, and to provide them with knowledge and networks to enable their leaders to effectively communicate with decision-makers and the public.

Q.88) WEBINAR: Pesticide registration toolkit is maintained by?

- a) UN Environment
- b) WHO
- c) FAO
- d) UNESCO

Q.88) Solution (c)

The FAO Pesticide Registration Toolkit is a decision support system for pesticide registration authorities in low- and middle income countries, designed to assist in the evaluation and authorization of pesticides. It provides links to many pesticide-specific information sources such as registrations in other countries, scientific reviews, hazard classifications, labels, MRLs and pesticide properties. Various modules of Pesticide Registration Toolkit can be of use to those involved in the implementation of the Rotterdam Convention, in particular the Designated National Authorities (DNAs).

Q.89) Industrial chemicals and Pesticides have become Health and Environmental hazards. With reference to this consider the following statements:

1. Rotterdam convention covers pesticides and industrial chemicals that have been banned or severely restricted
2. Rotterdam convention is legally non-binding obligations for the controlling of chemicals and pesticides
3. Prior Informed Consent (PIC) is related with Rotterdam convention

Which of the above statement is/are correct?

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

Q.89) Solution (c)

The text of the Rotterdam Convention was adopted on 10 September 1998 by a Conference of Plenipotentiaries in Rotterdam, the Netherlands. The Convention entered into force on 24 February 2004.

The objectives of the Convention are:

- To promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm;
- To contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.

The Convention creates **legally binding obligations for the implementation of the Prior Informed Consent (PIC) procedure**. It built on the voluntary PIC procedure, initiated by UNEP and FAO in 1989 and ceased on 24 February 2006.

Q.90) International Day for Biological Diversity is observed on?

- a) 21st May
- b) 22nd May
- c) 23rd May
- d) 22nd June

Q.90) Solution (b)

The United Nations has proclaimed May 22, The International Day for Biological Diversity (IDB) to increase understanding and awareness of biodiversity issues. When first created by the Second Committee of the UN General Assembly in late 1993, 29 December (the date of entry into force of the Convention of Biological Diversity), was designated The International Day for Biological Diversity.

Q.91) In the context of sustainable development Goals, Which of the below are crucial to achieve SDG'S?

1. Livestock farming
2. The loss of diverse diets
3. Marine conservation
4. Use of indigenous food crops in Agriculture

Choose correct option from below:

- e) 1 and 3 only
- f) 1, 3 and 4 only
- g) 2, 3 and 4 only
- h) All of the above.

Q.91) Solution (b)

The loss of diverse diets is directly linked to diseases or health risk factors, such as diabetes, obesity and malnutrition, and has a direct impact on the availability of traditional medicines. Thus this is a hurdle in achieving SDG'S.

Indigenous crops are helpful to mitigate the impact of climate change and more nutritious thus help in increased food production

Livestock farming and Marine resource (Fish) provide livelihood for millions thus important for achieving SDG targets.

Q.92) Bioremediation is a Technique used to clear pollutants through Biodegradation using Microbes. Which of the following are salient features of Bioremediation?

1. It is cost effective. No construction or additional infrastructure is required.
2. The microbial consortia used, exhibit growth at narrow temperature range
3. Control the nutrient level in water thus help in controlling “Eutrophication” process.

Which of the above statement is/are correct?

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

Q.92) Solution (c)

Bioremediation is the use of living microorganisms to degrade the environmental contaminants into less toxic forms. It uses naturally occurring bacteria and fungi or plants to degrade or detoxify substances hazardous to human health and/or the environment. The microorganisms may be indigenous to a contaminated area or they may be isolated from elsewhere and brought to the contaminated site.

Salient features:

- It is cost effective. No construction or additional infrastructure is required.
- These microbes are effective in controlling odour, reducing TSS, BOD, oil/ grease accumulation in sewage/ polluted water and solids.
- **These microbial consortia exhibit growth at wider temperature range**
- These strains maintains a satisfactory level of DO and therefore aerators, which consume high power can be avoided or its use can be reduced.
- Control the nutrient level in water thus help in controlling “Eutrophication” process.

Q.93) Consider the following statements:

1. In situ bioremediation involves the treatment of the contamination on site.
2. Ex situ bioremediation involves the physical extraction of the contaminated media to another location for treatment

Which of the above statement is/are incorrect?

- a) 1 only

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

Q.93) Solution (d)

Statement-1: correct	Statement-2: correct
In situ bioremediation involves the treatment of the contamination on site. In the case of soil contamination, in situ bioremediation involves the addition of mineral nutrients. These nutrients increase the degradation ability of the microorganisms that are already present in the soil.	Ex situ bioremediation involves the physical extraction of the contaminated media to another location for treatment. If the contaminants are just in the soil, the contaminated soil is excavated and transported for treatment. If the contamination has reached the groundwater, it must be pumped and any contaminated soil must also be removed.

Q.94) Match the following pairs:

Method	Characteristics
--------	-----------------

1. Microbial bioremediation : Uses microorganisms to break down contaminants by using them as a food source
2. Bioventing : Uses fungi's digestive enzymes to break down contaminants such as pesticides, hydrocarbons, and heavy metals.
3. Phytoremediation : Uses plants to bind, extract, and clean up pollutants such as pesticides, petroleum hydrocarbons, metals, and chlorinated solvents.
4. Mycoremediation : Blowing air from the atmosphere into the contaminated soil.

Which of the above is/are correctly matched?

- a) 1 and 2 only
- b) 1 and 4only
- c) 1 and 3 only
- d) All of the above

Q.94) Solution (c)

Microbial bioremediation	This uses microorganisms to break down contaminants by using them as a food source.
Bioventing	This consists of blowing air from the atmosphere into the contaminated soil. First, injection wells must be dug into the contaminated soil.
Phytoremediation	This uses plants to bind, extract, and clean up pollutants such as pesticides, petroleum hydrocarbons, metals, and

	chlorinated solvents.
Mycoremediation	This uses fungi's digestive enzymes to break down contaminants such as pesticides, hydrocarbons, and heavy metals.

Q.95) Moving towards renewable energy is crucial to achieve climate agreement targets. In the context of this, consider the following statements about Biofuels:

1. Third generation Biofuels uses non-food crops for biofuel production
2. Biodiesel is alcohol produced from fermentation of crops and their by-products
3. Biogas is produced by anaerobic digestion of inorganic materials
4. Rajasthan has become the first State in the country to implement the national policy on biofuels.

Which of the above statement is/are incorrect?

- a) 1 and 2 only
- b) 2 only
- c) 1, 2, and 3 only
- d) All of the above

Q.95) Solution (c)

Rajasthan has become the first State in the country to implement the national policy on biofuels.

First generation biofuel	It uses the food crops like wheat and sugar for making ethanol and oil seeds for bio diesel by conventional method of fermentation.
Second generation biofuel	It uses non-food crops and feedstock such as Jatropha, wood, grass, seed crops, organic waste.
Third Generation Biofuels	It uses specially engineered Algae whose biomass is converted into biofuels.
Fourth Generation biofuel	It aims at not only producing sustainable energy but also a way of capturing and storing CO ₂ .

Bio ethanol	It is an alcohol produced from fermentation of carbohydrate and cellulosic material of crops and other plants and grasses.
Bio Diesel	It is a methyl or methyl ester of fatty acids produced by transesterification of oils and fats obtained from plants and animals.
Bio gas	Biogas (primarily a mixture of methane and other gases like CO ₂ and N ₂) is produced by anaerobic digestion of organic materials
Biojet	It is a type of biofuel which are produced from biomass resources and used in place of, or blended with air turbine fuel.

Q.96) What are the Advantages of offshore wind power over the onshore wind power?

1. Greater area for setting up large projects and higher wind speed
2. Inconsistent wind speed
3. Close to load centers

Choose correct option from below:

- a) 3 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.96) Solution (c)

Offshore wind power is the use of wind farms constructed in bodies of water, usually in the ocean on the continental shelf, to harvest wind energy to generate electricity

Advantages of offshore wind power over the onshore wind power:

- Greater area for setting up large projects and higher wind speed resulting in higher electricity generation per amount of capacity installed.
- **Consistent wind speed:** The effective use of wind turbine generating capacity will be higher at sea than on land.
- Close to load centers: The off-shore wind farms are usually located near to the cities and load centers thus transmission losses are minimised.
- Less visual impact: As these sites are located far from land they have less visual impact which helps with public acceptance issues.
- Environmental impact: low global warming potential per unit of electricity generated, comparable to that of onshore wind farms.

Q.97) Sustainable agriculture is a concept that involves:

1. Mimic natural ecological processes
2. Minimize tilling and water use
3. Integrating croplands with livestock grazing
4. Reliance on monoculture
5. Avoid pesticide use and reliance on Bio-control

Choose correct option from below:

- a) 1, 3 and 4 only
- b) 1, 2 and 4 only
- c) 1, 2, 3 and 5 only
- d) All of the above

Q.97) Solution (c)

The concept of sustainable agriculture embraces a wide range of techniques, including organic, free-range, low-input, holistic, and biodynamic.

The common thread among these methods is an embrace of farming practices that mimic natural ecological processes. Farmers minimize tilling and water use, encourage healthy soil by planting fields with different crops year after year and integrating croplands with livestock grazing, and avoid pesticide use by nurturing the presence of organisms that control crop-destroying pests.

Current Industrial approach to agriculture involves: Reliance on monoculture, mechanization, chemical pesticides and fertilizers, biotechnology, Which are not sustainable

Q.98) Consider the following statements about Compensatory Afforestation Fund Management and Planning Authority (CAMPA):

1. NCAFMPA or CAMPA has been created under the Compensatory Afforestation Fund Act 2016
2. It establishes national and state compensatory afforestation funds
3. The National Fund will receive 25% and the State Funds will receive the remaining 75% of this funds.

Which of the above statement is/are correct?

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

Q.98) Solution (b)

NCAFMPA has been created under the Compensatory Afforestation Fund Act 2016.

It established National Compensatory Afforestation Fund (NCAF) under the Public account of India and State Compensatory Afforestation Funds under public accounts of states.

The National Fund will receive 10% of these funds, and the State Funds will receive the remaining 90%.

These funds will receive payments for: Compensatory afforestation, Net present value of forest (NPV), Other project specific payments.

Q99) The reason for slow growth of agricultural production in India are:

1. Lack of awareness about the treatment of crops
2. Low irrigation facilities
3. Use of chemical Fertilizers
4. Limited access to modern farming technology

Choose correct option from below:

- a) 1 and 2 only
- b) 1, 2 and 4 only
- c) 1, 3 and 4 only
- d) All of the above.

Q.99) Solution (b)

The Rice and cereal yield per hectare in the country is low, lagging far behind countries such as China, Japan and the US. The slow growth of agricultural production in India can be attributed to an inefficient rural transport system, lack of awareness about the treatment of crops, limited access to modern farming technology and the shrinking agricultural land due to urbanization. Add to that, an irregular monsoon and the fact that 63% of agricultural land is dependent on rainfall further increase the difficulties we face.

Q.100) Climate change has profound impact on agriculture. It includes:

1. Increase crop growth and crop yields
2. Decrease agriculture yield
3. Rainfed agriculture will be primarily impacted due to rainfall variability

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.100) Solution (d)

Higher CO₂ levels can affect crop yields. Some laboratory experiments suggest that elevated CO₂ levels can increase plant growth.

More extreme temperature and precipitation can prevent crops from growing. Extreme events, especially floods and droughts, can harm crops and reduce yields.

Climate change can have negative effects on irrigated crop yields across agro-ecological regions both due to temperature rise and changes in water availability. Rainfed agriculture will be primarily impacted due to rainfall variability and reduction in number of rainy days.

Q.101) With reference to Joint Forest Management (JFM), consider the following statements:

1. It envisages a process of joint management of forests by the central government and the local people
2. Non-wood forest products (NWFPs) have a key role in JFM efforts, Leading to sustainable resource utilization and economic development
3. JFM program initiated in the context of the National Forest Policy of 1988

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.101) Solution (c)

Forest is the state subject:

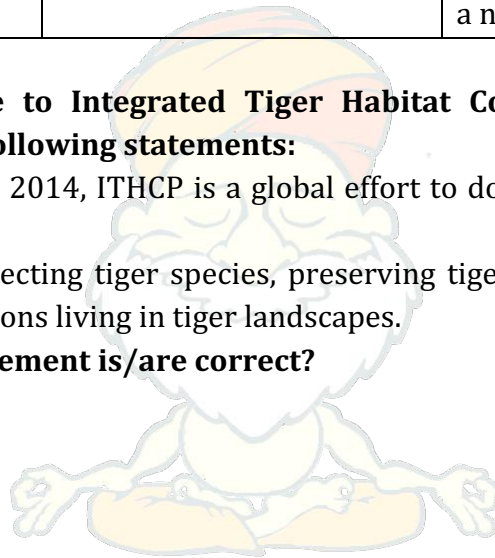
Statement-1: incorrect	Statement-3: correct	Statement-2: correct
The 1988 policy envisages a process of joint management of forests by the state governments (which have nominal responsibility) and the local people , which would share both the responsibility for managing the resource and the benefits that accrue from this management.	The Indian Forest Policy of 1988 (MoEF, 1988) and the subsequent government resolution on participatory forest management (MoEF, 1990) emphasize the need for people's participation in natural forest management.	Non-wood forest products (NWFPs) have a key role in JFM efforts. With the increasing awareness of their economic potential and growing concerns for the sustainability of the resources and the distribution of the benefits derived from them, various state governments have taken over control of a number of NWFPs.

Q.102) With reference to Integrated Tiger Habitat Conservation Programme (ITHCP), consider the following statements:

1. It is Initiated in 2014, ITHCP is a global effort to double tiger numbers in the wild by 2025
2. It involves protecting tiger species, preserving tiger habitats and supporting human populations living in tiger landscapes.

Which of the above statement is/are correct?

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

**Q.102) Solution (b)**

Initiated in 2014, the Integrated Tiger Habitat Conservation Programme (ITHCP) or 'Tiger Programme' is a grant-making initiative which contributes to the Global Tiger Recovery Programme (GTRP), **a global effort to double tiger numbers in the wild by 2022**. The programme consists of a portfolio of 12 large-scale projects in key Tiger Conservation Landscapes across Bangladesh, Bhutan, India, Indonesia, Nepal and Myanmar.

The Tiger Programme is based on three pillars:

- Protecting tiger species and their prey from the threat of poaching;
- Preserving tiger habitats, including core habitats, buffer zones and corridors;
- Supporting human populations living in tiger landscapes.

Q.103) The Terai landscape boasts of some of India's most well-known Tiger Reserves and Protected Areas. Arrange the following from west to east:

1. Corbett national park
2. Rajaji national park
3. Valmiki Tiger reserve
4. Dudhwa Tiger reserve

Choose correct option from below:

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

Q.103) Solution (b)



Q.104) Consider the following with respect to Red List of Ecosystems:

1. It is tool of IUCN, It categorises a global standard for how we assess the status of ecosystems, applicable at local, national, regional and global levels.
2. Applicable only to terrestrial and marine ecosystems
3. It also demonstrate how improved ecosystem management can reduce risks, enhance resilience, and be a means for adaptation.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.104) Solution (b)

Statement-1: correct	Statement-2: incorrect	Statement-3: correct
The Red List of Ecosystems is developed and implemented	Applicable to terrestrial, marine,	With climate change and increased risks of disasters, we

jointly by the IUCN Commission on Ecosystem Management (CEM) and the IUCN Ecosystem Management Programme (EMP), in collaboration with the IUCN Species Survival Commission (SSC) and the IUCN Global Species Programme (GSP).	freshwater and subterranean systems. Applicable from local and global, and from very small (fine resolution) to very large (coarse resolution) scales.	urgently need criteria at the ecosystem level to not only raise awareness about their threats, but to also demonstrate how improved ecosystem management can reduce risks, enhance resilience, and be a means for adaptation.
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Q.105) Post-2020 global biodiversity framework is related with?

- a) UN Biodiversity Summit.
- b) IUCN
- c) Paris Agreement
- d) Birdlife International

Q.105) Solution (a)

In October 2020 governments will come together to adopt a post-2020 global biodiversity framework, at the Convention on Biological Diversity (CBD) Conference of the Parties (COP 15) in Kunming, China – the UN Biodiversity Summit.

This 2020 deal for nature and people is a stepping stone towards achieving the CBD 2050 Vision of 'Living in harmony with nature'. It will replace and must improve on the Strategic Plan for Biodiversity 2011-2020, which has failed to stem the devastating decline in biodiversity.

Q.106) Protected Planet is a project of?

1. IUCN
2. UNEP
3. UNCCD
4. UNFCCC

Choose correct option from below:

- a) 1 and 2 only
- b) 3 Only
- c) 1 and 3 only
- d) All of the above

Q.106) Solution (a)

Protected Planet is the online visual interface for the World Database on Protected Areas (WDPA), a joint project of IUCN and UNEP. It is the most comprehensive global database on terrestrial and marine protected areas based on data that has been compiled since 1981 working with governments and NGOs. The visual interface reconciles governmental, expert and general public opinions on protected areas.

Q.107) Consider the following statements:

1. Intraspecific diversity refers to number and types of different species
2. Interspecific diversity refers to the genetic variety within a single species

Which of the above pairs is/are correct?

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

Q.107) Solution (d)

Biodiversity can be divided into two categories:

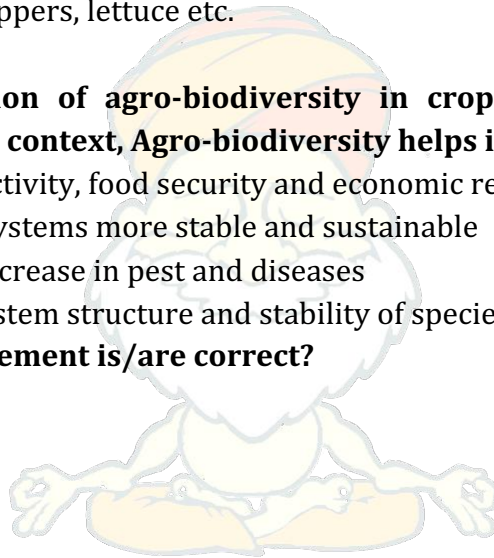
- Intraspecific diversity covers the genetic variety within a single species – such as different sub-species of rice, Basmati rice, Thai Jasmine rice, Japanese Mochi rice, Sona Masuri, etc.
- Interspecific diversity refers to the number and types of different species – such as potatoes, carrots, peppers, lettuce etc.

Q.108) The conservation of agro-biodiversity in crop production systems is important. In the above context, Agro-biodiversity helps in?

1. Increase productivity, food security and economic returns
2. Make farming systems more stable and sustainable
3. Contribute to increase in pest and diseases
4. Conserve ecosystem structure and stability of species diversity

Which of the above statement is/are correct?

- a) 1 and 2 only
- b) 2, 3 and 3 only
- c) 1, 2 and 4 only
- d) All of the above

**Q.108) Solution (c)**

Agro-biodiversity helps in various ways such as:

- Increase productivity, food security and economic returns
- Reduce the pressure of agriculture on fragile areas, forests and endangered species
- Make farming systems more stable and sustainable
- **Contribute to pest and disease management**
- Reduce the spread of diseases to individuals and nations
- Improve human nutrition and provide sources of medicines
- Conserve ecosystem structure and stability of species diversity

Q.109) Consider the following statements:

1. Seed banks are created to maintain and protect biodiversity
2. Seed banks primarily involve in selecting, collecting, and storing seed varieties.

3. Seed Banks are In-Situ form of Biodiversity Conservation

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.109) Solution (b)

A seed bank is a type of gene bank where seeds of different crops and rare plant species are stored for future use. Seed banks are created to maintain and protect biodiversity, where samples of all species are collected and stored. **Seed Banks are Ex-Situ form of conservation**

Seed banks primarily involve in selecting, collecting, and storing seed varieties. They also form seed exchange networks with government organizations, NGOs and community seed banks across the world.

Q.110) With reference to the Global Wildlife Program, consider the following statements:

1. It intends to wildlife conservation and wildlife crime prevention
2. It is launched by TRAFFIC

Which of the above pairs is/are incorrect?

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

Q.110) Solution (b)

The Global Wildlife Program (GWP) is a World Bank-led, GEF-funded global partnership that promotes wildlife conservation and sustainable development by combatting illicit trafficking in wildlife. Phase II of the Global Wildlife Program (GWP) was approved by the Global Environment Facility (GEF) Council in June 2019.

Q.111) Consider the following pairs:

- | Species | State |
|-----------------------|---------------------|
| 1. Snow leopard | : Arunachal Pradesh |
| 2. Black Panther | : Uttarakhand |
| 3. Asiatic Lion | : Gujrat |
| 4. Impressed Tortoise | : Kerala |

Which of the above is/are incorrectly matched?

- a) 1 only
- b) 2 and 4 only
- c) 1 and 2 only
- d) None of the above

Q.111) Solution (b)

Wildlife of India offers variety of animal life and the country is home to thousands of different species of wild animals, reptiles and birds. The natural habitat of Indian wildlife and dense forest provide shelter to unique, rare, few endemic and endangered species of animals

Animal	Habitat
Asiatic Lion	Gir forest National park, Gujrat
Black Panther	Karnataka, Maharastra, Assam forests
Snow Leopard	High Altitudes of Uttarakand, Jammu and Kashmir, Sikkim, Arunachal Pradesh
Clouded Leopard	Sikkim, Manipur, Nagaland, Mizoram
Sloth Bear	Kartnataka
Impressed Tortoise	Arunachal Pradesh

Q.112) Which of the following organizations were established under the provisions of the Wildlife (Protection) Act, 1972?

1. Central Zoo authority
2. Nation Tiger conservation Authority
3. National Board for Wildlife
4. Animal welfare Board for India

Choose correct option from below:

- a) 1 and 3 only
- b) 1, 2 and 3 only
- c) 2,3 and 4 only
- d) All of the above

Q.112) Solution (b)

The Wildlife (Protection) Act, 1972 is the most important act regarding wildlife conservation in India. It prohibits the capturing, killing, poisoning or trapping of wild animals.

It has the following objectives: prohibition of hunting; protection and management of wildlife habitats; establishment of protected areas; regulation and control of trade in parts and products derived from wildlife and management of zoos.

- **Animal Welfare Board of India** is a statutory advisory body on Animal Welfare Laws and promotes animal welfare in the country. It was **established in 1962 under Section 4 of the Prevention of Cruelty to Animals Act, 1960.**
- **NTCA, ZOO AUTHORITY AND NATONAL BOARD FOR WILDLIFE** are established

under the ambit of Wildlife (Protection) Act, 1972 through various Amendmend

Q.113) Which of the following are Invasive Alien Species in India?

1. Parthenium hysterophorus
2. Achatina fulica
3. Papaya Mealy Bug
4. Amazon sailfin catfish

Which of the above statement is/are correct?

- a) 1 only
- b) 2 and 3 only
- c) 3 and 4 only
- d) All of the above

Q.113) Solution (d)

The Zoological Survey of India (ZSI) has for the first time compiled a list of 157 alien invasive animal species.

Alien species become "invasive" when they are introduced deliberately or accidentally outside their natural areas where they displace the native species and upset the ecological balance. These invasive animal species pose a threat to the biodiversity of the area and human welfare and safety, also harming the agriculture and biodiversity.

- **Parthenium hysterophorus:** colloquially known as Congress grass, is believed to have been introduced into India and Australia from North America.
- **African apple snail (Achatina fulica):** The most invasive among all alien fauna in India, this mollusc was first reported in the Andaman and Nicobar Islands. It is now found across country and is threatening the habitat of several native species.
- **Papaya Mealy Bug (Paracoccus marginatus):** Native of Mexico and Central America, it is believed to have destroyed huge crops of papaya in Assam, West Bengal and Tamil Nadu
- **Amazon sailfin catfish (Pterygoplichthys pardalis):** This species is responsible for destroying the fish population in the wetlands of Kolkata.

Q.114) The sanctuary is situated in chora Island along the river Mandovi in Goa. Indain Giant Squirral can be spotted here. The above mentioned Sanctuary is?

- a) Merces Bird Sanctuary
- b) Salim Ali bird sanctuary
- c) Kumarakom Bird Sanctuary
- d) Kaundinya Bird Sanctuary

Q.114) Solution (b)

The Salim Ali bird sanctuary is home to many varieties of local and migratory birds, situated in chora Island along the river Mandovi in Goa. Salim Ali Bird sanctuary is one of the best known bird sanctuaries and very famous bird sanctuary in India. It is one of

the smallest bird sanctuaries where flying Sparrows, Beautiful peafowl, Parrots, pelican, Indian giant squirrel and other rare species of fauna can be spotted.

Q.115) Consider the following pairs:

Wildlife sanctuaries States

1. Kumarakom Bird Sanctuary : Kerala
2. Ranganthittu : Andhra Pradesh
3. Sariska National Park : Madhya Pradesh
4. Indira Gandhi National Park : Tamil Nadu

Which of the above is/are correctly matched?

- a) 1 only
- b) 2 and 4 only
- c) 1 and 4 only
- d) All of the above

Q.115) Solution (c)

Protected area	State
Indira Gandhi National Park (Anamalai Tiger reserve)	Coimbatore, Tamil Nadu
Sariska National Park	Alwar , Rajasthan
Ranganthittu Bird Sanctuary	Karnataka
Kumarakom Bird Sanctuary	Kerala

Q.116) Consider the following pairs:

National Parks Rivers

1. Mouling national park : Siyom
2. Orang National park : Lohit
3. Valmiki national park : Ganga
4. Panna National park : Ken

Which of the above is/are incorrectly matched?

- a) 1 only
- b) 1 and 4only
- c) 2 and 3 only
- d) None of the above

Q.116) Solution (c)

NATIONAL PARKS	RIVERS
Mouling National Park, Arunachal Pradesh	Siyom
Debra Saikhowa National Park in Assam	Brahamaputra, Lohit, dibru
Orang National Park in Assam	Brahamaputra
Valmiki National Park in Bihar	Gandak

Panna National Park in M.P	Ken
Jim Corbett National Park in Uttarakhand	Ranganga
Bhitarkanika National Park	Brahmani and Baitrani River Delta

Q.117) Consider the following statements:

1. Wildlife sanctuaries may be government owned or can be private controlled
2. National parks are reserved areas, owned by the government
3. Biosphere reserves are Notified area which may cover multiple protected areas

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.117) Solution (d)

Protected areas	Characteristics
Wildlife Sanctuary	<ul style="list-style-type: none"> • It is natural area which is reserve by a governmental or private agency for the protection of particular species • Only animals are conserved, Could be private property also, outside activities allowed • International Union for Conservation of Nature (IUCN) has defined its Category IV type of protected areas
National Park	<ul style="list-style-type: none"> • Reserve area of land, owned by the government • Area is protected from human exploitation, industrialization and pollution. • International Union for Conservation of Nature (IUCN), and its World Commission on Protected Areas, has defined its Category II type of protected areas
Biosphere Reserve	<ul style="list-style-type: none"> • Notified areas which cover a larger area of land which may cover multiple National Parks, Sanctuaries and reserves as well. • Three areas: Core, Buffer & Marginal. No outside Species allowed Conservation & research purpose

Q.118) Atkinson Index, Generalised Entropy Index. This terms are related to?

- a) Income Inequality
- b) Biodiversity

- c) Conservation efforts
- d) Agricultural diversity

Q.118) Solution (a)

1. Atkinson's inequality measure (or Atkinson's index): This is the most popular welfare-based measure of inequality. It presents the percentage of total income that a given society would have to forego in order to have more equal shares of income between its citizens.
2. Theil index and General Entropy (GE) measures: The values of the GE class of measures vary between zero (perfect equality) and infinity (or one, if normalized). A key feature of these measures is that they are fully decomposable, i.e. inequality may be broken down by population groups or income sources or using other dimensions, which can prove useful to policy makers

Q.119) With reference to the recently adopted European Green Deal, which of the following statements is/are correct?

1. It aims to achieve net carbon neutrality among its member countries by 2050
2. It was adopted as a part of the Conference of Parties (COP) 25 conference in Madrid

Which of the above statement is/are correct?

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

Q.119) Solution (a)

In the background of the failure of the global community to reach any agreement in the recently concluded COP 25, **the European Union (EU)** has come up with a climate action plan known as the European Green Deal. It is not part of COP-25. It aims to achieve carbon neutrality by 2050.

Q.120) Which of the Factors are responsible for Extinction of species?

1. Changes to Habitat
2. Poor reproductive trends
3. Introduction of Invasive species
4. Land use changes

Choose correct option from below:

- a) 1 and 2 only
- b) 3 and 4 only
- c) 1 and 4 only
- d) All of the above.

Q.120) Solution (d)

Extinction happens when environmental factors or evolutionary problems cause a species to die out. To some extent, extinction is natural. Changes to habitats and poor reproductive trends are among the factors that can make a species' death rate higher than its birth rate for long enough that eventually, none are left.

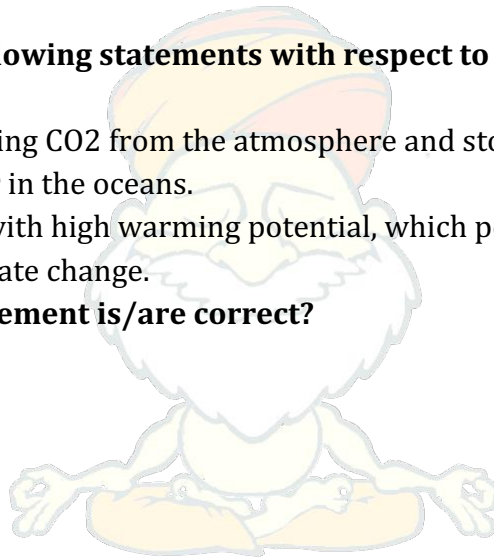
Humans also cause other species to become extinct by hunting, overharvesting, introducing invasive species to the wild, polluting, and changing wetlands and forests to croplands and urban areas. Even the rapid growth of the human population is causing extinction by ruining natural habitats.

Q.121) Consider the following statements with respect to concept of "Negative emissions".

1. It means removing CO₂ from the atmosphere and storing it on land, underground or in the oceans.
2. These are gases with high warming potential, which poses greater threat in controlling climate change.

Which of the above statement is/are correct?

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

**Q.121) Solution (a)**

The Paris Agreement, adopted at the COP21 climate talks in December, sets out a global aim to limit average global surface temperatures to "well below 2C" above pre-industrial levels. It adds that there should be "efforts" to limit it to 1.5C.

A study published last year warned that all the scenarios for keeping global temperature rise to 2C require "**negative emissions**" - removing CO₂ from the atmosphere and storing it on land, underground or in the oceans.

Q.122) The report titled "Ocean deoxygenation is released by?"

- a) UNEP
- b) IPCC
- c) UN CLIMATE
- d) IUCN

Q.122) Solution (d)

Recently, a report titled, '**Ocean deoxygenation: Everyone's problem**' was released by the International Union for Conservation of Nature (IUCN).

Ocean deoxygenation is one of the most pernicious, yet under-reported side-effects of human-induced climate change. The primary causes of deoxygenation are eutrophication (increased nutrient run-off from land and sewage pollution) and nitrogen deposition from the burning of fossil fuels, coupled with the widespread impacts from ocean warming. Oxygen loss from warming has alarming consequences for global oceanic oxygen reserves, which have already been reduced by 2% over a period of just 50-years (from 1960 to 2010).

Q.123) With respect to increasing Marine pollution, What are the impacts of global warming and pollution of water bodies?

1. Rise in sea surface temperature
2. Ocean deoxygenation
3. Decrease in oxygen demand of oceans
4. Formation of Gas Hydrates at bottom of oceans

Choose correct option from below:

- a) 1 and 2 only
- b) 2 and 3 only
- c) 3 and 4 only
- d) All of the above

Q.123) Solution (a)

Climate Change: As the ocean warms due to global warming, it induces Ocean warming-driven deoxygenation.

- Warmer ocean water holds less oxygen and is more buoyant than cooler water. This leads to reduced mixing of oxygenated water near the surface with deeper waters
- Warmer water also raises oxygen demand from living organisms (increases the metabolic rates).
- Warming of bottom waters may result in enhanced destabilization of methane gas hydrates

Nutrient pollution (Eutrophication) - It causes oxygen loss in coastal waters as fertiliser, sewage, animal and aquaculture waste cause excessive growth of algae, which in turn deplete oxygen as they decompose.

Q.124) What is meant by carbon pricing, recently seen in News?

1. It is the cost that companies has to bear to bring clean technology in their production lines.
2. It is external costs of carbon emissions, such as damage to crops and health care costs from heat waves and droughts or to property from flooding and sea level rise.

Which of the above statement is/are correct?

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

Q.124) Solution (b)

The Carbon pricing phrase put a price on carbon has now become well known with momentum growing among countries and business to put a **price on carbon pollution** as a means of bringing down emissions and drive investment into cleaner options.

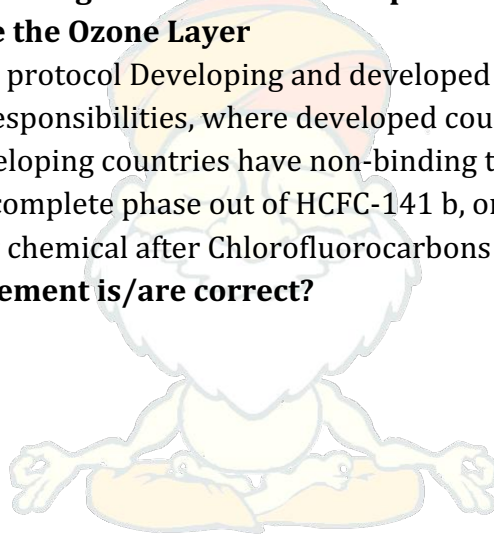
There are several paths governments can take to price carbon, all leading to the same result. They begin to capture what are **known as the external costs of carbon emissions** – costs that the public pays for in other ways, such as damage to crops and health care costs from heat waves and droughts or to property from flooding and sea level rise – and tie them to their sources through a price on carbon.

Q.125) Consider the following statements with respect to Montreal Protocol on Substances that Deplete the Ozone Layer

1. Under Montreal protocol Developing and developed countries have equal but differentiated responsibilities, where developed countries have legally binding targets and developing countries have non-binding targets
2. India achieved complete phase out of HCFC-141 b, one of the most potent ozone depleting chemical after Chlorofluorocarbons (CFCs).

Which of the above statement is/are correct?

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

**Q.125) Solution (b)**

The Montreal Protocol is the landmark multilateral environmental agreement that regulates the production and consumption of nearly 100 man-made chemicals referred to as ozone depleting substances (ODS).

- Adopted in 1987, the Protocol is to date the only UN treaty ever that has been ratified by all 197 UN Member States.
- Developing and developed countries have equal but differentiated responsibilities, but **both groups of countries have binding, time- targeted and measurable commitments.**
- Kigali agreement amended the Montreal Protocol in 2016.

India achieved complete phase out of HCFC-141 b, one of the most potent ozone depleting chemical after Chlorofluorocarbons (CFCs).

Q.126) Indian cities face the worst Air pollution in the world. What steps can be taken to reduce Air pollution across cities.

1. Use of LiDAR Technology to detect and control pollution
2. Photocatalytic paints to be used on roads
3. Set up 'smog towers'
4. Remove Scrubbers from chimneys of Industries

Choose correct option from below:

- a) 1 and 2 only
- b) 2, 3 and 4 only
- c) 1, 2 and 3 only
- d) All of the above.

Q.126) Solution (c)

Following technological solutions can be used to fight air pollution:

- Use of Light Detection and Ranging (LiDAR) and Wireless Sensor Networks (WSN) technology for better pollution- monitoring.
- Adoption of oxy furnaces in industries
- Photocatalytic paints to be used on roads
- Use of anti-smog gun

Scrubbers are air pollution control devices that use liquid to remove particulate matter or gases from an industrial exhaust or flue gas stream. This atomized liquid (typically water) entrains particles and pollutant gases in order to effectively wash them out of the gas flow.

Q.127) Consider the following pairs:

Conventions/ protocols	:	Pollutants
1. Gothenburg protocol	:	Ozone
2. Basel convention	:	Plastic
3. Rotterdam convention	:	Pesticide Phorate
4. Stockholm Convention (POP)	:	Persistent Organic Pollutants

Which of the above is/are correctly matched?

- e) 1 and 2 only
- f) 2 and 4 only
- g) 1, 2 and 3 only
- h) All of the above

Q.127) Solution (d)

Conventions/ protocols	Pollutants
Stockholm Convention	Persistent Organic Pollutants (POP), It was adopted in May 2001 and entered into force in 2004. It calls for international action on three categories of POPs: pesticides, industrial chemicals, and unintentionally produced POPs

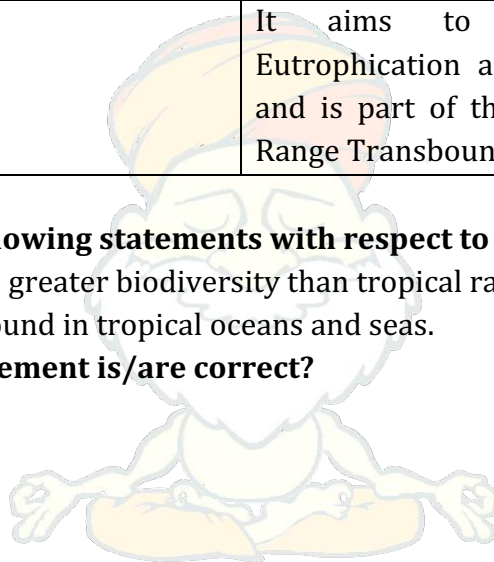
Rotterdam Convention	Prior Informed Consent Procedure (PIC) for Certain Hazardous Chemicals and Pesticides in International Trade
Basel Convention	It was adopted in 1989 and entered into force in 1992. Its scope of application covers a wide range of wastes defined as “hazardous wastes” based on their origin and/or composition and their characteristics. Adopted an amendment to include unsorted, mixed and contaminated plastic waste under PIC (Prior Informed Consent) procedure and improve the regulation of its transboundary movement.
Gothenburg Protocol	It aims to abate Acidification, Eutrophication and Ground-level Ozone and is part of the Convention on Long-Range Transboundary Air Pollution.

Q.128) Consider the following statements with respect to corals:

1. Coral reefs have greater biodiversity than tropical rainforests.
2. They are only found in tropical oceans and seas.

Which of the above statement is/are correct?

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



Q.128) Solution (a)

The coral is a polyp, an organism that lives in the shallow sea. Its skeleton is composed of limestone and dolomite. The layers of deposition of the skeletons of these polyps form a shallow rock known as Coral Reef.

- Coral reefs are retreating from equatorial waters and **establishing new reefs in more temperate regions, a new study shows**. Researchers say during the last four decades, the number of young corals on tropical reefs has declined by 85 percent—and doubled on reefs in the subtropics.
- The coral reefs are more diverse than tropical rainforests because coral reefs have more than 1,000,000 species.

Q.129) With reference to the agricultural practices, consider the following statements:

1. Mulching is the practice of cultivation of leguminous crops between the

- cropping seasons
2. Inter-cropping method involves growing different crops simultaneously within the same plot.
 3. Strip cropping is growing of two simultaneously which have different growth habits and no competition between them

Which of the above statement is/are incorrect?

- a) 1 only
- b) 2 and 4 only
- c) 1 and 3 only
- d) All of the above

Q.129) Solution (c)

Intercropping	Intercropping involves growing different crops simultaneously within the same plot of land. This increases the yield and maximizes utilization of abiotic inputs, like efficient use of sunlight, water etc.
Mulching	Mulches are generally waste plant materials. In mulching, these plant materials are spread around the base of the crops. It protects the soil from erosion, reduces compaction from the impact of heavy rains ,conserves moisture,
Strip cropping	Strip cropping is growing two or more crops simultaneously in strips, wide enough to permit independent cultivation
Parallel cropping	Parallel cropping is growing of two crops simultaneously which have different growth habits and no competition among them.

Q.130) Zero Tillage is the central element in what is now widely termed Conservation Agriculture. What are the advantages of zero tillage?

1. Improves soil structure and soil cover increase the soil's ability to absorb and infiltrate water
2. Soil erosion is reduced by about 90% and soil biological activity is minimized.
3. Increases evaporation from the soil

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.130) Solution (a)

Zero Tillage is the central element in what is now widely termed Conservation Agriculture. It brings a quantum leap in crop production technology, for it brings agriculture into harmony with nature.

Features:

Crop residues are distributed evenly and left on the soil surface;

- No implements are used to turn the soil over, cultivate it, or incorporate crop residues;
- Weeds and/or purpose-planted cover crops are controlled by a pre-planting application of a non-pollutant desiccant herbicide;
- A specialized planter or drill cuts through the desiccated cover and residues accumulated on the soil surface, slotting seed (and fertilizer) into the soil with minimal disturbance;
- Subsequent weed control is carried out with some pre- but mostly post-emergent herbicides, which also used in conventional tillage;
- Crop rotation is fundamental to Zero Tillage, since this promotes adequate biomass levels for permanent mulch cover; it also assists in the control of weeds, pests and diseases, as well as in improving the physical condition of the soil.
- Soil erosion is reduced by about 90% and soil biological activity and bio-diversity are maximized
- No-till practices also slow evaporation, which not only means better absorption of rainwater, but it also increases irrigation efficiency, ultimately leading to higher yields, especially during hot and dry weather.

Q.131) Recently, Central Ground Water Board (CGWB) released report on Groundwater Arsenic Contamination in India. In this context, Consider the following statements:

1. Peninsular states are worst effected by Arsenic contamination
2. Arsenic contamination impacts livestock population
3. Sources of arsenic contamination include both natural as well as Anthropogenic

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.131) Solution (c)

Recently, Central Ground Water Board (CGWB) released report on Groundwater Arsenic Contamination in India:

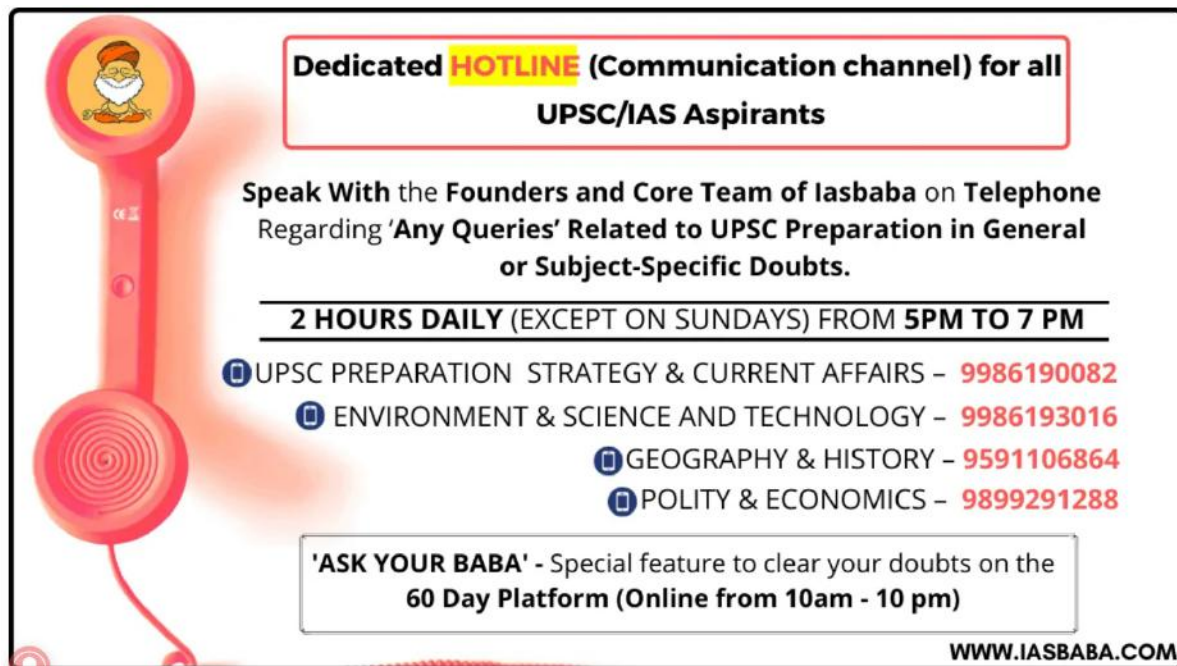
- 21 states across the country have pockets with arsenic levels higher than the Bureau of Indian Standards (BIS) stipulated permissible limit of 0.01 miligram per

litre (mg/l).

- The states along the Ganga-Brahmaputra- Meghna (GBM) river basin Uttar Pradesh, Bihar, Jharkhand, West Bengal and Assam are the worst affected
- Regular extraction of ground water for irrigation deposits arsenic in soil and consequently its uptake by the crops. Also, paddy farms flooded with contaminated water eventually causes accumulation of arsenic in the food crops.
- Rice husk used as fodder for livestock, exposes them to impacts of arsenic contamination. This leads to potential risk for humans when they consume cattle-based food products

Sources of arsenic contamination:

- Natural processes in groundwater: Weathering of rocks and minerals comprising sand, silt and clay, followed by leaching and runoff.
- Anthropogenic activities like intense exploitation of groundwater, application of fertilizers, burning of coal and leaching of metals from coal-ash tailings



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Q.132) In the context of water scarcity in India, Consider the following statements:

1. A water-stressed condition happens when per capita availability is less than 1,700 cubic metres
2. Water-scarcity condition when per capita availability falls below 1,000 cubic metres.

Which of the above statement is/are correct?

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

Q.132) Solution (c)

As per NITI Aayog report, nearly 600 million Indians face “high to extreme water stress” and 75% households do not have drinking water on their premises. 81.67% of rural households do not have tap water connections.

- India’s annual per capita availability of water fell from 1,820 cubic meters in 2001 to 1,545 cubic meters in 2011, which may further fall to 1,341 cubic meters in 2025.
- By Central water commission (CWC) benchmarks, a water-stressed condition happens when per capita availability is less than 1,700 cubic metres, and a water-scarcity condition when per capita availability falls below 1,000 cubic metres.

Q.133) Consider the following statements with respect to Jal Jeevan Mission (JJM)

1. JJM aims at providing Functional Household Tap Connection (FHTC) to every rural household only by 2024.
2. It will focus on integrated demand and supply side management of water

Which of the above statement is/are correct?

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

Q.133) Solution (c)

JJM aims at providing Functional Household Tap Connection (FHTC) **to every rural household** (Har Ghar Nal Se Jal) (with service level at the rate of 55 litres per capita per day (lpcd)) by 2024.

This Mission, under the Department of Drinking Water and Sanitation, will focus on integrated demand and supply side management of water at the local level, including creation of local infrastructure for source sustainability like rainwater harvesting, groundwater recharge and management of household wastewater for reuse in agriculture.

Q.134) Consider the following statements with respect to Plastic Waste Management Rules, 2016 (as amended in 2018)

1. Defines maximum thickness of plastic carry bags i.e. 50 microns
2. Rural areas are brought under the rules
3. Responsibility is fixed on street vendors and retailers for controlled use of plastics

Which of the above statement is/are correct?

- a) 1 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) All of the above

Q.134) Solution (b)

Plastic Waste Management Rules, 2016 (as amended in 2018):

- **Defines minimum thickness** of plastic carry bags i.e. **50 microns**. This would increase the cost and the tendency to provide free carry bags would come down.
- **Responsibility of local bodies:** Rural areas are brought under the rules since plastic has reached rural areas as well. The gram sabhas have been given responsibility of implementation.
- **Extended Producer Responsibility:** Producers and brand owners have been made responsible for collecting waste generated from their products
- **Responsibility of street vendors and retailers:** Not to provide such carry bags or fine would be imposed. Only the registered shopkeepers on payment of a registration fee to local bodies would be allowed to give out plastic carry bags on charge.

Q.135) With reference to recent All India Tiger estimates, Consider the following statements:

1. Karnataka state recorded highest number of Tigers in India
2. Continuing Increase of tiger-occupied areas has been recorded.

Which of the above statement is/are correct?

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

Q.135) Solution (d)

The four-year tiger census report, 'Status of Tigers, Co-predators, Prey and their Habitat, 2018' shows the count of tigers in India, has risen to 2967, in 2018 from 2,226 in 2014

Findings of All India Tiger Estimate-2018:

- **Biggest increase in tigers:** The biggest increase has been in Madhya Pradesh from 308 in 2014 to 526. Now, MP has most number of tigers.
- **Continuing loss of tiger-occupied areas:** The net loss in tiger-occupied area is estimated to be 20% of the tiger habitat in four years.
- No tiger was recorded in Buxa (West Bengal), Dampa (Mizoram) and Palamu (Jharkhand) tiger reserves.

Q.136) Consider the following statements, with respect to Cheetah reintroduction programme.

1. Asiatic cheetah is extinct. Hence, India is introducing African
2. Cheetah is a keystone species of dry forests, scrub forests, and savannahs.
3. Kuno Palpur was the preferred location for introduction of cheetah

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.136) Solution (c)

The plan, first floated in 2009, was to bolster the nearly extinct Indian cheetah population.

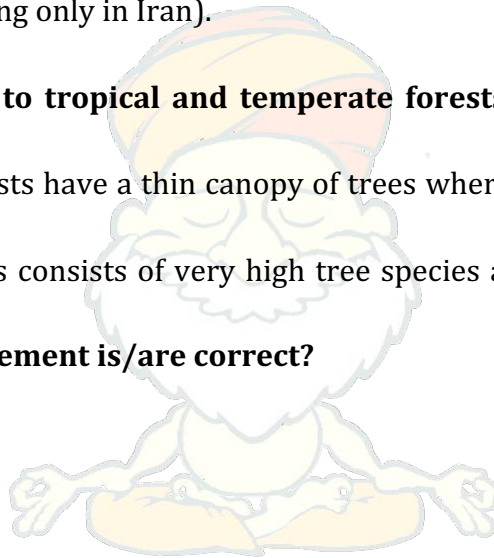
- Iran has a sub-species of the Asiatic cheetah but has refused to share them with India, forcing the government to look for African ones.
- In 2010, central government had set up an expert panel for reintroducing cheetah in India. Kuno Palpur was the preferred location for introduction of cheetah. It was also the place prepared by MP to house Asiatic lions
- Cheetah is a keystone species of dry forests, scrub forests, and savannahs.
- IUCN status: African Cheetah- Vulnerable and Asiatic Cheetah – Critically endangered (surviving only in Iran).

Q.137) With reference to tropical and temperate forests diversity, consider the following statements:

1. Temperate forests have a thin canopy of trees whereas tropical forests have a thick canopy
2. Tropical Forests consists of very high tree species as compared to temperate forests.

Which of the above statement is/are correct?

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

**Q.137) Solution (c)**

Flora in temperate forests are characterized by 3-4 tree species per square kilometre while for tropical forests it may be as high as 100 different tree species

- Temperate forests have a thin canopy of trees which allows more light and heat to penetrate and permit the survival of smaller and cold-blooded animals like garter snakes, turtles, and a few amphibians. Tropical forests have a thick canopy of trees which restricts light to penetrate
- Trees of temperate forests are distinguished by broad leaves which shed their leaves annually during the dry season. They include such species as oak, hickory, beech, hemlock, maple, basswood, cottonwood, elm, willow, and spring-flowering herbs. In case of boreal or taiga forests, the trees are cold-tolerant evergreen conifers with needle-like leaves like pine, fir, and spruce. While in tropical forests, trees are 25- 30 m tall, with shallow roots, mostly evergreen, with large dark green leaves. Some examples are orchids, bromeliads, vines (lianas), ferns, mosses, and

palms.

Q.138) With reference to the productivity of an ecosystem, consider the following statements

1. Gross primary productivity of an ecosystem is the rate of production of organic matter during photosynthesis.
2. Secondary productivity is the available biomass for the consumption to heterotrophs
3. Net primary productivity is defined as the rate of formation of new organic matter by consumers

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.138) Solution (a)

Statement-1: correct	Statement-2: incorrect	Statement-3: incorrect
Gross primary productivity of an ecosystem is the rate of production of organic matter during photosynthesis. A considerable amount of GPP is utilized by plants in respiration.	Secondary productivity is defined as the rate of formation of new organic matter by consumers	Gross primary productivity minus respiration losses, is the net primary productivity (NPP). Net primary productivity is the available biomass for the consumption to heterotrophs (herbivores and decomposers)

Q.139) India's Starry Dwarf Frog is found in the region of?

- a) Western Himalayas
- b) Eastern Himalayas
- c) Western Ghats
- d) Andaman and Nicobar island region

Q.139) Solution (c)

The thumbnail-sized species was discovered in India's Western Ghats.

- The new species is the only member of an ancient lineage that goes back tens of millions of years and also represents the discovery of a new subfamily
- The researchers have nicknamed them starry dwarf frogs because they're around the size of an adult's thumb, have an orange belly, a brown back and are covered in white spots.

Q.140) Which of the following are Critically Endangered Species In India?

1. Great Indian Bustard
2. Malabar civet
3. Ganges shark
4. Red headed Vulture
5. Pygmy Hog

Choose correct option from below:

- a) 1 and 2 only
- b) 1, 2, 3 and 4 only
- c) 2, 3, 4 and 5 only
- d) All of the above.

Q.140) Solution (b)

Some of the critically endangered species

Mammals	<ul style="list-style-type: none"> • Large Rock Rat or Elvira Rat • Namdapha Flying Squirrel. • Malabar Civet • Sumatran Rhinoceros and Javan Rhinoceros
Birds	<ul style="list-style-type: none"> • Siberian Crane and Spoon-billed Sandpiper • Bengal Florican • Great Indian Bustard • Indian Vulture, Red-headed Vulture, Slender-billed Vulture and White-backed Vulture.
Fishes	<ul style="list-style-type: none"> • Pondicherry Shark and Ganges Shark. • Large-tooth Sawfish and Long-comb Sawfish or Narrow-snout Sawfish
Recent changes in the IUCN Red List	<ul style="list-style-type: none"> • Pygmy Hog: Status changed from Critically Endangered (CR) to Endangered (EN). • Kondana Rat: Status changed from Critically Endangered (CR) to Endangered (EN) • Leatherback Turtle: Status changed from Critically Endangered (CR) to Vulnerable (VU).

Q.141) With reference to ecological balance, consider the following statements:

1. The stability of an ecosystem increases with the introduction of new species.

2. Ecological balance can happen when the diversity of the living organisms remains relatively stable

Which of the above statement is/are correct?

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

Q.141) Solution (b)

Ecological balance is a state of dynamic equilibrium within a community. It can happen when the diversity of the living organisms remains relatively stable. Gradual changes do take place but that happens only through natural succession. Any introduction of new species changes balance through change in interaction in the habitat and ecosystem.

Q.142) The global climate finance architecture is channeled through multilateral funds, with respect to this consider the following pairs:

- | Fund | Administered by |
|-----------------------------------|------------------------|
| 1. Biocarbon fund | : World Bank |
| 2. Clean technology fund | : world economic forum |
| 3. Global climate change alliance | : IPCC |
| 4. UN-REDD | : UNEP |

Which of the above is/are correctly matched?

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

Q.142) Solution (a)

funds	Administered by
Strategic Climate Fund	World Bank
Biocarbon Fund	World Bank
Clean Technology Fund	World Bank
Least Developed Countries Fund	GEF
Global Climate Change Alliance	European Commission
UN-REDD Programme	UNDP
Congo Basin Forest Fund	African Development Bank

Q.143) With reference to color coding of industries for their pollution Index, Consider the following pairs:

1. Red industries: Automobile Manufacturing, Sugar Industries

2. Orange industries: Aluminium & copper extraction from scrap, Ayurvedic and homeopathic medicine
3. White industries: cotton and woolen hosiers using dry processes, Brass and bell metal utensils

Which of the above is/are correctly matched?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.143) Solution (b)

In February 2016, the Ministry of Environment, Forest and Climate Change (MoEFCC) unveiled a new categorization of industries based on their pollution load. The new classification is for entire industrial sectors and not for individual units.

Red industries	Orange industries	White industries
<ul style="list-style-type: none"> • Hazardous chemicals • Automobile manufacturing • Sugar industries • Fire crackers • Milk and dairy products 	<ul style="list-style-type: none"> • Aluminium and copper extraction from scrap • Automobile servicing and repairing • Ayurvedic and homeopathic medicine 	<ul style="list-style-type: none"> • Bicycles, baby carriages • Bailing of waste papers • Bio fertilizer / bio-pesticides

Green industries: Brass and bell metal utensils, Small Bakery /confectionery, Small Cotton spinning and weaving

Q.144) Which of the following ecosystem(s) represent Ecotone between marine and terrestrial ecosystems?

1. Mangrove forests
2. River banks
3. Deltas
4. Estuaries

Which of the above is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1, 3 and 4 only
- d) All of the above

Q.144) Solution (c)

An ecotone is a transition area between two biomes. It is where two communities meet and integrate. It may be narrow or wide, and it may be local (the zone between a field and forest) or regional (the transition between forest and grassland ecosystems)

An ecotone may appear on the ground as a gradual blending of the two communities across a broad area, or it may manifest itself as a sharp boundary line. Riverbank, is example for **ecotone between aquatic and terrestrial ecosystem**. Ecotone for marine and terrestrial ecosystem will be Estuary and Mangrove forsts and deltas.

Q.145) Consider the following statements with reference to the climate feedback mechanism:

1. A negative feedback has a cooling effect, while positive feedback has a warming effect.
2. Ice albedo feedback is a strong negative feedback process.

Which of the above statement is/are correct?

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

Q.145) Solution (a)

- Climate feedbacks: These are the processes that can either amplify or diminish the effects of climate forcings. Feedback that increases an initial warming is called "positive feedback." A feedback that reduces an initial warming is a "negative feedback."
- The ice albedo effect is simply a name for how ice and snow reflect solar radiation, and thus help keep the Earth cool. Since a cool Earth also tends to have more ice and snow, the ice albedo effect is an example of a positive climate feedback.

Q.146) Which can be the consequences of melting of permafrost in polar regions?

1. It may further aggravate global warming due to release of methane gas.
2. It may pose a threat to local ecosystems.
3. It would add to global inequality

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 1 and 3 only
- d) All of the above

Q.146) Solution (d)

- As top soils melt due to global warming which is a great threat as there melt will aggravate the condition of global warming. As permafrost thaws, this carbon is released to the atmosphere in the form of methane, a powerful greenhouse gas. This process leads to more climate change and is an example of a positive feedback loop, which happens when warming causes changes that lead to even more warming.
- As permafrost thaws, it can also cause substantial changes in the local ecosystem,

altering the flow of water atop and through the soil, as well as what plant and animal life can thrive in the area.

- It would also add to global inequality because most of the economic burden – equivalent to almost the entire world's current annual GDP – is likely to be borne by countries in warmer poorer regions such as India and Africa, which are most vulnerable to a rise in temperatures.

Q.147) Which among the following are the factors that help in growth of Harmful algal blooms (HABs)?

1. Warming of waters
2. Nitrogen enrichment in water
3. Pollution of water bodies
4. Changes in ocean currents

Choose correct options from below:

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.147) Solution (d)

HABs are caused by organisms called phytoplankton, some of which can produce toxins. A HAB can occur in fresh, marine (salt), and brackish (a mixture of fresh and salt) water bodies around the world.

Various factors can cause rapid growth, or blooming of these organisms, including:

- Increases in nutrient levels (for example phosphorus and nitrates) from fertilizer run-off from residences and agricultural lands, sewage discharges, and run-off from urban areas and industrial facilities
- Changes in nutrient levels associated with ocean upwelling (El Niño, El Niña)
- Low water flows, such as those associated with drought
- Changes in water temperature, particularly increases in temperature
- Changes in chemical factors such as pH or turbidity
- Changes in ocean currents
- Changes in the local ecology (how organisms interact with each other)

Q.148) Consider the following statements regarding Black Carbon:

1. Black carbon is emitted from burning biofuels, fossil fuels, and open biomass burning.
2. Black carbon stays in the atmosphere for years.
3. In India, Project Surya has been launched to reduce black carbon in atmosphere.

Which of the above statement is/are correct?

- a) 1 only

- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.148) Solution (b)

- Approximately 20% of black carbon is emitted from burning biofuels, 40% from fossil fuels, and 40% from open biomass burning.
- Black carbon stays in the atmosphere for only several days to weeks, whereas carbon dioxide (CO₂) has an atmospheric lifetime of more than 100 years.
- Project Surya has been launched to reduce black carbon in atmosphere by introducing efficient stove technologies, solar cookers, solar lamps and biogas plants.

Q.149) Which Pyramid is most suitable to compare the functional roles of the trophic levels in an ecosystem?

- a) Pyramid of Energy
- b) Pyramid of Biomass
- c) Pyramid of Numbers-upright
- d) Pyramid of Numbers-inverted

Q.149) Solution (a)

To compare the functional roles of the trophic levels in an ecosystem, an energy pyramid is most suitable. An **energy pyramid, reflects the laws of thermodynamics**, with conversion of solar energy to chemical energy and heat energy at each trophic level and with loss of energy being depicted at each transfer to another trophic level. Hence the pyramid is always upward, with a large energy base at the bottom. Energy pyramid concept helps to explain the phenomenon of biological magnification--the tendency for toxic substances to increase in concentration progressively at higher levels of the food chain

Q.150) With reference to 'Eco Sensitive Zone' (ESA), consider the following statements.

1. ESA is the area that is declared under the Environment Protection Act, 1986.
2. The purpose of the declaration of ESA is to prohibit all kinds of human activities in these zones except agriculture.

Which of the above statement is/are incorrect?

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

Q.150) Solution (b)

- Eco-Sensitive Zones or Ecologically Fragile Areas are areas within 10 kms around

Protected Areas, National Parks and Wildlife Sanctuaries.

- ESZs are notified by MoEFCC, Government of India under Environment Protection Act 1986.
- The section 3(2)(v) of the Act, says that Central Government can restrict areas in which any industries, operations or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards.

Q.151) The 'Forest Carbon Partnership Facility' is related to which among the following?

- Man and Biosphere
- REDD+
- Montreaux Record
- Wetland International

Q.151) Solution (b)

The Forest Carbon Partnership Facility is a global partnership of governments, businesses, civil society, and Indigenous Peoples focused on reducing emissions from deforestation and forest degradation, forest carbon stock conservation, the sustainable management of forests, and the enhancement of forest carbon stocks in developing countries (activities commonly referred to as REDD+).

Some initiatives assisting countries that are engaged in REDD+ include the World Bank's Forest Carbon Partnership Facility, Norway's International Climate and Forest Initiative, the Global Environment Facility, Australia's International Forest Carbon Initiative, the Collaborative Partnership on Forests, and the Green Climate Fund

Q.152) With respect to Biomedical waste rules-2016, Consider the following statements:

1. Biomedical waste comprises of only human anatomical waste, treatment apparatus like needles, syringes and other materials used in health care facilities.
2. The hospitals servicing 1000 patients or more per month are required to obtain authorisation and segregate bio- medical waste
3. Phase-out the use of chlorinated plastic bags, gloves and blood bags within two years

Which of the above statement is/are incorrect?

- 1 only
- 1 and 3 only
- 2 and 3 only
- None of the above

Q.152) Solution (a)

- Biomedical waste comprises **human & animal anatomical waste**, treatment

apparatus like needles, syringes and other materials used in health care facilities in the process of treatment and research

- The hospitals servicing 1000 patients or more per month are required to obtain authorisation and segregate bio- medical waste in to 10 categories, pack five colour backs for disposal.
- Phase-out the use of chlorinated plastic bags, gloves and blood bags within two years;
- Pre-treatment of the laboratory waste, microbiological waste, blood samples and blood bags through disinfection or sterilization on-site in the manner as prescribed by WHO or NACO;

Q.153) Consider the following statements with reference to Wetlands (Conservation and Management) Rules 2017.

1. The new rules have replaced the Central Wetlands Regulatory Authority (CWRA) with the National Wetland Committee, which has decision making powers
2. The powers for managing Wetlands have been given to the State governments so that protection and conservation can be done at the local level.
3. Conservation and management of Wetlands would be based on the principle of wise use

Which of the above statement is/are incorrect?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.153) Solution (a)

Wetlands (Conservation and Management) Rules, 2017 supersede the Wetlands (Conservation and Management) Rules, 2010 for effective conservation and management of wetlands in the country.

Key features:

- Decentralisation of wetland management. Under the new rules, the powers have been given to the State governments so that protection and conservation can be done at the local level. The central government has mainly retained powers regarding monitoring.
- The new rules have replaced the Central Wetlands Regulatory Authority (CWRA) with the National Wetland Committee, which has a merely advisory role.
- The State or UT Wetlands Authority will have to prepare a list of all wetlands and also will develop a comprehensive list of activities to be regulated and permitted within notified wetlands and their zone of influence.
- The new rules also prohibit encroachments on wetlands, solid waste dumping, discharge of untreated waste and effluents from industries and human settlements
- It prescribes that conservation and management would be based on the principle

of wise use, which is to be determined by the Wetlands Authority.

Q.154) With reference to convention on the conservation of migratory species (Bonn convention), Consider the following statements.

1. It is the only global convention specializing in the conservation of migratory species (CMS), their habitats and migration routes
2. Migratory species threatened with extinction are listed on Appendix I of the Convention.
3. The development of models tailored according to the conservation needs throughout the migratory range is a unique capacity to CMS.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.154) Solution (d)

As an environmental treaty of the United Nations, CMS provides a global platform for the conservation and sustainable use of migratory animals and their habitats. CMS brings together the States through which migratory animals pass, the Range States, and lays the legal foundation for internationally coordinated conservation measures throughout a migratory range.

- As the only global convention specializing in the conservation of migratory species, their habitats and migration routes, CMS complements and co-operates with a number of other international organizations, NGOs and partners in the media as well as in the corporate sector.
- Migratory species threatened with extinction are listed on Appendix I of the Convention.
- CMS acts as a framework Convention. The agreements may range from legally binding treaties (called Agreements) to less formal instruments, such as Memoranda of Understanding, and can be adapted to the requirements of particular regions. The development of models tailored according to the conservation needs throughout the migratory range is a unique capacity to CMS.

Q.155) Barbados Programme of Action (BPOA) is related with?

- a) Conservation of migratory species
- b) Conservation of Wetlands
- c) Sustainable development of small Island states
- d) Conference on the Human environment

Q.155) Solution (c)

BPOA (1994) - Barbados Programme of Action:

Established by UN General Assembly resolution 47/189, the UN Global Conference on the Sustainable Development of small Islands developing states (SIDS) was held in Barbados from 25 April to 6 May 1994.

The Conference reaffirmed the principles and commitments to sustainable development embodied in Agenda 21 and translated these into specific policies, actions and measures to be taken at the national, regional and international levels. The Conference also adopted the Barbados Declaration, a statement of political will underpinning the commitments contained in the BPOA.

Q.156) Consider the following statements with respect to National Green Tribunal (NGT)

1. It is established for the effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources
2. NGT is mandated to dispose the cases within one year of their respective appeals.

Which of the above statement is/are correct?

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

Q.156) Solution (a)

NATIONAL GREEN TRIBUNAL (NGT):

1. The Preamble of the act provides for the establishment of a National Green Tribunal for the effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources
2. NGT is mandated to dispose the cases **within six months of their respective appeals.**
3. The specialized architecture of the NGT will facilitate fast track resolution of environmental cases and provide a boost to the implementation of many sustainable development measures

Q.157) The programme Harmony with Nature is Initiative of?

- a) UNFCCC
- b) IUCN
- c) UNCBD
- d) UN General Assembly

Q.157) Solution (d)

In 2009, the United Nations General Assembly proclaimed 22 April as International Mother Earth Day. In so doing, Member States acknowledged that the Earth and its ecosystems are our common home, and expressed their conviction that it is necessary

to promote Harmony with Nature in order to achieve a just balance among the economic, social and environmental needs of present and future generations. The same year, the **General Assembly adopted its first resolution on Harmony with Nature.**

Q.158) Which the below statements is/are correct?

1. Farm forestry is where Individual farmers are being encouraged to plant trees on their own farmland to meet the domestic needs of the family.
2. Community forestry is the raising of trees on community land and not on private land as in farm forestry.
3. Extension forestry is Planting of trees on the sides of roads, canals and rail-ways, along with planting on wastelands

Choose correct option from below:

- a) 2 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above.

Q.158) Solution (d)

SOCIAL FORESTRY	Social forestry also aims at raising plantations by the common man so as to meet the growing demand for food, fuel wood, fodder, fiber and fertilizer etc, thereby reducing the pressure on the traditional forest area.
1. Farm forestry	Farm forestry is where Individual farmers are being encouraged to plant trees on their own farmland to meet the domestic needs of the family.
2. Community forestry	It is the raising of trees on community land and not on private land as in farm forestry. All these programmes aim to provide for the entire community and not for any individual. The government has the responsibility of providing seedlings, fertilizer but the community has to take responsibility of protecting the trees
3. Extension forestry	It is Planting of trees on the sides of roads, canals and rail- ways, along with planting on wastelands is known as 'extension' forestry, increasing the boundaries of forests. Under this project there has been creation of wood lots in the village common lands, government waste- lands and panchayat lands
4. Recreational forestry	Raising of trees with the major objective of recreation alone.

Q.159) Consider the following statements about Lighting a Billion Lives (LaBL) initiative.

1. LaBL is a campaign by MoFECC that promotes the use of solar lanterns specially designed and manufactured on a decentralized basis.
2. LaBL has been able to engage with government inter- ventions under Sarva

Shiksha Abhiyan, Madhya Pradesh Rural Livelihood Project etc.

Which of the above statement is/are correct?

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

Q.159) Solution (b)

LaBL is a **campaign by TERI** that promotes the use of solar lanterns specially designed and manufactured on a decentralized basis.

- LaBL has been able to engage with government interventions under Sarva Shiksha Abhiyan, Madhya Pradesh Rural Livelihood Project, Rasthriya Gramin Vikas Nidhi, and has facilitated the spread of mobile telephony with support from Department of Telecommunications, Government of India.
- LaBL has successfully engaged the private sector and leveraged Corporate Social Responsibility (CSR)

Q.160) Consider the following statements about The National Biodiversity Authority (NBA).

1. The NBA is a Non-Statutory, Autonomous Body and it performs facilitative, regulatory and advisory function for the Government of India on issues of conservation, sustainable use of biological resources
2. The NBA will impose benefit-sharing conditions.
3. Ensures protection to the knowledge of local people relating to biodiversity through measures such as registration of such knowledge.

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.160) Solution (c)

The National Biodiversity Authority (NBA) was established in 2003 to implement India's Biological Diversity Act (2002).

- The NBA is a Statutory, Autonomous Body and it performs facilitative, regulatory and advisory function for the Government of India on issues of conservation, sustainable use of biological resources and fair and equitable sharing of benefits arising out of the use of biological resources.

Objectives of the NBA:

- Anybody seeking any kind of intellectual property rights on a research based upon biological resource or knowledge obtained from India has to obtain prior approval of the NBA.
- The NBA will impose benefit-sharing conditions.

- For ensuring equitable sharing of benefits arising from the use of biological resources and associated knowledge, Sections 19 and 21 stipulate prior approval of the National Biodiversity Authority (NBA) before their access.
- Ensures protection to the knowledge of local people relating to biodiversity through measures such as registration of such knowledge.

Q.161) Terrestrial part of biosphere is divided in to many Biomes. In this context consider the following.

1. The most important climatic determinants are temperature, precipitation and soil.
2. No two biomes are alike
3. Savannah has landscape of tall grasses with scattered trees and huge animal diversity

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.161) Solution (c)

The terrestrial part of the biosphere is divisible into enormous regions called biomes, which are characterized, by climate, vegetation, animal life and general soil type.

- No two biomes are alike. The climate determines the boundaries of a biome and abundance of plants and animals found in each one of them.
- The most important climatic factors are temperature and precipitation.

Savannah: Grasses with scattered trees and fire resisting thorny shrubs. The fauna include a **great diversity** of grazers and browsers such as antelopes, buffaloes, zebras, elephants and rhinoceros; the carnivores include lion, cheetah, hyena; and mongoose, and many rodents.

Q.162) Consider the following statements:

1. Aquatic systems are not called biomes
2. Estuaries are highly productive as compared to the adjacent river or sea.

Which of the above statement is/are incorrect?

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

Q.162) Solution (d)

Aquatic systems are not called biomes, however they are divided into distinct life zones, with regions of relatively distinct plant and animal life. The major differences

between the various aquatic zones are due to salinity, levels of dissolved nutrients, water temperature, depth of sunlight penetration.

Estuaries: In estuaries, fresh water from rivers meet ocean water and the two are mixed by action of tides. **Estuaries are highly productive** as compared to the adjacent river or sea.

Q.163) Biosphere is a part of the earth where life can exist. With reference to this consider the following statements:

1. The energy required for the life within the biosphere comes from the sun.
2. Living organisms are not uniformly distributed throughout the biosphere.
3. Diversity of living organism increases from Temperate to Tundra region

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.163) Solution (b)

Statement-1: correct	Statement-2: correct	Statement-3: incorrect
The energy required for the life within the biosphere comes from the sun. The nutrients necessary for living organisms come from air, water and soil. The same chemicals are recycled over and over again for life to continue.	Living organisms are not uniformly distributed throughout the biosphere. Only a few organisms live in the polar regions, while the tropical rain forests have an exceedingly rich diversity of plants and animals	Biodiversity goes on decreasing from Equator to Temperate to Tundra region

Q.164) Consider the following statements:

1. A Grazing food chain Always starts with producers
2. The source of energy to ecosystem is Always from Sun

Which of the above statement is/are correct?

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

Q.164) Solution (a)

Statement-1: correct	Statement-2: incorrect
This energy is captured by plants. Thus the	The arrows in a food chain show the

living part of a food chain always starts with plant life and ends with an animal. Plants are called producers because they are able to use light energy from the sun to produce food

flow of energy, from the **sun or hydrothermal vent** to a top predator.

Q.165) Consider the following statements:

1. The flow of energy and nutrients in ecosystem is unidirectional
2. The hydrological cycle is driven by solar energy
3. Phosphorus, calcium and magnesium circulate by means of the sedimentary cycle.

Which of the above statement is/are correct?

- a) 1 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) All of the above

Q.165) Solution (b)

Statement-1: incorrect	Statement-2 and 3: correct
The nutrient cycle is a concept that describes how nutrients move from the physical environment to the living organisms, and subsequently recycled back to the physical environment. While energy cycle is unidirectional, nutrition cycle is not	The hydrologic cycle is the continuous circulation of water in the Earth-atmosphere system which is driven by solar energy. Phosphorus, calcium and magnesium circulate by means of the sedimentary cycle.

Q.166) Consider the following

1. Durban Declaration and Program of Action
2. Bali Action Plan
3. Copenhagen Accord
4. Cancun Agreement

Which of the above includes commitments to reduce greenhouse gas emissions?

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

Q.166) Solution (d)

Durban Declaration and Programme of	The DDPA reasserts the principles of equality and non-discrimination as core human rights, thus transforming victims of
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Action	discrimination into rights-holders and States into duty bearers.
Bali Action Plan	The Bali Action Plan did not introduce binding commitments to reduce greenhouse gas emissions but included the request for developed countries to contribute to the mitigation of global warming in the context of sustainable development . In addition, the Bali Action Plan envisaged enhanced actions on adaptation, technology development and on the provision financial resources, as well as measures against deforestation.
Cancun Agreement	The agreements reached on December 11 in Cancun, Mexico, at the 2010 United Nations Climate Change Conference represent key steps forward in capturing plans to reduce greenhouse gas emissions and to help developing nations protect themselves from climate impacts and build their own sustainable futures.
The Copenhagen Agreement	The Copenhagen Agreement is a document that delegates at the 15th session of the Conference of Parties (COP 15) to the United Nations Framework Convention on Climate Change.

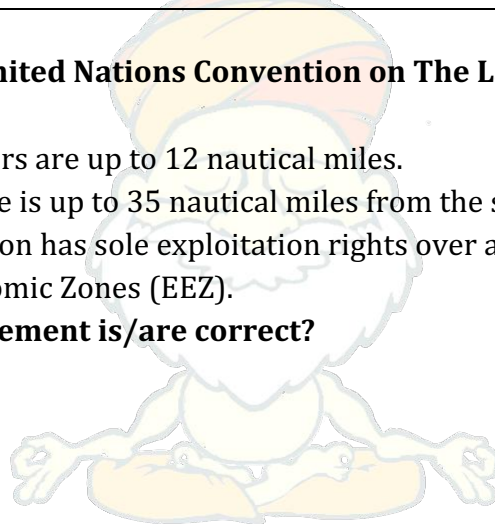
Q.167) According to “United Nations Convention on The Law of Seas (UNCLOS)”.

Consider the following:

1. Territorial waters are up to 12 nautical miles.
2. Contiguous Zone is up to 35 nautical miles from the shore
3. The coastal nation has sole exploitation rights over all natural resources in Exclusive Economic Zones (EEZ).

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above



Q.167) Solution (b)

The contiguous zone extends up to **24 nautical** miles from the shore. In a contiguous zone coastal nations can exercise their rights in four areas: customs, taxation, immigration and pollution.

In Exclusive Economic Zone (EEZ), which extends up to 200 nautical mile, the coastal nations have exclusive right to exploit the resources. International vessels are free to cross these waters without any restriction.

Q.168) TRAFFIC, The Wildlife Trade Monitoring Network is a joint conservation programme of?

- a) WWF and IUCN
- b) UNEP and IPCC
- c) WWF and UNDP
- d) UNEP and UNCBD

Q.168) Solution (a)

- TRAFFIC, the wildlife trade monitoring network, is a joint program of WWF and IUCN
- TRAFFIC works to ensure that trade in wild plants and animals is not a threat to the conservation of nature.
- TRAFFIC focuses on leveraging resources, expertise and awareness of the latest globally urgent species trade issues such as tiger parts, elephant ivory and rhino horn.

Q.169) The decisions on REDD+ enumerate some "eligible activities" that developing countries may implement to reduce emissions and enhance removals of greenhouse gases. Identify the activities

1. Reducing emissions from deforestation
2. Reducing emissions from land degradation
3. Conservation of forest carbon stocks
4. Enhancement of forest carbon stocks
5. Sustainable management of non-renewable energy

Choose correct option from below:

- a) 1 and 2 only
- b) 1, 3 and 4 only
- c) 1, 2 and 3 only
- d) All of the above.

Q.169) Solution (b)

Reducing emissions from deforestation and forest degradation in developing countries and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD+) encourages developing countries to contribute to climate change mitigation in the forest sector through the following activities:

- Reducing emissions from deforestation
- Reducing emissions from forest degradation
- Conservation of forest carbon stocks
- Sustainable management of forests
- Enhancement of forest carbon stocks

Q.170) Readiness for Investment in Sustainable Energy (RISE) is developed by?

- a) International Energy Agency
- b) International Monetary Fund
- c) United Nations Development Programme
- d) World Bank Group

Q.170) Solution (d)

Readiness for Investment in Sustainable Energy (RISE), developed by the World Bank Group, is a suite of indicators that **assesses the legal and regulatory environment for investment** in sustainable energy. It establishes a framework for better depicting the national enabling environment to attract investment into sustainable energy.

RISE is aimed at policymakers who focus on actions within their control. Creating this environment is directed by policymakers—the primary constituency RISE aims to influence. RISE supports the achievement of the objectives of the Sustainable Energy for All (SE4ALL) initiative.

Q.171) Consider the following statements regarding National Mission on Sustainable Habitats:

1. It is one of the missions under National Action Plan on Climate Change.
2. It aims to make cities sustainable through improvements in energy efficiency
3. The mission works on development of green corridors to connect protected areas of India.

Which of the above is/are correct?

- a) 1 and 2 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.171) Solution (a)

The National Mission on Sustainable Habitat is one of the missions under National Action Plan on Climate Change and aims to make cities sustainable through improvements in energy efficiency in buildings, management of solid waste & shift to public transport.

Q.172) World Sustainable Development Summit (WSDS) is a flagship initiative by

- a) Food and Agriculture Organization (FAO)
- b) The Energy and Resources Institute's (TERI)
- c) UNESCO
- d) United Nations Development Programme (UNDP)

Q.172) Solution (b)

The World Sustainable Development Summit (WSDS), TERI's flagship event, has been conceptualized as a single platform to accelerate action towards sustainable development and especially climate change. It the leading forum for discussing sustainable development issues.

Q.173) The term “Arribada” is related with?

- a) Ecological Niche

- b) Ecosystem efficiency
- c) Pollution Index
- d) Mass nesting of turtles

Q.173) Solution (d)

The Olive Ridley Turtles are one of the smallest and most abundant of all sea turtles found in the world, inhabiting warm waters of the Pacific, Atlantic and Indian oceans.

- These turtles, along with their cousin, Kemps Ridley turtle, are best known for their unique **mass nesting called Arribada**, where thousands of females come together on the same beach to lay eggs.
- IUCN Red list: Vulnerable; CITES: Appendix 1, CMS: Appendix 1.

Q.174) Consider the following statements:

1. Important Bird Area (IBA) was developed and sites are identified by BirdLife International.
2. Not all animals migrate by choice is launched by UN Environment India and Wildlife Crime Control Bureau (WCCB)
3. Sambhar is largest inland saltwater lake in India and also important Ramsar site

Which of the above statement is/are incorrect?

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

Q.174) Solution (d)

Statement-1: correct	Statement-2: correct	Statement-3: correct
<p>An Important BIRD and Biodiversity Area (IBA) is an area identified using an internationally agreed set of criteria as being globally important for the conservation of BIRD populations.</p> <ul style="list-style-type: none"> • IBA was developed and sites are identified by BirdLife International. 	<p>UN Environment India and Wildlife Crime Control Bureau (WCCB) of India launched an awareness campaign 'Not all animals migrate by choice' to be displayed at major airports across the country</p>	<p>Sambhar is largest inland saltwater lake situated in Rajasthan. It has been designated as wetland of international importance under Ramsar Convention</p>

Q.175) With reference to homeostasis, consider the following statements:

1. It refers to the maintenance of the constancy of an organism's internal environment despite varying external environmental conditions
2. Only mammals are capable of maintaining homeostasis.

Which of the above statement is/are correct?

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

Q.175) Solution (a)

- The maintaining of the constancy of an organism's internal environment despite varying external environmental conditions is called homeostasis.
- An overwhelming majority (99 per cent) of animals and nearly all plants cannot maintain a constant internal environment. Their body temperature changes with the ambient temperature. Hence homeostasis is important for them

Q.176) Consider the following statements:

1. While eurythermal organisms are those organisms which can survive in a wide range of temperatures, stenothermal organisms are restricted to a narrow range of temperatures.
2. While all vertebrates are stenothermal, all invertebrates are eurythermal.

Which of the above statement is/are incorrect?

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

Q.176) Solution (b)

Statement-1: correct	Statement-2: incorrect
Based on temperature tolerance, different groups of organisms are defined. Among them, eurythermal and stenothermal animals are two categories. Eurythermal animals are able to tolerate a wide range of temperature levels. Stenothermal animals are those which can tolerate a narrow range of temperature levels.	all stenothermal organisms are not necessarily vertebrates <ul style="list-style-type: none"> • stenothermal animals include a penguin, python, crocodile

Q.177) An Ecological Pyramid is a diagrammatic presentation to describe trophic levels. How does the knowledge of Ecological Pyramid can help us in conservation of an ecosystem?

1. It helps us in recognizing the keystone species.
2. It helps us to identify bioaccumulation
3. It helps us to identify biomagnifications.
4. It helps us recognize Invasive species

Choose correct option from below:

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

- c) 1, 3 and 4 only
- d) All of the above.

Q.177) Solution (a)

In order to take appropriate steps to preserve an ecosystem we must know the trophic levels of the ecosystem, by this we will be able to find out the keystone species. Through the study of the trophic levels, we will be able to know the impact of biomagnifications and bioaccumulation in that ecosystem and take corrective measures.

Invasive species are just one of species in trophic levels, which cannot be identified using ecological pyramid

Q.178) Which one of the following is the best description of the term 'standing crop' in ecology?

- a) It is the mass of living material at a particular time in each trophic level
- b) It is the amount of biomass of a forest
- c) It is the number of primary producers in an ecosystem
- d) It is the total amount of energy produced in a food chain.

Q.178) Solution (a)

In an ecosystem, total mass of living matter at a trophic level in an area at any time is called standing crop. It indicates the total biomass of an ecosystem.

Each trophic level has a certain mass of living material at a particular time called as the standing crop. The standing crop is measured as the mass of living organisms (biomass) or the number in a unit area. The biomass of a species is expressed in terms of fresh or dry weight

Q.179) The ecological footprint is a measure of human demand on the Earth's ecosystems. It measures?

1. How much of the biological capacity of the planet is demanded by a given human activity or population
2. Ecological Footprints is calculated for overall activity of a nation or population and activities such as industrialization etc.
3. The disadvantage of Ecological Footprint is that it cannot be calculated for individual people or area

Choose correct option from below:

- a) 2 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above.

Q.179) Solution (b)

- The Ecological Footprint is a resource accounting tool that measures how much biologically productive land and sea is used by a given population or activity, and

compares this to how much land and sea is available. Productive land and sea areas support human demands for food, fibre, timber, energy, and space for infrastructure.

- Ecological Footprint accounts answer a specific research question: how much of the biological capacity of the planet is demanded by a given human activity or population.
- Ecological Footprints can be calculated for individual people, groups of people (such as a nation), and activities (such as manufacturing a product).

Q.180) The Term “Bio-Mining is recently seen in news, it refers to?

- Extraction of minerals using enzymes
- Use of genetic information of ores to extract minerals from microbes
- Use of biomedical devices in the recovery of minerals from ores
- Use of microorganisms in the recovery of minerals from ores

Q.180) Solution (d)

Biomining is an approach to the extraction of desired minerals from ores.

Microorganisms are used to leach out the minerals, rather than the traditional methods of extreme heat or toxic chemicals, which have a deleterious effect on the environment.

In news: <http://www.thehindu.com/news/cities/Tiruchirapalli/Bio-mining-helps-in-tackling-garbage-problem/article16438953.ece>

Q.181) Pollution is defined as an addition or excessive addition of certain materials to the physical environment. With reference to this consider the following statements:

- Primary pollutants persist in the form in which they are added to the environment
- Secondary Pollutants are formed by interaction among the primary pollutants.
- Qualitative Pollutants do not occur in nature and are man-made

Which of the above statement is/are incorrect?

- 1 only
- 1 and 3 only
- 2 and 3 only
- None of the above

Q.181) Solution (d)

Types of pollutants	Characteristics
Primary pollutants	These persist in the form in which they are added to the environment e.g. DDT, plastic.
Secondary Pollutants	These are formed by interaction among the primary pollutants. For example, peroxyacetyl nitrate (PAN)

Quantitative Pollutants	These occur in nature and become pollutant when their concentration reaches beyond a threshold level. E.g. carbon dioxide, nitrogen oxide.
Qualitative Pollutants	These do not occur in nature and are man-made. E.g. fungicides, herbicides, DDT etc

Q.182) Indian cities are reeling under multiple problems, including environmental issues. What are the major causes of pollution in Indian cities?

1. Crop burning
2. Vehicular emission
3. Poor waste management
4. Loss of tree cover
5. Construction activities

Choose correct option from below:

- a) 1 and 2 only
- b) 3 and 4 only
- c) 1 and 4 only
- d) All of the above.

Q.182) Solution (d)

In 2016, a World Health Organisation (WHO) study found that fourteen of the twenty world's most polluted cities belonged to India.

- The sources of pollution are multiple. Vehicular emissions, crop burning, generation of dust- particularly from construction sites, depleting tree covers and poor waste management – all contribute towards the pollution in Indian cities

Q.183) Consider the following statements with respect to short lived climate pollutants (SLCP)

1. The main short-lived climate pollutants are black carbon, methane, tropospheric ozone, and fluorinated gases
2. SLCP'S contribute very less to climate change per molecule emitted as compared to Greenhouse gases

Which of the above statement is/are correct?

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

Q.183) Solution (a)

Statement-1: correct	Statement-2: Incorrect
The most significant short-lived climate pollutants are black carbon, methane,	Due to SLCP'S immense contributions to climate change per molecule emitted,

tropospheric ozone, and fluorinated gases due to their atmospheric impacts. They primarily come from fossil fuel production and combustion.

reducing short-lived climate pollutants can be very cost-effective. Actions taken in the immediate future to address them could slow the planet's warming 0.6 degrees by mid-century

Q.184) Climate change performance Index is issued by?

- a) IPCC
- b) UNFCCC
- c) Germanwatch
- d) UNEP

Q.184) Solution (c)

Recently, India has been ranked 14th in Climate Change Performance Index (CCPI).

- It is issued by Germanwatch, the New Climate Institute, and the Climate Action Network.
- Countries are ranked across four categories — Greenhouse Gas Emissions, Renewable Energy, Energy Use, and Climate Policy.

Q.185) Sahara forest project (SFP) is related with?

- a) Rejuvenation of degraded forest in Africa
- b) combating desertification and development
- c) Reversing Coral bleaching
- d) Livelihood programme for Saharan Tribes

Q.185) Solution (b)

Desertification refers to the land degradation in arid, semi-arid and sub-humid areas resulting from various factors, including climatic variations and human activities.

- The Sahara Forest Project aims to provide fresh water, food and renewable energy in hot, arid regions as well as re-vegetating areas of uninhabited desert.

Q.186) Consider the following statements in the context of UNFCCC summits

1. The Ocean Pathway was successfully launched in COP23 in Bonn with a strategy for 2020 supporting the goals of the Paris Agreement
2. Fiji Momentum for Implementation outlined the steps that need to be taken in 2018 to make the Paris Agreement operational
3. Talanoa dialogue is a facilitative dialogue among Parties to take stock of the collective efforts of Parties in relation to Paris agreement

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) All of the above

Q.186) Solution (d)

Fiji momentum	Talanoa dialogue
COP23 concluded with what was called the 'Fiji Momentum for Implementation,' which outlined the steps that need to be taken in 2018 to make the Paris Agreement operational	a process designed to help countries enhance and implement their Nationally Determined Contributions by 2020

The ocean pathway: The Ocean Pathway was successfully launched in COP23 in Bonn with a two track strategy for 2020 supporting the goals of the Paris Agreement that includes;

1. Increasing the role of the ocean considerations in the UNFCCC process and;
2. Significantly increasing action in priority areas impacting or impacted by ocean and climate change.

Q.187) The first ever Gender Action Plan (GAP) is related to?

- a) UNFCCC
- b) Lima work programmes
- c) Sustainable development goals
- d) Both a and b

Q.187) Solution (d)

At COP 25 Parties agreed a 5-year enhanced Lima work programme on gender and its gender action plan

GAP priority areas:

The enhanced gender action plan sets out objectives and activities under five priority areas that aim to advance knowledge and understanding of gender-responsive climate action and its coherent mainstreaming in the implementation of the UNFCCC and the work of Parties, the secretariat, United Nations entities and all stakeholders at all levels, as well as women's full, equal and meaningful participation in the UNFCCC process

Q.188) Consider the following statements with respect to Mission Innovation (MI)

1. MI is a global initiative working to accelerate clean energy innovation
2. MI seeks to double investments in clean energy innovation over five years.
3. Ministry of forest and climate change is nodal agency of this mission in India

Which of the above statement is/are correct?

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

Q.188) Solution (b)

- Mission Innovation (MI) is a global initiative of 24 countries and the European

Commission (on behalf of the European Union) working to reinvigorate and accelerate global clean energy innovation with the objective to make clean energy widely affordable.

- Department of Biotechnology (DBT) under Ministry of Science & Technology is nodal agency coordinating and steering activities of Mission Innovation (MI) in India

Q.189) Recently, new Moth species has been discovered in this wildlife sanctuary, it lies between subansiri, sipu and Pange Rivers. Both sub-tropical and temperate vegetation is found here and it is also one of home to clouded leopard.

The above description is of which wildlife sanctuary?

- Pakke wildlife reserve
- Talle wildlife reserve
- Manas Park
- Kaziranga Park

Q.189) Solution (b)

Recently, new Moth species has been discovered in Talle Wildlife Sanctuary in Arunachal Pradesh. The scientific name of moth is *ElcysmaZiroensis*, and commonly called Apatani Glory, named after a local tribe called Apatani

Talle Wildlife Sanctuary:

- It lies roughly in between the Subansiri, Sipu and Pange Rivers.
- Sub-tropical broad leafed, temperate broad leafed and temperate conifer types of vegetation are found here
- It is one of the home for clouded leopard (Vulnerable IUCN status).

Q.190) Red Sanders are in news for smuggling across borders. With reference to this consider the following statements:

1. Red Sanders is an endemic tree of South India.
2. They are found in Tropical Dry Deciduous Forest of the Nilgiri hill ranges
3. IUCN has put it under the category of endangered species

Which of the above statement is/are correct?

- 1 and 3 only
- 1 and 2 only
- 2 and 3 only
- All of the above

Q.190) Solution (a)

Red Sanders:

- Red Sanders is an endemic tree of South India.
- They are found in Tropical Dry Deciduous **Forest of the Palakonda and Seshachalam hill** ranges of Andhra Pradesh and also found in Tamil Nadu and Karnataka.

- Red Sanders usually grows in the rocky, degraded and fallow lands with Red Soil and hot and dry climate.
- IUCN has put it under the category of endangered species in the Red List due to the dwindling population because of illegal felling and smuggling

Q.191) Secure Himalaya project is launched by?

1. UNEP
2. UNDP
3. MOEFCCC
4. IUCN

Choose correct option from below:

- a) 2 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above.

Q.191) Solution (c)

The **Ministry of Environment, forest and climate change** in collaboration with **UNDP** has launched a six-year project to ensure conservation of locally and globally significant biodiversity, land and forest resources in the high Himalayan ecosystem spread over four states in India.

Q.192) This protected Area has the complex and fragile mangrove ecosystem and the endangered flora, fauna associated with it. It is declared as Ramsar site and is one of largest home to endangered crocodile species. It also has Marine sanctuary associated with it. The above description refers to which protected Area?

- a) Chambal Basin
- b) Bhitarkanika
- c) Kolleru lake
- d) Sunderbans

Q.192) Solution (b)

About Bhitarkanika:

- Bhitarkanika is a unique habitat of Mangrove Forests crisscrossed with numerous creeks and mud flats located in Kendrapara district of Orissa.
- It is located in the estuary of Brahmani, Baitarani, Dhamra & Mahanadi river systems.
- The wetland is represented by as many as 3 protected Areas, namely “The Bhitarkanika National Park”, “The Bhitarkanika Wildlife Sanctuary” and “The Gahirmatha Marine Sanctuary”.
- Bhitarkanika is said to house 70% of India’s estuarine or salt water crocodiles whose conservation started in 1975.

Q.193) Consider the following statements with respect to Biodiversity Heritage sites:

1. They are well defined areas that are unique, ecologically fragile Inland water ecosystems only
2. Ameenpur Lake became the first water body in the country to be declared a Biodiversity Heritage Site.
3. Under the Biological Diversity Act, 2002 (BDA) the State Government in consultation with local bodies notifies Biodiversity Heritage Sites (BHS)

Which of the above is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.193) Solution (c)

Biodiversity Heritage Site (BHS):

- They are well defined areas that are unique, ecologically fragile ecosystems - terrestrial, coastal and inland waters and, marine having rich biodiversity and other social, economic, cultural and ecological values
- Recently, Ameenpur Lake became the first water body in the country to be declared a Biodiversity Heritage Site. It is located on the western fringes of Hyderabad in Telangana state.
- Under the Biological Diversity Act, 2002 (BDA) the State Government in consultation with local bodies notifies Biodiversity Heritage Sites (BHS). Further, the State Government in consultation with the Central Government may frame rules for the management and conservation of BHS.

Q.194) Recently government of India has brought new Wetland conservation rules, in this respect consider the following statements:

1. Under the new rules, the central government has empowered the states and union territories to identify and manage their wetlands.
2. Central Wetlands Regulatory Authority (CWRA) replaced National Wetlands Committee
3. This new rules are applicable only to Wetlands categorised as 'wetlands of international importance' under the Ramsar Convention

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.194) Solution (a)

Recently, Central government notified Wetlands (Conservation and Management) Rules, 2017.

Some Provision under the new rules:

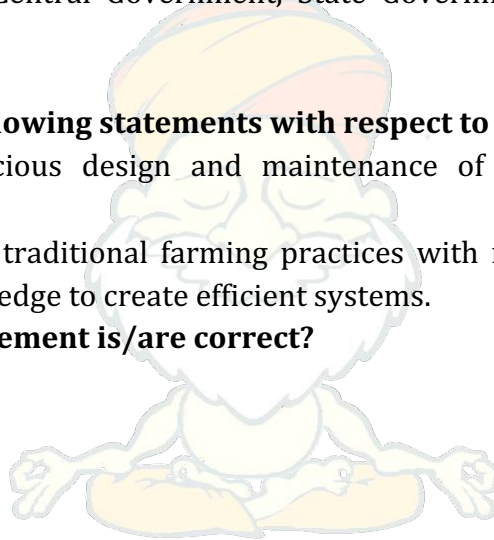
- Definition of wetlands: They are defined as “an area of marsh, fen, peatland or water; whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres
- Under the new rules, the central government has empowered the states and union territories to identify and manage their wetlands.
- Setting Up National Wetlands Committee: it will replace Central Wetlands Regulatory Authority (CWRA), to monitor implementation of these rules and advise the Central Government on appropriate policies and action programmes for conservation and wise use of wetlands
- These rules shall apply to the following wetlands- Wetlands categorised as 'wetlands of international importance' under the Ramsar Convent and Wetlands as notified by the Central Government, State Government and Union Territory Administration

Q.195) Consider the following statements with respect to PERMACULTURE:

1. It is the conscious design and maintenance of agriculturally productive ecosystems
2. It incorporates traditional farming practices with modern technological and scientific knowledge to create efficient systems.

Which of the above statement is/are correct?

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



Q.195) Solution (c)

Permaculture:

- It is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems.
- It is the harmonious integration of landscape and people — providing their food, energy, shelter, and other material and non-material needs in a sustainable way.
- The term was coined by Bill Mollison in 1978.
- Environment friendly: It discourages uses of chemical and pesticide and promotes the uses of eco-friendly means to maintain soil health and increase productivity.
- Promotion of Traditional practice: It incorporates traditional farming practices with modern technological and scientific knowledge to create efficient systems. It can also reduce the dependency of farmers on multi-national companies for genetically modified seeds.

Q.196) With respect to the Boreal biome, consider the following statements:

1. Soils in the Boreal ecosystem are acidic and poor in nutrients.
2. The southern most part of the boreal ecosystem is flanked by tree line.

Which of the above statement is/are correct?

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

Q.196) Solution (a)

1. The tree line is the edge of the habitat at which trees are capable of growing. It is found at high elevations and high latitudes. Beyond the tree line, trees cannot tolerate the environmental conditions. It occurs at the northern flank of the taiga ecosystem. Beyond the tree line, tundra ecosystem is present
2. Soils in the boreal forest are typically podzols, gray soils that are thin, acidic, and poor in nutrients. These soils lie beneath a mat of coniferous tree needles and other organic material that accumulates due to the slow decomposition rates and limited soil microorganism activity that occurs in the cold climate.

Q.197) The term stratification in Ecology refers to?

- a) Vertical zones in an aquatic ecosystem with varying levels of salinity.
- b) Arrangement of essential minerals in the soil.
- c) Decrease in populations of species down a food chain
- d) Vertical distribution of different species occupying different levels.

Q.197) Solution (d)

The vertical distribution of different species occupying different levels is called stratification. For example, trees occupy top vertical strata or layer of a forest, shrubs the second and herbs and grasses occupy the bottom layers.

Q.198) consider the following statements with reference to Ecotypes:

1. Ecotypes differ from each other on the basis of morphological and physiological characters.
2. Different ecotypes of a species are inter- fertile

Which of the above statement is/are correct?

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

Q.198) Solution (c)

1. Species having a wide range of distribution evolve genetically adapted local populations, called ecotypes. Ecotypes differ from each other on the basis of

morphological and physiological characters

2. Ecotypes are inter-fertile. Though the different ecotypes of a species are morphologically and genetically distinct, yet because of their inter-fertility, they are put into one taxonomic species

Q.199) Room Of The River Project is recently seen in News, It is related with?

- a) Hydro power generation
- b) Wetland conservation
- c) Flood mitigation
- d) Dam safety

Q.199) Solution (c)

In News: One of the flagship projects of the Netherland government, “Room of the river” is to be replicated in Kerala’s Kuttanad, which remained submerged for weeks during Kerala floods.

- It is a flood mitigation initiative which is aimed at protecting areas adjoining rivers from routine flooding and improving water management systems in delta regions.
- Key concept behind the project: To provide more space for the water body so that it can manage extraordinary high-water levels during floods. The project involves tailor-made solutions for each River.

Q.200) Consider the following statements:

1. Sumatran Rhino is the only Asian Rhino with two horns.
2. Sumatran Rhino’s IUCN status is Critically Endangered
3. The Sumatran rhino has become extinct in Malaysia

Which of the above statement is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) All of the above

Q.200) Solution (d)

The Sumatran rhino has become extinct in Malaysia after the last remaining individual died on November 23, 2019, due to natural causes.

- It is the smallest of all rhino species and one of the most endangered land mammals on the planet.
- It is the only Asian Rhino with two horns.
- Its IUCN status is Critically Endangered.
- Earlier, it has occurred in the parts of Bangladesh, Bhutan, Brunei Darussalam, Cambodia, India, Lao PDR, Myanmar, Thailand and Viet Nam.
- Now, it exists only in four isolated regions of rainforests on the Indonesian islands of Sumatra and Borneo.

