



All India Civil Services Coaching Centre

(Under the aegis of Government of Tamil Nadu)

Answer Key Explanation

Test 10 – Environment

Maximum Questions: 100

Maximum Marks: 200

1. Correct Answer: (d)
Terrestrial Ecosystem

- The interrelations between organisms and the environment on the land constitute “Terrestrial Ecology”. Due to variations in the topographic features of valleys, mountains, and slopes, certain differences occur.
- These differences are reflected in both the material and biotic diversities. Altitudinal and latitudinal variations cause shifts and differences in the climatic patterns.
- Due to varied climate, the plant and animal life existing in different terrestrial areas vary which results in differentiation of ecosystem as segments within the large biosphere.
- The most important limiting factors of the terrestrial ecosystems are moisture and temperature.

2. Correct Answer: (d)
Tundra

- Tundra means a “barren land” since they are found where environmental conditions are very severe. There are two types of tundra arctic and alpine.
- Arctic tundra extends as a continuous belt below the polar ice cap and above the tree line in the northern hemisphere.
- It occupies the northern fringe of Canada, Alaska, European Russia, Siberia and island group of Arctic Ocean.
- On the south pole, tundra is very small since most of it is covered by the ocean. Alpine tundra occurs at high mountains above the with respect to Arctic mountains are found at all latitudes, therefore, alpine

tundra shows day and night temperature variations.

- Typical vegetation of arctic tundra is cotton grass, sedges, dwarf heath, willows, birches, and lichens. Animals of tundra are reindeer, musk ox, arctic hare, caribous, lemmings, and squirrel.
- Most of them have a long life e.g. arctic willow has a life span of 150 to 300 years. They are protected from chillness by the presence of thick cuticle and epidermal hair.
- Mammals of the tundra region have a large body size, small tail and small ear to avoid the loss of heat from the surface.
- The body is covered with fur for insulation. Insects have short life cycles that are completed during a favorable period of the year.

3. Correct Answer: (c)
Tropical Seasonal Forests

- Tropical seasonal forests also are known as monsoon forests occur in regions where total annual rainfall is very high but segregated into pronounced wet and dry periods.
- This kind of forest is found in South East Asia, central and south America, northern Australia, western Africa and tropical islands of the Pacific as well as in India.

4. Correct Answer: (a)
Tropical Dry Deciduous Forest

- Dry deciduous forests are found throughout the northern part of the country except in the North-East.

- It is also found in Madhya Pradesh, Gujarat, Andhra Pradesh, Karnataka, and Tamil Nadu.
- The canopy of the trees does not normally exceed 25 meters. The common trees are the sal, a variety of acacia, and bamboo.

5. Correct Answer: (d)
Subalpine forest

- Subalpine forests extend from Kashmir to Arunachal Pradesh between 2900 to 3500 meters.
- In the Western Himalayas, the vegetation consists mainly of juniper, rhododendron, willow, and black currant.
- In the eastern parts, red fir, black juniper, birch, and larch are the common trees. Due to heavy rainfall and high humidity, the timberline in this part is higher than that in the West.
- Rhododendron of many species covers the hills in these parts.

6. Correct Answer: (d)
Deforestation

- It is the permanent destruction of forests in order to make the land available for other uses.

Causes

- Shifting cultivation
- Development project
- Fuel Requirements
- Raw Material Requirements
- Other Causes

Other Causes

- Deforestation also results from overgrazing, agriculture, mining, urbanization, flood, fire, pest, diseases, defense and communication activities.

7. Correct Answer: (d)
Types of Grasslands

- Based on climatic conditions there are six types of grasslands found in the different regions of the Indian subcontinent.
- Four major types of grasslands are discussed here.
- **Semi-arid zone**
It covers the northern portion of Gujarat,

Rajasthan (excluding Aravallis), western Uttar Pradesh, Delhi, and Punjab. The topography is broken up by hill spurs and sand dunes.

- **Dry sub-humid zone**
It covers the whole of peninsular India (except Nilgiri).

- **Moist sub-humid zone**
It covers the Ganga alluvial plain in Northern India. The topography is level, low lying and ill drained.

- **Humid montane regions**
This extends to the humid montane regions and moist sub-humid areas of Assam, Manipur, West Bengal, Uttar Pradesh, Punjab, Himachal Pradesh, and Jammu and Kashmir.

- The savanna is derived from the humid forests on account of shifting cultivation and sheep grazing.

8. Correct Answer: (d)
Aquatic Ecosystem

- Ecosystems consisting of water as the main habitat are known as aquatic ecosystems.
- Aquatic ecosystems are classified based on their salt content.
- Freshwater ecosystems- The salt content of fresh bodies is very low, always less than 5 ppt (parts per thousand). E.g lakes, ponds, pools, springs, streams, and rivers
- Marine ecosystems - the water bodies containing salt concentration equal to or above that of seawater (i.e., 35 ppt or above). E.g shallow seas and open ocean
- Brackish water ecosystems – these water bodies have salt content in between 5 to 35 ppt. e.g. estuaries, salt marshes, mangrove swamps, and forests.

9. Correct Answer: (b)
Dissolved Oxygen in Aquatic Ecosystems

- In aquatic ecosystems, oxygen is dissolved in water, where its concentration varies constantly depending on factors that influence the input and output of oxygen in the water.

- In freshwater, the average concentration of dissolved oxygen is 0.0010 percent (also expressed as 10 parts per million or 10 ppm) by weight, which is 150 times lower than the concentration of oxygen in an equivalent volume of air.
- Oxygen enters the aquatic ecosystem through the air-water interface and by the photosynthetic activities of aquatic plants.
- Dissolved oxygen escapes the water body through the air-water interface and through respiration of organisms (fish, decomposers, zooplanktons, etc).
- The amount of dissolved oxygen retained in water is also influenced by temperature.
- Oxygen is less soluble in warm water. Warm water also enhances decomposer activity. Therefore, increasing the temperature of a water body increases the rate at which oxygen is depleted from water.
- When the dissolved oxygen level falls below 3-5 ppm, many aquatic organisms are likely to die.

10. Correct Answer: (c)

Classification of Lakes

- Lakes are also classified on the basis of their water chemistry.
- Based on the levels of salinity, they are known as Freshwater, Brackish or Saline lakes (similar to that of classification of an aquatic ecosystem).
- On the basis of their nutrient content, they are categorized as Oligotrophic (very low nutrients), Mesotrophic (moderate nutrients) and Eutrophic (highly nutrient-rich).
- The vast majority of lakes in India are either eutrophic or mesotrophic because of the nutrients derived from their surroundings or organic wastes entering them.

11. Correct Answer: (d)

Eutrophication

- Greek word – Eutrophia means adequate & healthy nutrition.

- Eutrophication is a syndrome of an ecosystem, response to the addition of artificial or natural nutrients such as nitrates and phosphates through fertilizer, sewage, etc that fertilize the aquatic ecosystem.
- It is primarily caused by the leaching of phosphate and - or nitrate-containing fertilizers from agricultural lands into lakes or rivers.
- The growth of green algae seen in the lake surface layer is the physical identification of a Eutrophication.
- Some algae and blue-green bacteria thrive on the excess ions and a population explosion covers almost entire surface layer is known as an algal bloom. This growth is unsustainable.
- As Algal Bloom covers the surface layer, it restricts the penetration of sunlight. Oxygen is required by all respiring animals in the water and it is replenished by diffusion and photosynthesis of green plants.
- The oxygen level is already low because of the population explosion and further oxygen is taken up by microorganisms that feed off the dead algae during the decomposition process.
- Due to reduced oxygen levels, fishes and other aquatic organisms suffocate and they die.
- The anaerobic conditions can promote the growth of bacteria which produces toxins deadly to aquatic organisms, birds, and mammals.
- All this eventually leads to the degradation of the aquatic ecosystem and the death of its organisms.
- It often leads to change in animal and plant population & degradation of water & habitat quality.

12. Correct Answer: (d)

Harmful Algal Blooms

- Algae or phytoplankton are microscopic organisms that can be found naturally in coastal waters.

- They are major producers of oxygen and food for many of the animals that live in these waters.
- When environmental conditions are favorable for their development, these cells may multiply rapidly and form high numbers of cells and this is called an algal bloom.
- A bloom often results in a color change in the water.
- Algal blooms can be any color, but the most common ones are red or brown. These blooms are commonly referred to as red or brown tides.
- Most algal blooms are not harmful but some produce toxins and do affect fish, birds, marine mammals and humans.
- The toxins may also make the surrounding air difficult to breathe. These are known as Harmful Algal Blooms (HABs).

13. Correct Answer: (d)

Harmful Algal Blooms (HABs)

- HABs can deplete oxygen in the water and lead to low dissolved oxygen levels.
- When masses of algae die and decompose, the decaying process can deplete oxygen in the water, causing the water to become so low in oxygen.
- When oxygen levels become too low, fish suffocate and die.
- Some algae species in blooms produce potent neurotoxins that can be transferred through the food web where they affect and even kill the higher forms of life such as zooplankton, shellfish, fish, birds, marine mammals, and even humans that feed either directly or indirectly on them.
- As a consequence, HAB events adversely affect commercial and recreational fishing, tourism, and valued habitats, creating a significant impact on local economies and the livelihood of coastal residents.

14. Correct Answer: (b)

Seaweeds

- "Seaweeds" are a group of photoautotrophic, multi-cellular algae occurring in marine environments.

- Basically, they are simple organisms that can perform photosynthesis.
- The Seaweeds are macrophytic algae, a primitive type of plants lacking true roots, stems, and leaves.
- The word seaweed gives the wrong impression that it is a useless plant. However, seaweeds are wonder plants of the sea and highly useful plants.
- Seaweeds grow in the shallow waters. Seaweed planted in shallow water near the surface (30 to 50 centimeters) receives plenty of sunlight and its growth will be good.
- Seaweed planted in deep water (more than 1 meter from the sea surface) does not get enough sunlight and its growth will be poor.
- Seaweeds provide a new renewable source of food, energy, chemicals and medicines.
- It also provides a valuable source of raw material for industries like health food, medicines, pharmaceuticals, textiles, fertilizers, animal feed etc.
- Seaweeds are rich in minerals, vitamins, trace elements, and bioactive substances, seaweeds are called medical food of the 21st century.
- Seaweeds grow abundantly along the Tamil Nadu and Gujarat coasts and around Lakshadweep and Andaman and Nicobar islands.
- There are also rich seaweed beds around Mumbai, Ratnagiri, Goa, Karwar, Varkala, Vizhinjam and Pulicat in Tamil Nadu and Chilka in Orissa.

15. Correct Answer: (c)

Species diversity

- Species differ from one another in their genetic makeup and do not interbreed in nature.
- Closely-related species, however, have in common much of their hereditary characteristics. For example, about 98.4 percent of the genes of humans and chimpanzees are the same.

- Species diversity is the different variety of living organisms present on the earth.
- It is the ratio of one species population over a total number of organisms across all species in the given biome.
- 'Zero' would be infinite diversity, and 'one' represents only one species present in that region

16. Correct Answer: (d)

Species Richness

- Biodiversity is measured by two major components:
Species richness
Species evenness
- Species richness is the measure of the number of species found in a community. Species richness is further classified into 3 components:
Alpha diversity
Beta diversity
Gamma diversity
- Delta Diversity is not the measure of species richness of biodiversity.
- Species Evenness
It measures the proportion of species at a given site, e.g. low evenness indicates that a few species dominate the site.

17. Correct Answer: (a)

Ecosystem Services include

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

18. Correct Answer: (d)

Bio Geographic Realm

- Bio geographic realms are large spatial regions within which ecosystems share a broadly similar biota. Scholars have recognized eight Terrestrial biogeographic realms:
- Nearctic realm
- Neotropical realm
- Palearctic realm

- Indo-Malayan/Oriental realm
- Afrotropical/Ethiopian realm
- Oceania realm
- Australian realm
- Antarctic realm

19. Correct Answer: (b)

Annelids

- Annelids are Invertebrates and have bodies that are divided into segments.
- They have very well-developed internal organs.
- These are found almost anywhere in the world.
- They don't have any limbs. Examples of Annelids are earthworms, leeches, roundworms, etc.

20. Correct Answer: (b)

Pteridophytes

- Pteridophytes are flowerless green plants having well-differentiated plant bodies, consisting of roots, stems, and leaves.
- They do possess vascular bundles.
- Most of them are terrestrial plants flourishing well in moist and shady places, and some of them are aquatic.
- This group includes vascular cryptogams like club mosses, horsetails, and ferns which are universally distributed all over the world.
- The north-eastern region (including Eastern Himalaya) is rich in pteridophytes diversity, followed by south India (including Eastern and the Western Ghats) and north India (including Western Himalaya).

21. Correct Answer: (b)

Flora of Himalayan mountain system

- The west Himalayas have low rainfall, heavy snowfall (temperate conditions), whereas in the eastern Himalayas, there is heavy rainfall, snowfall only at very high altitudes and lower altitudes conditions are similar to the tropical rain forests.
- Flora and fauna of both Himalayas differ. Himalayan foothills

- It has natural monsoon evergreen and semievergreen forests and the dominant species are sal, silk-cotton trees, giant bamboos, tall grassy meadow with savannahs in the Tarai region.

Western Himalayas (High altitude region)

- Here natural monsoon evergreen and semievergreen forests are found along with rhododendrons, dwarf hill bamboo and birch forests mixed with alpine pastures.

Eastern Himalayas

- Trees like oaks, magnolias, laurels, and birches covered with Moss and ferns are found here.
- Other vegetation types include coniferous forests of pine, fir, yew, and junipers with undergrowth of scrubby rhododendrons and dwarf bamboos.
- Lichens, mosses, orchids, and other epiphytes are dominant here due to high humidity and high rainfall.

22. Correct Answer: (d)

Negative effects of frost

- Frost leads to the killing of young plants by freezing the soil moisture.
- The plants growing in such soil, get exposed to direct sunlight in the morning, they are killed due to increased transpiration when there is decreased moisture supply by the roots to the plant.
- This is the main reason for innumerable death of sal seedlings.
- It damages the plant cells by freezing the water in the intercellular spaces of the plant.
- This results in an increased concentration of salts and dehydration of cells. Thus coagulation and precipitation of the cell colloid result in the death of the plant.
- It also leads to the formation of canker which is a destructive fungal disease that damages the bark of the plant

23. Correct Answer: (b)

Invasive Faunal species in India

- Leptocybe invasa - a new insect pest detected from few pockets of coastal

Tamil Nadu and it has spread to peninsular India.

Crazy		ant
Giant	African	snail
Myna		
GoldFish		
Pigeon		
Donkey		
House		Gecko
Tilapia		

24. Correct Answer: (c)

Invasive Alien Species

Four 'o'clock plant

- As the name suggests, it flowers in the late afternoon.
- It is native to Peru and is distributed throughout India.
- Runs wild in gardens and near habitation.

Prickly Poppy

- It is native to tropical Central & South America and is distributed throughout India.
- It is a common winter season weed of the cultivated fields, scrublands, and fringes of forests.

Mad Plant

- Also known by the name of Datura and Thorn Apple.
- It is native to tropical America and distributed throughout India.
- It is an occasional weed on disturbed ground.

Water Hyacinth

- It is native to tropical America and distributed throughout India.
- It is abundant in still or slow floating waters and is a nuisance for aquatic ecosystems.

25. Correct Answer: (d)

Cycads

- Cycads are Gymnosperm trees and are also known as living fossils.
- They are distributed in the regions of Western ghats, Eastern Ghats, North East India, and Andaman and Nicobar Islands.

- Cycads have been used as a source of starch and also during socio-cultural rituals.
- There is some indication that the regular consumption of starch derived from cycads is a factor in the development of Lytico-Bodig disease, a neurological disease with symptoms similar to those of Parkinson's disease and ALS.
- It is threatened by overharvesting, deforestation and forest fire.

26. Correct Answer: (d)

Adventitious Roots

- These are roots that are produced from the parts of the plant other than the radicle or its subdivision. There are following types of Adventitious Roots:
- **Buttresses:** These are outgrowths formed usually vertically above the lateral roots and thus connect the base of the stem with roots.
- They are formed in the basal portion of the stem. Example includes the roots of Silk cotton tree.
- **Prop Roots:** These are produced from the branches of the tree which remain suspended in the air till they reach the ground.
- On reaching the ground they enter into the soil and get fixed. For example, the roots found in the Banyan Tree.
- **Stilt Roots:** These are Adventitious Roots which emerged from the butt of a tree above ground level.
- And the tree appears as if supported on flying buttresses. An example includes the roots of Rhizophora species of mangroves.

27. Correct Answer: (c)

- **Mycorrhiza:** It is the structure produced from the combination of the modified rootlet with fungal tissue.
- **Haustorial Roots:** These are the roots of parasitic plants that can absorb water and nutrients from another plant. An example includes the roots of mistletoe (*Viscum album*) and dodder plant

28. Correct Answer: (a)

Sandal Tree

- The sandal tree is a partial-root parasite.
- The seedlings of this species grow independently in the beginning but in few months develop haustorial connections with the roots of some shrub and later with some tree species growing in the vicinity.
- Sandal tree manufactures its own food but depends upon the host like other partial parasites for water and mineral nutrients.

29. Correct Answer: (b)

Natural causes of loss of biodiversity

Include

- Floods destruction
- Lack of pollination among plant species
- Seismic activity destruction i.e. Earthquakes
- Rivalry among species for habitat and resources
- Landslides

Man-Made causes of loss of biodiversity include

- Habitat destruction
- Uncontrolled commercial exploitation of natural resources
- Hunting & poaching activities
- Encroachment due to human settlement and industrial development
- Extension of agriculture
- Pollution
- Filling up of wetlands
- Destruction of coastal areas

30. Correct Answer: (d)

Causes of Extinction

- Extinction is caused by various processes: Deterministic processes are those that have a cause and effect. Examples include glaciations, human interference such as deforestation
- Stochastic processes are chance and random events that affect the survival and reproduction of individuals. Examples include unexpected changes in weather patterns, decreased food supply, disease, increase of competitors, predators or

parasites, etc. that may act independently or add to deterministic effects.

31. Correct Answer: (d)

Impact of Deforestation

- Closed forests (based on canopy level) have been diminished due to deforestation leading to an increase in degraded forests.
- Forests recycle moisture from soil into their immediate atmosphere by transpiration where it again precipitates as rain.
- Deforestation results in an immediate lowering of groundwater level and in the long-term reduction of precipitation.
- Due to deforestation, this natural reuse cycle is broken and water is lost through rapid runoff.
- Much of the mining activity in India is being carried out in forest regions.
- The obvious result is deforestation and soil erosion.
- Underground mining has also significantly denuded forests, as timber is used for supporting the roofs of mine galleries.
- A large number of abandoned mines are lying in bad shape and are under extensive gully erosion leading to degradation of the habitat.
- Deforestation affects the biota and neighbouring ecosystems, soil erosion, land degradation, alteration of groundwater channels, pollution and scarce.

32. Correct Answer: (d)

Major threats to Biodiversity:

- Threats in terrestrial areas: Degradation, destruction and fragmentation of natural habitats- Spread of the urbanized areas, road network and industrial areas and associated problems (noise, pollution); abandon of former agricultural practices that were favourable to biodiversity.
- Decrease in the capacity of the agricultural areas to host wildlife Intensification of agricultural practices (yielding pollution

and disturbance) and disappearance of landscape elements that provide food and shelter that are exploitable by wildlife (such as hedges, trees, ponds, etc.).

- Pollution of soils, air and water- Excess of heavy metals (industry, roads), manure and pesticides (agriculture) and other pollutants.
- Invasions by alien species- International trade and transport (roads, railways, rivers), gardening practices, exotic trees in forestry, exotic pests released in the wild, climate change, etc.
- Epidemics affecting wildlife- Arrivals of pathogens that are favoured by the introduction of exotic species, pollution and the destruction of habitats.
- Climate change- Carbon emissions, deforestation and other land use changes due to human activities
- Dessication of soils and wetlands- Excess pumping of underground water tables
- Recreation and leisure- Overuse of green open spaces and wild areas, little respect for nature, mountain biking and motor sports in fragile areas, dogs not on leash

Threats in marine areas

- Overfishing and decline of species- Industrial fishing, overexploitation of target species, bycatch species.
- Pollution and eutrophication- Land-based activities (river run-off), atmospheric deposition, maritime traffic.
- Degradation and destruction of the sea floor Beam trawling, dredging, sand and gravel extraction
- Alien species introductions- Maritime trade (ballast waters, fouling), leisure navigation, mariculture, climate change Leisure and tourism - Coastal development, water quality in summer (high population), mechanical beach cleaning, noise and other perturbations due to the high population.

33. Correct Answer: (a)

Species Extinction

- Loss of biodiversity occurs when either a particular species is destroyed or the

habitat essential for its survival is damaged.

- The latter is more common as habitat destruction is inevitable fallout of development.
- The extinction of species takes place when they are exploited for economic gain or due to environmental reasons like ecological substitutions, biological control etc.

The ecological factors that lead to extinction of species include:

- Distribution range – The threat of extinction increases as the size of distribution range becomes smaller.
- Degree of specialization – specialized organisms are more vulnerable to extinction as compared to the nonspecialized ones.
- Position of the organism in the food chain – the higher the position of the organism in the food chain, the more susceptible it is.

34. Correct Answer: (a)

Alien Species invasions

- Accidental or intentional introduction of non-native species into a habitat has led to the declination or extinction of indigenous species.
- Alien species cause the decline or extinction of indigenous species. E.g. The Nile Perch introduced in Lake Victoria (East Africa) caused the extinction of more than 200 species of native fish, cichlid fish in the lake.
- Invasive weed species like carrot grass (Parthenium), Lantana and water hyacinth (Eicchornia) caused damage to our native species.
- The illegal introduction of the African Catfish (Clarias gariepinus) for aquaculture is posing a threat to the indigenous catfishes in our rivers.

35. Correct Answer: (d)

Invasive species

- An invasive species can be any kind of living organism—an amphibian (like the cane toad), plant, insect, fish, fungus, bacteria, or even an organism's seeds or eggs—that is not native to an ecosystem and causes harm.
- They can harm the environment, the economy, or even human health. Species that grow and reproduce quickly, and spread aggressively, with the potential to cause harm, are given the label "invasive."
- An invasive species does not necessarily have to come from another country. For example, lake trout are native to the Great Lakes but are considered to be an invasive species in Yellowstone Lake in Wyoming because they compete with native cutthroat trout for habitat.
- Exotic species become invasive in nature when the area does not have its natural predator to prey upon the invasion.
- In their new ecosystems, invasive alien species become predators, competitors, parasites, hybridizers, and diseases of our native and domesticated plants and animals

The indirect threats of invasive species:

- **Changing food webs:** Invasive species can change the food web in an ecosystem by destroying or replacing native food sources. The invasive species may provide little to no food value for wildlife.
- **Decreasing biodiversity:** Invasive species can alter the abundance or diversity of species that are important habitat for native wildlife. Aggressive plant species like kudzu can quickly replace a diverse ecosystem with a monoculture of just kudzu.
- **Altering ecosystem conditions:** Some invasive species are capable of changing the conditions in an ecosystem, such as changing soil chemistry or the intensity of wildfires.

36. Correct Answer: (d)

Ex-situ Conservation

- In Ex-situ conservation, animals are reared or plants are cultivated outside the areas where they naturally occur.
- Even reintroduction of an animal or plant into the habitat from where it has become extinct is another form of ex situ conservation.
- Example of this another form of ex situ conservation includes the reintroduction of Gangetic gharial in the rivers of Uttar Pradesh, Madhya Pradesh and Rajasthan where it had become extinct.
- Some prominent methods of Ex-situ conservation include seed banks, botanical gardens, horticultural and recreational gardens.

37. Correct Answer: (a)

Conservation Reserve

- The Wildlife Protection Amendment Act of 2003 provided for the creation of a new type of protected area called a Conservation Reserve.
- Conservation Reserve is an area owned by the State Government adjacent to National Parks and sanctuaries for protecting the landscape, seascape, and habitat of fauna and flora.
- It is managed through a Conservation Reserve Management Committee.
- The State Government may, after having consultations with the local communities, declare any area owned by the Government as a conservation reserve.
- The first conservation reserve in the country was the Tiruppadaimarathur conservation reserve in the Tirunelveli district of Tamil Nadu.
- It is an effort of the village community to protect the birds nesting in their village.

38. Correct Answer: (c)

Tiger Reserves

- It is estimated that India had about 40,000 tigers in 1900, and the number declined to a mere about 1,800 in 1972. Hence, Project Tiger was launched as a

centrally sponsored scheme in 1973 for the conservation of highly endangered Indian tiger species.

- Tiger reserves are areas that are notified for the protection of the tiger and its prey and are governed by Project Tiger.
- At present, there are about 50 tiger reserves in the country with Kamlang Tiger Reserve of Arunachal Pradesh being the latest addition to it in 2016.

39. Correct Answer: (a)

Elephant Corridors

- An elephant corridor is defined as a stretch/ narrow strips of forested (or otherwise) land that connects larger habitats with elephant populations and forms a conduit for animal movement between the habitats.
- This movement helps enhance species survival and birth rate.
- There are 88 identified elephant corridors in India.
- Out of total 88 corridors, 20 were in South India, 12 in north-western India, 20 in central India, 14 in northern West Bengal and 22 in north-eastern India (highest of all regions).
- Nationally, only a few (24 percent) of the corridors are under complete forest cover.

40. Correct Answer: (b)

Sacred Grooves

- Sacred groves comprise of patches of forests or natural vegetation ranging from a few trees to forests of several acres, that are usually dedicated to local folk deities.
- These spaces are protected by local communities because of their religious beliefs and traditional rituals that run through several generations.
- The degree of sanctity of the sacred forests varies from one grove to another. In some forests, even the dry foliage and fallen fruits are not touched.

These are classified into the following three categories:

- Traditional Sacred Groves: It is the place where the village deity resides, who is represented by an elementary Symbol.
- Temple Groves: Here a grove is created around a temple and conserved.
- Groves around the burial or cremation grounds.

41. Correct Answer: (d)

Hot spots of biodiversity

- Biodiversity is not uniformly distributed across the geographical regions of the earth.
- Certain regions of the world are very rich in biodiversity. Such areas are called “mega diversity zones”.
- It is also referred to as “hotspots”. For example, India accounts for only 2.4 % of the land area of the world; but it contributes approximately 8% species to global diversity due to the existence of such pockets.
- Norman Myers, a British Ecologist, developed the concept of hot spots in 1988 to designate priority areas for in situ conservation. According to him, the hot spots are the richest and the most threatened reservoirs of biodiversity on the earth.
The criteria for determining a hot spot are:
- The area should support >1500 endemic species,
- It must have lost over 70 % of the original habitat

42. Correct Answer: (a)

Bird Sanctuary

- Wildlife lovers are eager to see magnificent Bird Sanctuary at Bharatpur, Rajasthan as it is the second habitat in the world that is visited by the Siberian Cranes in winter and it provides a vast breeding area for the native waterbirds, Great Indian bustard is found in the Indian deserts.

43. Correct Answer: (a)

Great Indian Bustard

- Great Indian Bustard is listed in Schedule I of the Indian Wildlife (Protection) Act, 1972 and is categorized as Critically Endangered on the IUCN Red List.
- Its habitat is found in the protected areas of Desert National Park, Rajasthan, Rollapadu Wildlife Sanctuary, Andhra Pradesh and Karera Wildlife Sanctuary, Madhya Pradesh.
- Great Indian Bustard has been identified as one of the species under the Integrated Development of Wildlife Habitats Recovery program of the Ministry of Environment and Forests, Government of India.

44. Correct Answer: (a)

- Indus Dolphin is a blind species that communicate through echos like bats.
- It is found only in India and Pakistan. Its population in India is confined in Punjab only up to 185km stretch till the Harike Barrage in Beas River of India.
- IUCN has categorized it as Endangered species.
- It has also been categorized as a state aquatic animal of Punjab.

45. Correct Answer: (c)

Gangetic Dolphin

- Gangetic river dolphin is one of the four freshwater dolphins found in the world.
- The other three species include the Baiji of Yangtze river in China, Bhulan or Indus river dolphin and Boto of Amazon river.
- It is found in the Ganges Brahmaputra Meghna and Karnaphuli-Sangu river system of Nepal, India, and Bangladesh
- Being a mammal, it cannot breathe underwater and resurfaces frequently.
- Because of the sound, it produces during surface breathing, it is also known by the name of SUSU.
- IUCN has classified it as endangered species.
- It is listed in the Schedule I of the Wildlife Protection Act 1972.

46. Correct Answer: (c)

The Sumatran Rhinoceros (*Dicerorhinus sumatrensis*)

- There are five species of rhino: White rhino, Black rhino, Sumatran rhino, Greater one horned rhino (or Indian rhino) and Javan rhino.
- Sumatran Rhinoceros is the smallest and most endangered of the five rhinoceros species.
- It is now thought to be regionally extinct in India, though it once occurred in the foothills of the Himalayas and north-east India.
- The Javan Rhinoceros (*Rhinoceros sondaicus*) is also believed to be extinct in India and only a small number survive in Java and Vietnam.
- Sumatran Rhinoceros is categorized as Critically Endangered as per IUCN red list.

47. Correct Answer: (d)

The Himalayan Quail

- It is presumed to be extinct since no reliable records of sightings of this species exist after 1876.
- Intensive surveys are required as this species is hard to detect due to its reluctance to fly and its preference for dense grass habitats.
- However possible sighting of this species was reported in Nainital, Utrakhand in 2003.
- It is habituated in the tall grass and scrub on steep hillsides.
- The population distribution is found in the Western Himalayas.
- Indiscriminate hunting during the colonial period along with habitat modification is the major threats to its survival.
- It is categorized as a Critically Endangered species by IUCN.

48. Correct Answer: (b)

Fire Corals

- These are more closely related to jellyfish than corals.
- On contact, one usually feels a burning sensation similar to a sting from a jellyfish.

- They are generally found in murky inshore waters and display tolerance for siltation.
- They often are found in clear offshore sites.
- Fire Corals are distributed in regions of Indonesia, Gulf of Chiriquí, Panama Pacific Province.
- They are possibly extinct from Australia, India, Indonesia, Malaysia, Panama, Singapore, and Thailand.
- Collection for decoration and jewelry trade poses a major threat to their survival.
- Fire Corals are sensitive to temperature rise and are thought to have completely disappeared from the majority of marine areas possibly because of growing global warmin grelated bleaching effects

49. Correct Answer: (d)

Migration

- Migration refers to the regular, recurrent and cyclical seasonal movement of birds from one place to another.
- The distance of migration ranged from short distance to thousands of kilometers.
- But at the end of the period, birds will eventually return to the original place.

Reasons for migration

- To avoid adverse factors (extreme climatic condition).
- To manage food shortage.
- To manage the shortage of water.
- To have better breeding conditions.
- Less competition for safe nesting places.

50. Correct Answer: (c)

Winter Migratory Bird

- Siberian Cranes
- Greater Flamingo
- Common Teal
- Yellow Wagtail
- White Wagtail
- Northern Shoveler
- Rosy Pelican
- Wood Sandpiper
- Long-Billed Pipit
- Summer Migratory Bird
- Asian Koel
- Black Crowned Night Heron

- Eurasian Golden Oriole
- Blue-tailed Bee-Eater
- Cuckoo

51. Correct Answer: (c)

Characteristics of Mangroves

- They produce pneumatophores (or aerial roots up from the mud) to overcome the respiration problem in anaerobic soil conditions.
- Adventitious roots that emerged from the main trunk of a tree above ground level are called stilt roots.
- Mangroves exhibit a remarkable capacity for saltwater tolerance and the characteristic vegetation is thus called halophytic vegetation.

52. Correct Answer: (a)

Mangrove Profile in India

- The mangroves of Sunderbans are the largest single block of tidal halophytic mangroves of the world.
- This mangrove forest is famous for the Royal Bengal Tiger and crocodiles.
- The mangroves of Bhitarkanika (Odisha), which is the second largest in the Indian sub-continent, harbor a high concentration of typical mangrove species and high genetic diversity.
- Mangrove swamps occur in profusion in the intertidal mudflats on both sides of the creeks in the Godavari- Krishna deltaic regions of Andhra Pradesh
- Mangroves of Pichavaram and Vedaranyam are degraded mainly due to the construction of aquaculture ponds and salt pans.
- On the west coast of India, mangroves, mostly scrubby and degraded occur along the intertidal region of estuaries and creeks in Maharashtra, Goa, and Karnataka
- On the Andaman & Nicobar Islands, the small tidal estuaries, neritic inlets, and the lagoons support a dense and diverse undisturbed mangrove flora.
- In size, mangroves range from bushy stands of dwarf mangroves found in Gulf

of Kutch to taller stands found in the Sunderbans

53. Correct Answer: (a)

Coral Reefs

- Coral is actually a living animal.
- Coral has a symbiotic relationship (each gives something to the other and gets something back in return) with 'zooxanthellae' microscopic algae which live on coral [i.e. instead of living on the seafloor, the algae lives upon the coral which is closer to the ocean surface and so that the algae gets adequate light].
- Zooxanthellae assist the coral in nutrient production through its photosynthetic activities.
- These activities provide the coral with fixed carbon compounds for energy, enhance calcification, and mediate elemental nutrient flux.
- The tissues of corals themselves are actually not the beautiful colors of the coral reef but are instead clear (white).
- The corals receive their coloration from the zooxanthellae living within their tissues.
- The host coral polyp in return provides its zooxanthellae with a protected environment to live within, and a steady supply of carbon dioxide for its photosynthetic processes.

54. Correct Answer: (a)

Characteristics of Wetlands

- Wetlands are areas of marsh, fen, peatland/ 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 metres.
- Covered by water (or) has waterlogged soil for at least seven days during the growing season.
- Adopted plant life (hydrophytes) Hydric soils (not enough O₂ available for some plants)

55. Correct Answer: (c)

Estuaries

- Four geomorphic processes are responsible for the formation of estuaries:
Rising sea level
Movement of sand and sandbars
Glacial processes
Tectonic processes
- A healthy estuary supports a host of plants and animals; stores and recycles nutrients; traps sediment and forms a buffer between coastal catchments and the marine environment; absorbs traps and detoxifies pollutants, acting as a natural water filter.
- Factors influencing the growth and distribution of organisms in an estuary are its salinity and the amount of flooding. Hence only certain types of plants and animals specially adapted to the "brackish" estuarine waters flourish in the estuaries.
- Predators are important to the estuary because of their end position in most consumer food chains.

56. Correct Answer: (d)

Land Degradation and Conservation Measures

- Ninety-five percent of our basic needs for food, shelter, and clothing are obtained from the land.
- Human activities have not only brought about the degradation of the land but have also aggravated the pace of natural forces to cause damage to the land.
- At present, there are about 130 million hectares of degraded land in India.
- Approximately, 28 percent of it belongs to the category of forest degraded area, 56 percent of it is water eroded area and the rest is affected by saline and alkaline deposits.
- Some human activities such as deforestation, overgrazing, mining, and quarrying to have contributed significantly to land degradation.
- In states like Gujarat, Rajasthan, Madhya Pradesh, and Maharashtra overgrazing are

one of the main reasons for land degradation.

- In the states of Punjab, Haryana, western Uttar Pradesh, over-irrigation is responsible for land degradation due to waterlogging leading to an increase in salinity and alkalinity in the soil.
- The mineral processing like grinding of limestone for the cement industry and calcite and soapstone for the ceramic industry generates a huge quantity of dust in the atmosphere.
- It retards the process of infiltration of water into the soil after it settles down on the land.
- Industrial effluents as waste have become a major source of land and water pollution in many parts of the country.
- There are many ways to solve the problems of land degradation.

57. Correct Answer: (d)

Impact of population growth on the environment

Clearing land for cultivation to grow more food

- Forests and natural grasslands have been converted to farmlands.
- Wetlands have been drained and arid lands have been irrigated.
- These changes have been made to grow more food and more raw materials.
- But in doing so, the natural resources have been depleted and the landscapes have undergone drastic changes. For example, forests have been cleared over large for the cultivation of agriculture crops.
- Many mangrove forests known to reduce erosion and stabilize shorelines have been cleared use for growing food crops to meet the needs of the growing population.

Water scarcity

- Water received as rainfall flows into rivers, lakes and other water bodies. Some of it seeps into the ground and reaches the groundwater.
- At certain depth of the soil, all the pore spaces between soil particles are

saturated with water. This depth is called Water Table.

- The water table may remain stable if the drawn from the groundwater is replenished by the seepage of the rainwater.
- But if water withdrawal exceeds beyond the rate of replenishment of the groundwater table keep on receding and resulting in drying out of wells.
- In many areas, excessive withdrawal has depleted groundwater resources causing acute water scarcity.

Slum development

- Overpopulated areas result in congested roads and slum formation which lack basic amenities like drinking water, drainage, waste disposal, lack of hygienic conditions and filthy environment create potential conditions for public health problems including spread of epidemic diseases.
- Discharge of untreated effluents and throwing waste into water bodies have polluted most of the lakes and rivers.
- Pollution resulting from overpopulation Holy rivers Ganga, Yamuna, and others are suffering from pollution due to discharge of effluents from industries, human settlements, bathing, washing of clothes and throwing of garbage into the river.

58. Correct Answer: (d)

Forests

- Forests have to be managed judiciously not only because they are the source of various products and industrial raw materials but also for environmental protection and various services they provide.
- Approximately $1/3^{\text{rd}}$ of the earth's total land area is covered by forests.
- The forests provide habitat for wildlife, resources such as timber, firewood, drugs, etc. and aesthetic environment.
- Indirectly, the forests benefit people by protecting watersheds from soil erosion, keeping rivers and reservoirs free of silt, and facilitate the recharging of groundwater.

- Forest plays an important role in the cycling of carbon, water, nitrogen, and other elements.
- Forest is a complex ecosystem consisting mainly of trees that support myriad forms of life.
- The trees are the most important component that helps to create a unique environment which, in turn, supports various kinds of animals and plants.
- Trees are the prime producers for the forests, purify and cool the air and control the climate.
- Forests may be subdivided into natural forests and plantations or man-made forests.
- Natural forests are forests composed of mainly naturally grown indigenous (local) trees while plantations are forests established by growing trees by humans.
- Climate, soil type, topography, and elevation are the main factors that determine the type of forest.
- Forests are classified according to their nature and composition, the type of climate in which they thrive, and their relationship with the surrounding environment.
- India has many types of forests: They range from rain forest of Kerala and North-East to deciduous forests in the plains, mountain forests to alpine pastures of Ladakh and deserts of Rajasthan.

59. Correct Answer: (d)

Non-Conventional Sources of Energy

- Increasing the use of fossil fuels also causes serious environmental problems. Hence, there is a pressing need to use renewable energy sources like solar energy, wind, tide, biomass and energy from waste material.
- These are called nonconventional energy sources. India is blessed with an abundance of sunlight, water, wind, and biomass.
- It has the largest programs for the development of these renewable energy resources.

- Renewable energy is energy that is generated from natural resources that are continuously replenished.
- This includes sunlight, geothermal heat, wind, tides, water, and various forms of biomass.
- This energy cannot be exhausted and is constantly renewed.
- They are viable sources of clean limitless energy, cause less emission, and are available locally.
- The use of renewable energy greatly reduces all sorts of pollutions vis-a-vis nonrenewable energy.
- Most of the renewable sources of energy are fairly non-polluting and considered clean.
- But biomass through a renewable source is a major contributor to indoor pollution.

60. Correct Answer: (c)

Anaerobic Digestion/Biomethanation

- Biomethanation, or methanogenesis, is a scientific process whereby anaerobic microorganisms in an anaerobic environment decompose biodegradable matter producing methane-rich biogas and effluent.
- The three functions that take place sequentially are hydrolysis, acidogenesis, and methanogenesis.

61. Correct Answer: (a)

Pollutants

- Pollutants are the materials or factors, which cause an adverse effect on the natural quality of any component of the environment.
For example, smoke from industries and automobiles, chemicals from factories, radioactive substances from nuclear plants, sewage of houses and discarded household articles are common pollutants.

Classifications

- According to the form in which they persist after release into the environment.
- 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) is formed by the interaction of nitrogen oxides and hydrocarbons.

62. Correct Answer: (d)

Pollution

- Pollution is defined as 'an addition or excessive addition of certain materials to the physical environment (water, air, and lands), making it less fit or unfit for life'.

Causes of pollution

- Uncontrolled growth in the human population
- Rapid industrialization
- Urbanization
- Uncontrolled exploitation of nature.
- Forest fires, radioactivity, volcanic eruptions, strong winds, etc.

63. Correct Answer: (c)

Major Air Pollutants and their sources

- Carbon monoxide (CO)
- Carbon dioxide (CO₂)
- Chloroflorocarbons (CFC)
- Lead
- Ozone
- Suspended particulate matter (SPM)
- Sulphur dioxide (SO₂)
- Smog
- Ozone
- It occurs naturally in the upper layers of the atmosphere.
- This important gas shields the earth from the harmful ultraviolet rays of the sun. However, at the ground level, it is a pollutant with highly toxic effects.
- Vehicles and industries are the major sources of ground-level ozone emissions.
- Ozone makes our eyes itch, burn, and water.
- It lowers our resistance to cold and pneumonia.

64. Correct Answer: (c)

Indoor Air Pollution

- It refers to the physical, chemical, and biological characteristics of air in the

indoor environment within a home, or an institution or commercial facility.

- Indoor air pollution is a concern where energy efficiency improvements sometimes make houses relatively airtight, reducing ventilation and raising pollutant levels.
- Indoor air problems can be subtle and do not always produce easily recognized impacts on health.
- Different conditions are responsible for indoor air pollution in rural areas and urban areas.

Rural

- It is the rural areas that face the greatest threat from indoor pollution, where people rely on traditional fuels such as firewood, charcoal, and cow dung for cooking and heating.
- Burning such fuels produces a large amount of smoke and other air pollutants in the confined space of the home, resulting in high exposure.
- Women and children are the groups most vulnerable as they spend more time indoors and are exposed to the smoke.
- Although many hundreds of separate chemical agents have been identified in the smoke from biofuels, the four most serious pollutants are particulates, carbon monoxide, polycyclic organic matter, and formaldehyde.

Urban

- In urban areas, exposure to indoor air pollution has increased due to a variety of reasons, such as
- The construction of more tightly sealed buildings.
- Reduced ventilation.
- The use of synthetic materials for building and furnishing.
- The use of chemical products, pesticides, and household care products.
- Indoor air pollution can begin within the building or drawn in from outdoors.
- Other than nitrogen dioxide, carbon monoxide, and lead, there are a number of other pollutants that affect air quality

65. **Correct Answer: (d)**

Types of Acid Deposition

- "Acid rain" is a broad term referring to a mixture of wet and dry deposition (a form of deposition material) from the atmosphere

Wet Deposition

- If the acid chemicals in the air are blown into areas where the weather is wet, the acids can fall to the ground in the form of rain, snow, fog, or mist.
- As this acidic water flows over and through the ground, it affects a variety of plants and animals.
- The strength of the effects depends on several factors, including how acidic the water is; the chemistry and buffering capacity of the soils involved; and the types of fish, trees, and other living things that rely on the water.
- Precipitation removes gases and particles from the atmosphere by two processes: rain-out which is the incorporation of particles into cloud drops which fall to the ground, and washout which occurs when materials below the cloud are swept down by rain or snow it falls.

66. **Correct Answer: (a)**

Water Pollution - Types of sources

- Point Sources
- Diffuse or non-point source

Point Sources

- It is directly attributable to one influence. Here pollutant travels directly from source to water.
- Point sources are easy to regulate.

67. **Correct Answer: (a)**

Putrescibility

- It is the process of decomposition of organic matter present in water by microorganisms using oxygen.

68. **Correct Answer: (a)**

Oil Spills

- Oil spills from tankers at sea or leaks from underground storage tanks on land are very difficult to control as oil tends to

spread very fast, affecting a large area in a very short time.

- On land crude is transported through pipelines or tankers which can get damaged and spew out crude oil over the land, thereby contaminating it.
- Since crude oil is lighter than water, it floats on the surface and poses the threat of swift spreading fire.
- Oil spills at sea decrease the oxygen level in the water and cause harm to the organisms.
- Oil spills are also a source of air and groundwater pollution.

69. Correct Answer: (b)

Blue baby syndrome

- Excess nitrate in drinking water reacts with hemoglobin to form non-functional methaemoglobin and impairs oxygen transport. This condition is called methaemoglobinemia or blue baby syndrome.

70. Correct Answer: (c)

Algal Bloom

- An algal bloom is a rapid increase or accumulation in the population of algae in freshwater or marine water systems and is recognized by the discoloration in the water from their pigments.
- Algal blooms are the consequence of Eutrophication.
- Eutrophication is the response to the addition of nutrients such as nitrates and phosphates naturally or artificially, fertilizing the aquatic ecosystem.
- As more algae and plants grow, others die. This dead organic matter becomes food for bacteria that decompose it.
- With more food available, the bacteria increase in number and use up the dissolved oxygen in the water.
- When the dissolved oxygen content decreases, many fish and aquatic insects cannot survive
- Death of primary consumers adversely affects the food chain and leads to the

destruction of higher life forms. This results in a dead area.

Some other facts

- Algal blooms may also be of concern as some species of algae produce neurotoxins.
- At the high cell concentrations reached during some blooms, these toxins may have severe biological impacts on wildlife.
- Algal blooms composed of phytoplankters known to naturally produce biotoxins are often called Harmful Algal Blooms, or HABs.
- Warm water is the main cause behind the rise of algal blooms.

71. Correct Answer: (b)

Negative effects of E-Waste exposure

- Cadmium: Toxic cadmium compounds accumulate in the human body and harm internal organs especially the kidneys.
- Barium: Short-term exposure to barium causes brain swelling, muscle weakness, damage to the heart, liver, and spleen.
- Beryllium: Exposure to beryllium can cause lung cancer. Beryllium also causes a skin disease that is characterised by poor wound healing and wartlike bumps
- Hexavalent Chromium: It can cause damage to DNA and is extremely toxic in the environment.

72. Correct Answer: (a)

Pyrolysis

- It is a process of combustion in the absence of oxygen or the material burnt under a controlled atmosphere of oxygen. It is an alternative to incineration.
- The gas and liquid thus obtained can be used as fuels.
- Pyrolysis of carbonaceous wastes like firewood, coconut, palm waste, corn combs, cashew shell, rice husk paddy straw, and sawdust, yields charcoal along with products like tar, methyl alcohol, acetic acid, acetone, and fuel gas.

73. Correct Answer: (a)

Effects of radioactive pollutants depend upon

- Half-life
- Energy-releasing capacity
- Rate of diffusion
- Rate of deposition of the pollutant
- Various environmental factors such as wind, temperature, rainfall also influence their effects

74. Correct Answer: (d)

Radioactive Pollution

- Radioactivity is a phenomenon of spontaneous emission of proton (α -particles), electrons (β -particles) and gamma rays (short wave electromagnetic waves) due to the disintegration of atomic nuclei of some elements. These cause radioactive pollution.

Sources

Natural

- They include cosmic rays from space and terrestrial radiations from radionuclides present in earth's crust such as radium-224, uranium-238, thorium-232, potassium-40, carbon-14, etc

Man-made

- Nuclear power plants
- Nuclear weapon
- Transportation of nuclear material
- Disposal of nuclear waste
- Uranium mining
- Radiation therapy

75. Correct Answer: (a)

Deinococcus radiodurans

- The bacterium *Deinococcus radiodurans* has been used to detoxify toluene and ionic mercury which are released from radioactive nuclear waste.

76. Correct Answer: (b)

Global Warming Potential

- Global warming potential describes the impact of each gas on global warming.
- The Global Warming Potential (GWP) for a gas is a measure of the total energy that a gas absorbs over a particular period of

time (usually 100 years), compared to carbon dioxide.

- Gases with a higher GWP absorb more energy, per pound, than gases with a lower GWP, and thus contribute more to warming Earth.
- Carbon dioxide (CO₂) has a GWP of 1 and serves as a baseline for other GWP values.

77. Correct Answer: (c)

Global Warming

- The increased CO₂ concentration in the atmosphere may increase the photosynthetic productivity of plants due to an increased rate of metabolic activity. This, in turn, produces more organic matter.
- Weeds may proliferate rapidly and that too at the expense of useful plants.
- Insects and other pests that feed on plants may also increase in number. The survival of other organisms gets affected. Elevated CO₂ can increase levels of simple sugars in leaves and lower their nitrogen content.
- These can increase the damage caused by many insects, who will consume more leaves to meet their metabolic requirements of nitrogen. Thus, any attack will be more severe

78. Correct Answer: (b)

Green House Gases

- Global warming is a result of a rise in the proportion of atmospheric greenhouse gases (GHG) than their normal level.
- The rise of GHG levels has been attributed to the process of industrialization, urbanization, and pollution caused by vehicular, industrial, domestic and agricultural emission.
- The main component gases of GHG emissions are –
Carbon dioxide
Methane
Chlorofluorocarbons
Nitrous oxide
Ozone
- Nitrogen is not the Green House Gas

79. Correct Answer: (c)

Extra-Terrestrial causes of Climate Change Sunspots:

- These are dark and cooler patches on the sun which increase and decrease in a cyclical manner.
- When the number of sunspots increases, cooler and wetter weather and greater storminess occur.
- A decrease in sunspot numbers is associated with warm and drier conditions.

Milankovitch oscillations:

- This theory infers cycles in the variations in the earth's orbital characteristics around the sun, the wobbling of the earth and the changes in the earth's axial tilt. All these alter the amount of insolation received from the sun, which in turn, might have a bearing on the climate.
- The orbital eccentricity of the earth: The eccentricity of the earth orbit is between 0.001 & 0.05 Earth takes 95,000 years to achieve its maximum eccentricity from the minimum.
- As eccentricity increases, days of summer increase both in northern and southern hemispheres.
- Obliquity of the axial tilt of Earth's rotational axis: The axial tilt or obliquity of the earth's rotational axis is the angle between the axis of revolution and the axis of rotation of the Earth.
- The significance of obliquity is that it controls the latitudinal distribution of solar radiant energy and intensity and duration of different seasons.
- The change in the obliquity is directly related to the temperature difference between summers and winters.
- Smaller is the obliquity; smaller is the change in temperature between summers and winters.

80. Correct Answer: (d)

Livestock

- Animals and birds that are kept on a farm, such as cows, sheep, or chickens are termed as livestock.

Disadvantages of Livestock Farming:

- One of the primary disadvantages is the loss of land.
- To home the livestock animals, a good amount of land is necessary.
- It also results in less water for the food crops, as these Livestock Animals drink a lot of water particularly the cattle animals.
- Bovines emit methane due to belching. Ninety million tonnes of methane is estimated to come from livestock farming due to what is known as enteric fermentation in ruminant animals.
- Animals such as cows, sheep, and goats expel large amounts of methane as they digest their food due to microorganisms in their stomachs, specifically the rumen. These organisms help the cow break down otherwise inedible grass and hay to get nutrients but create methane in the process, which is expelled from the animal.
- Livestock grazing between land and streams destabilizes stream banks making them vulnerable to erosion.
- Overgrazing destroys the grass root system and degrades the soil holding capacity, loosening them to flow easily under the impact of water near the stream banks.
- Livestock rearing leads to a high amount of manure generation.
- Manure contains high amounts of nitrogen, phosphorous, and potassium which causes contamination of groundwater being highly soluble in water.
- The first two are the most important as pollutants.

81. Correct Answer: (c)

The salient features of the draft CRZ Notification, 2018 and changes with respect to CRZ Notification, 2011, are as under:-

- The High Tide Line (HTL) has been demarcated by the National Centre for Sustainable Coastal Management (NCSCM) and shall be reckoned as a universal standard for the HTL for all regulatory

purposes under the CRZ Notification, 2018.

- Hazard line mapping has also been carried out by Survey of India.
- The Hazard Line has, however, been delinked from the CRZ regulatory regime and shall be used only as a tool for Disaster Management and planning of adaptive and mitigation measures.
- CRZ limits on land along the tidally influenced water bodies have been proposed to be reduced from 100 meters or the width of the creek, whichever is less, to 50 meters or the width of the creek, whichever is less.
- A No Development Zone (NDZ) of 20 meters has been proposed to be stipulated for all Islands close to the mainland coast and for all Backwater Islands in the mainland.
- For CRZ-III areas, two separate categories have been proposed viz.:
- CRZ-III A – Densely populated rural areas with a population density of 2161 per square kilometer as per the 2011 Census. Such areas shall have an NDZ of 50 meters from the HTL as against 200 meters from the HTL stipulated in the CRZ Notification, 2011.
- CRZ-III B – Rural areas with a population density of below 2161 per square kilometer as per the 2011 Census. Such areas shall continue to have an NDZ of 200 meters from the HTL.
- The procedure for CRZ clearances has been simplified and delegations have been made at various levels for recommending/according to CRZ clearances to the projects/activities.
- Only such projects/activities, which are located in the CRZ-I & IV areas, shall be dealt with for CRZ clearance by the MoEFCC.
- For all other project activities located in CRZ-II/III areas, CRZ clearance shall be considered at the level of the CZMA.
- As per CRZ, 2011 Notification, for CRZ-II areas, Floor Space Index (FSI) or the Floor Area Ratio (FAR) had been frozen at 1991 Development Control Regulation (DCR) levels.
- In the Draft CRZ, 2018 Notification, it has been proposed to de-freeze the same and permits FSI for construction projects, as prevailing on the date of the new Notification.
- Temporary tourism facilities such as shacks, toilet blocks, change rooms, drinking water facilities, etc. have been proposed in beaches. Such temporary tourism facilities are also proposed to be permissible in the No Development Zone (NDZ) of the CRZ-III areas.
- Wherever there is a National or State Level Highway passing through the NDZ in CRZ-III areas, temporary tourism facilities have been proposed to be taken up on the seaward side of the roads.
- On the landward side of such roads in the NDZ, Resorts/Hotels and other tourism facilities have also been proposed to be permitted subject to the extant regulations of the concerned State.
- Regulated limestone mining is proposed to be permitted, subject to strict Environmental safeguards, in areas adequately above the height of HTL, based on recommendations of reputed National Institutes in the Mining field.
- The prohibitive activities along Coastal Regulation Zones are setting up new industries and expanding existing ones, except projects of the Department of Atomic Energy, setting up and expanding units for the disposal of waste and effluents.
- However, exceptions include stormwater drains and facilities required for discharging treated effluents.
- Though prohibitive, these activities are permitted under certain safeguards.
- Also dumping of the city or town waste for the purposes of land-filling, discarding ash or any other waste from thermal power stations and mining of sand, rocks, and other substrate materials constitute the non-permissive activities.

82. Correct Answer: (c)

The Water Prevention and Control of Pollution Act, 1974:

- An Act to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water for the establishment, with a view to carrying out the purposes aforesaid, of Boards for the prevention and control of water pollution, for conferring on and assigning to such Boards powers and functions relating thereto and for matters connected therewith.

The Air (Prevention and Control of Pollution) Act, 1981:

- This is an Act to provide for prevention, control, and abatement of air pollution in the country so as to preserve the quality of air.
- Central and State constituted Central and State Boards for the prevention and control of air pollution. An Act to provide for the prevention, control and abatement of air pollution, for the establishment, with a view to carrying out the aforesaid purposes, of Boards, for conferring on and assigning to such Boards powers and functions

The Environment Protection Act 1986:

- Is an Act of the Parliament of India. In the wake of the Bhopal Tragedy, the Government of India enacted the Environment Protection Act of 1986 under Article 253 of the Constitution.
- The purpose of the Act is to implement the decisions of the United Nations Conference on the Human Environments.
- They relate to the protection and improvement of the human environment and the prevention of hazards to human beings, other living creatures, plants and property.
- The Act is an “umbrella” legislation designed to provide a framework for central government coordination of the activities of various central and state authorities established under previous

laws, such as the Water Act and the Air Act.

83. Correct Answer: (a)

Goa Preservation of Trees Act

- The Goa government has tabled an amendment to Goa, Daman and Diu Preservation of Trees Act in the state Assembly session, which will classify coconut as a palm and not a tree.
- The decision now enables anyone in Goa to fell coconut trees without a permit.
- The bill seeks to increase the fees for tree felling or compounding offences from the existing Rs. 10,000 to Rs. 25,000.
- It seeks to omit section 1-A of the Goa, Daman and Diu Preservation of Trees Act 1981. Further, the bill also seeks to substitute section 10 of the Act so as to provide that the person shall be bound to plant a tree if he has felled or disposed of the tree as specified, the state Cabinet had approved an amendment to Goa Daman and Diu Preservation of Trees Act-1981
- The definition of a tree is a plant with main trunk and branches but a coconut palm does not fit into these criteria as it has no branches.

84. Correct Answer: (d)

Air Pollution

- As per the Air (Prevention and Control) of Pollution Act, 1981, “air pollutant” means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.
- Air Pollution means the presence in the atmosphere of any air pollutant.

Major air pollutants are:

- Carbon Monoxide
- Carbon Dioxide
- Chlorofluorocarbons (CFCs)
- Lead
- Ozone
- Suspended Particulate Matter
- Sulphur Dioxide

85. Correct Answer: (b)

Biological Diversity Act, 2002

- The Biological Diversity Act, 2002 is an Act of the Parliament of India for the preservation of biological diversity in India and provides a mechanism for equitable sharing of benefits arising out of the use of traditional biological resources and knowledge.
- The Act was enacted to meet the obligations under the Convention on Biological Diversity (CBD), to which India is a party.
- The National Biodiversity Authority (NBA) is a statutory autonomous body, headquartered in Chennai, under the Ministry of Environment and Forests, Government of India established in 2003 to implement the provisions under the Act.
- State Biodiversity Boards (SBB) has been created in 28 States along with 31,574 Biological management committees (for each local body) across India.

Functions include:

- Regulation of acts prohibited under the Act Advise the Government on conservation of biodiversity
- Advise the Government on the selection of biological heritage sites
- Take appropriate steps to oppose the grant of intellectual property rights in foreign countries, arising from the use of biological resources or associated traditional knowledge

Objectives are:

- Fair and equitable sharing of benefits arising out of the utilization of genetic resources.
- Biological diversity conservation.
- Sustainable use of its components.
- Biological Diversity Act, 2002 was brought to realize the objective of the Convention on Biological Diversity.
- The act establishes three-tier structures at the national, state and local levels.

86. Correct Answer: (d)

Joint Conference on BRS Conventions

- The joint meetings of three conventions on chemicals and waste that is the 14th meeting of the Conference of the Parties (COP) to Basel Convention on the Control of Trans-boundary Movement of Hazardous Wastes and their Disposal (COP 14) was held along with the 9th meeting of the COP to Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the 9th meeting of the COP to Stockholm Convention on Persistent Organic Pollutants.
 - The theme of the meetings this year was "Clean Planet, Healthy People: Sound Management of Chemicals and Waste".
 - The outcomes of the conference included: The establishment of a compliance mechanism under the Rotterdam Convention
 - The listing of dicofol and perfluorooctanoic acid (PFOA), its salts, and PFOA-related compounds under the Stockholm Convention
 - Parties to the Basel Convention also adopted technical guidelines on environmentally sound management of electrical and electronic wastes (e-wastes) and also included plastic wastes in the PIC procedure.
 - Under the Rotterdam Convention, two new chemicals (Phorate and HBCD) were added in the list for mandatory PIC procedure in international trade.
- India in Joint Conference**
- The draft technical guidelines stipulated the conditions when used electrical and electronic equipment destined for direct reuse, repair, refurbishment or failure analysis should be considered as non-waste.
 - India had major reservations regarding these provisions as in the name of re-use, repair, refurbishment, and failure analysis there was a possibility of dumping from the developed world to the developing

countries including India in view of the growing consumption of electronic equipment and waste across the world.

- The Indian delegation strongly objected to the proposed decision on these guidelines during plenary and did not allow it to be passed by the conference of the parties (COP).
- On the final day of the COP, a modified decision was adopted in which all the concerns raised by India were incorporated like recognition that the interim guideline has issues and further work is required especially on the provision on distinguishing waste from nonwaste and the guidelines were adopted on an interim basis only.

87. Correct Answer: (d)

GIAHS Sites in India: The following sites have been recognized.

Koraput, Odisha State:

- This region has rich biodiversity, growing several varieties of paddy, millets, pulses, oilseeds, vegetables.
- The region primarily a tribal district inhabited by khonds, bonda tribes practicing poddhu (shifting) cultivation.
- Shifting cultivation – loss of forest cover = hurting the biodiversity.
- Soil erosion, Soil degradation, habitat loss. Illiteracy, large family, small farm holding size.
- The socio-economic indicators are very poor here nearly 84% living in abject poverty.

Kuttanad:

- Kuttanad is a delta region of about 900 sq. km situated on the west coast of Kerala State, India.
- Unique feature: Below sea level rice cultivation site, only such a system in India.
- Farmers of Kuttanad have developed and mastered the spectacular technique of below sea level cultivation over 150 years ago.
- They made this system unique as it contributes remarkably well to the

conservation of biodiversity and ecosystem services including several livelihood services for local communities.

Kashmir Valley, Pampore region:

- Saffron Heritage Site of Kashmir in India Grains such as maize, rice, rajmah/lentils, fruit and vegetable crops, and pulses.
- A set of unique low-tillage traditional agricultural practices are carried During the fallow period, the growth of fruit, fodder and mulberry trees along the farm boundaries (Agro-forestry) is practiced, thereby maintaining traditional agro biodiversity.

88. Correct Answer: (a)

The United Nations Office for Disaster Risk Reduction (UNISDR)

- UNISDR was created in December 1999.
- The successor to the secretariat of the International Decade for Natural Disaster Reduction was established to ensure the implementation of the International Strategy for Disaster Reduction.
- UNISDR is part of the United Nations Secretariat and its functions span the social, economic, environmental as well as humanitarian fields.
- UNISDR supports the implementation, followup, and review of the Sendai Framework for Disaster Risk Reduction adopted by the Third UN World Conference on Disaster Risk Reduction on 18 March 2015 in Sendai, Japan.
- The Sendai Framework is a 15-year voluntary, non-binding agreement that maps out a broad, people-centered approach to disaster risk reduction, succeeding the 2005-2015 Hyogo Framework for Action.
- UNISDR's vision is anchored on the four priorities for action set out in the Sendai Framework: understanding disaster risk, strengthening disaster risk governance to manage disaster risk, investing in disaster risk reduction for resilience, and enhancing disaster preparedness for effective response and to "Build Back

Better” in recovery, rehabilitation, and reconstruction.

- UNISDR informs and connects people by providing practical services and tools such as the risk reduction website-PreventionWeb, terminology, publications on good practices, country profiles and the Global Assessment Report on Disaster Risk Reduction which is an authoritative biennial analysis of global disaster risks and trends.

89. Correct Answer: (d)

Climate Change and Land

- The IPCC approved and accepted Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems at its 50th Session held on 2 – 7 August 2019.
- This is the first time that IPCC has solely focused on the land sector.
- The current report talks about the contribution of land-related activities to global warming — how the different uses of land, like agriculture, industry, forestry, cattle-rearing, and urbanization, was affecting emissions of greenhouse gases.
- An important part of the report talks about the manner in which even existential activities like food production contributes to global warming and is also affected by it.
- The report says that if pre-production activities like cattle rearing and postproduction activities like transport, energy and food processing, is taken into account, then food production could contribute as much as 37 percent of all greenhouse gas emissions every year.
- It points out that nearly 25 percent of all food produced is either lost or wasted.
- And even the decomposition of the waste releases emissions.
- The report shows that sustainable land management including sustainable forest management can help reduce land

degradation and also tackle climate change.

- Coordinated efforts to tackle climate change will also help improve land, food security, and nutrition, etc.
- Reducing over-consumption and waste of food, eliminating the clearing and burning of forests, preventing over-harvesting of fuelwood, and reducing greenhouse gas emissions will help to address land-related climate change issues.

Land-Climate Link:

- Land use and changes in land use have always been an integral part of the conversation on climate change. That is because land acts as both the source as well as a sink of carbon.
- Land Degradation is both the cause and consequence of climate change.
- Climate change causes the land to degrade through both gradual changes in temperature and rainfall patterns, as well as changes in the distribution and intensity of extreme events.
- Degraded land is less productive which reduces its ability to absorb carbon thus exacerbating climate change.

90. Correct Answer: (a)

Hindu Kush Himalaya (HKH) Assessment Report

- International Centre for Integrated Mountain Development (ICIMOD), a regional intergovernmental body has released the first ever assessment of climate change impacts on the Hindu Kush Himalayan (HKH) region.
- The ICIMOD is pursuing 8 countries, including India, to set up an inter-governmental body to protect the Hindu Kush Himalayan region, known as the water tower of Asia.
- Main findings of the report HKH region is warming faster than the global average.
- It would continue to warm through this century even if the world is able to limit global warming at the agreed 1.5 degrees Celsius.

- The per capita fossil fuel carbon dioxide emission from the HKH countries is one-sixth of the global average though it is disproportionately impacted.
- In the last 60 years, extreme cold events have become lesser while extreme warm weather events have become more pronounced.
- Both minimum and maximum temperatures are also changing: they are moving north, indicating overall warming.
- Every decade HKH loses one cold night and half a cold day.
- While warm nights have increased by 1.7 per decade, the region gets 1.2 warm days every decade.
- Alarming, changes in surface temperature (relative to 1976-2005) in this Himalayan region are higher than the global average, and even the South Asian region.
- The projected changes in the surface mean temperature over the HKH region is larger compared to the global mean change by the end of the 21st century.
- The number of glaciers in the Himalayan area has increased in the last five decades and this is an indicator of how severe glacier melting has been due to global warming.
- The increase in the number of glaciers is primarily due to glacier fragmentation — that big ones are splitting into smaller ones.
- And this is happening due to consistent loss in areas the glaciers occupy.
- Smaller glaciers are shrinking faster than larger ones, although the smaller glaciers of Ladakh show a lower rate of a retreat than other Himalayan glaciers. However, the assessment makes clear that despite the surety of glaciers in the Hindu Kush Mountains losing length since 1973, no studies have been done to examine area change in this region.
- In 1998-2014, when global warming slowed down, this region continued to warm.
- In the 20th century, the HKH region oscillated between warming and cooling phases.
- In the first 40 years, it reported warming to be followed by a cooling phase in 1940-1970. However, since 1970 it has been warming, and as assessed, it would continue to be through the current century.
- Warming may be good news for agriculture as the length of the growing season has increased by 4.25 days per decade — a positive change for agriculture.

91. Correct Answer: (c)

Environmental Impact Assessment

- According to the Convention of Biological Diversity, Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account interrelated socio-economic, cultural and human health impacts, both beneficial and adverse.
- United Nations Environment Programme (UNEP) defines Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making.
- It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.
- By using EIA both environmental and economic benefits can be achieved, such as reduced cost and time of project implementation and design, avoided treatment/clean-up costs and impacts of laws and regulations

92. Correct Answer: (d)

Environment Impact Assessment

- Environment Impact Assessment Notification of 2006 has decentralized the

environmental clearance projects by categorizing the developmental projects in two categories, i.e., Category A (national level appraisal) and Category B (state-level appraisal).

- 'Category A' projects are appraised at the national level by Impact Assessment Agency (IAA) and the Expert Appraisal Committee (EAC) and Category B projects are appraised at the state level.
- State Level Environment Impact Assessment Authority (SEIAA) and State Level Expert Appraisal Committee (SEAC) are constituted to provide clearance to the Category B process.
- EIA links the environment with development for environmentally safe and sustainable development and it provides a cost-effective method to eliminate or minimize the adverse impact of developmental projects.
- The Ministry of Environment constituted the Western Ghats Experts Ecology Panel (WGEEP) in 2010 under the Chairmanship of Madhav Gadgil, which submitted its report in 2011 but it was not made public immediately due to its stringent assessment of the condition of Western Ghats.

93. Correct Answer: (c)

The International Whaling Commission (IWC)

- The International Whaling Commission (IWC) is the global body charged with the conservation of whales and the management of whaling.
- It was set up to provide for the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry.
- Uncertainty over whale numbers led to the introduction of a 'moratorium' on commercial whaling in 1986. This remains in place although the Commission continues to set catch limits for aboriginal subsistence whaling.
- The main duty of the IWC is to keep under review and revise as necessary the

measures laid down in the Schedule to the Convention which govern the conduct of whaling throughout the world.

- These measures, among other things, provide for the complete protection of certain species; designate specified areas as whale sanctuaries; set limits on the numbers and size of whales which may be taken; prescribe open and closed seasons and areas for whaling, and prohibit the capture of suckling calves and female whales accompanied by calves.
- The IWC currently has 89 member governments from countries all over the world.
- India is a member state. All members are signatories to the International Convention for the Regulation of Whaling.
- International Convention for the Regulation of Whaling is an international environmental agreement that governs the commercial, scientific, and aboriginal subsistence whaling practices.
- This Convention is the legal framework that established the IWC in 1946.
- Today, the Commission also works to understand and address a wide range of non-whaling threats to cetaceans including entanglement, ship strike, marine debris, climate change, and other environmental concerns.
- In 1994, it created the Southern Ocean Whale Sanctuary surrounding the continent of Antarctica. Here, the IWC has banned all types of commercial whaling.
- Only two such sanctuaries have been designated by IWC to date.
- Another is Indian Ocean Whale Sanctuary by the tiny island nation of Seychelles.

94. Correct Answer: (d)

Pollution Index

- The Ministry of Environment, Forest and Climate Change (MoEFCC) has developed the criteria of categorization of industrial sectors based on the Pollution Index which is a function of the emissions (air pollutants), effluents (water pollutants),

hazardous wastes generated and consumption of resources.

- The Pollution Index PI of any industrial sector is a number from 0 to 100 and the increasing value of PI denotes the increasing degree of pollution load from the industrial sector.
 - 'Range of Pollution Index 'for the purpose of categorization of industrial sectors is:
 - Industrial Sectors having Pollution Index score of 60 and above - Red category
 - Industrial Sectors having Pollution Index score of 41 to 59 - Orange category
 - Industrial Sectors having Pollution Index score of 21 to 40 - Green category
 - Industrial Sectors having Pollution Index score incl. & upto 20 - White category
- Some examples:
- White - Air conditioners, bicycles, CFL lamp, Organic manure, etc.
 - Green - Aluminum Utensils, Distilled water, flour mills, Ayurvedic medicines,
 - Orange - Dry cell battery, food processing, glass manufacturing, and automobile servicing
 - Red - Lead acid battery, cement, oil & gas extraction, pharmaceuticals.

95. Correct Answer: (a)

Resource Depletion

- The rate of depletion of resources is measured by two parameters - per capita mining and per capita consumption.
- Per capita mining is calculated by dividing the amount of resource mined by the population.
- Per capita consumption is obtained by dividing the amount of resource actually processed by the population.
- It is a better index of the standard of living of the population.
- Overconsumption, or people consuming resources faster than they can be replenished, is the main cause of resource depletion.
- Overpopulation, industrial and technological development, erosion, deforestation, overfishing, irrigation,

mining and pollution all contribute to the problem as well.

96. Correct Answer: (b)

National Mission for Green India

- It is one of the eight missions launched under the National Action Plan on Climate Change (NAPCC).
- The mission was launched in 2015. The objective of the mission is:
- To increase green cover to the extent of 5 million hectares (mha) and improve the quality of existing green cover on another 5 mha, improve eco-system services like carbon sequestration, hydrological services and biodiversity and provisioning services like fuel, fodder, and timber and non-timber forest produces (NTFPs).
- It also has to increase forest-based livelihood income for about 3 million households.

97. Correct Answer: (a)

M-STRiPES (Monitoring System for Tigers Intensive Protection and Ecological Status)

- It is developed by the Wildlife Institute of India, Dehradun.
- The application is used by forest guards, and is GPS-enabled and helps to capture data relating to tiger sightings, deaths, wildlife crime and ecological observations while patrolling.
- It is a free app that will be made available to staff participating in the tiger census exercise, and they will feed in their observation during the carnivore sign survey and transect marking.

98. Correct Answer: (d)

Namami Gange Programme

- 'Namami Gange Programme', is an Integrated Conservation Mission, approved as 'Flagship Programme' by the Union Government in June 2014 with a budget outlay of Rs.20,000 Crore to accomplish the twin objectives of effective abatement of pollution and conservation and rejuvenation of National River Ganga.

Main pillars of the Namami Gange Programme are:

- Sewerage Treatment Infrastructure
- River Front Development
- River Surface Cleansing
- Biodiversity
- Afforestation
- Public Awareness
- Industrial Effluent Monitoring
- Ganga Gram

99. Correct Answer: (b)

Kalam Climate Fellowship

- India and the US have launched the Fulbright - Kalam Climate Fellowship.
- The fellowship programme will enable Indian research scholars to work with American institutions in the field of climate change.
- The United States-India Educational Foundation (USIEF) administers the Fulbright Kalam Climate Fellowship on behalf of both the governments.

100. Correct Answer: (d)

Pollution Index (PI)

- The Pollution Index (PI) of any industrial sector is a number from 0 to 100 and the increasing value of PI denotes the increasing degree of pollution load from the industrial sector.
- The new system is based on the pollution index (PI) which is derived only from: the quantity of emissions (air pollution), quantity of effluents (water pollution), hazardous wastes generated and consumption of resources by industry.
- The index is based on the concentrations of 5 pollutants: Ozone, Nitrogen Dioxide, Sulphur Dioxide, PM2.5 (particles with an aerodynamic diameter less than 2.5 μm) and PM10.