12th Science Lesson 15 Questions in English

15] Biodiversity and its conservation

1. In which year the UN earth summit defined the Biodiversity?

a) 1992

b) 1990

c) 1978

d) 1965

Explanation

The 1992 UN Earth Summit defined Biodiversity as the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part. This includes diversity within species, between species and ecosystems of a region.

2. Which of these are not related to the Biodiversity?

a) Reflects the number of different organisms and their relative frequencies.

b) Maintains the ecological processes.

c) Survival of human race depends on wellbeing of plants only.

d) Provides an index of health of an ecosystem.

Explanation

Biodiversity reflects the number of different organisms and their relative frequencies in an ecological system and constitutes the most important functional component of a natural ecosystem. It helps to maintain ecological processes, create soil, recycle nutrients, influence climate, degrade waste and control diseases. It provides an index of health of an ecosystem. The survival of human race depends on the existence and wellbeing of all life forms (plants and animals) in the biosphere.

3. Who introduced the term Biodiversity?

a) Marsden

b) Walter Rosen

c) Earnshaw

d) Richard P.Feynman

Explanation

The term biodiversity was introduced by Walter Rosen (1986).

4. In which direction the number of species per unit area declines due to climatic changes?

a) From tropics towards the poles.

b) From poles to poles

c) Along the equator

d) Around the coastal areas

Explanation

Biodiversity is the assemblage of different life forms. Each species is adapted to live in its specific environments. The changes in climatic conditions are reflected in the distribution and pattern of biodiversity on our planet. The number of species per unit area declines as we move from tropics towards the poles.

5. Choose the incorrect statements.

i) The Tundra and Taiga of northern Canada possess less than 12 species of trees.

ii) The Temperate forests of the United States have about 35 species of trees.

iii) The tropical forests of Panama have only 11 species of trees in a small area.

a) i only

b) ii only

c) iii only

d) None of the above

Explanation

The Tundra and Taiga of northern Canada, Alaska, northern Europe and Russia possess less than 12 species of trees. The temperate forests of the United States have 20-35 species of trees while the tropical forests of Panama have over 110 species of trees in a relatively small area.

6. Who described the biodiversity levels?

a) Edward Wilson

b) W. Pauli

c) Henry Becquerel

d) Fredrick Reines

Explanation

Edward Wilson popularized the term 'Biodiversity' to describe diversity at all levels of biological organization from populations to biomes.

7. Which of the following is not a biodiversity level?

a) Genetic diversity

b) Community diversity

c) Species diversity

d) Population diversity

Explanation

There are three levels of biodiversity – Genetic diversity, Species diversity and Community/Ecosystem diversity.

8. Which of these is referred as Genetic diversity?

a) Genetic variations between distinct populations of the same species.

b) Types of genes between distinct species.

c) Genetic variation within a single species.

d) All the above

Explanation

Genetic diversity refers to the differences in genetic make-up (number and types of genes) between distinct species and to the genetic variation within a single species; also covers genetic variation between distinct populations of the same species.

9. Which of this medicinal plant of Himalaya ranges shows differences in the potency?

a) Curcuma longa

b) Rouwolfia vomitaria

c) Phyllanthus emblica

d) Piper nigrum

Explanation

Rouwolfia vomitaria, a medicinal plant growing in different ranges of the Himalayas shows differences in the potency and concentration of the active ingredient reserpine due to genetic diversity. Genetic diversity helps in developing adaptations to changing environmental conditions.

10. Define species richness.

a) Variety in number of species.

b) Number of species per unit area at a specific time.

c) Number of diverse species

d) Ratio of total species to the fittest.

Explanation

Species diversity refers to the variety in number and richness of the species in any habitat. The number of species per unit area at a specific time is called species richness, which denotes the measure of species diversity.

11. Assertion (A): The Western Ghats of India have greater amphibian species diversity than the Eastern Ghats.

Reasoning(R): The more number of species in an area leads to more richness of the species.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

The Western Ghats have greater amphibian species diversity than the Eastern Ghats. The more the number of species in an area the more is the species richness.

12. Which of the following is not a diversity index?

a) Alpha

b) Tesla

c) Beta

d) Gamma

Explanation

The three indices of diversity are - Alpha, Beta and Gamma diversity.

13. Which of these refers to the diversity of the habitats over the landscape?

a) Alpha diversity

b) Gamma diversity

c) Beta diversity

d) None of the above

Explanation

Alpha diversity: It is measured by counting the number of taxa (usually species) within a particular area, community or ecosystem.

Beta diversity: It is species diversity between two adjacent ecosystems and is obtaining by comparing the number of species unique to each of the ecosystem.

Gamma diversity refers to the diversity of the habitats over the total landscape or geographical area.

14. Which of this diversity exists at the ecosystem level?

a) Community diversity

b) Alpha diversity

c) Beta diversity

d) Gamma diversity

Explanation

Community/Ecosystem diversity is the variety of habitats, biotic communities, and ecological processes in the biosphere. It is the diversity at ecosystem level due to diversity of riches, trophic levels and ecological processes like nutrient cycles, food webs, energy flow and several biotic

interactions. India with its alpine meadows, rain forests, mangroves, coral reefs, grass lands and deserts has one of the greatest ecosystem diversity on earth.

15. Which of these is known as Taxonomic impediment?

a) Quantified number of species in a region at a given time.

b) Number of extinct species.

c) The exact magnitude of natural wealth.

d) All the above

Explanation

Biodiversity is often quantified as the number of species in a region at a given time. The current estimate of different species on earth is around 8-9 million. However, we really don't know the exact magnitude of our natural wealth. This is called the 'The Taxonomic impediment'.

16. Which of these represents the biomes of India?

a) Tropical humid forests

b) Tropical dry forests

c) Warm deserts

d) All the above

Explanation

India is very rich in terms of biological diversity due to its unique bio-geographical location, diversified climatic conditions and enormous eco-diversity and geo-diversity. According to world biogeographic classification, India represents two of the major realms (The Palearctic and Indo-Malayan) and three biomes (Tropical humid forests, Tropical Dry/ Deciduous forests and Warm Deserts/Semi deserts). With only about 2.4% of the world's total land surface, India is known to have over 8 % of the species of animals that the world holds and this percentage accounts for about 92,000 known species.

17. What is the global position of India in terms of area?

a) 7^{th}

b) 2^{nd}

c) 10^{th}

d) 20^{th}

Explanation

India is the seventh largest country in the world in terms of area. India has a variety of ecosystems, biomes with its varied habitats like, hills, valleys, plateaus, sea shores, mangroves, estuaries, glaciers, grasslands and river basins. It also reflects different kinds of climates, precipitation, temperature distribution, river flow and soil. India is one of the 17 mega biodiversity countries of the world and has ten biogeographic zones with characteristic habitat and biota.

18. Assertion (A): The Habitat conditions are determined by the latitude and altitudes.

Reasoning(R): Organisms require different sets of conditions for their growth and metabolism.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

The distribution of plants and animals is not uniform around the world. Organisms require different sets of conditions for their optimum metabolism and growth. Within this optimal range (habitat) a large number and type of organisms are likely to occur, grow and multiply. The habitat conditions are determined by their latitudes and altitudes.

19. Which of these factors determine the biodiversity distribution patterns?

a) Temperature

b) Distance of the equator

c) Altitude from sea level

d) All the above

Explanation

Latitudinal and altitudinal gradients: Temperature, precipitation, distance from the equator (latitudinal gradient), altitude from sea level (altitudinal gradient) is some of the factors that determine biodiversity distribution patterns. The most important pattern of biodiversity is latitudinal gradient in diversity. This means that there is an increasing diversity from the poles to equator.

20. In which point of the Earth zones diversity reaches maximum?

a) Tropics

b) Poles

c) Equator

d) Sea level

Explanation

Diversity increases as one moves towards the temperate zones and reaches the maximum at the tropics. Thus, tropics harbour more biodiversity than temperate or polar regions, especially between the latitudes of 23.5^{o}N and 23.5^{o}S (Tropic of Cancer to the Tropic of Capricorn). Harsh conditions exist in temperate areas during the cold seasons while very harsh conditions prevail for most of the year in Polar Regions.

21. Which of the factors increases the species diversity?

a) Temperature

b) Population

c) Latitude

d) Fertility

Explanation

Columbia located near the equator (0^{o}) has nearly 1400 species of birds while New York at 41^{o}N has 105 species and Greenland at 71^{o}N has 56 species. India, with much of its land area in the tropical latitudes, is home for more than 1200 species of birds. Thus it is evident that the latitude increases the species diversity.

22. What is the effect of drop in temperature in species diversity?

a) Increases

b) No change

c) Decreases

d) Proportional change

Explanation

Decrease in species diversity occurs as one ascends a high mountain due to drop in temperature (temperature decreases @ 6.5^{o}C per Km above mean sea level)

23. Which of these reasons increases the richness of biodiversity in the tropics?

a) Environmental conditions support variety of organisms.

b) Average rainfall is more than 200 mm per year.

c) Rich resource and nutrient availability.

d) All the above

Explanation

The reasons for the richness of biodiversity in the Tropics are: Warm tropical regions between the tropic of Cancer and Capricorn on either side of equator possess congenial habitats for living organisms. Environmental conditions of the tropics are favorable not only for speciation but also for supporting both variety and number of organisms. The temperatures vary between 25^{o}C to 35^{o}C, a range in which most metabolic activities of living organisms occur with ease and efficiency. The average rainfall is often more than 200 mm per year. Climate, seasons, temperature, humidity, photoperiods are more or less stable and encourage both variety and numbers. rich resource and nutrient availability.

24. State the relationship between the species richness and its area.

a) $\log S = \log C + Z \log A$

b) $\log S = \log C + A$

c) log S = log A + Z log C

d) log S = log A + log Z

Explanation

German Naturalist and Geographer Alexander von Humboldt explored the wilderness of South American jungles and found that within a region the species richness increased with increasing area but up to a certain limit. The relationship between species richness and area for a wide variety of taxa (angiosperm plants, birds, bats, freshwater fishes) turned out to be the rectangular hyperbola. On a logarithmic scale, the relationship is a straight line described by the equation.

log S = log C + Z log A where,

S = Species richness

A = Area

Z = Slope of the line (regression coefficient)

C = Y-intercept

25. Assertion (A): Biodiversity is denoted as the number of different species of flora and fauna including microorganisms.

Reasoning(R): Organisms can inhabit different ecosystems with varying conditions and it is essential for the wellbeing of our planet.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

Biodiversity is the variety of life on earth. That is, it is the number of different species of flora and fauna including microorganisms. These organisms can inhabit different ecosystems with varying conditions like the Rainforests, Coral reefs, Grasslands, Deserts, Tundra and the Polar ice caps. This variety (Biodiversity) is essential for the wellbeing of our planet and sustenance of life as a whole.

26. Who proposed the Rivet Popper Hypothesis concept related to the ecosystem?

a) Paul Ehrlich

b) Neil's Bohr

c) James Chadwick

d) Rouwolfia vomitaria

Explanation

Ecologist Paul Ehrlich proposed the 'Rivet Popper Hypothesis' for better understanding the loss of each species in the ecosystem. He compared each species of an ecosystem with rivets in the body

of an aero plane. Thousands of rivets (species) join all the parts of an aero plane (ecosystem). If every passenger travelling in the aero plane starts taking rivets home (loss of species), initially it may not affect flight safety (proper functioning of the ecosystem). However, the plane becomes dangerously weak over a period of time, when more and more rivets are removed. Moreover, which rivet is removed is also important. When the key rivets (removal of key stone species) on the wings of the aero plane are removed, undoubtedly it poses serious threat to the flight safety. Thus we understand the role of every species for the hormonal function of an ecosystem.

27. Which of these is not an important factor of biodiversity?

a) Ecosystem Services

b) Tradeoff between species and its richness

c) Biological resources

d) Social Benefits

Explanation

The importance of biodiversity can be viewed and measured as Ecosystem services, Biological resources, and social benefits of biodiversity.

28. Which of these are the functional attributes of the Biodiversity?

a) Soil formation and soil health

b) Water flow regulators

c) Climate stability

d) All the above

Explanation

The organization and functioning of ecosystems world over is effected and dependent on biodiversity and its richness. The major functional attributes are: continuity of nutrient cycles or biogeochemical cycles (N2, C, H2O, P, S cycles) Soil formation, conditioning or maintenance of soil health (fertility) by soil microbial diversity along with the different trophic members, increases ecosystem productivity and provide food resources, act as water traps, filters, water flow regulators and water purifiers (forest cover and vegetation) climate stability (forests are essential for rainfall, temperature regulation, CO2 absorption, which in turn regulate the density and type of vegetation), forest resource management and sustainable development, maintaining balance between biotic components cleaning up of pollutants – microbes are the biggest degraders of molecules including many anthropogenic ones which are present in effluents, sewage, garbage and agro-chemicals, ecological stability – the varieties and richness of species contribute to ecological stability and survival of species.

29. Which of these is a crucial indicator of the species richness?

a) Endemism

b) Environment

c) Extinction

d) Survival

Explanation

Bio diverse regions are reservoirs of biological resources like food resources, gene pool, genetic resource, and medicinal resources, bio-prospecting to provide unique aesthetic value and hot spots for Ecotourism. Along with forest resources and wildlife it has commercial significance an indicator of the health of the ecosystem. Endemism is a crucial indicator of richness.

30. Which of the following zone is not included in the Trans Himalaya?

a) Ladakh

b) North Sikkim

c) Aravalli hill

d) Lahaul

31. Which of the zones have thorn and deciduous forests?

a) Thar

b) Ladakh

c) Eastern Ghats

d) Sundarbans

Explanation

Bio geographical Zones of India

S. No.	Biogeographical Zones	Biotic Provinces	Area %	Biota
1.	Trans Himalaya	Comprises mountain areas of Ladakh (J&K), North Sikkim and Lahaul and Spiti of H.P	5.7%	Alpine steppe vegetation, richest wild sheep and goat community in the world (renowned for its quality wool), Chiru, black rocked crane, etc.,
2.	Himalayas	The entire mountain chain running from western to north eastern India	7.2%	Alpine forest, orchids, rhodotendrons, wild sheep, mountain goats, shrew, snow leopard, panda etc.,
3.	Indian Desert	The extremely arid area west of the Aravalli hill range comprising of the sand desert of Rajasthan (Thar) and the salt desert of Gujarat (Kutch)	6.9%	Thorn forests, deciduous forest, wild ass (endemic), Indian bustard, camel, foxes,snakes tc.,

32. Which of these zones comprises the larger area in the Indian subcontinent?

a) Deccan Peninsula

b) Western Ghats

c) Semi-arid zones

d) Gangetic plains

Explanation

4.	Semi-arid zones	The zones in between the desert and the Deccan plateau including the Aravalli hill range	15.6%	Thorn and deciduous forest, mangroves, Nilghai, black buck, four horned antelopes, sambar, chital, spotted deer, Asiatic lion, tiger, leopard, jackal etc.,
5.	Western Ghats	Mountain ranges from Sat Pena in South Gujarat to the southern most tip of Kerala	4%	Evergreen to dry deciduous forests, Nilgiri langur, Indian elephant. Nilgiri tahr (state animal of Tamilnadu), the grizzled squirrel and lion tailed macaque (endemic)
6.	Deccan Peninsula	A large area comprising of raised land bound by the Sathpura range on the north, Western Ghats on the west and Eastern Ghats on the east	43%	Deciduous forest, thorn forests and pockets of semi ever green forests, chital, sambar, sloth bear, barking deer, Nilghai, elephant , black buck etc.,
7.	Gangetic plains	One of most fertile region of India which extends from eastern Rajasthan through Uttar Pradesh, Bihar and West Bengal	11%	Mangrove forest, dry deciduous forest, rhinoceros, elephant, buffalo, tiger, crocodile, swamp deer, hog deer etc.,

33. Which of these forests is associated with the Andaman and Nicobar Islands?

a) Thorn forests

b) Deciduous Forests

c) Evergreen Forests

d) Mangroves

Explanation

9.	Coastal Region	The coastline from Gujarat to Sunderbans with sandy beaches, mud flats, coral reefs, and mangroves	2.5%	Mangroves, sponges, corals, crabs, turtles, tunas, ornamental fishes etc.,
10.	Andaman and Nicobar Islands	Andaman and Nicobar Islands in the Bay of Bengal	0.3%	Evergreen forest, a wide diversity of corals, Narcondam hornbills, giant robber crab, turtle, wild boar, water monitor, south Andaman krait etc.,

34. Which of these is the major cause for decline in the biodiversity?

a) Habitat loss

b) Climate change

c) Natural disasters

d) All the above

Explanation

The major causes for biodiversity decline are: Habitat loss, fragmentation and destruction (affects about 73% of all species) Pollution and pollutants (smog, pesticides, herbicides, oil slicks, GHGs), Climate change, Introduction of alien/exotic species Over exploitation of resources (poaching, indiscriminate cutting of trees, over fishing, hunting, mining), Intensive agriculture and aquaculture practices, Hybridization between native and nonnative species and loss of native species, Natural disasters (Tsunami, forest fire, earth quake, volcanoes) Industrialization, Urbanization, infrastructure development, Transport –Road and Shipping activity, communication towers, dam construction, unregulated tourism and monoculture are common area of specific threats, Co-extinction

35. Assertion (A): Habitat loss is mainly for the benefit of human society development.

Reasoning(R): Species become victim to predation, starvation or eventually die in human animal conflicts.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

Habitat Loss: Development of human society is inevitable. Natural habitats are destroyed for the purpose of settlement, agriculture, mining, industries and construction of highways. As a result species are forced to adapt to the changes in the environment or move to other places. If not, they become victim to predation, starvation, disease and eventually die or results in human animal conflict.

36. By which of these ways the fragmentation and destruction of natural habitats happen?

a) Constructing transport ways

b) Extracting ores

c) Changing the course of rivers

d) All the above

Explanation

Over population, urbanization, industrialization and agricultural advancements require additional land, water and raw materials every year. This is made possible only through fragmentation or destruction of natural habitats by filling wetlands, ploughing grasslands, cutting down trees, forest, desilting rivers, constructing transport ways, caving mountains, extracting, and ores, changing the course of rivers and filling of seashore.

37. Which of these are the effects of Habitat fragmentation?

a) Large continuous area of habitat is reduced in area.

b) Destruction of complex interactions among the species.

c) Decreased bio diversity in the habitat fragments.

d) All the above

Explanation

Habitat fragmentation is the process where a large, continuous area of habitat is both, reduced in area and divided into two or more fragments. Fragmentation of habitats like forest land into crop lands, orchard lands, plantations, urban areas, industrial estates, transport and transit systems has resulted in the destruction of complex interactions amongst species, (food chain and webs) destruction of species in the cleared regions, annihilation of species restricted to these habitats (endemic) and decreased biodiversity in the habitat fragments. Animals requiring large territories such as mammals and birds are severely affected. The elephant corridors and migratory routes are highly vulnerable. The dwindling of many well-known birds (sparrows) and animals can be attributed to this.

38. State some of the species became extinct due to over exploitation?

a) Dodo

b) Steller's sea cow

c) Passenger pigeon

d) All the above

Explanation

Over exploitation: We depend on nature for our basic needs such as food and shelter. However, when the need becomes greed, it leads to over exploitation of natural resources. Excessive exploitation of a species reduces the size of its population to such a level that it becomes vulnerable to extinction. Dodo, passenger pigeon and Steller’s sea cow have become extinct in the last 200-300 years due to over exploitation by humans. Overfishing due to population pressure leads to many marine fish (populations) declining around the world.

39. Which of these statements are not true regarding the exotic species?

i) Exotic species are non-native or alien introduced intentionally for commercial purposes.

ii) Exotic species become invasive and drive away the local species.

iii) Exotic species are not harmful to both aquatic and terrestrial ecosystems.

a) i only

b) ii only

c) iii only

d) None of the above

Explanation

Exotic species (non-native; alien) are organisms often introduced unintentionally or deliberately for commercial purpose, as biological control agents and other uses. They often become invasive and drive away the local species and are considered as the second major cause for extinction of species. Exotic species have proved harmful to both aquatic and terrestrial ecosystems.

40. From which of these countries the Paracoccus marginatus originated?

a) Central America

b) China

c) New Zealand

d) South Africa

Explanation

The introduction of the Nile Perch, a predatory fish into Lake Victoria in East Africa led to the extinction of an ecologically unique assemblage of more than 200 nature species of cichlid fish in the lake. Papaya Mealy Bug (Paracoccus marginatus) is native of Mexico and Central America, is believed to have destroyed huge crops of papaya in Assam, West Bengal and Tamil Nadu.

41. Which of the following is not an effect of Industrialization?

a) Economy Deficit

b) Extreme weather conditions

c) Large scale of deforestation

d) Glaciers melting

Explanation

Industrialization is a major contributor to climate change and a major threat to biodiversity. Energy drives our industries are provided by burning of fossil fuels. This increases the emission of CO2, a GHG leading to climate change. Due to large scale deforestation, the emitted CO2 cannot be absorbed fully, and its concentration in the air increases. Climate change increases land and ocean temperature, changes precipitation patterns and raises the sea level. This in turn results in melting of glaciers, water inundation, less predictability of weather patterns, extreme weather conditions, outbreak of squalor diseases, and migration of animals and loss of trees in forest. Thus climate change is an imminent danger to the existing biodiversity.

42. What are the negative effects of the shifting cultivation?

a) Loss of forest cover

b) CO_2 discharge

c) Climate change

d) All the above

Explanation

Shifting or Jhum cultivation (Slash-and-burn agriculture): In shifting cultivation, plots of natural tree vegetation are burnt away and the cleared patches are farmed for 2-3 seasons, after which their fertility reduces to a point where crop production is no longer profitable. The farmer then abandons this patch and cuts down a new patch of forest trees elsewhere for crop production. This system is practiced in north-eastern regions of India. When vast areas are cleared and burnt, it results in loss of forest cover, pollution and discharge of CO2 which in turn attributes to loss of habitat and climate change which has an impact on the faunal diversity of that region.

43. Which of the following concepts explain the relation between the Calvaria tree and Dodo bird?

a) Co extinction of species

b) Intensive agriculture

c) Shifting Cultivation

d) Parasites

Explanation

Co extinction of a species is the loss of a species as a consequence of the extinction of another. (Eg., orchid bees and forest trees by cross pollination). Extinction of one will automatically cause extinction of the other. Another example for co-extinction is the connection between Calvaria tree and the extinct bird of Mauritius Island, the Dodo. The Calvaria tree is dependent on the Dodo bird for completion of its life cycle. The mutualistic association is that the tough horny endocarp of the seeds of Calvaria tree are made permeable by the actions of the large stones in bird's gizzard and digestive juices thereby facilitating easier germination. The extinction of the Dodo bird led to the imminent danger of the Calvaria tree co extinction.

44. What is the base for the Intensive Agriculture?

a) High yielding varieties

b) Short time yield

c) Hybrid varieties

d) All the above

Explanation

Intensive agriculture: Spread of agriculture is sometimes at the cost of wetlands, grasslands and forests. Intensive agriculture is based on a few high yielding varieties. As a result, there is reduction in the genetic diversity. It also increases vulnerability of the crop plants to sudden attack by

pathogens and pests. There are only few varieties of traditional paddy strains today due to use to hybrid varieties in Tamil Nadu.

45. Assertion (A): Extinct species destabilizes the ecological stability and the distribution of biological diversity on earth.

Reasoning(R): Natural sources and organisms are indiscriminately exploited by human beings.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

Loss of biodiversity: Species have been evolving and dying out (extinction) ever since the origin of life. However, species are now becoming extinct at a faster rate. This is destabilizing the ecological stability and the distribution of biological diversity on earth. Human activities greatly contribute to the loss of biodiversity. Natural resources such as land, water and organisms are indiscriminately exploited by human beings.

46. Choose the Incorrect statements.

i) Direct and Indirect human activities have a detrimental effect on biodiversity.

ii) Harvesting, Pollution and Climate changes are the direct human activities in the biodiversity loss.

iii) The Indirect human drivers include demographic, economic, technological and religious factors.

a) i only

b) ii only

c) iii only

d) None of the above

Explanation

According to the Convention of Biological Diversity, direct and indirect human activities have a detrimental effect on biodiversity. Direct human activities like change in local land use, species introduction or removal, harvesting, pollution and climate change contribute a greater pressure on loss of biodiversity. Indirect human drivers include demographic, economic, technological, cultural and religious factors.

47. Which is not an indirect effect of human activities in the biodiversity loss?

a) Monsoon failure

b) Global warming

c) Species Extinction

d) Depletion in ozone layer

Explanation

Even though new species are being discovered, there is little hope for adding new species through speciation into the biodiversity treasure. Monsoon failure, global warming, depletion in ozone layer, landslides in hilly states, pollution are a few indirect effects of human activities which results in the loss biodiversity.

48. Which of these are the negative effects of the biodiversity loss?

a) Reduced ecosystem services

b) Adverse effect of the food chain

c) Species reduction

d) All the above

Explanation

The loss of biodiversity has a immense impact on plant animal and human life. The negative effects include dramatic influence on the food web. Even reduction in one species can adversely affect the entire food chain which further leads to an overall reduction in biodiversity. Reduced biodiversity leads to immediate danger for food security by reducing ecosystem services.

49. Which of the following statements is not true regarding hotspot?

a) High concentration of endangered species.

b) Great diversity of endemic species impacted and altered by human activities.

c) Hotspot supports endemic vascular plants and gained more than 25% of its original vegetation.

d) There are about 1000 biodiversity hotspots in the world.

Explanation

Hotspots are areas characterized with high concentration of endemic species experiencing unusual rapid rate of habitat modification loss. Norman Myers defined hot spots as "regions that harbour a great diversity of endemic species and at the same time, have been significantly impacted and altered by human activities." A hotspot is a region that supports at least 1500 endemic vascular plant species (0.5% of the global total) has lost more than 70% of its original vegetation. There are 35 biodiversity hotspots in the world.

50. Which of these is not a bio diversity hotspot of India?

a) Himalaya

b) Indian Ocean

c) Sunderland's

d) Western Ghats

Explanation

India is home to four biodiversity hotspots (as per ENVIS). They are Himalaya (the entire Indian Himalayan region), Western Ghats Indo-Burma: includes entire North-eastern India, except Assam and Andaman group of Islands (and Myanmar, Thailand, Vietnam, Laos, Cambodia and Southern China) , Sunderland's: includes Nicobar group of Islands (and Indonesia, Malaysia, Singapore, Brunei, Philippines).

51. Assertion (A): Endangered species categorized by the International Union for Conservation of Nature are likely to be extinct.

Reasoning(R): Red list species are the Critically Endangered conservation status for wild populations.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

A species that has been categorized as very likely to become extinct is an Endangered species. Endangered (EN), as categorized by the International Union for Conservation of Nature (IUCN) Red List, is the second most severe conservation status for wild populations in the IUCN's scheme after Critically Endangered (CR). In 1998 there were 1102 animal and 1197 plant species in the IUCN Red List. In 2012, the list features 3079 animal and 2655 plant species as endangered (EN) worldwide.

52. Which of this factor decides the extinction of species?

a) Drastic environmental changes

b) Atmospheric conditions

c) Population characteristics

d) Both a and c

Explanation

The extinction of species is mainly due to drastic environmental changes and population characteristics. There are three types of Extinctions

53. Assertion (A): Natural Extinction is a slow process of replacing existing species with better adapted species.

Reasoning(R): A small population can get extinct sooner than the larger population.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

Natural extinction is a slow process of replacement of existing species with better adapted species due to changes in environmental conditions, evolutionary changes, predators and diseases. A small population can get extinct sooner than the large population due to inbreeding depression (less adaptivity and variation).

54. In which year the Government of India launched the Project Tiger?

a) 1973

b) 1987

c) 1977

d) 1972

Explanation

The Government of India launched the 'Project Tiger' in 1973 to protect our national animal. From 9 tiger reserves since its inception, the Project Tiger coverage has increased to 50 at present. Project Tiger is an ongoing Centrally Sponsored Scheme of the Ministry of Environment and Forests, providing central assistance to the states for tiger conservation in designated tiger reserves. Project Tiger was launched in the Jim Corbett National Park, Uttarakhand in 1973. The project ensures a viable population of Bengal tigers in their natural habitats, protecting them from extinction and preserving areas of biological importance as a natural heritage.

55. Which of these causes the Mass extinction in Earth?

a) UV rays

b) Pandemic

c) Environmental Catastrophes

d) Sea level rise

Explanation

Mass extinction: The earth has experienced quite a few mass extinctions due to environmental catastrophes. A mass extinction occurred about 225 million years ago during the Permian, where 90% of shallow water marine invertebrates disappeared.

56. Which of these human activities causes the anthropogenic extinctions?

a) Habitat destruction

b) Over exploitation

c) Urbanization

d) All the above

Explanation

Anthropogenic extinctions are abetted by human activities like hunting, habitat destruction, over exploitation, urbanization and industrialization. Some examples of extinctions are Dodo of Mauritius and Steller's sea cow of Russia. Amphibians seem to be at higher risk of extinction because of habitat destruction. The most serious aspect of the loss of biodiversity is the extinction of species. The unique information contained in its genetic material (DNA) and the niche it possesses are lost forever.

57. Which of the following statements are not true regarding IUCN?

i) The IUCN was established in the year 1948 and located at Switzerland.

ii) The mission of IUCN is to influence encourage and assist societies to conserve nature.

iii) IUCN passed several laws through international conventions on nature conservation and biodiversity.

a) i only

b) ii only

c) iii only

d) None of the above

Explanation

The International Union for Conservation of Nature (IUCN) is an organization working in the field of nature conservation and sustainable use of natural resources. It was established in 1948 and located at Gland VD, Switzerland. It is involved in data gathering and analysis research, field projects and education on conservation, sustainable development and biodiversity. IUCN's mission is to influence, encourage and assist societies throughout the world to conserve nature and to ensure that any use of natural resources is equitable and ecologically sustainable. It influences governments and industries through partnerships by providing information and advice. The organization collects, compiles and publishes the IUCN red list of threatened species and their conservation status in the world. It plays a vital role in the implementation of several international conventions on nature conservation and biodiversity.

58. In which year the concept of Red list was mooted by IUCN?

a) 1963

b) 1976

c) 1947

d) 1955

Explanation

Red Data book or Red list is a catalogue of taxa facing risk of extinction. IUCN – International Union of Conservation of Nature and Natural Resources, which is renamed as WCU – World Conservation Union (Morges Switzerland) maintains the Red Data book. The concept of Red list was mooted in 1963.

59. Which of the following is not a purpose of Red list?

a) Identifying and documenting high risk extinct species.

b) To create awareness on the threat degree of biodiversity.

c) To enact laws and agreements on biological diversity conservation.

d) Preparing conservation priorities and conservation in action.

Explanation

The purpose of preparation of Red List are: To create awareness on the degree of threat to biodiversity, Identification and documentation of species at high risk of extinction, Provide global index on declining biodiversity, Preparing conservation priorities and help in conservation of action, Information on international agreements on conservation of biological diversity.

60. State the species which is not categorized in the Red list.

a) Vulnerable

b) Not evaluated

c) High risk

d) Data deficiency

Explanation

Red list has eight categories of species: Extinct, Extinct in wild, Critically Endangered, Endangered, Vulnerable, Lower risk, Data deficiency, Not evaluated.

61. In which year the Principle of Stockholm declaration was passed?

a) 1978

b) 1972

c) 1982

d) 1963

Explanation

The natural resources of the Earth, including air, water, land, flora and fauna of natural ecosystems must be safeguarded for the benefit of the present and future generations through careful planning and management, as appropriate – Principle of the Stockholm Declaration, 1972.

62. Which of these denotes the conservation of biodiversity?

a) Protecting and scientific management of biodiversity.

b) To maintain optimum level of biodiversity.

c) Protect species from extinction and their habitats.

d) All the above

Explanation

Conservation of biodiversity is protection and scientific management of biodiversity so as to maintain it at its optimum level and derive sustainable benefits for the present as well as future generations. It aims to protect species from extinction and their habitats and ecosystems from degradation.

63. What are the general strategies in conservation?

a) Identify and protect critical habitats

b) Implementing the Wildlife Protection Act.

c) Protecting air, water and soil on priority basis.

d) All the above

Explanation

General strategies in conservation: Identify and protect all threatened species, identify and conserve in protected areas the wild relatives of all the economically important organisms Identify and protect critical habitats for feeding, breeding, nursing, resting of each species, resting, feeding and breeding places of the organisms should be identified and protected, air, water and soil should be conserved on priority basis, wildlife Protection Act should be implemented.

64. What is defined as In-situ conservation?

a) Conservation of genetic resources within a natural or man-made ecosystem.

b) Breeding new species in an artificial ecosystem.

c) Protecting wild life sanctuaries and Forests.

d) Conservation of new species and habitats in a closed environment.

Explanation

In-situ Conservation (Conservation in the natural habitat): This is the conservation of genetic resources through their protection within a natural or manmade ecosystem in which they occur. It is conservation and protection of the whole ecosystem and its biodiversity at all levels in order to protect the threatened species.

65. Assertion (A): Protected Areas are bio geographical areas managed and maintained through legal measures.

Reasoning(R): Protected Areas includes National Parks, Wild Life Sanctuaries, community reserves and Biosphere reserves.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

Protected Areas: These are bio geographical areas where biological diversity along with natural and cultural resources is protected, maintained and managed through legal measures. Protected areas include national parks, wild life sanctuaries, community reserves and biosphere reserves.

66. Which of the chapters of Indian Constitution deals with the Wildlife Protection Acts?

a) CHAPTER X

b) CHAPTER II

c) CHAPTER IV

d) CHAPTER I

Explanation

National Parks (NP): It is a natural habitat that is notified by the state government to be constituted as a National Park due to its ecological, faunal, floral, geomorphological, or zoological association of importance. No human activity is permitted inside the national park except the activities permitted by the Chief Wildlife Warden of the state under the conditions given in CHAPTER IV, of the Wildlife Protection Act (WPA) 1972.

67. Match

National Parks	Year of Establishment
A. Mudumalai	i) 2001
B. Gulf of Mannar	ii) 1976
C. Indira Gandhi	iii) 1940
D. Mukkuruthi	iv) 1986

a) iii, iv, ii, i

b) ii, i, iii, iv

c) iv, iii, i, ii

d) ii, iii, iv, i

Explanation

National Parks in Tamil Nadu

National Parks in Tamil Nadu	Year of establishment	District(s)
Guindy NP	1977	Chennai
Gulf of Mannar Marine NP	1986	Ramanathpuram and Tuticorin
Indira Gandhi (Annamalai) NP	1976	Coimbatore
Mudumalai NP	1940	Nilgiris
Mukurthi NP	2001	Nilgiris

68. Choose the correct statements.

i) Any area including reserve forests or territorial waters can be notified as sanctuary by the State Government.

ii) As per the Chapter IV of Wildlife Act restricted human activities are allowed inside the Sanctuary areas of State Government.

iii) Eco tourism is not permitted inside the sanctuaries protected by the State Government.

a) i only

b) ii only

c) iii only

d) All the above

Explanation

Any area other than the area comprised with any reserve forest or the territorial waters can be notified by the State Government to constitute as a sanctuary if such area is of adequate ecological, faunal, floral, geomorphological, natural or zoological significance. This is for the purpose of protecting, endangered factual species. Some restricted human activities are allowed inside the Sanctuary area details of which are given in CHAPTER IV, of the Wildlife Protection Act (WPA) 1972. Eco tourism is permitted, as long as animal life is undisturbed.

69. Which of the following wild life sanctuaries are known for the Indian Tiger and Asiatic elephant?

a) Periyar Wild life sanctuary

b) Vedanthangal Wild life sanctuary

c) Guindy National Park

d) Kaziranga National Park

Explanation

Periyar wild life sanctuary in Kerala is famous for the Indian Tiger and Asiatic Elephant.

70. Identify the Incorrect Match.

A. Coimbatore	i) Indira Gandhi WLS
B. Nilgiris	ii) Mundanthurai WLS
C. Nagapattinam	iii) Point Calimere WLS
D. Chengalpet	iv) Vedanthangal WLS

a) i only

b) ii only

c) iii only

d) iv only

71. In which year the Mudumalai Wild Life Sanctuary was established?

a) 2001

b) 1987

c) 1992

d) 1942

Explanation

Prominent WLS in Tamil Nadu

Prominent WLS in Tamil Nadu	Year of establishment	Districts
Vedanthangal Lake Birds WLS	1936	Chengalpet
Mudumalai WLS	1942	Nilgiris
Point Calimere WLS	1967	Nagapattinam
Indira Gandhi (Annamalai) WLS	1976	Coimbatore
Mundanthurai WLS	1988	Tirunelveli

72. Who vision the Madras Crocodile Bank Trust and Centre for Herpetology?

a) James Chadwick

b) George Zweig

c) F. Strassman

d) Romulus Whitaker

Explanation

The Madras Crocodile Bank Trust and Centre for Herpetology was the brain child of the legendary Romulus Whitaker and a handful of like-minded conservation visionaries, who began work on the facility in 1976. It aimed to save India's dwindling crocodilian population. The mission is to promote the conservation of reptiles and amphibians and their habitats through education, scientific research and capture breeding. The crocodile bank remains a world leader in the field of frontline conservation and the preservation of natural landscapes.

73. Assertion (A): Biosphere reserve is an international designation by UNESCO.

Reasoning(R): Biosphere reserves are designated to deal with the conservation of biodiversity, economic and social development and maintaining cultural values.

a) Both A and R is True and R is the correct explanation of A.

b) Both A and R is True but R is not the correct explanation of A.

c) A is True but R is False.

d) Both A and R is False.

Explanation

Biosphere Reserve (BR) is an international designation by UNESCO for representative parts of natural and cultural landscapes extending over large area of terrestrial or coastal/ marine ecosystems or a combination thereof. BRs are designated to deal with the conservation of biodiversity, economic and social development and maintenance of associated cultural values.

74. Choose the correct statements regarding the Insitu Conservation.

i) On-site conservation of genetic resources in natural populations of plant or animal species.

ii) Recovering populations and preventing their extinctions.

iii) National parks and Wild Life Sanctuaries are not from the Insitu strategies.

a) i only

b) ii only

c) iii only

d) All the above

75. Which of the following statements are not related to Exsitu Conservation?

a) Zoological parks and Botanical gardens are common Exsitu conservation programs.

b) Conservation strategies placing of threatened animals and plants in special care locations.

c) Process of protecting endangered plants and animal species.

d) Helps in recovering species from extinction under simulated conditions.

Explanation

Difference between Insitu and Exsitu Conservation

Insitu Conservation	*Exsitu* Conservation
It is the on-site conservation or the conservation of genetic resources in natural populations of plant or animal species.	This is a conservation strategy which involves placing of threatened animals and plants in special care locations for their protection.
It is the process of protecting an endangered plant or animal species in its natural habitat, either by protecting or restoring the habitat itself, or by defending the species from predators.	It helps in recovering populations or preventing their extinction under simulated conditions that closely resemble their natural habitats.
National Parks, Biosphere Reserve, Wild Life Sanctuaries form *insitu* conservation strategies.	Zoological parks and Botanical gardens are common *exsitu* conservation programs.

76. Which of the following is preserved by the Gene banks?

a) Genetic materials and seeds

b) Extinct species

c) New species information

d) Genitival research works

Explanation

Gene banks are a type of bio repository which preserves genetic materials. Seeds of different genetic strains of commercially important plants can be stored in long periods in seed banks, gametes of threatened species can be preserved in viable and fertile condition for long periods using cryopreservation techniques.

77. In which year the World Wild Fund for Nature was founded?

a) 1992

b) 1978

c) 1961

d) 1920

Explanation

World Wild Fund for Nature (WWF) is an international non-governmental charitable trust founded in 1961, with headquarters at Gland, Vaud, Switzerland. It aims at wildness preservation and the reduction of human impact on the environment. It was formerly named the World Wildlife Fund. The living planet report is being published every two years by WWF since 1998.

78. Choose the correct statements.

i) The vision of WWF is to conserve nature and reduce the most pressing threats to the diversity of life on Earth.

ii) WWF ensures that the value of nature is reflected in decision made by individuals, communities, governments and businesses.

a) i only

b) ii only

c) Both i and ii

d) Neither i nor ii

Explanation

The vision of WWF is to conserve nature and reduce the most pressing threats to the diversity of life on Earth by conserving the world's most ecologically important regions, protect and restore species and their habitats, strengthen local communities' ability to conserve the natural resources they depend upon and to ensure that the value of nature is reflected in decision made by individuals, communities, governments and businesses.

79. Which of the following is not an objective of ZSI?

a) Periodic review of the status of the threatened and endemic species.

b) Establishing new Zoological centers by continuous monitoring.

c) Red Data Book preparation and Fauna of India.

d) Maintenance and Development of National Zoological Collections.

Explanation

The objectives of ZSI are: Exploration, Survey, Inventorying and Monitoring of faunal diversity in various states, ecosystems and protected areas of India. Periodic review of the status of threatened and endemic species. Preparation of Red Data Book and Fauna of India. Biological studies on selected important species. Maintenance and Development of National Zoological Collections.

80. Which of these strategies is employed by the FREEP in India?

a) Eco development

b) Eco Tourism

c) Eco Friendly

d) Ecological services

Explanation

The Forestry Research Education and Extension Project FREEP (A World Bank Initiative) in India is employing a strategy called 'eco development' which enlists local commodities in the preservation of biodiversity. The strategy involves developing alternate resources and sources of income for those who depend on the protected natural habitat (forest) for their livelihood.

81. In which of these places FREEP is conducting programs in Tamil Nadu?

a) Gulf of Mannar

b) Vedanthangal Birds Life Sanctuary

c) Kalakad- Mundanthurai Tiger Reserve

d) Arignar Anna Zoological Park

Explanation

FREEP is conducting pilot eco development programs in the Kalakad-Mundanthurai Tiger Reserve (KMTR) in Tamil Nadu. The reserve contains a unique and varied array of flora ranging from thorn and dry teak to tropical evergreen, and supports a rich variety of birds and mammals, including tigers, leopards and elephants. The last tiger refuge in Tamil Nadu, the KMTR is one of 50 sites covered under the Indian Government's Project Tiger, a programed receiving international assistance to enhance tiger habitat.

82. Which of the following facts is not related to the United Nations convention on Biological Diversity?

a) Sovereign right of nation over their genetic resources.

b) High resource countries decide the benefits of genetic resources.

c) Appropriate access to genetic resources.

d) Fair and equitable sharing of benefits from the use of genetic resources.

Explanation

The United Nations convention on Biological Diversity, known as CBD in short, was signed by India and 172 other nations on December 29, 1993. The CBD was an attempt to establish an international program for conserving and using the world's biological resources. This historical treaty recognizes the "sovereign right of nation over their genetic resources" and considers "appropriate access to genetic resources." The treaty also takes into account the "fair and equitable sharing" of benefits arising from the use of genetic resources.

83. Where did the convention of Earth Summit held in the year 1992?

a) Geneva

b) Switzerland

c) Brazil

d) Paris

Explanation

The Convention on Biological Diversity (CBD) is a United Nations initiative to protect Biodiversity and encourage the sustainable use of natural resources. The convention was held in 1992 at the 'Earth Summit' in Brazil. India is a signatory of the CBD.

84. Which of these acts preserve the biological diversity in India?

a) Earth Summit, 1992

b) Wild Life Protection Act, 1942

c) The Biological Diversity Act, 2002

d) None of the above

Explanation

The Biological Diversity Act, 2002 is an Act of the Parliament of India for preservation of biological diversity in India, and provides 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 Convention on Biological Diversity (CBD), to which India is a party.

85. In which year the National Biodiversity Authority was established?

a) 2003

b) 2000

c) 1998

d) 2007

Explanation

The National Biodiversity Authority (NBA) was established by the Central Government in 2003 to implement India's Biological Diversity Act (2002). The NBA is a Statutory Body and it performs facilitative, regulatory and advisory functions 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.