https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

Chapter 36 Ecosystem

1. Which ecosystem has the maximum biomass?
   (a) Grassland ecosystem
   (b) Pond ecosystem
   (c) Lake ecosystem
   (d) Forest ecosystem *(NEET 2017)*

2. The primary producers of the deep-sea hydrothermal vent ecosystem are
   (a) green algae
   (b) chemosynthetic bacteria
   (c) blue-green algae (d) coral reefs.
   (NEET-II 2016)

3. Which of the following would appear as the pioneer organisms on bare rocks?
   (a) Mosses (b) Green algae
   (c) Lichens (d) Liverworts
   (NEET-I 2016)

4. Which one of the following is a characteristic feature of cropland ecosystem?
   (a) Absence of weeds
   (b) Ecological succession
   (c) Absence of soil organisms
   (d) Least genetic diversity *(NEET-I 2016)*

5. The term ecosystem was coined by
   (a) E. Haeckel (b) E.Warming
   (c) E.P. Odum (d) A. G. Tansley.
   (NEET-I 2016)

6. Most animals that live in deep oceanic waters are
   (a) tertiary consumers (b) detritivores
   (c) primary consumers
   (d) secondary consumers. *(2015)*

7. During ecological succession
   (a) the numbers and types of animals remain constant
   (b) the changes lead to a community that is in near equilibrium with the environment and is called pioneer community
   (c) the gradual and predictable change in species composition occurs in a given area
   (d) the establishment of a new biotic community is very fast in its primary phase. *(2015)*

8. In which of the following both pairs have correct combination?

(a)	Gaseous nutrient cycle	Nitrogen and Sulphur
	Sedimentary nutrient cycle	Carbon and Phosphorus
(b)	Gaseous nutrient cycle	Sulphur and Phosphorus
	Sedimentary nutrient cycle	Carbon and Nitrogen
(c)	Gaseous nutrient cycle	Carbon and Nitrogen
	Sedimentary nutrient cycle	Sulphur and Phosphorus
(d)	Gaseous nutrient cycle	Carbon and Sulphur
	Sedimentary nutrient cycle	Nitrogen and Phosphorus

(2015)

9. The mass of living material at a trophic level at a particular time is called
   (a) net primary productivity
   (b) standing crop
   (c) gross primary productivity
   (d) standing state. *(2015 Cancelled)*

10. Vertical distribution of different species occupying different levels in a biotic community is known as
   (a) zonation (b) pyramid
   (c) divergence (d) stratification.
   (2015 Cancelled)

11. Secondary succession takes place on/in
   (a) newly created pond
   (b) newly cooled lava

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

(c) bare rock (d) degraded forest. *(2015 Cancelled)*

12. Most animals are tree dwellers in a
(a) temperate deciduous forest
(b) tropical rainforest
(c) coniferous forest
(d) thorn woodland. *(2015 Cancelled)*

13. In an ecosystem the rate of production of organic matter during photosynthesis is termed as
(a) secondary productivity
(b) net productivity
(c) net primary productivity
(d) gross primary productivity. *(2015 Cancelled)*

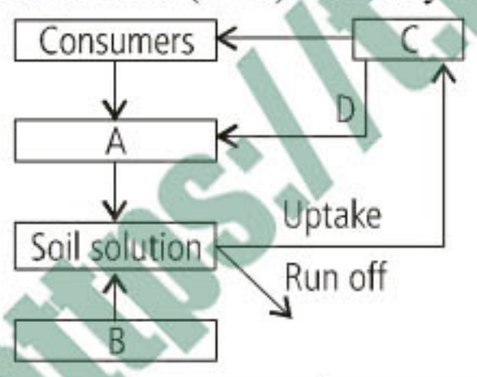
14. Match the following and select the correct option.

A. Earthworm (i) Pioneer species
B. Succession (ii) Detritivore
C. Ecosystem service (iii) Natality
D. Population growth (iv) Pollination

	A	B	C	D
(a)	(i)	(ii)	(iii)	(iv)
(b)	(iv)	(i)	(iii)	(ii)
(c)	(iii)	(ii)	(iv)	(i)
(d)	(ii)	(i)	(iv)	(iii)

(2014)

15. Given below is a simplified model of phosphorus cycling in a terrestrial ecosystem with four blanks (A-D). Identify the blanks.



	A	B	C	D
(a)	Rock minerals	Detritus	Litter fall	Producers
(b)	Litter fall	Producers	Rock minerals	Detritus
(c)	Detritus	Rock minerals	Producers	Litter fall
(d)	Producers	Litter fall	Rock minerals	Detritus

(2014)

16. If 20 J of energy is trapped at producer level, then how much energy will be available to peacock as food in the following chain?

Plant → Mice → Snake → Peacock
(a) 0.02 J (b) 0.002 J
(c) 0.2 J (d) 0.0002 J *(2014)*

17. Natural reservoir of phosphorus is
(a) rock (b) fossils
(c) sea water (d) animal bones. *(NEET 2013)*

18. Secondary productivity is rate of formation of new organic matter by
(a) consumers (b) decomposers
(c) producers (d) parasites. *(NEET 2013)*

19. Which one of the following processes during decomposition is correctly described?
(a) Catabolism – Last step in the decomposition under fully anaerobic condition
(b) Leaching – Water soluble inorganic nutrients rise to the top layers of soil
(c) Fragmentation – Carried out by organisms such as earthworm
(d) Humification – Leads to the accumulation of a dark coloured substance humus which undergoes microbial action at a very fast rate. *(NEET 2013)*

20. Which two distinct microbial processes are responsible for the release of fixed nitrogen as dinitrogen gas (N_2) to the atmosphere?
(a) Aerobic nitrate oxidation and nitrite reduction
(b) Decomposition of organic nitrogen and conversion of dinitrogen to ammonium compounds
(c) Enteric fermentation in cattle and nitrogen fixation by *Rhizobium* in root nodules of legumes
(d) Anaerobic ammonium oxidation and denitrification. *(Karnataka NEET 2013)*

21. Which of the following is a primary consumer in maize field ecosystem?
(a) Grasshopper (b) Wolf
(c) Phytoplankton (d) Lion *(Karnataka NEET 2013)*

22. When man eats fish which feeds on zooplanktons which have eaten small plants, the producer in this chain is

https://t.me/Estore33_com

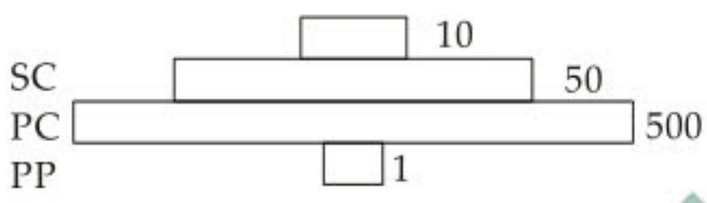
https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

(a) small plants (b) fish
(c) man (d) zooplankton.
(Karnataka NEET 2013)

23. Which one of the following is not a gaseous biogeochemical cycle in ecosystem?
(a) Sulphur cycle (b) Phosphorus cycle
(c) Nitrogen cycle (d) Carbon cycle
(2012)

24. Identify the possible link "A" in the following food chain.
Plant ⇨ Insect ⇨ Frog ⇨ "A" ⇨ Eagle
(a) Rabbit (b) Wolf
(c) Cobra (d) Parrot *(2012)*

25. Given below is an imaginary pyramid of numbers. What could be one of the possibilities about certain organisms at some of the different levels?



(a) Level PC is "insects" and level SC is "small insectivorous birds".
(b) Level PP is "phytoplanktons" in sea and "whale" on top level TC
(c) Level one PP is "*pipal* trees" and the level SC is "sheep".
(d) Level PC is "rats" and level SC is "cats".
(2012)

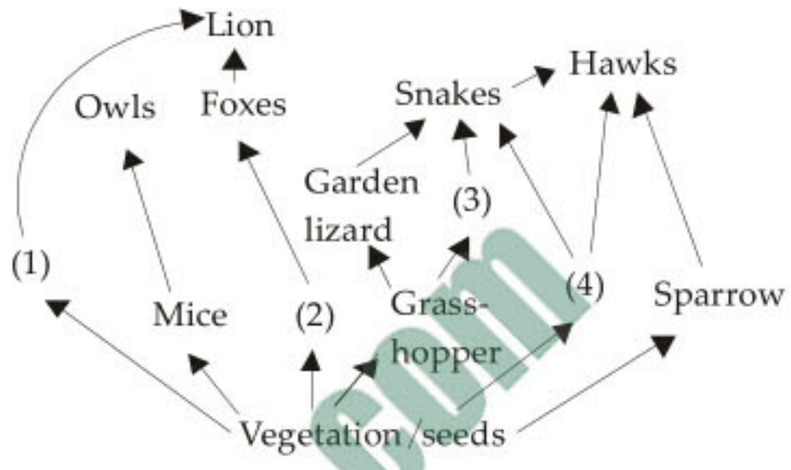
26. Which one of the following is not a functional unit of an ecosystem?
(a) Energy flow (b) Decomposition
(c) Productivity (d) Stratification
(2012)

27. The upright pyramid of number is absent in
(a) pond (b) forest
(c) lake (d) grassland. *(2012)*

28. The rate of formation of new organic matter by rabbit in a grassland, is called
(a) net productivity
(b) secondary productivity
(c) net primary productivity
(d) gross primary productivity. *(Mains 2012)*

29. The second stage of hydrosere is occupied by plants like
(a) *Azolla* (b) *Typha*
(c) *Salix* (d) *Vallisneria*.
(Mains 2012)

30. Identify the likely organisms (1), (2), (3) and (4) in the food web shown below.



	(1)	(2)	(3)	(4)
(a)	Deer	Rabbit	Frog	Rat
(b)	Dog	Squirrel	Bat	Deer
(c)	Rat	Dog	Tortoise	Crow
(d)	Squirrel	Cat	Rat	Pigeon

(Mains 2012)

31. Mass of living matter at a trophic level in an area at any time is called
(a) standing crop (b) detritus
(c) humus (d) standing state.
(2011)

32. Of the total incident solar radiation the proportion of PAR is
(a) about 70% (b) about 60%
(c) less than 50% (d) more than 80%.
(2011)

33. Which one of the following statements is correct for secondary succession?
(a) It begins on a bare rock.
(b) It occurs on a deforested site.
(c) It follows primary succession.
(d) It is similar to primary succession except that it has a relatively fast pace. *(2011)*

34. Which one of the following statements for the pyramid of energy is incorrect ?
(a) Its base is broad.
(b) It shows energy content of different trophic level organisms.
(c) It is inverted in shape.
(d) It is upright in shape. *(2011)*

35. Which one of the following animals may occupy more than one trophic levels in the same ecosystem at the same time?

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

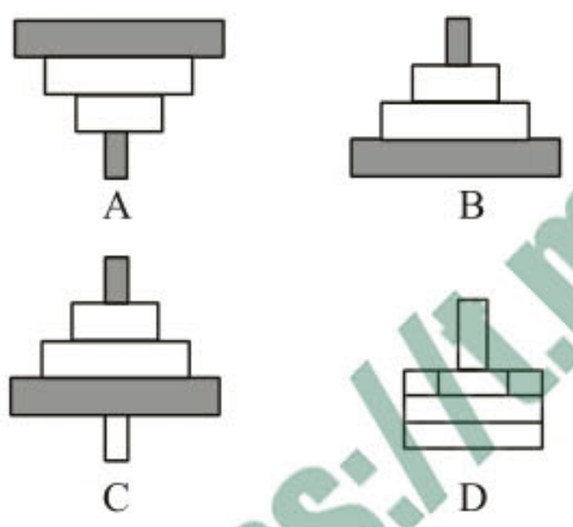
(a) Sparrow (b) Lion
(c) Goat (d) Frog *(Mains 2011)*

36. Both hydrarch and xerarch successions lead to
(a) medium water conditions
(b) xeric conditions
(c) highly dry conditions
(d) excessive wet conditions. *(Mains 2011)*

37. The breakdown of detritus into smaller particles by earthworm is a process called
(a) humification (b) fragmentation
(c) mineralisation (d) catabolism.
(Mains 2011)

38. The biomass available for consumption by the herbivores and the decomposers is called
(a) net primary productivity
(b) secondary productivity
(c) standing crop
(d) gross primary productivity. *(2010)*

39. Which of the following representations shows the pyramid of numbers in a forest ecosystem?



(a) D (b) A
(c) B (d) C *(Mains 2010)*

40. The correct sequence of plants in a hydrosere is
(a) *Volvox* □ *Hydrilla* □ *Pistia* □ *Scirpus* □ *Lantana* □ Oak
(b) *Pistia* □ *Volvox* □ *Scirpus* □ *Hydrilla* □ Oak □ *Lantana*
(c) Oak □ *Lantana* □ *Volvox* □ *Hydrilla* □ *Pistia* □ *Scirpus*
(d) Oak □ *Lantana* □ *Scirpus* □ *Pistia* □ *Hydrilla* □ *Volvox*. *(2009)*

41. Which one of the following types of organisms occupy more than one trophic level in a pond ecosystem?
(a) Fish (b) Zooplankton
(c) Frog (d) Phytoplankton
(2009)

42. Consider the following statements concerning food chains.
A. Removal of 80% tigers from an area resulted in greatly increased growth of vegetation.
B. Removal of most of the carnivores resulted in an increased population of deers.
C. The length of food chains is generally limited to 3-4 trophic levels due to energy loss.
D. The length of food chains may vary from 2 to 8 trophic levels.

Which two of the above statements are correct?
(a) A, D (b) A, B
(c) B, C (d) C, D *(2008)*

43. The slow rate of decomposition of fallen logs in nature is due to their
(a) anaerobic environment around them
(b) low cellulose content
(c) low moisture content
(d) poor nitrogen content. *(2008)*

44. About 70% of total global carbon is found in
(a) oceans (b) forests
(c) grasslands (d) agroecosystems.
(2008)

45. Which one of the following ecosystem types has the highest annual net primary productivity?
(a) Tropical deciduous forest
(b) Temperate evergreen forest
(c) Temperate deciduous forest
(d) Tropical rainforest *(2007)*

46. Which one of the following is not used for construction of ecological pyramids?
(a) Fresh weight (b) Dry weight
(c) Number of individuals
(d) Rate of energy flow *(2006)*

47. Which of the following is expected to have the highest value ($gm/m^2/yr$) in a grassland ecosystem?
(a) Secondary production
(b) Tertiary production
(c) Gross production (GP)
(d) Net production (NP) *(2004)*

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

48. An ecosystem which can be easily damaged but can recover after some time if damaging effect stops will be having
(a) low stability and high resilience
(b) high stability and low resilience
(c) low stability and low resilience
(d) high stability and high resilience. *(2004)*

49. Bamboo plant is growing in a fir forest then what will be the trophic level of it?
(a) First trophic level (T_1)
(b) Second trophic level (T_2)
(c) Third trophic level (T_3)
(d) Fourth trophic level (T_4) *(2002)*

50. Plant decomposers are
(a) monera and fungi (b) fungi and plants
(c) protista and animalia
(d) animalia and monera. *(2001)*

51. Which is the reason for highest biomass in aquatic ecosystem?
(a) Nano plankton, blue green algae and green algae
(b) Sea grass and slime moulds
(c) Benthoic and brown algae
(d) Diatoms *(2000)*

52. Energy transfer from one trophic level to other, in a food chain, is
(a) 10% (b) 20%
(c) 1% (d) 2%. *(1999)*

53. In a terrestrial ecosystem such as forest, maximum energy is in which trophic level?
(a) T_3 (b) T_4
(c) T_1 (d) T_2 *(1998)*

54. The rate at which light energy is converted into chemical energy of organic molecules is the ecosystem's
(a) net secondary productivity
(b) gross primary productivity
(c) net primary productivity
(d) gross secondary productivity. *(1998)*

55. Which of the following ecosystem has the highest gross primary productivity?
(a) Mangroves (b) Rainforest
(c) Grassland (d) Coral reef *(1997)*

56. Which of the following acts as "nature's scavengers"?
(a) Insects (b) Microorganisms
(c) Man (d) Animals *(1997)*

57. The 10% energy transfer law of food chain was given by
(a) Lindemann (b) Tansley
(c) Stanley (d) Weismann. *(1996)*

58. If we completely remove the decomposers from an ecosystem, its functioning will be adversely affected, because
(a) mineral movement will be blocked
(b) the rate of decomposition will be very high
(c) energy flow will be blocked
(d) herbivores will not receive solar energy. *(1995)*

59. In a biotic community, the primary consumers are
(a) detritivores (b) herbivores
(c) carnivores (d) omnivores. *(1995)*

60. Which of the following pairs is a sedimentary type of biogeochemical cycle?
(a) Phosphorus and nitrogen
(b) Phosphorus and sulphur
(c) Oxygen and nitrogen
(d) Phosphorus and carbon dioxide *(1995)*

61. Which of the following is the most stable ecosystem?
(a) Mountain (b) Ocean
(c) Forest (d) Desert *(1995)*

62. The primary succession refers to the development of communities on a
(a) forest clearing after devastating fire
(b) newly-exposed habitat with no record of earlier vegetation
(c) freshly cleared crop field
(d) pond, freshly filled with water after a dry phase. *(1995)*

63. The dominant second trophic level, in a lake ecosystem, is
(a) phytoplankton (b) zooplankton
(c) benthos (d) plankton. *(1994)*

64. Pyramid of numbers deals with number of
(a) species in an area
(b) individuals in a community
(c) individuals in a trophic-level
(d) subspecies in a community. *(1993)*

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

65. Pyramid of numbers in a pond ecosystem is
(a) irregular (b) inverted
(c) upright (d) spindle shaped. *(1993)*

66. Food chain in which microorganisms breakdown the food formed by primary producers is
(a) parasitic food chain
(b) detritus food chain
(c) consumer food chain
(d) predator food chain. *(1991)*

67. Pick up the correct food chain.
(a) Grass □ Chameleon □ Insect □ Bird
(b) Grass□ Fox□ Rabbit □ Bird
(c) Phytoplankton □ Zooplankton □ Fish
(d) Fallen leaves □ Bacteria □ Insect larvae *(1991)*

68. Pyramid of numbers in a grassland/tree ecosystem is
(a) always inverted (b) always upright
(c) both (a) and (b) (d) spindle-shaped. *(1991, 1990)*

69. Upper part of sea/aquatic ecosystem contains
(a) plankton (b) nekton
(c) plankton and nekton
(d) benthos. *(1988)*

70. What is true of ecosystem?
(a) Primary consumers are least dependent upon producers.
(b) Primary consumers out-number producers.
(c) Producers are more than primary consumers.
(d) Secondary consumers are the largest and most powerful. *(1988)*

71. In an ecosystem, which one shows one-way passage?
(a) Free energy (b) Carbon
(c) Nitrogen (d) Potassium *(1988)*

https://t.me/Estore33_com

Answer Key

1.	(d)	**2.**	(b)	**3.**	(c)	**4.**	(d)	**5.**	(d)	**6.**	(b)	**7.**	(c)	**8.**	(c)	**9.**	(b)	**10.**	(d)
11.	(d)	**12.**	(b)	**13.**	(d)	**14.**	(d)	**15.**	(c)	**16.**	(a)	**17.**	(a)	**18.**	(a)	**19.**	(c)	**20.**	(d)
21.	(a)	**22.**	(a)	**23.**	(b)	**24.**	(c)	**25.**	(a)	**26.**	(d)	**27.**	(b)	**28.**	(b)	**29.**	(d)	**30.**	(a)
31.	(a)	**32.**	(c)	**33.**	(b)	**34.**	(c)	**35.**	(a)	**36.**	(a)	**37.**	(b)	**38.**	(a)	**39.**	(c)	**40.**	(a)
41.	(a)	**42.**	(c)	**43.**	(d)	**44.**	(a)	**45.**	(d)	**46.**	(a)	**47.**	(c)	**48.**	(a)	**49.**	(a)	**50.**	(a)
51.	(c)	**52.**	(a)	**53.**	(c)	**54.**	(b)	**55.**	(b)	**56.**	(b)	**57.**	(a)	**58.**	(a)	**59.**	(b)	**60.**	(b)
61.	(b)	**62.**	(b)	**63.**	(b)	**64.**	(c)	**65.**	(c)	**66.**	(b)	**67.**	(c)	**68.**	(b)	**69.**	(a)	**70.**	(c)
71.	(a)																		

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

EXPLANATIONS

1. (d)

2. (b) : Hydrothermal vents are cracks in the ocean floor that emit jets of hot water loaded with minerals and chemosynthetic bacteria. These bacteria are autotrophs that oxidise hydrogen sulphide in vent water to obtain energy which is used to produce organic material. These chemosynthetic bacteria are the primary producers and form the base of vent food webs. All vent animals ultimately depend on bacteria for food.

3. (c) : The bare rocky habitat is extremely hostile to living beings. There is no water, as the substratum does not absorb rain water. There is no nutrient holding mechanism. Plants cannot grow on these rocks. The first inhabitants or pioneers of such a habitat are usually lichens as they are resistant to desiccation and extreme temperatures.

4. (d) : Cropland ecosystem is an artificial or man-made terrestrial ecosystem which is created and maintained by human beings for their maximum benefits. Therefore, they will have least genetic diversity.

5. (d) : The term ecosystem was coined by A.G. Tansley in 1935.

6. (b) : Benthos is the community of organisms which live on, in, or near the sea bed, also known as the benthic zone. As no light is available at this zone of sea, the energy source for deep benthic ecosystems is often organic matter from higher up in the water column which drifts down to the depths. This dead and decaying matter sustains the benthic organisms, and therefore, most organisms in benthic zone *i.e.*, in deep oceanic waters, are scavengers or detritivores.

7. (c) : Biotic or ecological succession is the natural development of a series of biotic communities at the same site, one after the other till a climax community develops which does not change further because it is in perfect harmony with the environment of the area. The change is orderly and sequential. There is a parallel change in the physical environment.

During an ecological succession, the number and types of animals goes on increasing with time.

The community that is in near equilibrium with the environment is called climax community. The establishment of a new biotic community is slow in its primary phase but gradually becomes fast in its secondary phase.

8. (c) : Biogeochemical cycles are of two types: gaseous and sedimentary. In gaseous nutrient cycles, the materials involved in circulation between biotic and abiotic components of biosphere are gases or vapours and the reservoir pool is atmosphere or hydrosphere, *e.g.,* carbon, hydrogen, oxygen, nitrogen, water. In sedimentary nutrient cycles, materials involved in circulation between biotic and abiotic components of biosphere are non-gaseous and the reservoir pool is lithosphere, *e.g.*,phosphorus, calcium, magnesium. Sulphur has both sedimentary and gaseous nutrient cycles.

9. (b) : Standing crop is the total amount of living material in a specified population at a particular time, expressed as biomass (standing biomass) or its equivalent in terms of energy. The standing crop may vary at different times of the year; for example, in a population of deciduous trees between summer and winter.

10. (d)

11. (d) : Secondary succession (subsere) is the biotic succession that occurs in an area which become secondarily bare due to the destruction of community previously present there. Secondary succession starts from previously built up substrata with already existing living matter. The action of any external force, such as a sudden change in climatic factors, biotic intervention, fire, etc., had resulted in the destruction of previous community. Thus, area became devoid of living matter but its substratum, is built up. It has organic matter, so is biologically fertile and thus the successions are comparatively more rapid.

12. (b) : Tropical rainforests have a very dense plant cover. They also experience a large amount of precipitation, thus the forest floor is always damp. Thus, the conditions there have led animals to get adapted to arboreal habitats. Most animals found there are tree dwellers as almost every space on the forest floor is occupied by the vegetation.

13. (d) : The amount of energy accumulation in green plants as biomass or organic matter per unit area over a time period is known as primary productivity. The rate of total capture of energy, or the rate of total production of organic material (biomass), is known as gross primary productivity.

14. (d)

15. (c)

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

16. (a) : Herbivores are eaten by primary carnivores. Only 10% of the herbivores productivity is utilized for raising productivity of primary carnivores. The rest is consumed in ingestion, respiration, maintenance of body heat and other activities. Higher carnivores similarly are able to retain only 10% of energy present in primary carnivores. It is called 10% law which was proposed by Lindemann. Accordingly, if plant trapped 20 J of energy, mice will have 2 J, snake will have 0.2 J and hence, peacock will have 0.02 J of energy.

17. (a) : The reservoir pool of phosphorus is in phosphate rocks while the cycling pool is soil and water for terrestrial and aquatic ecosystems respectively. Small amount of phosphate is always being added to the cycling pool through weathering of rocks. Phosphate is generally found in soil in combination with calcium, iron and aluminium. Atmosphere or gaseous cycle is absent. Phosphate circulates in the abiotic environment in lithosphere as well as hydrosphere.

18. (a) : The rate of photosynthesis of organic matter by the consumers is known as secondary productivity. It depends upon the loss while transferring energy containing organic matter from the previous trophic level plus the consumption due to respiration and predation. Therefore, net productivity decreases with each trophic level.

19. (c) : Decomposition is the process in which decomposers break down complex organic matter into inorganic substances like carbon dioxide, water and nutrients. The important steps in the process of decomposition are fragmentation, leaching, catabolism, humification and mineralisation. Detritivores (*e.g.*, earthworm) break down detritus into smaller particles. This process is called fragmentation. By the process of leaching, water-soluble inorganic nutrients go down into the soil horizon and get precipitated as unavailable salts. Bacterial and fungal enzymes degrade detritus into simpler inorganic substances. This process is called as catabolism. Humification and mineralisation occur during decomposition in the soil. Humification leads to accumulation of a dark coloured amorphous substance called humus that is highly resistant to microbial action and undergoes decomposition at an extremely slow rate. The humus is further degraded by some microbes and release of inorganic nutrients occur by the process known as mineralisation.

20. (d) : Denitrification is a chemical process in which nitrates in the soil are reduced to molecular nitrogen (N_2) which is released into the atmosphere. It is done by denitrifying bacteria like *Pseudomonas denitrificans*. Anaerobic oxidation of ammonium (NH_4) also releases nitrogen in the atmosphere.

21. (a) : Primary consumers are herbivorous organisms that feed on producers. Carnivores are termed secondary, tertiary etc., consumers depending upon their position in food chain. In food chain on land, grasshopper is a herbivore (primary consumer) while wolf and lion are carnivores. Phytoplanktons are producers in aquatic food chains.

22. (a) : The transfer of food energy from producers to consumers through a series of organisms with repeated eating and being eaten is known as food chain. Green plants are always the first link of food chain because they alone are capable of synthesising organic food by using light energy by photosynthesis. The logical sequence of a food chain is :

Producer □ Consumers □ Decomposer

Small plants	→	Zooplanktons	→	Fish	→	Man
(Primary producer)		(Primary consumer)		(Secondary consumer)		(Tertiary consumer)

23. (b) : *Refer to answer 8.*

24. (c) **25. (a)**

26. (d) : Four important functional aspects of the ecosystem are productivity, decomposition, energy flow and nutrient cycling.

27. (b) : In forests, a single tree can support a large number of birds thus base showing producers in a pyramid of number will be narrower than the next slab showing primary consumers. Hence an upright pyramid of number is not formed in a forest ecosystem.

28. (b) : The rate of resynthesis of organic matter by consumers or the rate at which food energy is assimilated at the trophic level of consumers is called secondary productivity. In a grassland ecosystem, the rate of formation of new organic matter by rabbit is referred as secondary productivity.

29. (d) : Series of biotic communities that develop one after the other in a newly formed pond or lake is called hydrosere. It starts as soon as the muddy water becomes clear. The pioneer stage of hydrosere is plankton stage. Death and decomposition of planktons in the first seral stage of hydrosere produces organic matter which mixes up with clay and silt at the bottom to form soft mud which is favourable for growth of submerged hydrophytes in the next seral stage. Hence, the second stage of hydrosere is occupied by submerged hydrophytes like *Vallisneria*.

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

30. (a)

31. (a) : *Refer to answer 9.*

32. (c) : The source of energy in all ecosystem is solar energy. About 50% of the solar energy incident over earth is present in PAR (Photosynthetically active radiation). About 1–5% of incident solar radiation or 2 – 10% of PAR is captured by the photosynthetic organisms in the synthesis of organic matter (gross primary productivity). Roughly 20% of it is consumed in respiration so that net capture of energy (net primary productivity) is 0.8 – 4% of incident radiation or 1.6 – 8% of PAR.

33. (b) : Secondary succession begins in areas where natural biotic communities have been destroyed such as in abandoned farm lands, burned or cut forests (deforested site), lands that have been flooded etc.

34. (c) : Pyramid of energy is always upright, can never be inverted, because when energy flows from a particular trophic level to the next trophic level, some energy is always lost as heat at each step.

35. (a) : Sparrow can be herbivorous (eating seeds and fruits) or carnivorous (eating insects).

36. (a) : Hydrarch succession takes place in wetter areas and the successional series progress from hydric to the mesic condition . Xerach succession takes place in dry areas and the series progress from xeric to mesic condition. Hence, both hydrach and xerach succession leads to medium water conditions (mesic).

37. (b) : *Refer to answer 19.*

38. (a) : The total organic matter synthesised by the producers in the process of photosynthesis per unit time and area is known as gross primary productivity. Net primary productivity is equal to the rate of organic matter created by photosynthesis minus the rate of respiration and other losses. It is actually the biomass available for consumption by the herbivores and the decomposers.

39. (c) : The representation of forest ecosystem in pyramid of numbers is always upright because higher trophic level comprising of tertiary consumers is generally smaller than that of the lower trophic levels (*i.e.*, secondary consumer, than primary consumer and primary producer).

The pyramid of number is inverted in case of single tree producer which can provide nourishment to several herbivores such as birds which can further support larger population of ectoparasites.

40. (a) : Hydrosere,originating in water (pond, pools, lakes etc.) and starts with the colonization of some phytoplanktons which form the pioneer plant community, and finally terminates into a forest, which is a climax community together with their chief components of vegetation.

The various stages together with their components of plant species of a hydrosere are phytoplankton stage,rooted submerged stage,rooted floating stage, reed swamp stage, marsh or sedge meadow stage, woodland stage and climax forest stage. *Volvox* is phytoplankton, *Hydrilla* is rooted submerged plant,*Pistia* is rooted floating plant,*Scirpus* is reed swamp plant, *Lantana* is sedge meadow plant and oak is woody tree.

41. (a) : A single species may occupy more than one trophic level. In pond, fish occupy more than one trophic level. Small fishes act as secondary consumer. They feed on primary consumer. Large fishes act as tertiary consumer. They feed on smaller fish.

42. (c) : Removal of 80% tigers (*i.e.*, tertiary consumer) from an area resulted in decreased growth of vegetation because there will be increased numbers of secondary or primary consumers which feeds on green plant. Removal of most of the carnivores resulted in an increased population of deers on which carnivores depends. The length of food chain is generally limited to 3-4 trophic level due to energy loss because all the food available at one level is neither eaten nor used by animals at the next level and a lot of the energy is lost in respiration to drive the organisms metabolism so less energy is left to support higher trophic level.

43. (d) : Decomposition is largely an oxygen-requiring process. The rate of decomposition is controlled by chemical composition of detritus and climatic factors. In a particular climatic condition, decomposition rate is slower if detritus is rich in lignin and chitin, and quicker, if detritus is rich in nitrogen and water-soluble substances like sugar. Temperature and soil moisture are the most important climatic factors that regulate decomposition through their effects on the activities of soil microbes. Warm and moist environment favour decomposition whereas low temperature and anaerobiosis inhibit decomposition resulting in build up of organic materials.

44. (a) : Carbon constitutes 49% of dry weight of organism and is next only to water. Among the total quantity of global carbon 71% is found in oceans

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

in dissolved form whereas only 1% is found in atmosphere. Carbon cycling occurs through atmosphere, ocean and living or dead organism.

45. (d) : Net primary productivity is the total organic matter stored by producers per unit area per unit time. Gross primary productivity is the total organic matter synthesised by producers in the process of photosynthesis per unit area per unit time. So,

Net primary productivity = Gross productivity – Respiration and other losses

Tropical rainforests occur over equatorial/ subequatorial regions with abundant warmth and rainfall. Diversity and productivity are maximum as compared to other regions.

46. (a) : Ecological pyramids represents the trophic structure and trophic function of an ecosystem. In an ecological pyramid, the first trophic level forms the base and successive trophic levels the tiers which make up the apex. Ecological pyramids may be of three general types pyramid of number, pyramid of biomass and pyramid of energy. Pyramid of biomass *i.e.* the living weight of the organisms of the food chain present at any time in an ecosystem forms the pyramids of biomass. The pyramid of biomass indicates the decrease or the gradual reduction in biomass at each trophic levels from base to apex. Fresh weight is not used in ecological pyramids.

47. (c) : Productivity is rate of accumulation of energy containing organic matter by an ecosystem per unit area per unit time. It is of two types- primary and secondary.

Productivity at producers level is known as primary productivity. It is two types: Gross primary productivity is primary productivity including that amount which is utilized in respiration and other metabolic activities. Net primary productivity (NPP) is primary productivity in excess to that which is utilised in respiration and other metabolic activities.

NPP = GP – Respiration

Secondary productivity is productivity at consumers level. Since gross production includes total production including the amount utilized in respiration and other metabolic activities so it is more than other forms of productivity.

48. (a) : Stability can be defined as the power of a system to be in their state against unfavourable factors and resilience is the capability of regaining its original shape or position after being deformed. An ecosystem can be damaged easily and it must be having high resilience.

49. (a) : Trophic structure of ecosystem is a type of producer-consumer arrangement, in which each food level is called trophic level and the graphical representation of trophic structure of ecosystem constitutes ecological pyramids. The green plants are producers and represent the first trophic level (T_1). So bamboo plant is the first trophic level (T_1).

50. (a) : Microorganisms (bacteria and fungi) are decomposers of the ecosystem. They feed upon dead decaying living organisms (both plant and animals) and break them into simpler compounds. These are released free in the atmosphere and are utilized by producers for the synthesis of their food materials. They mainly belong to monera and fungi.

51. (c) : The benthic region includes all the sea floor from the wave-washed shore-line to the greatest depths. Depending upon the penetration of light it is subdivided into two main zones : the lighted or littoral zone and the deep sea system. Due to abundance of light, water, oxygen, carbon dioxide and less salinity of water, the tidal zone is characterized by exhorbitant growth of plants. The dense growth of vegetation, on the other hand, provides shelter and food for animals. A wide variety of algae, few grasses and animals of every phylum of animal kingdom are represented in this region.

52. (a) : *Refer to answer 16.*

53. (c) : In a terrestrial ecosystem maximum energy is in trophic level I because the organisms which trap solar energy are primary producers and they have got maximum energy. Only 10% energy is transferred from one trophic level to next trophic level.

54. (b)

55. (b) : Gross primary productivity is the total rate of photosynthesis, including the organic matter used up in respiration during the measurement period. Tropical evergreen/rainforests occur over equatorial/subequatorial regions with abundant warmth and rainfall (200–350 cm/yr) almost throughout the year. The forests are impenetrable (= jungle) with maximum diversity, *e.g.*, 200 types of trees in one hectare, 70–80% of all insects 80–85% of all birds. Productivity is maximum here, 12000 kcal/m^2/yr.

56. (b) : Microorganisms (bacteria and mould) are decomposers of the ecosystem. They feed upon dead decaying organisms (both plant and animals) and break them into simpler compounds. These are released free in the atmosphere and are utilized by producers for the synthesis of their food materials. They are called nature's scavengers as they are consumers of dead matter.

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

57. (a) : *Refer to answer 16.*

58. (a) : Decomposers are saprotrophs which decompose the organic remains by secreting extracellular digestive enzymes. They are also known as mineralisers as they release minerals trapped in organic remains. So in the absence of microorganisms the flow of minerals will stop.

59. (b)

60. (b) : *Refer to answer 8.*

61. (b) : Of all the ecosystems, ocean is the largest and most stable ecosystem. Aquatic life is protected from vigorous climates and weather that are climatic conditions, problem of water supply, food, fire and artificial forces such as industrialization, farming and grazing are lacking in the oceans. The sea is continuous and not separated as land and freshwater habitats.

62. (b) : When succession begins on an area which has not been previously being occupied by a community, *e.g.*, a new exposed rock area, sand dunes, new islands, deltas, shore or recent lava flow, it is known as primary succession. The first group of organisms (plants or animals) which become established in such an area is termed the pioneer community.

63. (b) : Trophic level is a step or division of food chain which is characterized by the method of obtaining its food. The two fundamental trophic levels are producers and consumers. Producers belong to the first trophic level. In a lake the producers are mainly some rooted or floating plants and phytoplanktons.

Primary consumers form the second trophic level. They feed on living plants or plant parts. The primary consumers are zooplanktons.

64. (c) : Pyramid of numbers is an ecological pyramid which employs the number of individuals per unit area at various trophic levels sequence wise with producers at the base and various consumers at successively higher levels. Pyramid of number assumes different shapes in different ecosystems. The pyramid of number in pond ecosystem is also upright. In forest ecosystem the pyramid of number is intermediate. Here, the number of primary consumers is more than producers as well as top consumers. In parasitic food chain the pyramid of number is inverted.

65. (c) : *Refer to answer 64.*

66. (b) : The dead organic matter of plants or animals is called as detritus. While a part of it remains on the soil surface as litter, the other part enters the soil. Many animals such as protozoans, nematodes, insects etc., depend on detritus and hence they are called as detritivores. Even the human beings are detritivores when they eat cooked food. From detritus, the chain proceeds to detritivores, then to carnivores and finally to top carnivores.

67. (c) : The process of transfer of energy from producers through a series of organisms, *i.e.*, from primary consumers to secondary consumers and from secondary consumers to tertiary consumers by process of eating and being eaten constitute a food chain. The correct food chain is :

Phytoplankton □ Zooplankton □ Fish

68. (b) : Pyramid of numbers in a grassland/tree ecosystem is always upright. It shows the number of individual organisms at each level. In a grassland, the producers, which are mainly grasses, are always maximum in number. This number then shows a decrease towards apex, primary consumers are lesser in number than the grasses; the secondary consumers are lesser in number than the primary consumers. Finally, the top consumers are least in number. Thus, the pyramid becomes upright.

69. (a) : Planktons are passively floating in upper water, nektons are actively swimming while benthos lead sedentary life upon the sea bottom. Planktons are producers and are present in large number.

70. (c) : An ecosystem may be defined as a structural and functional unit of the biosphere comprising living organisms and their non-living environment that interact by means of food chains and chemical cycles resulting in energy flow, biotic diversity and material cycling to form a stable, self supporting system.

The organisms in an ecosystem are classified into 3 main categories-producers, consumers and decomposers. The consumers utilise materials and energy stored by the producers. Decomposers obtain their food molecules from the organic materials of dead producers and consumers. In a true ecosystem, producers are more than consumers (herbivores and carnivores).

71. (a) : The behaviour of energy in ecosystem can be termed energy flow due to unidirectional flow of energy. Flow of energy is only in one direction *i.e.*, from solar radiation □ producers □ herbivores □ carnivores.

This energy cannot pass in the reverse direction. There is decrease in the content and flow of energy with rise in trophic level.

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

Chapter 37 Biodiversity and Conservation

1. Which one of the following is related to *ex situ* conservation of threatened animals and plants?
(a) Biodiversity hotspots
(b) Amazon rainforest
(c) Himalayan region
(d) Wildlife safari parks *(NEET 2017)*

2. Alexander von Humboldt described for the first time
(a) laws of limiting factor
(b) species area relationships
(c) population growth equation
(d) ecological biodiversity. *(NEET 2017)*

3. The region of biosphere reserve which is legally protected and where no human activity is allowed is known as
(a) buffer zone (b) transition zone
(c) restoration zone (d) core zone. *(NEET 2017)*

4. How many hotspots of biodiversity in the world have been identified till date by Norman Myers?
(a) 17 (b) 25
(c) 34 (d) 43 *(NEET-II 2016)*

5. Which of the following is correctly matched?
(a) Aerenchyma – *Opuntia*
(b) Age pyramid – Biome
(c) *Parthenium hysterophorus* – Threat to biodiversity
(d) Stratification – Population *(NEET-II 2016)*

6. Red list contains data or information on
(a) all economically important plants
(b) plants whose products are in international trade
(c) threatened species
(d) marine vertebrates only. *(NEET-II 2016)*

7. Which of the following national parks is home to the famous musk deer or hangul?
(a) Keibul Lamjao National Park, Manipur
(b) Bandhavgarh National Park, Madhya Pradesh
(c) Eaglenest Wildlife Sanctuary, Arunachal Pradesh
(d) Dachigam National Park, Jammu and Kashmir *(NEET-II 2016)*

8. Which is the national aquatic animal of India?
(a) Blue whale (b) Sea-horse
(c) Gangetic shark (d) River dolphin *(NEET-I 2016)*

9. Which of the following is the most important cause of animals and plants being driven to extinction?
(a) Habitat loss and fragmentation
(b) Co-extinctions
(c) Over-exploitation
(d) Alien species invasion *(NEET-I 2016)*

10. The species confined to a particular region and not found elsewhere is termed as
(a) endemic (b) rare
(c) keystone (d) alien. *(2015)*

11. In which of the following, both pairs have correct combination?
(a) *In situ* conservation : Seed Bank
Ex situ conservation : National Park
(b) *In situ* conservation : Tissue culture
Ex situ conservation : Sacred groves
(c) *In situ* conservation : National Park
Ex situ conservation : Botanical Garden
(d) *In situ* conservation : Cryopreservation
Ex situ conservation : Wildlife Sanctuary *(2015 Cancelled)*

12. Cryopreservation of gametes of threatened species in viable and fertile condition can be referred to as
(a) *in situ* conservation by sacred groves
(b) *in situ* cryo-conservation of biodiversity
(c) *in situ* conservation of biodiversity
(d) advanced *ex situ* conservation of biodiversity. *(2015 Cancelled)*

13. An example of *ex situ* conservation is
(a) national park (b) seed bank
(c) wildlife sanctuary (d) sacred grove. *(2014)*

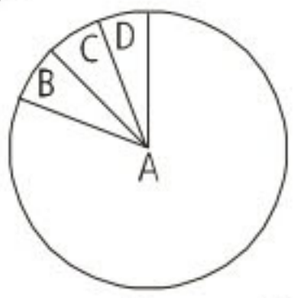
https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

14. A species facing extremely high risk of extinction in the immediate future is called
(a) vulnerable (b) endemic
(c) critically endangered
(d) extinct. *(2014)*

15. The organization which publishes the Red list of species is
(a) ICFRE (b) IUCN
(c) UNEP (d) WWF. *(2014)*

16. Given below is the representation of the extent of global diversity of invertebrates. What groups the four portions (A-D) represent respectively?



	A	B	C	D
(a)	Insects	Crustaceans	Other animal groups	Molluscs
(b)	Crustaceans	Insects	Molluscs	Other animal groups
(c)	Molluscs	Other animal groups	Crustaceans	Insects
(d)	Insects	Molluscs	Crustaceans	Other animal groups

(2014)

17. Which one of the following is not used for *ex situ* plant conservation?
(a) Shifting cultivation (b) Botanical gardens
(c) Field gene banks (d) Seed banks
(NEET 2013)

18. Which of the following represent maximum number of species among global biodiversity?
(a) Fungi (b) Mosses and Ferns
(c) Algae (d) Lichens
(NEET 2013, 2012)

19. The largest tiger reserve in India is
(a) Valmiki
(b) Nagarjunasagar-Srisailam
(c) Periyar (d) Nagarhole.
(Karnataka NEET 2013)

20. Which of the following has maximum genetic diversity in India?
(a) Mango (b) Wheat
(c) Groundnut (d) Rice
(Karnataka NEET 2013, 2011)

21. Which organization publishes the 'Red Data Book'?
(a) IUCN (b) UNEP
(c) WWF (d) GEF
(Karnataka NEET 2013)

22. Which one of the following areas in India, is a hotspot of biodiversity?
(a) Eastern Ghats (b) Gangetic Plain
(c) Sunderbans (d) Western Ghats
(2012)

23. Select the correct statement about biodiversity.
(a) The desert areas of Rajasthan and Gujarat have a very high level of desert animal species as well as numerous rare animals.
(b) Large scale planting of Bt cotton has no adverse effect on biodiversity.
(c) Western ghats have a very high degree of species richness and endemism.
(d) Conservation of biodiversity is just a fad pursued by the developed countries.
(Mains 2012)

24. Sacred groves are specially useful in
(a) generating environmental awareness
(b) preventing soil erosion
(c) year-round flow of water in rivers
(d) conserving rare and threatened species.
(Mains 2012)

25. Which one of the following have the highest number of species in nature?
(a) Fungi (b) Insects
(c) Birds (d) Angiosperms
(2011)

26. Consider the following statements (A – D) each with one or two blanks.
(A) Bears go into (1) during winter to (2) cold weather.
(B) A conical age pyramid with a broad base represents (3) human population.
(C) A wasp pollinating a fig flower is an example of (4) .
(D) An area with high levels of species richness is known as (5) .

Which one of the following options, gives the correct fill ups for the respective blank numbers from (1) to (5) in the statements ?
(a) (3) - stable (4) - commensalism, (5) marsh
(b) (1) - aestivation, (2) - escape, (3) - stable, (4) - mutualism
(c) (3) - expanding, (4) - commensalism, (5) - biodiversity park
(d) (1) - hibernation, (2) - escape, (3) - expanding (5) - hotspot
(Mains 2011)

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

27. Biodiversity of a geographical region represents
(a) endangered species found in the region
(b) the diversity in the organisms living in the region
(c) genetic diversity in the dominant species of the region
(d) species endemic to the region.
(Mains 2011)

28. Study the four statements (i–iv) given below and select the two correct ones out of them.
(i) A lion eating a deer and a sparrow feeding on grains are ecologically similar in being consumers.
(ii) Predator star fish *Pisaster* helps in maintaining species diversity of some invertebrates.
(iii) Predators ultimately lead to the extinction of prey species.
(iv) Production of chemicals such as nicotine, strychnine by the plants are metabolic disorders.
The two correct statements are
(a) (ii) and (iii) (b) (iii) and (iv)
(c) (i) and (iv) (d) (i) and (ii).
(2010)

29. Which one of the following is an example of *ex situ* conservation?
(a) Wildlife sanctuary (b) Seed bank
(c) Sacred groves (d) National park
(2010)

30. The Indian rhinoceros is a natural inhabitant of which one of the Indian states?
(a) Uttarakhand (b) Uttar pradesh
(c) Himachal Pradesh (d) Assam
(Mains 2010)

31. Which one of the following has maximum genetic diversity in India?
(a) Mango (b) Wheat
(c) Tea (d) Teak
(2009)

32. Tiger is not a resident in which one of the following national parks?
(a) Sunderbans (b) Gir
(c) Jim Corbett (d) Ranthambhor
(2009)

33. The table below gives the populations (in thousands) of ten species (A-J) in four areas (p-s) consisting of the number of habitats given within brackets against each. Study the table and answer the question which follows.

Area and No. of habitats	Species, and their populations (in thousands) in the areas									
	A	B	C	D	E	F	G	H	I	J
p (11)	2.3	1.2	0.52	6.0	-	3.1	1.1	9.0	-	10.3
q (11)	10.2	-	0.62	-	1.5	3.0	-	8.2	1.1	11.2
r (13)	11.3	0.9	0.48	2.4	1.4	4.2	0.8	8.4	2.2	4.1
s (12)	3.2	10.2	11.1	4.8	0.4	3.3	0.8	7.3	11.3	2.1

Which area out of p - s shows maximum species diversity?
(a) s (b) p
(c) q (d) r *(2008)*

34. Which one of the following is not observed in biodiversity hotspots?
(a) Lesser inter-specific competition
(b) Species richness (c) Endemism
(d) Accelerated species loss *(2008)*

35. World Summit on Sustainable Development (2002) was held in
(a) Argentina (b) South Africa
(c) Brazil (d) Sweden. *(2008)*

36. Which one of the following pairs of organisms are exotic species introduced in India?
(a) *Lantana camara*, water hyacinth
(b) Water hyacinth, *Prosopis cinereria*
(c) Nile perch, *Ficus religiosa*
(d) *Ficus religiosa*, *Lantana camara* *(2007)*

37. Identify the odd combination of the habitat and the particular animal concerned.
(a) Sunderbans - Bengal Tiger
(b) Periyar - Elephant
(c) Rann of Kutch - Wild Ass
(d) Dachigam National Park - Snow Leopard
(2007)

38. One of the endangered species of Indian medicinal plants is that of
(a) *Ocimum* (b) garlic
(c) *Nepenthes* (d) *Podophyllum*.
(2007)

39. Which of the following is considered a hotspot of biodiversity in India?
(a) Aravalli hills (b) Western ghats
(c) Indo-gangetic plain (d) Eastern ghats
(2006)

40. Which of the following pairs of an animal and a plant represents endangered organisms in India?
(a) Banyan and black duck
(b) *Bentinckia nicobarica* and red panda
(c) Tamarind and rhesus monkey
(d) *Cinchona* and leopard *(2006)*

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

41. Which one of the following is not included under *insitu* conservation?
(a) National park (b) Sanctuary
(c) Botanical garden
(d) Biosphere reserve *(2006)*

42. Which one of the following is the correctly matched pair of an endangered animal and a national park?
(a) Great Indian bustard : Keoladeo National Park
(b) Lion : Corbett National Park
(c) Rhinoceros : Kaziranga National Park
(d) Wild ass : Dudhwa National Park *(2006)*

43. Biodiversity Act of India was passed by the Parliament in the year
(a) 1992 (b) 1996
(c) 2000 (d) 2002. *(2005)*

44. According to IUCN Red List, what is the status of Red Panda (*Ailurus fulgens*)?
(a) Critically endangered species
(b) Vulnerable species
(c) Extinct species
(d) Endangered species *(2005)*

45. In your opinion, which is the most effective way to conserve the plant diversity of an area?
(a) By tissue culture method
(b) By creating biosphere reserve
(c) By creating botanical garden
(d) By developing seed bank *(2004)*

46. Which group of vertebrates comprises the highest number of endangered species?
(a) Mammals (b) Fishes
(c) Reptiles (d) Birds *(2003)*

47. Which endangered animal is the source of the world's finest, lightest, warmest and most expensive wool – the shahtoosh ?
(a) Nilgai (b) Cheetal
(c) Kashmiri goat (d) Chiru *(2003)*

48. Wildlife is continuously decreasing. What is the main reason of this?
(a) Predation
(b) Cutting down of forest
(c) Destruction of habitat
(d) Hunting *(2002)*

49. Indri-indri lemur is found in
(a) Madagascar (b) Mauritius
(c) India (d) Sri Lanka. *(2000)*

50. Viable material of endangered species can be preserved by
(a) gene bank (b) gene library
(c) herbarium (d) gene pool. *(2000)*

51. Which of the following is mainly responsible for the extinction of wildlife?
(a) Pollution of air and water
(b) Hunting of flesh
(c) Destruction of habitats
(d) All of these *(1999)*

52. What is the major cause of diminishing wildlife number?
(a) Felling of trees
(b) Paucity of drinking water
(c) Cannibalism
(d) Habitat destruction *(1998)*

53. The breeding place of Flamingo (Hansawar) in India is most likely
(a) Runn of Kutch (b) Ghana Vihar
(c) Sambhar lake (d) Chilka lake. *(1996)*

54. The abundance of a species population, within its habitat, is called
(a) relative density (b) regional density
(c) absolute density (d) niche density. *(1995)*

55. Identify the correct match between tiger reserve and its state.
(a) Manas - Assam
(b) Corbett - Madhya Pradesh
(c) Bandipur - Tamil Nadu
(d) Palamu - Odisha *(1995)*

56. Which of the following is the matching pair of a sanctuary and its main protected wild animal?
(a) Kaziranga-Musk deer
(b) Gir-Lion
(c) Sunderban-Rhino
(d) All of these *(1995)*

57. The most important human activity, leading to the extinction of wildlife, is
(a) pollution of air and water
(b) hunting for valuable wildlife products
(c) introduction of alien species
(d) alteration and destruction of the natural habitats. *(1994)*

Answer Key

1.	(d)	**2.**	(b)	**3.**	(d)	**4.**	(c)	**5.**	(c)	**6.**	(c)	**7.**	(d)	**8.**	(d)	**9.**	(a)	**10.**	(a)
11.	(c)	**12.**	(d)	**13.**	(b)	**14.**	(c)	**15.**	(b)	**16.**	(d)	**17.**	(a)	**18.**	(a)	**19.**	(b)	**20.**	(d)
21.	(a)	**22.**	(d)	**23.**	(c)	**24.**	(d)	**25.**	(b)	**26.**	(d)	**27.**	(b)	**28.**	(d)	**29.**	(b)	**30.**	(d)
31.	(a)	**32.**	(b)	**33.**	(a)	**34.**	(a)	**35.**	(b)	**36.**	(a)	**37.**	(d)	**38.**	(d)	**39.**	(b)	**40.**	(b)
41.	(c)	**42.**	(c)	**43.**	(d)	**44.**	(d)	**45.**	(b)	**46.**	(a)	**47.**	(d)	**48.**	(c)	**49.**	(a)	**50.**	(a)
51.	(c)	**52.**	(d)	**53.**	(d)	**54.**	(d)	**55.**	(a)	**56.**	(b)	**57.**	(d)						

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

EXPLANATIONS

1. (d) : *Ex situ* conservation is conservation of selected rare or threatened animals and plants in places outside their natural homes. It includes offsite collections like botanical gardens, zoological parks, wildlife safari parks, etc., and gene banks.

2. (b) : Alexander von Humboldt described species area relationship for the first time. He observed that within a region, species richness increases with increasing explored area, but only upto a limit.

3. (d) : Core zone or Natural zone area of a biosphere reserve is undisturbed and legally protected ecosystem. No human activity is allowed in this zone. Little human activity is allowed in the buffer zone whereas in transition zone, an active cooperation is present between reserve management and local people for activities like settlements, cropping, etc. Restoration region is degraded area which is selected for restoration to near natural form.

4. (c) : Biodiversity hotspots are a method to identify those regions of the world where attention is needed to address biodiversity loss and to guide investments in conservation. The idea was first developed by Norman Myers in 1988 to identify tropical forests hotspots characterised both by exceptional levels of plant endemism and serious habitat loss which he then expanded to a more global scope. Currently 34 biodiversity hotspots have been identified most of which occur in tropical forests.

5. (c) : *Parthenium hysterophorus* is commonly known as congress grass or carrot weed. It is herbaceous annual plant of Family Asteraceae. It is a deadly invasive, noxious weed infesting cropped and non-cropped areas. It rapidly colonises area replacing the native vegetation and causes a number of human health related problems such as skin allergy, rhinitis and eye irritations. Also, being toxic and unpalatable it causes fodder scarcity. Hence, it is considered a threat to the biodiversity.

6. (c) : A red data book or red list is a catalogue of taxa facing risk of extinction. Red data book or red list was initiated in 1963.

7. (d)

8. (d) : River dolphin found in holy river Ganga, Brahmaputra, Indus and its tributaries is the National aquatic animal of India. Presence of river dolphin in Ganga indicates pure and freshwater.

9. (a) : Destruction of natural habitat causes the most serious threat to the biodiversity. Over-population, urbanisation and industrialisation lead to the destruction or fragmentation of natural habitats to fulfill the requirement of additional land. Loss of habitat results in annihilation of plants, microorganisms and forcing out of animals which in alien lands die out after some time. Fragmentation of habitats results in disruption of complex interactions amongst species, destruction of species in the cleared regions, annihilation of species restricted to deeper undisturbed parts of forests and decreased biodiversity in the habitat fragments.

10. (a)

11. (c) : *In situ* (on site) conservation is conservation and protection of the whole ecosystem and its biodiversity at all levels, in order to protect the threatened species. Two *in situ* methods are being used to save biodiversity *viz.*, hotspots and protected areas. Protected areas include national parks, sanctuaries, biosphere reserves and sacred groves. *Ex situ* (off site) conservation is conservation of selected rare plants/animals in places outside their natural homes. *Ex situ* conservation includes offsite collections, seed banks, gene banks, *in vitro* fertilization, cryopreservation techniques and tissue culture.

12. (d) : Cryopreservation is an advanced method of *ex situ* conservation. It involves preservation at –196°C in liquid nitrogen. It can maintain tissue culture, embryos, animal cells/tissues, spermatozoa indefinitely. The cryopreserved material is revived through special technique, when required.

13. (b) : *Refer to answer 11.*

14. (c) : The taxon under critically endangered category are facing very high risk of extinction in the wild and can become extinct at any moment in the immediate future.

15. (b) : IUCN is International Union of Conservation of Nature and Natural Resources which is now called World Conservation Union (WCU). It has its headquarters at Morges, Switzerland. It maintains a red data book or red list which is a catalogue of taxa facing risk of extinction. Red data book or red list was initiated in 1963. The Red list of year 2000 has made assessment of 18,000 species.

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

16. (d)

17. (a) : *Ex situ* conservation is conservation of selected rare plants/animals in places outside their natural homes. It includes botanical gardens or zoological parks, seed banks, cryopreservation, field gene banks and sacred plants. Many wild and domesticated species are well managed and collected in botanical gardens, zoological parks, wildlife safari parks, arboreta etc. Most of these have capture breeding programmes to restore the decreasing number of animals and helping the survival of existing individuals of the species. Gene banks are institutes that maintain stocks of viable seeds (seed banks), live plants (orchards), tissue culture and frozen germplasm with the whole range of genetic viability.

18. (a) : Fungi is a large kingdom of over 72,000 species. They are achlorophyllous, heterotrophic, spore forming, non-vascular, eukaryotic organisms which contain chitin or fungal cellulose in their walls and possess glycogen as food reserve. They are major decomposers of many ecosystems and are associate of many organisms.

19. (b) : Nagarjunasagar - Srisailam Tiger Reserve is the largest tiger reserve in India. It is present in Andhra Pradesh with a total area of 3568 km^2. The core area of this reserve is 1200 km^2.

20. (d) : Genetic diversity is the diversity in the numbers and types of genes as well as chromosomes present in different species and the variations in the genes and their alleles in the same species. *Oryza sativa* (rice) has 32,000-50,000 genes.

21. (a) : *Refer to answer 15.*

22. (d) : Hotspots are areas with high density of biodiversity or megadiversity which are also the most threatened ones. Ecologically hotspots are determined by four factors – number of species/ species diversity, degree of endemism, degree of threat to habitat due to its degradation and fragmentation, and degree of exploitation. India has three hotspots : Indo-Burma, Himalayas and Western Ghats - Sri Lanka. India is even otherwise a country of megadiversity with 2.4% of land area and having 8.1% of global diversity. Major centres of biodiversity are Agasthyamalai hills, Silent valley and Amambalam reserve. There is high degree of endemism as well as richness of species of flowering plants, amphibians, reptiles, some mammals and butterflies.

23. (c) : *Refer to answer 22.*

24. (d) : Sacred grove is an example of *in situ* conservation of forests and wildlife especially rare and threatened species. These forest patches are found around places of worship which are held in high esteem by tribal communities. They are the most undisturbed forest patches which are often surrounded by highly degraded landscapes. Not a single branch is allowed to be cut from these forests. As a result many endemic species which are rare or have become extinct elsewhere can be seen to flourish here. Such sacred groves are found in Khasi and Jaintia hills of Meghalaya, Aravalli hills of Rajasthan, Western ghat regions of Karnataka, Maharashtra, Sarguja, Chanda and Bastar areas of Madhya Pradesh.

25. (b) : Insects have highest number of species found in nature. The insecta is the largest class of animals. It has over 7,00,000 species. The insects are the most successful land invertebrates and the only major competitors with humans for dominance in the world.

26. (d)

27. (b) : Biodiversity (biological diversity) is the existence of a wide variety of species (species diversity) or other taxa of plants, animals and microorganisms in a natural community or habitat, or of communities within a particular environment (ecological diversity), or of genetic variation within a species (genetic diversity). The maintenance of a high level of biodiversity is important for the stability of ecosystems.

28. (d) : Predator and prey evolve together. The prey is part of the predator's environment, and the predator dies if it does to get food, so it evolves whatever is necessary in order to eat the prey. Likewise, the predator is part of the prey's environment, and the prey dies if it is eaten by the predator, so it evolves whatever is necessary to avoid being eaten. So, predators cannot lead to the extinction of prey species.

Nicotine is an alkaloid found in the night shade family of plants (Solanaceae) that constitutes approximately 0.6–3.0% of dry weight of tobacco, with biosynthesis taking place in the roots and accumulation occurring in the leaves. Strychnine is an alkaloid plant toxin extracted chiefly from *Nux vomica*; formerly used as a stimulant. These are not metabolic disorder products but are metabolic wastes.

29. (b) : *Refer to answer 17.*

30. (d) : The Indian rhinoceros is a endemic of north-east region of India. Kaziranga National Park (Assam) is famous for rhinoceros.

31. (a)

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

32. (b) : Gir National Park is situated in district Junagarh of Gujarat. This national park is famous for Asiatic lion. Beside lion, panther, striped hyaena, sambhar, nilgai, cheetal are also conserved.

33. (a) : Species diversity is related to the variety in the number and richness of the species within a region and is measured at the level of 'species'. Thus, it is the product of species richness and species evenness. Species richness refers to the number of species per unit area. As the area of the site increases, the number of species also increases due to more availability of natural resources. Species evenness is the relative abundance with which each species is represented in an area. Thus, variation in the number of species, kinds of species as well as the number of individuals per species lead to greater diversity. In the given table, the area which shows maximum species diversity is 's'.

34. (a)

35. (b) : Conservation of biodiversity is a collective responsibility of all nations. The historic Convention on Biological Diversity ('The Earth Summit') held in Rio de Janeiro in 1992, called upon all nations to take appropriate measures for conservation of biodiversity and sustainable utilisation of its benefits. In a follow-up, the World Summit on Sustainable Development held in 2002 in Johannesburg, South Africa, 190 countries pledged their commitment to achieve by 2010, a significant reduction in the current rate of biodiversity loss at global, regional and local levels.

36. (a) : In India, large variety of exotic animal and plant species have been introduced from other parts of the world through the ages. Some exotic plants have turned into weeds, multiplying fast and causing harm to the ecosystem, *e.g.* water hyacinth and *Lantana camara*.

37. (d) : Dachigam National Park is located only 22 kilometers from Srinagar, the capital city of the northern state of Jammu and Kashmir. Dachigam is considered home to some of the unique Himalayan range of flora and fauna. Primary amongst them is the hangul or Kashmiri stag, the most endangered species of red deer in the world. It was finally upgraded and declared a National Park in the year 1981.

38. (d) : An endangered species is a population of an organism which are at risk of becoming extinct because it is either a few in number or threatened by changing environmental or predation parameters. *Podophyllum* is such an endangered species of Indian medicinal plants. They contain, podophyllotoxin and podophyllin that is used as a purgative and as a cytostatic. They are also grown as ornamental plants for their attractive foliage and flowers. Extracts of plants are used for genital warts and some skin cancers.

39. (b) : *Refer to answer 22.*

40. (b) : An endangered species is a living organism in danger of disappearing from the face of the earth if it is not protected and its situation is not improved. Red panda (*Ailurus fulgens*) and *Bentinckia nicobarica* are endangered organisms of India. The red panda (*Ailurus fulgens*) faces problems with human encroachment into its habitat. *Bentinckia nicobarica* is a fast-growing, slender and elegant, pinnate palm from the Nicobar Islands in the Andaman Sea, North of Sumatra.

41. (c) : *In situ* conservation means "on-site conservation". *In situ* conservation is the protection and management of important components of biological diversity through a network of protected areas *e.g.*, National Park, sanctuary, biosphere reserve, etc. Botanical gardens come under *ex situ* conservation.

42. (c) : Kaziranga National Park of Assam is known for the conservation of rhinoceros.

43. (d) : Biodiversity Act of India provides for conservation of biological diversity, substainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected there with or incidental there to. The biodiversity act of India was passed in 2002. This act of parliament received the assent of President of India on the 5th February 2003.

44. (d) : According to IUCN Red list, the status of Red panda (*Ailurus fulgens*) is endangered species. Endangered species are those species that are facing a very high risk of extinction in the wild in the near future. This category is used when the species suffered a population reduction of 80% or more.

Vulnerable species have sufficient population at present but are depleting fast. *e.g.*, Golden langur, leopard cat. Extinct species no longer exist, *e.g.*, Dodo. Critically endangered species are threatened to a greater extent.

45. (b) : Biosphere reserves are multipurpose protected areas of different representative ecosystems which are meant for conservation of

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

biodiversity or wildlife, traditional life style of tribals and their domesticated animals and also plant resources. Each biosphere reserve has a core zone (where no human activity is allowed), a buffer zone (with limited human activity) and manipulation zone (where human activity is allowed without degradation of ecology. Thus, the biosphere reserves protect not just wild varieties but also domesticated varieties of plants of an area.

46. (a) : IUCN Red List (2004) documents the extinction of 784 species (including 338 vertebrate species, 359 invertebrate species and 87 plant species) in the last 500 years. On worldwide basis, more than 15,500 species are facing the threat of extinction. At present, 12% of the bird species, 23% of mammal species, 32% of amphibian species and 31% of gymnosperm species are facing the threat of extinction in the world. Several endangered mammalian species are *Panthera pandus* (Leopard), *Panthera leo persica* (Lion), *Presbytis pilaetus* (capped langur) etc.

47. (d) : Chiru or the Tibetan antelope (*Pantholops hodgsoni*) is medium-sized bovid which is about 1.2 m in height. Its coat is grey to reddish brown, with a white underside. The Chiru's wool, known as the shahtoosh, is worm, soft and fine. The wool can only be obtained by killing the animal. It is listed as endangered by the world conservation union and the United States Fish and Wildlife Service due to commercial poaching for its wool.

48. (c) : Wildlife refers to all living organisms (terrestrial, aquatic and aerial) living in all possible natural habitats of their own, other than the cultivated plants and domesticated animals. Thus "wildlife" does not exist only in jungles and are hunted down but wild life includes even the migrating birds, turtles, coral reefs, microorganisms, insects, fishes, etc.

Several hundred organisms are endangered or on the verge of extinction. The reasons are deforestation, pollution, killing, over exploitation etc. The most important among them is deforestation or destruction of their natural habitat because it will affect the species (flora and fauna) of complete area and not only the few organisms. The natural habitat may be destroyed by man for his settlements, grazing grounds, agriculture, mining, industries, dam building etc. As a consequence of this, the species must adapt to the changes, move elsewhere or may succumb to predation, starvation or disease, and eventually dies.

49. (a) : Indri-indri lemur is found in Madagascar. It is the largest of all surviving lemurs and is best known for its beautiful song which can carry for more than 2 km. Today, the Indri's number is small and dwindling due to habitat loss.

50. (a) : Viable material of endangered species can be preserved by gene bank. Gene bank is an institute that maintains stocks of viable seeds (seed banks), live growing plants (orchards), tissue culture and frozen germplasm with the whole range of genetic variability.

51. (c)

52. (d) : *Refer to answer 48.*

53. (d) : Flamingoes are protected in Chilka lake, Odisha. Other important birds protected are water fowls, ducks, cranes, golden plovers, sandpipers etc.

54. (d)

55. (a) : Manas biosphere reserve is located in Assam. Corbett National Park is located in district Nainital of Uttaranchal. Bandipur National Park is located in district Mysore of Karnataka. Palamu is located in Chhotanagpur, Jharkhand.

56. (b)

57. (d) : *Refer to answer 48.*

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

Chapter 38 Environmental Issues

1. Which one of the following statements is not valid for aerosols?
(a) They alter rainfall and monsoon patterns.
(b) They cause increased agricultural productivity.
(c) They have negative impact on agricultural land.
(d) They are harmful to human health.
(NEET 2017)

2. Biochemical Oxygen Demand (BOD) may not be a good index for pollution for water bodies receiving effluents from
(a) domestic sewage
(b) dairy industry
(c) petroleum industry
(d) sugar industry. *(NEET-II 2016)*

3. A lake which is rich in organic waste may result in
(a) increased population of aquatic organisms due to minerals
(b) drying of the lake due to algal bloom
(c) increased population of fish due to lots of nutrients
(d) mortality of fish due to lack of oxygen.
(NEET-II 2016)

4. The highest DDT concentration in aquatic food chain shall occur in
(a) phytoplankton (b) seagull
(c) crab (d) eel.
(NEET-II 2016)

5. Depletion of which gas in the atmosphere can lead to an increased incidence of skin cancers?
(a) Ammonia (b) Methane
(c) Nitrous oxide (d) Ozone
(NEET-I 2016)

6. Joint Forest Management Concept was introduced in India during
(a) 1980s (b) 1990s
(c) 1960s (d) 1970s.
(NEET-I 2016)

7. A river with an inflow of domestic sewage rich in organic waste may result in
(a) an increased production of fish due to biodegradable nutrients
(b) death of fish due to lack of oxygen
(c) drying of the river very soon due to algal bloom
(d) increased population of aquatic food web organisms. *(NEET-I 2016)*

8. Acid rain is caused by increase in the atmospheric concentration of
(a) CO_2 and CO (b) O_3 and dust
(c) SO_2 and NO_2 (d) SO_3 and CO.
(2015)

9. Eutrophication of water bodies leading to killing of fishes is mainly due to non-availability of
(a) essential minerals (b) oxygen
(c) food (d) light. *(2015)*

10. The UN Conference of Parties on climate change in the year 2012 was held at
(a) Lima (b) Warsaw
(c) Durban (d) Doha. *(2015)*

11. Which of the following are most suitable indicators of SO_2 pollution in the environment?
(a) Algae (b) Fungi
(c) Lichens (d) Conifers *(2015)*

12. Increase in concentration of the toxicant at successive trophic levels is known as
(a) biotransformation
(b) biogeochemical cycling
(c) biomagnification
(d) biodeterioration. *(2015)*

13. The UN Conference of Parties on climate change in the year 2011 was held in
(a) Peru (b) Qatar
(c) Poland (d) South Africa.
(2015 Cancelled)

14. Which of the following is not one of the prime health risks associated with greater UV radiations through the atmosphere due to depletion of stratospheric ozone?
(a) Damage to eyes
(b) Increased liver cancer
(c) Increased skin cancer
(d) Reduced Immune System
(2015 Cancelled)

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

15. High value of BOD (Biochemical Oxygen Demand) indicates that
(a) water is less polluted
(b) consumption of organic matter in the water is higher by the microbes
(c) water is pure
(d) water is highly polluted. *(2015 Cancelled)*

16. Rachel Carson's famous book "*Silent Spring*" is related to
(a) population explosion
(b) ecosystem management
(c) pesticide pollution
(d) noise pollution. *(2015 Cancelled)*

17. A location with luxuriant growth of lichens on the trees indicates that the
(a) trees are very healthy
(b) trees are heavily infested
(c) location is highly polluted
(d) location is not polluted. *(2014)*

18. The zone of atmosphere in which the ozone layer is present is called
(a) ionosphere (b) mesosphere
(c) stratosphere (d) troposphere. *(2014)*

19. A scrubber in the exhaust of a chemical industrial plant removes
(a) gases like sulphur dioxide
(b) particulate matter of the size 5 micrometer or above
(c) gases like ozone and methane
(d) particulate matter of the size 2.5 micrometer or less. *(2014)*

20. Kyoto protocol was endorsed at
(a) CoP - 6 (b) CoP - 4
(c) CoP - 3 (d) CoP - 5. *(NEET 2013)*

21. Global warming can be controlled by
(a) increasing deforestation, slowing down the growth of human population
(b) increasing deforestation, reducing efficiency of energy usage
(c) reducing deforestation, cutting down use of fossil fuel
(d) reducing reforestation, increasing the use of fossil fuel. *(NEET 2013)*

22. The Air Prevention and Control of Pollution Act came into force in
(a) 1985 (b) 1990
(c) 1975 (d) 1981. *(NEET 2013)*

23. The second commitment period for Kyoto Protocol was decided at
(a) Durban (b) Bali
(c) Doha (d) Cancun. *(Karnataka NEET 2013)*

24. Climate of the world is threatened by
(a) decreasing amount of atmospheric oxygen
(b) increasing amount of atmospheric carbon dioxide
(c) decreasing amount of atmospheric carbon dioxide
(d) increasing concentration of atmospheric oxygen. *(Karnataka NEET 2013)*

25. Which one of the following is not correct with regard to the harmful effects of particulate matter of the size 2.5 micrometer or less?
(a) It can cause respiratory problems.
(b) It can directly enter into our circulatory system.
(c) It can cause inflammation and damage to the lungs.
(d) It can be inhaled into the lungs. *(Karnataka NEET 2013)*

26. In an area where DDT had been used extensively, the population of birds declined significantly because
(a) birds stopped laying eggs
(b) earthworms in the area got eradicated
(c) cobras were feeding exclusively on birds
(d) many of the birds eggs laid, did not hatch. *(2012)*

27. Which one of the following is a wrong statement?
(a) Most of the forests have been lost in tropical areas.
(b) Ozone in upper part of atmosphere is harmful to animals.
(c) Greenhouse effect is a natural phenomenon.
(d) Eutrophication is a natural phenomenon in freshwater bodies. *(2012)*

28. Measuring Biochemical Oxygen Demand (BOD) is a method used for
(a) estimating the amount of organic matter in sewage water
(b) working out the efficiency of oil driven automobile engines
(c) measuring the activity of *Saccharomyces cerevisiae* in producing curd on a commercial scale
(d) working out the efficiency of RBCs about their capacity to carry oxygen. *(2012)*

29. Eutrophication is often seen in
(a) deserts (b) fresh water lakes
(c) ocean (d) mountains. *(2011)*

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

30. Which one of the following pairs of gases are the major cause of "greenhouse effect"?
(a) CO_2 and O_3 (b) CO_2 and CO
(c) CFCs and SO_2 (d) CO_2 and N_2O
(2011)

31. Which one of the following statements is incorrect in case of Bhopal tragedy?
(a) Methyl isocyanate gas leakage took place.
(b) Thousands of human beings died.
(c) Radioactive fall out engulfed Bhopal.
(d) It took place in the night of December 2/3, 1984. *(2011)*

32. Which one of the following is correct expanded form of the acronym?
(a) IPCC = International Panel for Climate Change
(b) UNEP = United Nations Environmental Policy
(c) EPA = Environmental Pollution Agency
(d) IUCN = International Union for Conservation of Nature and Natural Resources *(2011)*

33. "Good ozone" is found in the
(a) mesosphere (b) troposphere
(c) stratosphere (d) ionosphere.
(Mains 2011)

34. A renewable exhaustible natural resource is
(a) coal (b) petroleum
(c) minerals (d) forest. *(2010)*

35. dB is a standard abbreviation used for the quantitative expression of
(a) the density of bacteria in a medium
(b) a particular pollutant
(c) the dominant *Bacillus* in a culture
(d) a certain pesticide. *(2010)*

36. The two gases making highest relative contribution to the greenhouse gases are
(a) CO_2 and CH_4 (b) CH_4 and N_2O
(c) CFCs and N_2O (d) CO_2 and N_2O.
(2010)

37. When domestic sewage mixes with river water
(a) small animals like rats will die after drinking river water
(b) the increased microbial activity releases micronutrients such as iron
(c) the increased microbial activity uses up dissolved oxygen
(d) the river water is still suitable for drinking as impurities are only about 0.1%.
(Mains 2010)

38. Global agreement in specific control strategies to reduce the release of ozone depleting substances, was adopted by
(a) Montreal Protocol
(b) Kyoto Protocol
(c) Vienna Convention
(d) Rio de Janeiro Conference. *(2009)*

39. Biochemical oxygen demand (BOD) in a river water
(a) has no relationship with concentration of oxygen in the water
(b) gives a measure of *Salmonella* in the water
(c) increases when sewage gets mixed with river water
(d) remains unchanged when algal bloom occurs.
(2009)

40. Steps taken by the Government of India to control air pollution include
(a) compulsory PUC (Pollution under control) certification of petrol driven vehicles which tests for carbon monoxide and hydrocarbons
(b) permission to use only pure diesel with a maximum of 500 ppm sulphur as fuel for vehicles
(c) use of non-polluting compressed natural gas (CNG) only as fuel by all buses and trucks
(d) compulsory mixing of 20% ethyl alcohol with petrol and 20% biodiesel with diesel.
(2009)

41. Montreal Protocol aims at
(a) biodiversity conservation
(b) control of water pollution
(c) control of CO_2 emission
(d) reduction of ozone depleting substances.
(2009)

42. DDT residues are rapidly passed through food chain causing biomagnification because DDT is
(a) moderately toxic
(b) non-toxic to aquatic animals
(c) water soluble
(d) lipo soluble. *(2009)*

43. Chipko movement was launched for the protection of
(a) forests (b) livestock
(c) wetlands (d) grasslands. *(2009)*

44. A lake near a village suffered heavy mortality of fishes within a few days. Consider the following reasons for this.
A. Lots of urea and phosphate fertilizer were used in the crops in the vicinity.
B. The area was sprayed with DDT by an aircraft.
C. The lake water turned green and stinky.
D. Phytoplankton populations in the lake declined initially there by greatly reducing photosynthesis.

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

Which two of the above were the main causes of fish mortality in the lake?
(a) A, C (b) A, B
(c) B, C (d) C, D *(2008)*

45. According to Central Pollution Control Board (CPCB), which particulate size in diameter (in micrometers) of the air pollutants is responsible for greatest harm to human health?
(a) 1.0 or less (b) 5.2 - 2.5
(c) 2.5 or less (d) 1.5 or less *(2008)*

46. Which one of the following is the correct percentage of the two (out of the total of 4) green house gases that contribute to the total global warming?
(a) N_2O 6%, CO_2 86%
(b) methane 20%, N_2O 18%
(c) CFCs 14%, methane 20%
(d) CO_2 40%, CFCs 30% *(2008)*

47. In which one of the following the BOD (Biochemical Oxygen Demand) of sewage (S), distillery effluent (DE), paper mill effluent (PE) and sugar mill effluent (SE) have been arranged in ascending order?
(a) SE < PE < S < DE (b) PE < S < SE < DE
(c) S < DE < PE < SE (d) SE < S < PE < DE *(2007)*

48. In a coal fired power plant electrostatic precipitators are installed to control emission of
(a) NO_X (b) SPM
(c) CO (d) SO_2. *(2007)*

49. Which one of the following statements is correct?
(a) Both *Azotobacter* and *Rhizobium* fix atmospheric nitrogen in root nodules of plants.
(b) Cyanobacteria such as *Anabaena* and *Nostoc* are important mobilizers of phosphates and for plant nutrition in soil.
(c) At present it is not possible to grow maize without chemical fertilizers.
(d) Extensive use of chemical fertilizers may lead to eutrophication of nearby water bodies. *(2007)*

50. Which one of the following is not a bioindicator of water pollution?
(a) Blood-worms (b) Stone flies
(c) Sewage fungus (d) Sludge-worms *(2007)*

51. Limit of BOD prescribed by Central Pollution Control Board for the discharge of industrial and municipal waste waters into natural surface waters, is
(a) < 30 ppm (b) < 3.0 ppm
(c) < 10 ppm (d) < 100 ppm. *(2006)*

52. Photochemical smog pollution does not contain
(a) PAN (peroxyacyl nitrate)
(b) ozone
(c) nitrogen dioxide
(d) carbon dioxide. *(2006)*

53. Montreal protocol which calls for appropriate action to protect the ozone layer from human activities was passed in the year
(a) 1985 (b) 1986
(c) 1987 (d) 1988. *(2006)*

54. Prolonged liberal irrigation of agricultural fields is likely to create the problem of
(a) acidity (b) aridity
(c) salinity (d) metal toxicity. *(2005)*

55. Which one of the following is not used for disinfection of drinking water?
(a) Chlorine (b) Ozone
(c) Chloramine (d) Phenyl *(2005)*

56. Identify the correctly matched pair.
(a) Basal convention - Biodiversity conservation
(b) Kyoto protocol - Climatic change
(c) Montreal protocol - Global warming
(d) Ramsar convention - Ground water pollution *(2005)*

57. Which one of the following pairs is mismatched?
(a) Fossil fuel burning - release of CO_2
(b) Nuclear power - radioactive wastes
(c) Solar energy - greenhouse effect
(d) Biomass burning - release of CO_2 *(2005)*

58. In 1984, the Bhopal gas tragedy took place because methyl isocyanate
(a) reacted with DDT
(b) reacted with ammonia
(c) reacted with CO_2
(d) reacted with water. *(2004)*

59. Lead concentration in blood is considered alarming if it is
(a) 20 mg / 100 ml (b) 30 mg / 100 ml
(c) 4 - 6 mg / 100 ml (d) 10 mg / 100 ml. *(2004)*

60. Common indicator organism of water pollution is
(a) *Lemna pancicostata*
(b) *Eichhornia crassipes*
(c) *Escherichia coli*
(d) *Entamoeba histolytica*. *(2004)*

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

61. Fluoride pollution mainly affects
(a) brain (b) heart
(c) teeth (d) kidney. *(2003)*

62. *Escherichia coli* is used as an indicator organism to determine pollution of water with
(a) heavy metals (b) faecal matter
(c) industrial effluents
(d) pollen of aquatic plants. *(2003)*

63. Which of the following is absent in polluted water?
(a) *Hydrilla* (b) Water hyacinth
(c) Larva of stone fly (d) Blue green algae *(2002)*

64. Maximum green house gas released by which of the following country?
(a) India (b) France
(c) USA (d) Britain *(2002)*

65. What is B.O.D.?
(a) The amount of O_2 utilised by organisms in water.
(b) The amount of O_2 utilised by micro-organisms for decomposition.
(c) The total amount of O_2 present in water.
(d) All of the above *(2001)*

66. What is the intensity of sound in normal conversation?
(a) 10-20 dB (b) 30-60 dB
(c) 70-90 dB (d) 120-150 dB *(2001)*

67. Which is the result of damage to relative biological effectiveness?
(a) High temperature (b) Pollution
(c) Radiation (d) Low temperature *(2000)*

68. The Minamata disease in Japan was caused through the pollution of water by
(a) cyanide (b) methyl isocyanate
(c) lead (d) mercury. *(1999)*

69. D.D.T. is
(a) not a pollutant (b) an antibiotic
(c) a non-degradable pollutant
(d) a biodegradable pollutant. *(1999)*

70. Which of the following organism is likely to have more concentration of D.D.T. in its body?
(a) Top carnivores (b) Primary producers
(c) Herbivores (d) Carnivores *(1999)*

71. Which of the following is pollution related disorder?
(a) Silicosis (b) Pneumonicosis
(c) Fluorosis (d) Leprosis *(1999)*

72. In 1984, Bhopal gas tragedy was caused due to leakage of
(a) potassium isocyanate
(b) methyl isocyanate
(c) sodium monoxide
(d) none of these. *(1999)*

73. Which of the following is a secondary pollutant?
(a) PAN (b) Aerosol
(c) CO (d) CO_2 *(1999)*

74. The maximum biomagnification would be in which of the following in case of aquatic ecosystem?
(a) Zooplanktons (b) Phytoplanktons
(c) Fishes (d) Birds *(1999)*

75. Which of the following is the use of lichens in case of pollution?
(a) They promote pollution.
(b) Lichens are not related with pollution.
(c) They treat the polluted water.
(d) They act as bioindicators of pollutions. *(1999)*

76. The supersonic jets cause pollution by the thinning of
(a) O_2 layer (b) O_3 layer
(c) CO_2 layer (d) SO_2 layer. *(1998)*

77. Which one of the following organisms is used as indicator of water quality?
(a) *Azospirillum* (b) *Escherichia*
(c) *Biggiata* (d) *Chlorella* *(1998)*

78. If there was no CO_2 in the earth's atmosphere, the temperature of earth's surface would be
(a) higher than the present
(b) dependent on the amount of oxygen in the atmosphere
(c) same as present
(d) less than the present. *(1998)*

79. Carbon monoxide is a pollutant because
(a) reacts with haemoglobin
(b) makes nervous system inactive
(c) it reacts with O_2
(d) it inhibits glycolysis. *(1998)*

80. How carbon monoxide, emitted by automobiles, prevents transport of oxygen in the body tissues?
(a) By forming a stable compound with haemoglobin
(b) By obstructing the reaction of oxygen with haemoglobin
(c) By changing oxygen into carbon dioxide
(d) By destroying the haemoglobin *(1998)*

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

81. The most common indicator organism that represents polluted water is
(a) *C.vibrio*
(b) *Entamoeba histolytica*
(c) *E.coli*
(d) *P.typhi.* *(1997)*

82. In coming years, skin related disorders will be more common due to
(a) water pollution
(b) depletion of ozone layer
(c) pollutants in air
(d) use of detergents. *(1997)*

83. MAB stands for
(a) mammals and biosphere
(b) mammals and biology programme
(c) man and biology programme
(d) man and biosphere programme. *(1997)*

84. Formation of ozone hole is maximum over
(a) Europe (b) Africa
(c) India (d) Antarctica. *(1997)*

85. Phosphate pollution is caused by
(a) sewage and phosphate rock
(b) sewage and agricultural fertilizers
(c) phosphate rock only
(d) agricultural fertilizers only. *(1997)*

86. The true statement about 'green-house effect' is that it is
(a) caused by combination of many gases
(b) caused only by CO_2
(c) caused by CO_2, CFC, CH_4 and NO_2 gases
(d) none of these. *(1996)*

87. Which country has the greatest contribution for the hole formation in ozone layer?
(a) Russia (b) Japan
(c) USA (d) Germany *(1996)*

88. The two great industrial tragedies namely, MIC and Chernobyl tragedies respectively occurred where and at which time?
(a) Bhopal 1984, Ukrain 1986
(b) Bhopal 1986, Russia 1988
(c) Bhopal 1984, Ukrain 1990
(d) Bhopal 1984, Ukrain 1988 *(1996)*

89. If we uncover half of the forest covering the earth, what crisis will be produced at most and at first?
(a) Some species will be extinct
(b) Population and ecological imbalance will rise up
(c) Energy crisis will occur
(d) Rest half forests will maintain this imbalance *(1996)*

90. When huge amount of sewage is dumped into a river, its B.O.D. will
(a) slightly decrease
(b) remain unchanged
(c) increase
(d) decrease. *(1995)*

91. The Taj Mahal is threatened due to the effect of
(a) oxygen (b) hydrogen
(c) chlorine (d) sulphur-dioxide. *(1995)*

92. In Minamata Bay Japan the animals which remained free from minamata disease, are
(a) dogs (b) cats
(c) pigs (d) rabbits. *(1995)*

93. The toxic effect of carbon monoxide is due to its greater affinity for haemoglobin as compared to oxygen approximately by
(a) 200 times (b) 1000 times
(c) 2 times (d) 20 times. *(1995)*

94. Which of the following isotopes is most dangerous to *Homo sapiens*?
(a) Phosphorus-32 (b) Strontium-90
(c) Cesium-137 (d) Iodine-131 *(1995)*

95. A dental disease characterized by mottling of teeth is due to the presence of certain chemical element in drinking water. Which of the following is that element?
(a) Fluorine (b) Boron
(c) Mercury (d) Chlorine *(1995)*

96. Which of the following is the main factor of desertification?
(a) Over-grazing (b) Tourism
(c) Irrigated agriculture (d) All of these *(1995)*

97. Which among the following is likely to have the highest levels of D.D.T. depositions in its body?
(a) Sea gull (b) Phytoplankton
(c) Eel (d) Crab *(1994)*

98. Which one of the following gases contributes maximum to the 'green house effect' on the earth?
(a) Carbon dioxide
(b) Chlorofluorocarbon
(c) Freon
(d) Methane *(1994)*

99. Sounds above what level are considered hazardous noise pollution?
(a) Above 80 dB (b) Above 30 dB
(c) Above 150 dB (d) Above 120 dB *(1994)*

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

100. A disease caused by eating fish contaminated by industrial waste, containing mercury compounds, is called
(a) osteosclerosis
(b) Hashimoto's oxidase
(c) Bright's disease
(d) Minimata disease. *(1994)*

101. Ultraviolet radiations from sunlight causes a reaction that produces
(a) fluorides (b) carbon monoxide
(c) sulphur dioxide (d) ozone. *(1993)*

102. American water plant that has become a troublesome water weed in India is
(a) *Cyperus rotundus*
(b) *Eichhornia crassipes*
(c) *Typha latifolia*
(d) *Trapa bispinosa*. *(1993)*

103. Most hazardous metal pollutant of automobile exhausts is
(a) mercury (b) cadmium
(c) lead (d) copper. *(1992)*

104. Petroleum is a
(a) synthetic product
(b) renewable resource
(c) nonrenewable resource
(d) inconvenient resource. *(1992)*

105. Minerals and metals are
(a) biodegradable resources
(b) renewable
(c) non-renewable
(d) renewable and nonrenewable resources. *(1992)*

106. Which one is not a pollutant normally?
(a) Hydrocarbon (b) Carbon dioxide
(c) Carbon monoxide (d) Sulphur dioxide *(1992, 1988)*

107. Domestic waste constitutes
(a) nonbiodegradable pollution
(b) biodegradable pollution
(c) effluents
(d) air pollution. *(1991)*

108. Acid rain is due to increase in atmospheric concentration of
(a) ozone and dust (b) CO_2 and CO
(c) SO_3 and CO (d) SO_2 and NO_2. *(1991)*

109. Greenhouse effect is warming due to
(a) infra-red rays reaching earth
(b) moisture layer in atmosphere
(c) increase in temperature due to increase in carbon dioxide concentration of atmosphere
(d) ozone layer of atmosphere. *(1991, 1989)*

110. Major aerosol pollutant in jet plane emission is
(a) sulphur dioxide (b) carbon monoxide
(c) methane (d) fluorocarbon. *(1990)*

111. Gas released during Bhopal tragedy was
(a) methyl isocyanate
(b) potassium isothiocyanate
(c) sodium isothiocyanate
(d) ethyl isothiocyante. *(1990)*

112. Deforestation will decrease
(a) soil erosion (b) land slides
(c) soil fertility (d) rainfall. *(1990)*

113. Soil conservation is
(a) conversion of sterile soil into fertile one
(b) aeration of soil (c) erosion of soil
(d) protection against loss. *(1989)*

114. Acid rains are produced by
(a) excess NO_2 and SO_2 from burning fossil fuels
(b) excess production of NH_3 by industry and coal gas
(c) excess release of carbon monoxide by incomplete combustion
(d) excess formation of CO_2 by combustion and animal respiration. *(1989, 1988)*

Answer Key

1.	(b)	**2.**	(c)	**3.**	(d)	**4.**	(b)	**5.**	(d)	**6.**	(a)	**7.**	(b)	**8.**	(c)	**9.**	(b)	**10.**	(d)
11.	(c)	**12.**	(c)	**13.**	(d)	**14.**	(b)	**15.**	(b,d)	**16.**	(c)	**17.**	(d)	**18.**	(c)	**19.**	(a)	**20.**	(c)
21.	(c)	**22.**	(d)	**23.**	(c)	**24.**	(b)	**25.**	(b)	**26.**	(d)	**27.**	(b)	**28.**	(a)	**29.**	(b)	**30.**	(d)
31.	(c)	**32.**	(d)	**33.**	(c)	**34.**	(d)	**35.**	(b)	**36.**	(a)	**37.**	(c)	**38.**	(a)	**39.**	(c)	**40.**	(a)
41.	(d)	**42.**	(d)	**43.**	(a)	**44.**	(b)	**45.**	(c)	**46.**	(c)	**47.**	(b)	**48.**	(b)	**49.**	(d)	**50.**	(b)
51.	(a)	**52.**	(d)	**53.**	(c)	**54.**	(c)	**55.**	(d)	**56.**	(b)	**57.**	(c)	**58.**	(d)	**59.**	(b)	**60.**	(c)
61.	(c)	**62.**	(b)	**63.**	(c)	**64.**	(c)	**65.**	(b)	**66.**	(b)	**67.**	(b)	**68.**	(d)	**69.**	(c)	**70.**	(a)
71.	(c)	**72.**	(b)	**73.**	(a)	**74.**	(c)	**75.**	(d)	**76.**	(b)	**77.**	(b)	**78.**	(d)	**79.**	(a)	**80.**	(a)
81.	(c)	**82.**	(b)	**83.**	(d)	**84.**	(d)	**85.**	(b)	**86.**	(c)	**87.**	(c)	**88.**	(a)	**89.**	(a)	**90.**	(c)
91.	(d)	**92.**	(d)	**93.**	(a)	**94.**	(b)	**95.**	(a)	**96.**	(a)	**97.**	(a)	**98.**	(a)	**99.**	(d)	**100.**	(d)
101.	(d)	**102.**	(b)	**103.**	(c)	**104.**	(c)	**105.**	(d)	**106.**	(b)	**107.**	(b)	**108.**	(d)	**109.**	(c)	**110.**	(d)
111.	(a)	**112.**	(d)	**113.**	(d)	**114.**	(a)												

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

EXPLANATIONS

1. (b) : Aerosols are harmful environmental pollutants which have negative effects on agriculture.

2. (c) : Biochemical oxygen demand (BOD) is the measure of oxygen required by aerobic decomposers for biochemical degradation of the biodegradable organic materials. BOD indicates the degree of organic pollution in water. Petroleum is not degraded by decomposer microbes.

3. (d) : High amount of organic waste in a lake will trigger and activate decomposer microbes which will decompose organic waste. Biochemical Oxygen Demand (BOD) of this lake will shoot up and decomposers will utilise most of the dissolved oxygen present in lake. Consequently the level of dissolved oxygen will go down to alarming extent. Aquatic animals like fish which totally depend on the oxygen dissolved in water will ultimately die.

4. (b) : DDT is non-biodegradable and is not metabolised within the body of an organism rather it accumulates in the fat tissues therefore its concentration goes on increasing from one trophic level to another of a food chain, highest amount being present in top consumer *i.e.,* it shows biomagnification. In an aquatic food chain sea gull is the top carnivore therefore will possess highest concentration of DDT.

5. (d) : Ozone layer or shield is present in stratosphere. It functions as a shield against strong UV radiations coming from sun. UV radiations are very harmful and may cause mutations in living organisms. Thinning of ozone layer increases the amount of UV radiations reaching the earth. It would increase occurrence of cataract, skin cancers, dimming of eye sight, photoburning, deficient functioning of immune system, etc.

6. (a) : In India, Joint Forest Management was started in 1980s. Village and tribal communities are being involved in development and protection of degraded forests on share basis.

7. (b) : *Refer to answer 3.*

8. (c) : Acid rain is rainfall and other forms of precipitation with a pH of less than 5. Acid rain is caused by large scale emission of acidic gases into the atmosphere from thermal power plants, industries and automobiles. The common ones are sulphur dioxide, nitrogen oxides (NO_x), volatile organic carbons (VOCs) and hydrogen chloride. Sulphur dioxide and nitrogen oxides are changed in the atmosphere into sulphuric acid and nitric acid by combining with oxygen and water, which then fall on earth in the form of acid rain.

9. (b) : Eutrophication is the excessive growth of algae, plants and animals in water bodies due to the nutrient enrichment particularly with nitrogen and phosphate. Nutrients present in sewage, agricultural wastes and fertilisers cause dense growth of plants and planktonic algae. The excessive growth of planktonic algae that cause colouration of water is called algal bloom, which is toxic to animals and humans. Eutrophic water bodies also support excessive growth of floating plants. Algal blooms and floating plants cut off light form submerged plants, resulting in their death. There is drastic decrease in oxygen replenishment inside water. Non-availability of oxygen results in the death of aquatic animals such as fish, which further adds to organic loading of water. Decomposition is replaced by putrefraction which is anaerobic, leading to absence of oxygen in water and death of aquatic animals.

10. (d)

11. (c) : Lichens are very sensitive to SO_2 pollution. They are completely destroyed at places where there is SO_2 pollution in atmosphere. Therefore, they act as very good indicators of SO_2 pollution.

12. (c) : Heavy metals and persistent pesticides (*e.g.*, chlorinated hydrocarbons like DDT) pass into food chain and increase in amount per unit weight of organisms with the rise in trophic level due to their accumulation in fat. The phenomenon is called biomagnification/ bioconcentration/biological amplification, *e.g.*, 0.003 parts per billion of DDT in water becomes 0.003 ppm in phytoplankton, 0.04 ppm in zooplankton, 0.5 ppm in clams and small fish, 2.0 ppm in predator fish and 25 ppm in fish eating birds like sea gulls.

13. (d)

14. (b) : Ultraviolet radiations are of three types-UV-C (100 - 280 nm), UV-B (280 - 320nm) and UV-A (320 - 390nm). Shorter ultraviolet radiations (UV-C) are absorbed by the atmosphere. The longer ones (UV-A) are not much harmful. The intermediate or UV-B are harmful as well as capable of deep penetration. Thinning of ozone layer increases the amount of UV-B radiations reaching the earth. UV-B radiations damage skin cells, cause ageing of skin, skin cancer and eye damage.

15. (b,d): Biochemical oxygen demand or BOD is the oxygen required for microbial decomposition of a unit mass of organic remains. The degree of impurity of water due to organic matter is measured in terms of BOD. A higher BOD of a river indicates that water is highly polluted.

16. (c)

17. (d) : *Refer to answer 11.*

18. (c) : *Refer to answer 5.*

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

19. (a) : Dust separation is carried out by scrubbers. They are of two types, dry and wet. Both can be used to separate particulate matter by passing through dry or wet packing material but more commonly they are employed in removing gaseous pollutants like SO_2.

20. (c) : Kyoto protocol is an international treaty to reduce emission of green house gases which was adopted at the third session of the Conference of Parties (CoP - 3) to the UNFCCC (United Nations Framework Convention on Climate Change) in 1997, in Kyoto, Japan.

21. (c) **22. (d)**

23. (c) : International conference held in Kyoto, Japan obtained commitments from different countries for reducing overall green house gas emissions at a level 5% below than that in 1990 by 2008-2012. In Doha, Qatar on 8th December 2012, the "Doha amendment to the Kyoto Protocol" was adopted. The second commitment period is from 1st January 2013 to 31st December 2020.

24. (b) : Carbon dioxide is a greenhouse gas with warming effect of 60%. Greenhouse gases are essential for keeping the earth warm and hospitable. They prevent a substantial part of long wave radiations emitted by earth to escape into space and radiate a part of this energy back to the earth. The phenomenon is called greenhouse flux. Because of greenhouse flux, the mean annual temperature of earth is 15°C. Recently the concentration of greenhouse gases has started rising that is resulting in increasing the mean global temperature. It is called global warming. Deforestation has reduced carbon dioxide assimilation. The excess remains in the air. Excessive use of fossil fuel is adding more CO_2 to atmosphere. This causes greenhouse effect.

25. (b) : Particulate matter consists of soot, flyash, dust, spores, pollen grains etc. Particulate matter is differentiated into settleable (larger than 10 mm and remaining in air for less than one day) and suspended (less than 10 mm and remaining in air for more than one day to several weeks). Particles of 2.5 μm and lesser diameter (PM2.5) are the most harmful to human health (as per Central Pollution Control Board or CPCB). They pass deep into the lungs causing breathing and respiratory problems, irritation, inflammation and damage to lungs resulting in premature death. It cannot directly enter circulatory system but indirectly through respiratory system.

26. (d) : Higher amounts of DDT disturb calcium metabolism of birds resulting in thinning of egg shells and their premature breaking that kills the embryos. Thus many of the eggs laid by birds did not hatch.

27. (b) : Ozone present in upper atmosphere forms a distinct layer that is known as ozone layer. Ozone layer is necessary for the survival of life on earth as it blocks harmful UV rays of sun from reaching earth's surface.

28. (a) : Biochemical oxygen demand (BOD) is the amount of oxygen taken up by microorganisms that decompose organic waste matter in water. It is therefore used as a measure of the amount of certain types of organic pollutant in water.

29. (b) : *Refer to answer 9.*

30. (d) : Nitrous oxide is commonly known as laughing gas or sweet air. It is a chemical compound with formula N_2O. It is also a major greenhouse gas and air pollutant along with CO_2 with tremendous global warming potential. When compared to CO_2, N_2O has 310 times the ability to trap heat in the atmosphere. N_2O is produced naturally in the soil during the microbial processes of nitrification and denitrification. Carbon dioxide from coal-fired power stations and car exhausts, is the main greenhouse gas.

31. (c) **32. (d)**

33. (c) : Bad ozone is formed in the lower atmosphere (troposphere) that harms plants and animals. Good ozone is found in the upper part of the atmosphere called the stratosphere and it acts as a shield absorbing ultraviolet radiation from the sun. UV rays are highly injurious to living organisms since DNA and proteins of living organisms preferentially absorb UV rays and its high energy breaks the chemical bonds within these molecules.

34. (d) : Exhaustible resources are those natural resources which are likely to be exhausted or diminished as a result of their continuous use. These are further of two types – renewable and non-renewable. Forest is a renewable exhaustible resource which can be again generated or produced artificially or naturally. Coal, petroleum and minerals are non-renewable exhaustible natural resources which cannot be again produced or generated.

35. (b) : Unwanted sound is called noise and it is measured in terms of decibels (dB). Generally sound above 80 dB is noise.

36. (a) : Due to heavy industrialisation and transportation (modernisation), CO_2 concentration is increasing day by day in the atmosphere. CO_2 has capacity of absorbing heat radiations and thus increases temperature. This increase in global temperature (global warming) is mainly due to CO_2 concentration and is called 'greenhouse effect'. Besides CO_2, other important gases associated with greenhouse effect are CH_4 (methane), oxides of nitrogen (NO_x), CFCs (chlorofluorocarbons) and O_3 (ozone) and these are called 'greenhouse gases'.

Relative contribution of these gases to global warming are : CO_2 (50%), CFCs (20%), CH_4 (16%), O_3 (8%), nitrous oxide (6%).

37. (c) : When sewage mixes with water body, microorganisms present in it biodegrade organic matter of sewage using oxygen. This results into a sharp

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

decline in dissolved oxygen which may cause mortality of aquatic creatures. Gradually, however, dissolved oxygen increases in concentration with the completion of biodegradation of sewage matter.

38. (a) : The Montreal protocol was signed in Montreal, Canada, by over 150 countries at a convention in 1987 to cut use of CFCs (chlorofluorocarbons). The aim of the protocol was to protect the ozone layer in the stratosphere by decreasing and eventually eliminating the use of ozone depleting substances like CFCs. It is regarded as one of the most successful international treaties in modern history.

39. (c) : *Refer to answer 28.*

40. (a)

41. (d) : *Refer to answer 38.*

42. (d) : Biomagnification is caused by non-degradable pollutant like DDT. Heavy metals and persistent pesticides (*e.g.*, organochlorine or chlorinated hydrocarbons like DDT) pass into food chain and increase in amount per unit weight of organisms with the rise in trophic level because they are lipo soluble.

43. (a)

44. (b) : A lake near a village suffered heavy mortality of fishes within few days due to accumulation of biodegradable pollutant like DDT sprayed by an aircraft or by several industrial effluents (such as acid, alkalies, phenol etc) or fertilizers like urea and phosphate etc in the water body. These pollutants either lead to biomagnification or eutrophication of water body. Excess of pesticides cause immediate and mass scale death of aquatic animals. Eutrophication leads to decreased oxygen level in water and hence kills aquatic animals.

45. (c) : *Refer to answer 25.*

46. (c)

47. (b) : The BOD of the given pollutants in ascending order is PE < S < SE < DE.

48. (b) : SPM is suspended particulate matter which is less than 10 mm remaining in air for more than one day to several weeks. It includes aerosol, dust, mist, smoke, soot etc.

49. (d) : *Refer to answer 9.*

50. (b) : Some plants and animals act as the measure of existing environmental conditions because of their response to these conditions. The organisms are called bioindicators. From the given options, stone flies do not act as bioindicator of water pollution.

51. (a) : According to central pollution control board, limit of BOD prescribed is < 30 ppm (mg/d) for 3 days at 27° C.

52. (d) : Photochemical smog is grey or yellow brown opaque smog having oxidising environment with little smoke. Photochemical smog contains secondary pollutants or photochemical oxidants. It was first reported over Los Angeles in 1940s. Photochemical smog is formed at high temperature over cities and towns due to still air, emission of nitrogen oxides and carbohydrates from automobile exhausts and solar energy. Nitrogen dioxides splits into nitric oxide and nascent oxygen. Nascent oxygen combines with molecular oxygen to form ozone. Ozone reacts with carbohydrates to form aldehydes and ketones. Nitrogen oxides, oxygen and ketones combine to form peroxy-acyl-nitrates (PAN). In areas with intense solar radiations, photoelectrical smog forms brown air.

53. (c) : *Refer to answer 38.*

54. (c) : Irrigation induced salinity can arise as a result of the use of any irrigation water, irrigation of saline water etc. combined with inadequate leaching. Since all surface and ground water contains salts to varying degrees, irrigation is often seen as the primary culprit for bringing salts into the field.

55. (d) : In a sewage efficient treatment plan (CETP) during the tertiary treatment the decreased water is chlorinated with chlorine or perchlorate salts, ozonised or irradiate with UV to kill pathogens. Phenyl is not used for disinfection of drinking water.

56. (b) : *Refer to answer 20.*

57. (c) : *Refer to answer 36.*

58. (d) : Bhopal gas tragedy occurred on 3 December 1984 in a Union Carbide pesticide plant. When water and MIC mixed, an exothermic chemical reaction started, which produced a lot of heat. As a result, the safety valve of the tank burst because of the increase in pressure. This burst was so violent that even the concrete around the tank also broke. The high moisture content (aerosol) in the discharge while evaporating gave rise to a heavy gas which rapidly sank to the ground. It caused several ailments like partial or complete blindness, disorders like, gastrointestinal disorders in many surviving people.

59. (b) : Lead (Pb) is released by combustion of petrol as tetra ethyl lead is used as antiknock in petrol. This lead is very harmful and causes plumbism or lead poisoning, which disturbs nervous system, liver, kidneys in adults and also causes brain damage in children. About 150 to 400 mg of lead is stored in the body of an average adult and blood levels average about 25 mg/100 ml. Increase to 70 mg/100 ml of blood is generally associated with clinical symptoms. Hence a level of 30 mg/100 ml should be considered alarming.

60. (c) : *E.coli* is the most common indicator of water pollution. It naturally occurs in the intestines of human beings and animals. They are commonly found in sewage and if *E.coli* are detected in water then it indicates faecal contamination. So if *E.coli* are detected in drinking water it indicates a serious health risk and that water should not be used for drinking.

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

61. (c) : Fluorides are given out during refining of materials. Fluorides cause fluorosis. It is a disease which is defined by mottling of teeth, abnormal bones that are liable to fracture because fluorine replaces Ca^{2+} and makes the bones brittle. Fluoride pollution is a serious problem in many districts of Rajasthan, where excess of fluoride in water adversely affects the health of man. Many villagers have aged prematurely or became hunch backs.

62. (b) : *Refer to answer 60.*

63. (c) : Stone fly (Plecoptera Order) larva requires well aerated, non-polluted water. It is absent in polluted water.

64. (c) **65. (b)** **66. (b)**

67. (b) : Pollution is any change in physical, chemical or biological characteristics of the environment that has the potentiality to harm human life, life of other desirable species, natural resources, cultural assests and industries. Another type of pollution is increase in CO_2 and other green house gases and a decrease in stratospheric ozone on global scale which would be affecting air, water and land resources, biological diversity and human health. Thus pollution results in damage to biological effectiveness.

68. (d) : Mercury is changed to water soluble dimethyl mercury which undergoes biomagnification. Eating poisoned animals causes deformity known as Minamata disease (first reported in 1952 due to eating of fish captured from Hg-contaminated Minimata Bay of Japan) which is characterised by diarrhoea, haemolysis, impairment of various senses, numbness of lips, tounge, limbs, deafness, blurring of vision, mental dearrangement, meningitis and death.

69. (c) : *Refer to answer 4.*

70. (a) : *Refer to answer 4.*

71. (c) : *Refer to answer 61.*

72. (b) : *Refer to answer 58.*

73. (a) : Secondary pollutant is formed from a primary one through change or reaction. The secondary pollutant are more toxic than primary ones. Nitrogen oxides and hydrocarbons react photochemically to produce peroxyacyl nitrates and ozone. Peroxyacyl nitrates are produced due to photochemical reactions between nitrogen oxides and unsaturated hydrocarbons.

$$\text{Nitrogen oxides} + \text{Hydrocarbons} \xrightarrow{\text{UV in sunlight}} \text{Peroxyacetyl nitrate (PAN)} + \text{Ozone } (O_3)$$

74. (c) : *Refer to answer 12.*

75. (d) : *Refer to answer 11.*

76. (b) : Depletion of ozone is due to action of sunlight over pollutants which release chemicals (*e.g.*, chlorine) that destroy ozone. Ozone depleting substances react with ozone present in the stratosphere and destroy the same. The major ODS are chloroflourocarbons (14% of total depletion), nitrogen oxides (3.5% of total depletion), sulphur dioxide, halon, carbon tetrachloride, methyl chloroform, chlorine, etc. Many of these are being released by jets flying in the stratosphere and rockets being fired into space. Major contributor of these gases is USA.

77. (b) : *Refer to answer 60.*

78. (d) : *Refer to answer 24.*

79. (a) : Carbon monoxide is produced due to incomplete combustion, metallurgical operations and naturally by plants as well as animals. Carbon monoxide has 200 times more affinity to haemoglobin as compared to oxygen. Carbon monoxide combines with haemoglobin of blood and forms a stable compound called carboxyhaemoglobin. At 50 ppm, CO converts 7.5% of haemoglobin into carboxy-haemoglobin within 8 hours. It impairs oxygen transport resulting in headache, decreased vision, cardiovascular malfunction and asphyxial.

80. (a) : *Refer to answer 79.*

81. (c) : *Refer to answer 60.*

82. (b) : *Refer to answer 5.*

83. (d) : Man and biosphere programme is an international biological programme of UNESCO (United Nations Educational Scientific and Cultural Organisation) which was started in 1971 but was introduced in India in 1986. MAB has studied human environment, impact of human interference and pollution on biotic and abiotic environments and conservation strategies for the present as well as future.

84. (d) : Depletion in the concentration of ozone over a restricted area as spring time decline over Antartica is called ozone hole. Ozone hole was discovered over Antartica by Faman *et al*, 1985. It is quite large (23 million square km in 1992 and 28.3 million square km in 2000). A small ozone hole also occurs over North Pole. It was discovered in 1990. Thinning of ozone shield has also been reported elsewhere(*e.g.*, 8% between 30º – 50º N).

85. (b) : Phosphate is an important compound of fertilizer which are added to crop fields and then are passed down to water bodies during rains through run off. It is also present in sewage that is dumped into the water body. This nutrient bring about dense growth of water plants especially the algae and cause algal bloom. This algal bloom leads to oxygen depletion in water bodies and causes death of aquatic life.

86. (c) : *Refer to answer 36.*

87. (c)

88. (a)

89. (a) : Deforestation will affect in different ways. Due to destruction of natural habitat, many species will

https://t.me/Estore33_com

https://t.me/Estore33_com http://www.estore33.com https:/t.me/TheHindu_Zone_Official

get extinct. Man will be deprived of the benefits of trees and wild animals. Soil erosion will be increased. Floods and drought will become more frequent. There will also be a change in climate. Deforestation will also decrease the atmospheric humidity which will affect rainfall and makes the air hot. Economy of the forest dwelling people will be deteriorated and wild life will be adversely affected.

90. (c)

91. (d) : The Taj Mahal is built with white marble and is threatened by environmental pollution, especially due to sulphur dioxide. Sulphur dioxide is produced during combustion of fossil fuels, refining of petroleum and smelting of sulphur containing ores. Threat to Taj Mahal from Mathura refinery is due to pollutant gases composing SO_2, H_2S and nitrogen oxides. They would convert $CaCO_3$ (marble) into calcium sulphate and calcium nitrate.

92. (d)

93. (a) : *Refer to answer 79.*

94. (b) : Strontium-90 is a long lived radioactive isotope. It tends to cycle like calcium.It causes bone cancer, blood and tissue degeneration.

95. (a) : *Refer to answer 61.*

96. (a) : Desertification means a process of spread of desert that occurs due to degradation of environment, cutting of trees, soil erosion etc. It can be natural or man made. The main causes for desertification are overcultivation of poor soils, over grazing by animals, excessive cutting of fuelwood and inappropriate irrigation practises resulting in salinization. Among them overgrazing is the most important factor as it causes maximum effect.

97. (a) : *Refer to answer 4.*

98. (a) : *Refer to answer 36.*

99. (d) : Noise level are expressed on a logarithmic scale of decibels. The baseline noise levels in the community vary around 40 dB. International standards prescribe a maximum of 50 dB for day and 40 dB for night time in a residential area. Noise over 115 dB is regarded as highly avoidable. The World Health Organization (WHO) recommends an industrial noise limit of 75 dB.

100. (d) : *Refer to answer 68.*

101. (d) : Ozone is generated in the lower atmosphere during the formation of photochemical smog when nitrogen dioxide splits to produce reactive oxygen atoms which combine with molecular oxygen. Oxygen molecules split under ultraviolet radiations to produce oxygen atoms which combine with molecular oxygen to form ozone. It is this gas which forms the protective ozone umbrella in the stratosphere and shield life from biocidal high energy radiations. It can also damage DNA molecules and cause carcinogenesis.

102. (b)

103. (c) : *Refer to answer 59.*

104. (c)

105. (d) : Metals and minerals are both renewable and non-renewable resources. Non renewable due to very long recycling in case of metals and some minerals but renewable due to shorter recycling in case of biogenetic nutrients.

106. (b) : The common gaseous pollutants are oxides of carbon (CO and CO_2), oxides of nitrogen (NO and NO_2) oxides of sulphur (SO_2 and SO_3), all these together contribute 90% of the global air pollution. Out of all these CO_2 is not a pollutant normally, the green plants, by photosynthesis balance the CO_2 and O_2 ratio in the air to a great extent, whereas others like carbon monoxide, NO_2 etc. are poisonous gases.

107. (b) : Domestic waste constitutes biodegradable pollution. These are also called non-conservative pollutants. These are decomposed chemically or by activity of microorganisms into harmless products and are recycled back into the atmosphere.

108. (d)

109. (c) : The mean global temperature rise by 2°-6°C and the concentration of carbon dioxide increases in the troposphere upto 600 ppm. Hence, the surface of the earth becomes warm which causes global warming. The phenomenon is similar to that of green house in which the glass enclosed atmosphere gets heated up due to its insulation from the rest of the environment. Hence, global warming is also known as green house effect and the gases responsible for it are called green house gases *e.g.*, CH_4, CO_2 etc.

110. (d) : Aerosols are chlorofluoro-hydrocarbon compounds released into air with force in the form of vapour. Main source of aerosols is the emission of jet planes, where fluorocarbon are used. These chlorofluorocarbons depletes the ozone layer in the higher atmosphere. These CFC's have produced a hole in the ozone layer.

111. (a) : *Refer to answer 58.*

112. (d) : *Refer to answer 89.*

113. (d) : Soil conservation is to conserve fertile soil from the losses like heavy rainfall, drainage, high wind, flood, drought etc. Soil is the top cover of the Earth in which plants can grow. The rotation of crops, contour ploughing and use of proper fertilizers help in maintaining the fertility of soil. Plantation of trees, controlled grazing of grasslands, reforestation, prevention of forests fires will protect the erosion of top soil. The regulation of water resources to prevent flood will help not only in soil conservation but also supply an adequate water supply in the period of drought.

114. (a) : *Refer to answer 8.*

https://t.me/Estore33_com