ECOSYSTEM

1. A functional unit of nature, where living organisms interact among themselves and also with the surrounding physical environment is
   (A) biosphere
   (B) ecosystem
   (C) environment
   (D) None of these

2. Abiotic components refer to
   (A) non-livingphysico-chemical factors
   (B) livingphysico-chemical factors
   (C) gases produced by industries
   (D) living organisms

3. Biotic components refer to
   (A) gases produced by industries
   (B) nutrient-deficient soil
   (C) living organisms
   (D) fossil fuels

4. Stratification is more pronounced in
   (A) tropical rainforest
   (B) deciduous forest
   (C) temperate forest
   (D) tropical savannah

5. Primary production is
   (A) expressed in terms of weight(gm-2) or energy(kcal m-2)
   (B) the amount of biomass or organic matter produced per unit area over a time period by plants during photosynthesis
   (C) Both(A) and (B)
   (D) None of the above

6. Primary productivity depends upon
   (A) availability of nutrients
   (B) photosynthetic capacity of plants
   (C) Both(A) and (B)
   (D) None of the above

7. Which of the following is/are example(s) of detritivore?
   (A) Millipedes
   (B) Earthworm
   (C) Fiddler crabs
   (D) All of these

8. The organisms which physically and chemically break the complex dead organic remains are known as
   (A) scavangers
   (B) decomposers
   (C) Both(A) and (B)
   (D) parasites

9. The process by which water soluble inorganic nutrients go down into the soil horizon and get precipitated as unavailable salts is called as
   (A) fragmentation
   (B) leaching
   (C) catabolism
   (D) mineralisation

10. The process of mineralisation by microorganisms helps in the release of
   (A) inorganic nutrients from humus
   (B) both organic and inorganic nutrients from detritus
   (C) organic nutrients from humus
   (D) inorganic nutrients from detritus and the formation of humus

11. PAR stands for
   (A) Photosynthesis Active Reaction
   (B) Photosynthesis Absorb Radiation
   (C) Photosynthetically Active Radiation
   (D) Photosynthetically Active Reaction

12. The green plants in an ecosystem which can trap solar energy to convert it into chemical bond energy are called
   (A) producer
   (B) decomposer
   (C) consumer
   (D) predators

13. Ecosystems need a constant supply of energy

(A) to counteract increasing disorderliness
(B) to counteract decreasing disorderliness
(C) tosynthesise molecules
(D) Both(A) and (C)

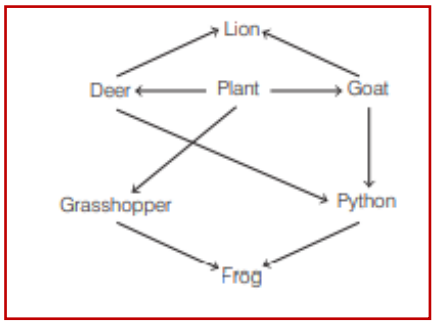
14. Fill up the blanks.
I. Herbivores are also called …A…
II. Secondary consumers are eaten by larger …B… .
III. …C… consumer eat the secondary consumers.
IV. A network of many food chains is called a …D… .
Choose the correct option for A, B, C and D.
(A) A–secondary consumers, B–top predator, C–Quaternary, D–food web
(B) A–primary consumer, B–predators, C–Tertiary consumer, D–food web
(C) A–tertiary consumers, B–natural enemies, C–Primary consumer, D–food web
(D) A–quaternary consumers, B–alligator, C–Top consumer, D–food web

15. Which of the following two organisms are producers?
(A) Plants and phytoplanktons
(B) Plants and consumers
(C) Zooplanktons and phytoplanktons
(D) Phytoplanktons and chlorophylls

16. Food chain refers to
(A) number of humans forming a chain for food
(B) animals gathered near a source of food
(C) transfer of energy from producers to consumers
(D) None of the above

17. In what order do a hawk, grass and rabbit form a food chain in a meadow?
(A) Hawk → grass → rabbit
(B) Grass→hawk→rabbit
(C) Rabbit→grass → hawk
(D) Grass → rabbit → hawk

18. How many food chains are there in the food web shown below?



(A) 2
(B) 3
(C) 5
(D) 7

19. …… begins with dead organic matter and saprophytes make the first trophic level. Most appropriate word for filling blank space is
(A) Detritus food chain
(B) Grazing food chain
(C) Complex food chain
(D) Normal food chain

20. In an ecosystem, organism occupies a specific place in a food chain is called
(A) Branching lines
(B) Progressive straight line
(C) Trophic level
(D) Standing crop

21. The organisms, which attack dead animals are
(A) first link of the food chain and are known as primary producers
(B) second link the food chain and are herbivorous
(C) third link of the food chain and are tertiary consumers
(D) present at the starting of food chain and are detritivores

22. The 10% law for energy transfer in food chains was given by
(A) Stanley
(B) Tansley
(C) Lindemann
(D) Weismann

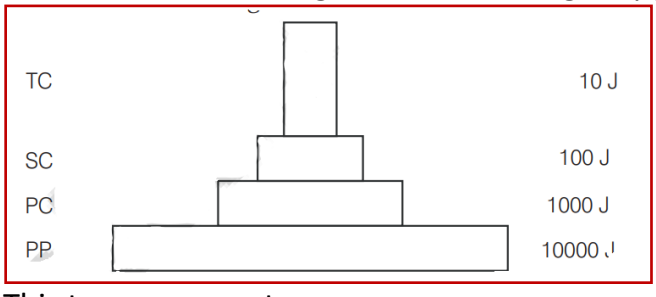
23. The relation between producers and consumers in an ecosystem can be graphically represented in the form of a pyramid called
    (A) ecological pyramid
    (B) trophic level
    (C) Pi chart
    (D) pyramid of biomass

24. To show how many organisms are present at each level of a food chain, ecologists use a model called
    (A) an energy flow pyramid
    (B) pyramid of numbers
    (C) pyramid of energy
    (D) food chain/food web pyramid

25. Peacock eats a snake and snake eats frog and frog eats insects, while insects eat green plants. The position of peacock is
    (A) primary producer
    (B) secondary producer
    (C) decomposer
    (D) at the apex of food ecological pyramid

26. An inverted pyramid of …A… may occasionally be observed in …B… communities.
    (A) A–energy, B–grassland
    (B) A–energy, B–forest
    (C) A–biomass, B–marine
    (D) A–biomass, B–grassland

27. Given below is the diagram of the ecological pyramids.



This type represents
    (A) pyramid of number in a grassland
    (B) pyramid of biomass in a lake
    (C) pyramid of biomass in a land
    (D) pyramid of energy

28. Ecological succession is a sequence of series leading from baren land to the …… .
    (A) seral community
    (B) climax community
    (C) pioneer species
    (D) benthos

29. The nature of climax community in ecological succession is most dependent upon
    (A) climate
    (B) water
    (C) soil fertility
    (D) None of these

30. In secondary succession, the species that invade depend on
    (A) the condition of soil
    (B) availability of water
    (C) seeds or other propagules
    (D) All of the above

31. The total amount of nutrients like carbon, phosphorus, calcium, etc., present in soil at any time is called
    (A) standing crop
    (B) standing state
    (C) nutrient crops
    (D) sediment

32. Which of the following pair is a gaseous type of biogeochemical cycle?
    (A) Nitrogen and carbon cycle
    (B) Phosphorus and carbon cycle
    (C) Nitrogen and sulphur cycle
    (D) Sulphur and carbon cycle

33. In a …… cycle, the elements returns and is withdrawn from the atmosphere. Most appropriate word to fill the blank is
    (A) gaseous
    (B) sedimentary
    (C) Both(A) and (B)
    (D) None of these

34. In sedimentary nutrient cycling,

(A) the reservoir pool is lithosphere
(B) the sedimentary cycles are less perfect
(C) thewithdrawl from reservoir pool is large
(D) All of the above

35. What is the reason behind deficit rising in nutrient reservoir?
(A) Due to imbalance in the rate of influx
(B) Due to imbalance in the rate of efflux
(C) Due to imbalance in the rate of influx and efflux
(D) None of the above

36. What is the medium by which carbon cycle takes place?
(A) Through atmosphere
(B) Through ocean
(C) Through living and dead organisms
(D) All of the above

37. Which of the following factor is contributing to an overload of the carbon cycle?
(A) Photosynthesis
(B) Cellular respiration
(C) Deforestation
(D) Afforestation

38. Phosphorus is needed for the production of
(A) DNA and RNA
(B) cellular membranes
(C) bones and teeth
(D) All of these

ANSWERS

1	(b)	2	(A)	3	(c)	4	(A)	5	(c)
6	(c)	7	(D)	8	(B)	9	(B)	10	(A)
11	(c)	12	(A)	13	(D)	14	(B)	15	(A)
16	(c)	17	(D)	18	(c)	19	(A)	20	(c)
21	(D)	22	(c)	23	(A)	24	(B)	25	(D)
26	(c)	27	(D)	28	(B)	29	(A)	30	(D)
31	(B)	32	(A)	33	(A)	34	(D)	35	(c)
36	(D)	37	(c)	38	(d)				

HINTS & EXPLANATIONS

2.(A) Abiotic components refer to the non-living physico-chemical factors of the environment. These components not only affect the distribution and structure of organisms but also their behaviour and inter-relationships. Abiotic factors also include inorganic substances, organic compounds, climatic factors and edaphic factors.

3.(C) The biotic components of an ecosystem refer to all living organisms like plants, animals and microbes, etc.

4.(A) As stratification pattern change with latitude, it becomes more pronounced in tropical rainforest than temperate forests, deciduous forest or a savannah. This is probably due to the higher complexity of the vertical structure of tropical rainforests.

6.(C) Primary productivity depends upon availability of nutrients and photosynthetic capability of plants. Other factors which affect primary productivity are temperature, water, moisture, etc.

8.(B) Decomposers(saprotrophs) are the organisms that breakdown degrading dead organic matter or detritus into inorganic substances and in doing, so they carry out the natural process of decomposition.

11.(C) PAR stands for Photosynthetically Active Radiation. The sun is the only source of energy for all ecosystems on earth. Out of the total incident solar radiation, only 50% of it is Photosynthetically Active Radiation(PAR). Plants capture only 2-10% of the PAR and this small amount of energy sustains the entire living world.

13.(D) Ecosystems also follow second law of thermodynamics. They need a constant supply of energy to synthesise the molecules they require, to counteract the universal tendency toward increasing disorderliness.

15.(A) Plants and phytoplanktons are producers. In a terrestrial ecosystem, plant grows by manufacturing food from carbon dioxide of air, water and minerals of soil with the help of chlorophyll and sunlight. Plants, thus act as the producer on land. In a pond, phytoplankton(rooted and floating plants) synthesise food materials from dissolved nutrients by photosynthesis. They, thus act as the producers.

16.(C) The transfer of energy from producers to top consumers through a series of organisms is called food chain. It is always straight and proceed in a progressive straight line. In a food chain, the maximum population is of producers.

18.(C) In the given food web, there are following five food chains

- Plant → Deer → Python
- Plant → Grasshopper → Frog
- Plant → Goat → Lion

- Plant → Goat → Python
- Plant → Deer → Lion

20.(C) In an ecosystem, organism occupies a specific place in food chain is called trophic level. Every organism occupies a place in the natural surrounding or in a community according to their feeding relationship with other organisms.

21.(D) The organisms, which attack dead animals are present at the starting of food chain, e.g. detritus food chain and are known as decomposers(detritivores).

22.(C) The 10% law for enegy transfer in food chain was given by Lindemann in 1942. At each step of food chain when food enegry is transferred from one trophic level to the next higher trophic level only about 10% of energy is passed on to the next level.

25.(D) Green plants → Insects → Frog → Snakes → Peacock

From the given food chain, it is clear that the peacock stands at the apex of this food ecological pyramid.

28.(B) Ecological succession is a sequence of series leading from baren land to the climax. In ecological terms, the developmental stages of a community are known as seral stages and the final stage as the climax community. The change is orderly and sequential. It is a long term process.

31.(B) The total amount of nutrients like carbon, phosphorus, calcium, etc., present in soil at any given time is called standing state. Standing state varies with the kind of ecosystem and season(time).

33.(A) In a gaseous cycle, the element return to and is withdrawn from the atmosphere as a gas. The four most abundant elements in the living systems –H, C, O, N have predominantly gaseous cycles.

37.(C) Anthropogenic activities mainly deforestation is contributing a lot in disturbing the balance of carbon cycling in nature.