



## BIOLOGY

### BOOKS - PRADEEP BIOLOGY (HINGLISH)

#### ECOSYSTEM

#### Ncert Exercises

1. Plants are called as \_\_\_\_\_ because they fix carbon dioxide.



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2. In an ecosystem dominated by trees, the pyramid (of numbers) is \_\_\_\_\_ type.



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3. In aquatic ecosystems, the limiting factor for the productivity is \_\_\_\_\_.

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4. Common detritivores in our ecosystem are \_\_\_\_\_.

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5. The major reservoir of carbon on earth is \_\_\_\_\_

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6. Which one of the following has the largest population in a food chain ?

- A. Producers
- B. Primary consumers
- C. Secondary consumers
- D. Decomposers.

**Answer: D**



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7. Second trophic level in a lake is

- A. Phytoplankton
- B. Zooplankton

C. Benthos

D. Fishes

**Answer: B**



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**8. Secondary producers are:-**

A. Herbivores

B. Producers

C. Carnivores

D. None of these

**Answer: D**



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9. What is the percentage of photosynthetically active radiations ?

A. 1

B. 0.5

C. 1-5%

D. 2-10%

**Answer: B**



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10. Distinguish between

(a) Grazing food chain and detritus food chain

(b) Production and decomposition

(c) Upright and inverted pyramid

(d) Food chain and Food web

(e) Litter and detritus

(f) Primary and secondary productivity .



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**11.** Describe the components of an ecosystem.



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**12.** Define ecological pyramids and describe with examples, pyramids of number and biomass.



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**13.** What is primary productivity? Give brief description of factors that affect primary productivity



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**14.** Define decomposition and describe the processes and products of decomposition.



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**15.** Give an account of energy flow in an ecosystem.



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16. Write important features of a sedimentary cycle in an ecosystem.



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17. Outline salient features of carbon cycling in an ecosystem



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## Very Short Answer

1. Which of the following is an abiotic components of the ecosystem?

A. Bacteria



B. Humus

C. Plants

D. Fungi

**Answer: B**



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2. Which of the following process helps in nutrient conservation

A. Mineralisation

B. Immobilisation

C. Leaching

D. Nitrification

**Answer: B**

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3. What fraction of assimilated energy is used in respiration by the herbivore ?

- A. 20 per cent
- B. 30 per cent
- C. 40 per cent
- D. 60 per cent

**Answer: B**

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4. Name the three major biotic components of an ecosystem.

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5. What are the two kinds of decomposers ?



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6. Which are more numerous, secondary consumers or tertiary consumers ?



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7. What is a photoperiod ?



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8. Name three nocturnal animals.



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9. What are epiphytes ? Cite an example.



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10. Define the term biomass.



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11. What are ecotones ?



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12. Name the two resident birds of Tundra biome.



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**13.** What is a Savannah ?



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**14.** Upto what depth the producers grow in the sea?



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**15.** Mention one eutrophic lake found in India.



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**16.** Give an alternative term for ecological pyramids.



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17. Name two types of producers.



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18. What are day neutral plants ?



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19. What are crepuscular animals ? Cite an example .



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20. Define anemophily .



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**21.** What are detrivores ?



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**22.** Define the term homeothermy.



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**23.** What is the ultimate source of energy for organisms ?



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24. Which of the following represents the sedimentary type of nutrient cycle?

- A. Nitrogen
- B. Carbon
- C. Phosphorus
- D. Oxygen

**Answer: B**



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25. Which of the following is a free living nitrogen fixing bacteria ?

- A. Azotobacter



B. Nitrosomonas

C. Rhizobium

D. Pseudomonas

**Answer: A**



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**26.** Suggest an alternative term for biosphere.



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**27.** Which is used again and again in the biosphere, matter or energy ?



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**28.** Name two types of biogeochemical cycles.

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**29.** What are the main sources of carbon ?

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**30.** Which biogeochemical cycle is fully balanced ?

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**31.** Biological nitrogen fixation provides more nitrogen than nonbiological nitrogen fixation. Is it so ?

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**32.** Name a denitrifying bacterium.



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**33.** Who introduced the concept of biosphere ?



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**34.** Is the biosphere an open system or closed system ?



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**35.** What is the life span of the ecosphere ?



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**36.** For how long the entire  $CO_2$  of the air can last with its use in photosynthesis by green plants ?

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**37.** Phosphorus cycle has no atmospheric phase. Is it true ?

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**38.** In which form can the plants take up sulphur ?

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**39.** Oxygen content of the air is not affected by human activities.

Why?



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**40.** How long a primary succession takes to complete ?



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**41.** Define succession.



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**42.** Name the first community that develops in barren area.



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43. Which of the following is a free living bacteria that can fix nitrogen in the soil.

Spirulina, Azospirillum, Sonalika

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44. Which of the following is a cyanobacterium that can fix atmospheric nitrogen ?

Azospirillum, Oscillatoria, Spirulina

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45. Name an organism found as secondary carnivore in an aquatic ecosystem.

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46. What does the base tier of the ecological pyramid represent ?

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47. Arrange the following as observed in Vertical stratification of a forest, Grass, Shrubby plants, Teak, Amaranths.

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48. Name an omnivore which occurs in both grazing food chain and the decomposer food chain.

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**49.** Justify the pitcher plant as a producer.



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**50.** Name any two organisms which can occupy more than one trophic level in an ecosystem.



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**51.** Among bryophytes, lichens and fern which one is a pioneer species in a xeric succession?



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**52.** What is common to earthworm, mushroom, soil mites and dung beetle in an ecosystem.



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**53.** Write a difference between net primary productivity and gross productivity



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**54.** Write the equation that helps in deriving the net primary productivity of an ecosystem.



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**55.** Why are green algae not likely to be found in the deepest strata or the ocean ?



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**56.** What is a detritus food chain made up of? How do they meet their energy and nutritional requirements?



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**57.** How is 'stratification' represented in a forest ecosystem?



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**58.** Define the term standing crop.

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## Short Answer Question

1. What is the use of perspiration and panting to mammals ?

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2. What is blubber ?

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3. How do the terms hibernation and aestivation differ ?

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4. How plants are cooled In hot summer ?



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5. What is a photoperiod ? How do plants detect it.



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6. Give the response of plants to short photoperiods.



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7. Mention the use of hygroscopic roots In plants.



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8. Give the advantage of shivering.



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9. Name the edaphic factors of an ecosystem.



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10. Name the three latitudinal zones of the earth.



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11. Mention the three strata (zones) of a lake.



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**12.** Give the 3 types of pyramids of numbers.



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**13.** In which biome the fossils of mammoths have been found ?

Give its limits also.



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**14.** What are coral reefs ?



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**15.** Give the total vertical extent of biosphere in kilometres.



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**16.** What materials the various subdivisions of the biosphere supply to the organisms ?

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**17.** How do the gaseous and sedimentary biogeocycles differ ?

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**18.** Whatt is greenhouse effect?

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**19.** How is the greenhouse effect produced ?



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20. What is nonbiological nitrogen fixation ?

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21. In what way are the short-wavelength radiations harmful ?

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22. What is denitrification?

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23. Name the fossil fuels and greenhouse gases.



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24. Which regions of the biosphere lack life ?

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25. When did oxygen started collecting in the atmosphere ?

What is its percentage in the air at present ?

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26. List the processes involved in nitrogen cycle.

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**27.** Industries cause rise as well as fall in the temperature of biosphere. Explain.



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**28.** Differentiate between a detritivore and a decomposer giving an example of each.



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**29.** State the difference between the first trophic levels of detritus food chain and grazing food chain.



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**30.** Name the pioneer and the climax species in a water body. Mention the changes observed in the biomass and the biodiversity of the successive seral communities developing in the water body.

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**31.** Match the items given in column I with appropriate items (one or more) given in column II.

- |                             |               |
|-----------------------------|---------------|
| (i) Natural ecosystem       | (a) Producers |
| (ii) Decomposers            | (b) Consumers |
| (iii) Primary productivity  | (c) Forest    |
| (iv) secondary productivity | (d) Lake      |
| (v) Desert                  | (e) Bacteria  |
|                             | (f) Biome     |
|                             | (g) Fungi     |

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**32.** Name the type of food chains responsible for the flow of larger fraction of energy in an aquatic and a terrestrial ecosystem respectively. Mention one difference between the two food chains.

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**33.** The number of trophic levels in an ecosystem are limited. Comment.

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**34.** What is net primary productivity ?

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**35.** Distinguish between upright and inverted pyramid.

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**36.** Why the pyramid of energy is always upright ? Explain.

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**37.** Differentiate between two different types of pyramids of biomass with the help of one example of each.

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**38.** Construct an age pyramid which reflects a stable growth status of human population.

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39. How are productivity, gross productivity, net primary productivity and secondary productivity interrelated ?

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40. Define an ecosystem. Give a few instances of an ecosystem.

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41. All the solar energy trapped by green plants ultimately returns to the environment'. Comment on this statement.

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42. Explain the term pyramid of biomass.



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43. Explain the 10% law.



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44. Why is the concept of a food web more real ecologically than the concept of a simple food chain?



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45. What are the basic differences between community, ecosystem and biome ?



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46. Explain the term 'stratification' in relation to a tropical rain forest.

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47. Explain the concept of pyramids of numbers.

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48. Give an account of ecological succession.

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**49.** Describe the various kinds of food chains in a food web.



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**50.** What are biogeochemical cycles ? Mention their two kinds, giving instances of each.



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**51.** Define the terms : nitrate assimilation, ammonification, nitrification and denitrification



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**52.** What is biosphere? What are the main subdivisions of the biosphere?



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**53.** Why is the term 'cycle' used for the movement of matter but 'flow' for energy ?



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**54.** What is net primary productivity ?



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**55.** List the bacteria that bring about the various processes involved in nitrogen cycle.



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**56.** How is the flow of energy in an ecosystem linked to the flow of nutrients ? How do energy and nutrient flows differ ?



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**57.** Differentiate between primary and secondary succession. Provide one example of each.



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**58.** Write note on ecosystem services.



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**59.** Construct an ideal pyramid of energy when 1,000,000 joules of sunlight is available. Label all its trophic levels.



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**60.** Construct a pyramid of biomass starting with phytoplankton. Label trophic levels. Is the pyramid upright or inverted? Why?



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**61.** What could be the reason for the faster rate of decomposition in the tropics?



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**62.** Flow of energy through various trophic levels in an ecosystem is unidirectional and non-cyclic. Explain.



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**63.** Apart from plants and animals, microbes form a permanent biotic component in an ecosystem. While plants have been referred to as autotrophs and animals as heterotrophs. What are microbes referred to as? How do the microbes fulfill their energy requirements?



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**64. i)** What is primary productivity? Why does it vary in different types of ecosystem?

ii) State the relation between gross and net primary productivity.

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**65.** Differentiate between primary and secondary succession.

Provide one example of each.

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**66.** Describe the relationship between productivity, gross primary productivity and net productivity.

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## Long Answer Question

1. Give an account of the factors affecting the rate of decomposition.

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2. What is primary productivity ? Give the range of primary productivity in different ecosystems of the world

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3. What is Ecological efficiency ? Explain its significance ?

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4. Briefly describe the tropical forest biomes.



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5. Give an account of energy flow in an ecosystem.



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6. Define decomposition and describe the processes and products of decomposition.



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7. What is a grassland ? How does it differ from savannah ?



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8. Give the major characteristics of the desert.

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9. Distinguish between the following : (a) Grazing food chain and detritus food chain. (b) Abiotic and biotic components. (c) Net primary productivity and gross primary productivity.

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10. Distinguish between Food chain and food web.

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**11.** List the major ecosystems (biomes) of the world.



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**12.** Distinguish between autotrophs and heterotrophs. What role do they play in the energy flow of an ecosystem?



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**13.** Name the two fundamental trophic levels and describe the general make up of each.



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**14.** Explain the concept of food chain.



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**15.** Depict diagrammatically a food web in any ecosystem. How many types of food chains are there in that food web?

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**16.** Define the term 'biome' and list the factors that determine the characteristics of a biome.

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**17.** Name some man-made ecosystems. Describe one of these.

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**18.** Discuss briefly the abiotic components of an ecosystem.

 [Watch Video Solution](#)

**19.** List the various terrestrial biomes. Describe any one of them.

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**20.** Name the different aquatic biomes. Describe any one of these.

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**21.** Explain the following terms-Plankton, Nekton, Benthos, Continental shelf, Abyssal zone.

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22. Write a note on coral reefs.



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23. Distinguish between : Gaseous and sedimentary types of nutrient cycling.



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24. How is the biosphere maintained ?



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25. Explain the oxygen cycle in nature.



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**26.** What is meant by the term 'cycles of matter' ? Explain the carbon or nitrogen cycle.



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**27.** What is meant by a sedimentary cycle ? Depict diagrammatically the phosphorus or sulphur cycle.



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**28.** Add suitable words in the gaps left in the following sentences : (i) Ecosystem has 2 main components : biotic and . . . . . (ii) .... and bacteria are decomposers. (iii) Herbivores are .... .

consumers. (iv) A saprophytic food chain proceeds from .... animals to microorganisms. (v) A large distinct biotic community is called .... (vi) Actively swimming animals are called .... (vii) .... are bottom dwelling animals. (viii) The region of sea shore between low and high tide is called .... (ix) Horned lizard and cacti are found in .... biome. (x) Reindeer occurs in .... biome.



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**29.** Describe the process of decomposition of detritus under the following heads : Fragmentation, leaching, catabolism , humification and mineralization.



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**30.** What will happen to an ecosystem if

(a) All producers are removed

(b) All organisms of herbivore level are eliminated and

(c) All top carnivore population is removed



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**31.** "The energy flow in the ecosystem follows the second law of thermodynamics." Explain.



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**32.** Explain with diagrammatic representation flow of energy in an ecosystem.



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**33.** Give a detailed account of decomposition in an ecosystem.

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**34.** What is ecological succession? Describe the succession of plants in a pond.

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**35.** Describe the advantages for keeping the ecosystem healthy.

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**36.** It is often said that the pyramid of energy is always upright. On the other hand, the pyramid of biomass can be both upright and inverted." Explain with the help of example and sketches .

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**37. (a)** Taking an example of a small pond, explain how the four components of an ecosystem function as a unit.

**(b)** Name the type of food chain that exists in a pond.

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**38.** Discuss the role of healthy ecosystem services as a pre-requisite for a wide range of economic, environmental and aesthetic goods and services.

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**39.** (a) What is an ecological pyramid ? Compare the pyramids of energy , biomass and numbers.

(b) Write any two limitations of ecological pyramids.

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**40.** (a) What is a trophic level in an ecosystem ? What is 'standing crop' with reference to it?

(b) Explain the role of the 'first trophic level' in an ecosystem.

(c) How is the detritus food chain connected with the grazing food chain in a natural ecosystem ?

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41. Draw the pyramids of biomass in sea and in a forest. Explain giving reasons why are the two pyramids different ?



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## Analytical Questions With Answers

1. Under what conditions would a particular stage in the process of succession revert back to an earlier stage?



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2. State what does 'standing crop' of a trophic level represent.



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3. Why is the rate of assimilation of energy at the herbivore level called secondary productivity?

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4. What are the following terms referred to as ?

(i) Auroral animals (ii) Vesperal animals.

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5. What is the main source of nitrogen for the plants? How is nitrogen important for plants?

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6. Climax stage is achieved quickly in secondary succession as compared to primary succession. Why?



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7. "It is possible that a species may occupy more than one trophic level in the same ecosystem at the same time." Explain with the help of one example.



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8. Apart from being part of the food chain, predators play other important roles. Mention any two such roles supported by examples.



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9. Name the pioneer species on a bare rock. How do they help in establishing the next type of vegetation ?

Mention the type of climax community that will ultimately get established.



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10. What is an incomplete ecosystem? Explain with the help of suitable example.



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11. Why ecological succession will be faster in a forest devastated by fire than on a bare rock ? Also, compare

succession in case of an abandoned land after floods with that on a bare rock?

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**12.** In the pictures provided, what is the relationship between (1) and (2) and (3) and (4) with respect to trophic levels.

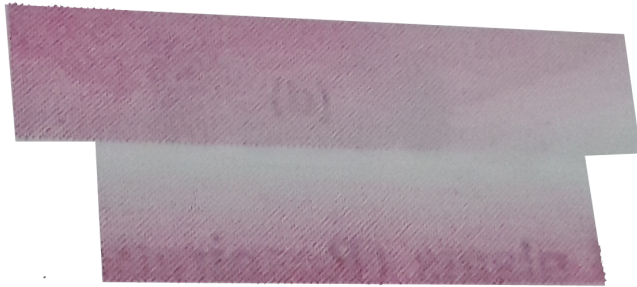


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**13.** In a pyramid of biomass drawn below, name the two crops :  
(i) one which is supported and  
(ii) the one which supports. In which ecosystem is such a



pyramid found ?



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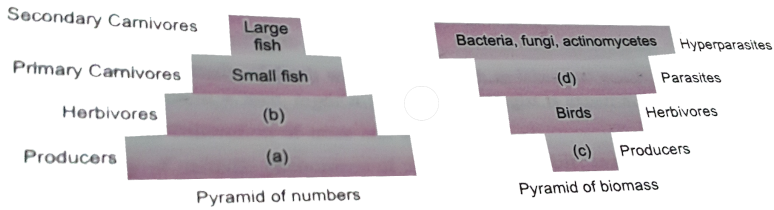
14. When is the structure and composition of a community expected to remain unchanged?



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15. Given below are two figures depicting pyramid of numbers and pyramid of biomass in aquatic ecosystem and parasitic food chain. Observe the figures carefully and fill in the blanks (a), (b),

(c) and (d).



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16. Why are reducers or decomposers considered crucial and essential components of an ecosystem ? Explain.

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17. Why are there usually 4 or 5 trophic levels in the food chain ? Explain.

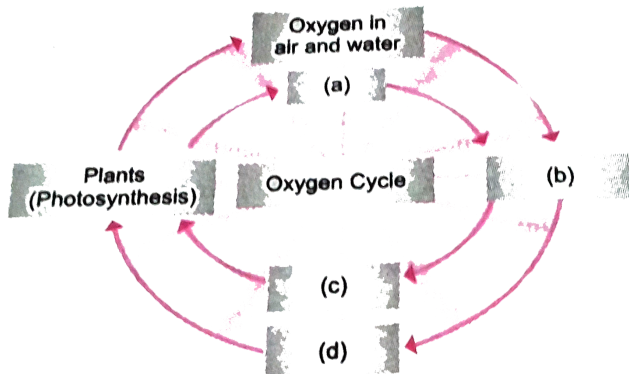
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18. (a) How would you differentiate primary productivity from secondary productivity ?

(b) Why is productivity maximum in the coral reefs?

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19. Study the diagram carefully and fill in the blanks (a), (b),(c ) and (d).



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20. Dal lake of Kashmir is a good example of a 'Eutrophic lake'.

Why? How is eutrophic lake different from oligotrophic lake?



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### Multiple Choice Question

1. Photosynthetically active radiation (PAR) represents the following range of wavelength

A. 340-450 nm

B. 400-700 nm

C. 500-600 nm

D. 450-950 nm

**Answer: B**



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2. Which one of the following pairs is mismatched.?

- A. Tundra : permafrost
- B. Savannah : acacia trees
- C. Prairie : epiphytes
- D. Coniferous forest : evergreen trees

**Answer: C**



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3. Energy transferred from one trophic level to another is

- A. 0.05

B. 0.1

C. 0.15

D. 0.2

**Answer: B**



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4. Maximum absorption of rainfall water is done by

A. tropical deciduous forest

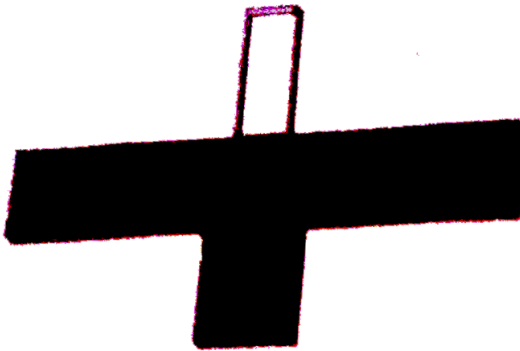
B. tropical evergreen forest

C. tropical savannah

D. scrub forest

**Answer: B**

5. Given below is one of the types of ecological pyramids. This type represents



- A. pyramid of numbers in a grassland
- B. pyramid of biomass in a fallow land
- C. pyramid of biomass in a lake
- D. energy pyramid in a spring

**Answer: C**

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6. Which one of the following is not used for construction of ecological pyramids?

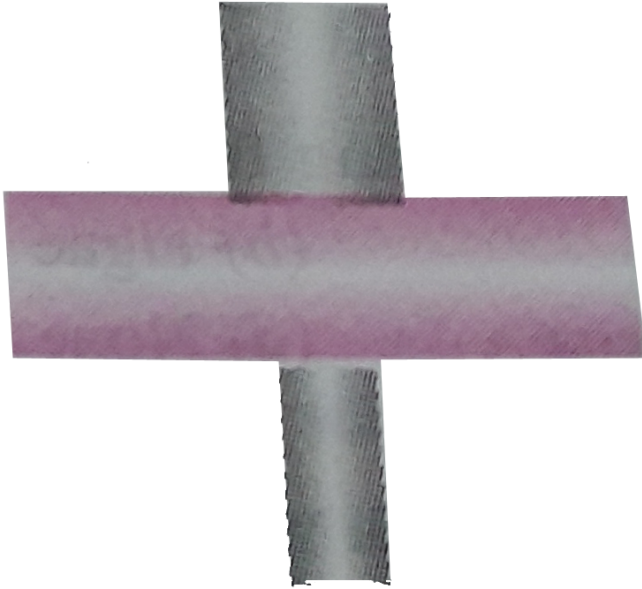
- A. fresh weight
- B. dry weight
- C. number of individuals
- D. rate of energy flow

**Answer: A**

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7. Decomposers are



A. autotrophs

B. autoheterotrophs

C. organotrophs

D. heterotrophs

**Answer: D**

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8. Lichen is the pioneer vegetation of which succession?

A. hydrosere

B. lithosere

C. psammosere

D. xerosere

**Answer: B**

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9. 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 rain forest

**Answer: D**



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**10. Ecosystems having the highest primary productivity in**

- A. pond
- B. ocean
- C. desert
- D. forest

**Answer: D**



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**11.** The term ecosystem was coined by

A. Odum

B. Haeckel

C. Tansley

D. Mobius and Forbes

**Answer: C**



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**12.** Pyramid of energy in an aquatic ecosystem is

A. always straight

B. always inverted

C. bell shaped

D. none of these

**Answer: A**



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**13.** Stability of ecosystem depends upon:

A. primary productivity

B. interchange between producers and consumers

C. number of producers

D. number of consumers

**Answer: B**



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**14.** About 70% of total global carbon is found in

A. oceans

B. forests

C. grasslands

D. agroecosystems

**Answer: A**



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15. Consider the following statements concerning food chains

- (i) Removal of 80% tigers from an area resulted in greatly increased growth of vegetation
- (ii) Removal of most of the carnivores resulted in an increased population of deers
- (iii) The length of food chains is generally limited to 3 - 4 trophic levels due to energy loss
- (iv) 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

**Answer: C**



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16. Which of the following is considered as pioneer community in xerarch?

- A. annual herb
- B. perennial herb
- C. scrub stage
- D. lichen

**Answer: D**



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17. Identify which one of the following is an example of incomplete ecosystem?



A. grassland

B. cave

C. river

D. wetland

**Answer: B**



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**18.** In a grassland ecosystem, if the number of primary producers (plants) is approximately 6 million, the number of top carbivores.

Which may be supported by them will be

A. 3

B. 30

C. 6

D. 60

**Answer: A**



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**19.** It is estimated that about 85 % of the Earth's photosynthetic activity is carried out by:

A. trees

B. savannahs

C. phytoplanktons

D. herbaceous plants

**Answer: C**



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20. A progressive series of changes in plant and animal life of an area from initial colonization is known as:

- A. evolution
- B. succession
- C. specialization
- D. selection

**Answer: B**

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21. Which of the following is an example of man-made ecosystem?

- A. herbarium

B. aquarium

C. tissue culture

D. forest

**Answer: B**



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**22. Identify the correct type of food chain.**

Dead animal → Blowfly maggots → Common frog → Snake:

A. grazing food chain

B. detrital food chain

C. decomposer food chain

D. predator food chain

**Answer: B**



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**23.** Trophic levels in ecosystem is formed by:

- A. only bacteria
- B. only plants
- C. only herbivores
- D. organisms linked in food chain

**Answer: D**



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**24.** Select the formula for ecological efficiency:

- A.  $\frac{\text{Gross primary productivity} \times 100}{\text{Incident total solar radiation}}$
- B.  $\frac{\text{Food primary assimilated} \times 100}{\text{Food energy ingested}}$
- C.  $\frac{\text{Net primary productivity} \times 100}{\text{Gross primary productivity}}$
- D.  $\frac{\text{Energy in biomass production at a trophic level} \times 100}{\text{Energy in biomass production at previous trophic level}}$

**Answer: D**



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**25. The final stable community in ecological succession is:**

- A. pioneers
- B. sere
- C. climax
- D. carnivores

**Answer: C**



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**26.** In an aquatic ecosystem, the trophic level equivalent to cows in grasslands is

- A. phytoplankton
- B. zooplankton
- C. nekton
- D. benthos

**Answer: B**



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27. Desert, grassland, forests and tundra are the example of:

- A. biomes
- B. biogeographical regions
- C. ecosystems
- D. biospheres

**Answer: A**



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28. Which of the following is a free-living nitrogen fixing bacterium present in the soil ?

- A. Nitrosomonas
- B. Rhizobium



C. Azotobacter

D. Pseudomonas

**Answer: C**



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**29.** Which of the following fixes atmospheric  $N_2$  ?

A. Nostoc

B. algae

C. methanogens

D. None of these

**Answer: A**



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30. Pyramid of energy in a river ecosystem is:

- A. always upright
- B. always erect
- C. constant
- D. declining

**Answer: A**



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31. Which one of the following types of organisms occupy more than one trophic level in a pond ecosystem?

- A. Frog

B. Phytoplankton

C. Fish

D. Zooplankton

**Answer: C**



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**32.** Chipko movement was launched for the protection of

A. Wetlands

B. Grasslands

C. Forests

D. Livestock

**Answer: C**

33. The correct sequence of plants in a hydrosere is

A. Oak → La tana → Volvox → Hydrilla → Pistia →

Scirpus

B. Oak → Lantana → Scirpus → Pistia → Hydrilla →

Volvox

C. Volvox → Hydrilla → Pistia → Scirpus → Lantana

→ Oak.

D. Pistia → Volvox → Scirpus → Hydrilla → Oak. →

Lantana

**Answer: C**

**34.** Which one of the following is a symbiotic nitrogen fixer?

A. Azolla

B. Glomus

C. Azotobacter

D. Frankia

**Answer: D**



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**35.** During the process of ecological succession the changes that take place in communities are

A. Orderly and sequential

B. Random

C. Very quick

D. Not influenced by the physical environment.

**Answer: A**



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**36.** Climax community is in a state of

A. non-equilibrium

B. equilibrium

C. disorder

D. constant change.

**Answer: B**

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**37.** Among the following biogeochemical cycles, which one does not have losses due to respiration?

- A. Phosphorus
- B. Nitrogen
- C. Sulphur
- D. All of the above

**Answer: D**

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**38.** The sequence of communities of primary succession in water is

- A. phytoplankton, sedges, free-floating hydrophytes, rooted hydrophytes, grasses and trees.
- B. phytoplankton, free-floating hydrophytes, rooted hydrophytes, sedges, grasses and tree.
- C. free-floating hydrophytes, sedges, phytoplankton, rooted hydrophytes, grasses and trees.
- D. phytoplankton, rooted submerged hydrophytes, floating hydrophytes, reed swamp, sedges, meadow and trees.

**Answer: D**



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**39.** The reservoir for the gaseous type of bio-geo chemical cycle exists in:



A. stratosphere

B. atmosphere

C. ionosphere

D. lithosphere

**Answer: B**



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**40.** If the carbon atoms fixed by producers already have passed through three species, the trophic level of the last species would be

A. scavenger

B. tertiary producer

C. tertiary consumer

D. secondary consumer

**Answer: C**



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**41.** Which of the following type of ecosystem is expected in an area where evaporation exceeds precipitation, and mean annual rainfall is below 100mm:

A. Grassland

B. Shrubby forest

C. Desert

D. Mangrove

**Answer: C**



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42. The zone at the edge of a lake or ocean which is alternatively exposed to air and immersed in water is called

- A. Pelagic zone
- B. Benthic zone
- C. Lentic one
- D. Littoral zone

**Answer: D**



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43. Edaphic factor refers to

- A. Water

B. Soil

C. Relative humidity

D. Altitude

**Answer: B**



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**44.** Which of the following is an ecosystem service provided by a natural ecosystem?

A. Cycling of nutrients

B. Prevention of soil erosion

C. Pollutant absorption and reduction of the threat of global warming

D. All of the above

**Answer: D**



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**45.** The biomass available for consumption by the herbivores and the decomposers is called

- A. gross primary productivity
- B. net primary productivity
- C. secondary productivity
- D. standing crop

**Answer: B**



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46. Nutrient enrichment of a lake will cause

- A. eutrophication
- B. stratification
- C. biomagnification
- D. bioaccumulation

**Answer: A**



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47. Which of the following pyramid is always upright ?

- A. pyramid of numbers
- B. pyramid of biomass
- C. pyramid of energy

D. none of these

**Answer: C**



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**48.** In ecosystem , cycling of nutrients is called

A. geological cycle

B. chemical cycle

C. geochemical cycle

D. biogeochemical cycle

**Answer: D**



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49. In ecological succession the climax community is best recognised by the following state

- A.  $P = R$
- B.  $P > R$
- C.  $P < R$
- D.  $P \neq R$

**Answer: A**



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50. In a polluted environment, the maximum pollutant will occur in:

- A. primary producers



- B. tertiary consumers
- C. secondary consumers
- D. primary consumers

**Answer: B**



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**51.** In primary succession on rocks, the pioneer species are usually:

- A. algae
- B. fungi
- C. lichens
- D. bryophytes

**Answer: C**



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**52.** The "10 per cent law" is related to:

A. Mendelian genetics

B. non-mendelian genetics

C. energy transfer from lower trophic level to higher trophic level

D. energy consumption during photosynthesis in  $C_4$  plants

**Answer: C**



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**53.** 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

**Answer: A**



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**54.** 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%

**Answer: C**



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**55.** Large woody vines are more commonly found in

A. temperate forests

B. mangrooves

C. tropical rainfor

D. alpine forests

**Answer: C**



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56. Nitrifying bacteria

- A. oxidize ammonia to nitrates
- B. convert free nitrogen to nitrogen compounds
- C. convert proteins into ammonia
- D. reduce nitrates to free nitrogen

**Answer: A**



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57. 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

**Answer: B**



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**58.** Which one of the following statements for pyramid of energy is incorrect whereas remaining three are correct?

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

**Answer: C**



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

A. sparrow

B. lion

C. goat

D. frog

**Answer: A**



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60. Both, hydrarch and xerarch successions lead to

- A. medium water conditions
- B. xeric conditions
- C. highly dry conditions
- D. excessive wet conditions

**Answer: A**



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61. The breakdown of detritus into smaller particles by earthworm is a process called

- A. humification



B. fragmentation

C. mineralisation

D. catabolism

**Answer: B**



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**62.** 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

**Answer: B**



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**63.** Identify the possible link "A" in the following food chain

Plant → insect frog → "A" → Eagle

A. Rabbit

B. Wolf

C. Cobra

D. Parrot

**Answer: C**



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64. Which one of the following is not a functional unit of an ecosystem

- A. Energy flow
- B. Decomposition
- C. Productivity
- D. Stratification

**Answer: D**



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65. The upright pyramid of number is absent in

- A. Pond
- B. Forest

C. Lake

D. Grassland

**Answer: B**



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**66.** 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

**Answer: B**



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67. The second stage of hydrosere is occupied by plants like

- A. Azolla
- B. Typha
- C. Salix
- D. Vallisneria

**Answer: D**



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68. The important steps in the process of decomposition are

- A. fragmentation and mineralization

- B. leaching and catabolism
- C. humification and mineralization
- D. all of these

**Answer: D**

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**69.** In an ecosystem , at a particular time, standing crop includes

- A. total living material
- B. total detritus
- C. both (a) and (b)
- D. total nutrients present in the crop

**Answer: A**



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70. In a pyramid of biomass, if the total dry weight ( $kg/m^2$ ) of primary producers is about 809 it will decrease at tertiary consumer level upto

A.  $37 kg/m^2$

B.  $11 kg/m^2$

C.  $5 kg/m^2$

D.  $1.5 kg/m^2$

**Answer: D**



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71. Natural reservoir of phosphorus is

- A. animal bones
- B. rock
- C. fossils
- D. sea water

**Answer: B**



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72. 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. 0.21 J

D. 0.0002 J

**Answer: A**



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**73.** Most animals that live in deep oceanic waters are:

A. Detritivores

B. Primary consumers

C. Secondary consumers

D. Tertiary consumers

Answer: A



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

- |     |                                   |                         |
|-----|-----------------------------------|-------------------------|
| (A) | Gaseous nutrient cycle            | Carbon and sulphur      |
|     | <b>Sedimentary nutrient cycle</b> | Nitrogen and Phosphorus |
| (B) | Gaseous nutrient cycle            | Nitrogen and sulphur    |
|     | <b>Sedimentary nutrient cycle</b> | Carbon and Phosphorus   |
| (C) | Gaseous nutrient cycle            | Sulphur and Phosphorus  |
|     | <b>Sedimentary nutrient cycle</b> | Carbon and Nitrogen     |
| (D) | Gaseous nutrient cycle            | Carbon and Nitrogen     |
|     | <b>Sedimentary nutrient cycle</b> | Sulphur and Phosphorus  |
- 
- |    |                            |                        |
|----|----------------------------|------------------------|
| A. | (a) Gaseous nutrient cycle | Sulphur and Phosphorus |
|    | Sedimentar nutrient cycle  | Carbon and nitrogen    |
| B. | (b) Gaseous nutrient cycle | Carbon and Nitrogen    |
|    | Sedimentray nutrient cycle | Sulphur and Phosphorus |

C.

(c) Gaseous nutrient cycle      Carbon and sulphur  
Sedimentary nutrient cycle      Nitrogen and phosphorus

D.

(d) Gaseous nutrient cycle      Nitrogen and sulphure  
Sedimentary nutrient cycle      Carbon and Phosphorus

**Answer: B**



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**75. During ecological succession**

A. The changes lead to a community that is in near equilibrium with the environment and is called pioneer community

- B. The gradual and predictable change in species composition occurs in a given area
- C. The establishment of a new biotic community is very fast in its primary phase
- D. The number and types of animals remain constant

**Answer: B**

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**76.** Which one of the following is a characteristic feature of cropland ecosystem?

- A. Least genetic diversity
- B. Absence of weeds
- C. Ecological succession

D. Absence of soil organisms

**Answer: A**

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77. Which of the following would appear as the pioneer organisms on bare rocks?

A. Liverworts

B. Mosses

C. Green algae

D. Lichens

**Answer: D**

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**78.** The term ecosystem was coined by

- A. A.G. Tansley
- B. E. Haeckel
- C. E. Warming
- D. E.P. Odum

**Answer: A**



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**79.** The primary producers of the deep-sea hydrothermal vent ecosystem are:

- A. green algae

B. chemosynthetic bacteria

C. blue-green algae

D. coral reefs

**Answer: B**



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**80.** Which ecosystem has the maximum biomass ?

A. Grassland ecosystem

B. Pond ecosystem

C. Lake ecosystem

D. Forest ecosystem

**Answer: D**

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**81.** Presence of plants arranged into well defined vertical layers depending on their height can be seen best in

- A. tropical rainforest
- B. grassland
- C. temperate forest
- D. tropical savannah

**Answer: A**

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**82.** What type of ecological pyramid would be obtained with the following data ?



Secondary consumer : 120 g

Primary consumer : 60 g

Primary producer : 10 g

- A. Inverted pyramid of biomass
- B. Pyramid of energy
- C. Upright pyramid of numbers
- D. Upright pyramid of biomass

**Answer: A**



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**Assertion And Reasoning**

1. Assertion : Life occurs upto 15,000 metres on the mountains.

Reason : Beyond 15,000 metres, temperature is too low,  $CO_2$  and  $O_2$  are too little.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: A**



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2. Assertion : Ozone layer is present in the stratosphere.

Reason : Hydrosphere covers about 70% of the earth's surface.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: B**



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**3. Assertion :** Biosphere is a closed system for energy.

**Reason :** Biosphere receives a lot of material from outside.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: D**



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4. Assertion : Biogeochemicals pass between non-living and living components of biosphere in a cyclic manner.

Reason : Biogeochemicals are likely to exhaust one day.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: C**



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5. Assertion : Minerals have sedimentary cycles.

Reason : Their reservoir is in the earth's sediment.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: A**



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6. Assertion : Oceans acts as the global "sink" for  $CO_2$ .

Reason : Human activities are increasing  $CO_2$  concentration in the air.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: B**



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7. Assertion : Microorganisms play a very significant role in nitrogen cycle.

Reason : Animals are essential in  $N_2$  cycle.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: C**



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8. Assertion : Productivity generally increases from polar regions toward the tropics.

Reason : It is due to increasing sunlight and temperature toward the tropics.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: A**



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**9. Assertion :** Lichens are a pioneer community in the temperate region.

**Reason :** Blue-green algae grow as the pioneer community in the tropical region.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: B**



**Watch Video Solution**

**10.** Assertion : Mosses squeeze out the lichens in primary ecological succession.

Reason : Being taller and gregarious, the mosses kill the lichens with their shade.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: A**



**Watch Video Solution**

11. Assertion : Ecological succession can turn a lake into a dryland forest with time.

Reason : A bare rock can become a forest through ecological succession.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: B**



**Watch Video Solution**

**12. Assertion :** Nitrogen - fixing bacteria in legume root nodules survive in oxygen - depleted cells of nodules.

**Reason :** Leghaemoglobin completely removes oxygen from the nodule cells.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: A**



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**13. Assertion:**A network of food chain existing together in an ecosystem is known as food web.

**Reason:** An animal like kite cannot be a part of a food web.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: C**



**Watch Video Solution**

14. Assertion (A): Deforestation is one main factor contributing to global warming.

Reason (R) : Besides  $CO_2$ , two other gases methane and CFCs are also included under greenhouse gases:

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: B**



**Watch Video Solution**

**15. Assertion :** Tropical rain forests are rich in flora and fauna along with microbes on this biosphere.

**Reason :** The low latitude humid tropics harbour the rainforest ecosystems.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: A**



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**16. Assertion:**A network of food chain existing together in an ecosystem is known as food web.

**Reason:** An animal like kite cannot be a part of a food web.

A. If both A and R are true and R is the correct explanation of

A.

B. If both A and R are true but R is not the correct explanation of A.

C. If A is true but R is false.

D. If both A and R are false.

**Answer: C**



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