



# BIOLOGY

## BOOKS - MBD

### ECOSYSTEM

#### Example

1. What is an eco-system?



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2. Who proposed the term ecosystem?



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3. Name two major kinds of ecosystems.



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4. Write three examples of terrestrial ecosystem.



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5. Give one example of smallest and another of large sized ecosystem.



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6. Give three examples of fresh water ecosystem.



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7. Name two salt water ecosystem.



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8. Name two man-made ecosystems.



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9. Name two aquatic ecosystem which have rich diversity of macrophytes.



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**10.** Name two structural features of ecosystem.



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**11.** What forms the raw material for decomposition in the biosphere?



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**12.** What is detritus?



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**13.** What are decomposers? Name any two of them. What do they do in the forest?



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**14.** What is humification?



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**15.** What is meant by mineralisation?



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**16.** Name the two important climatic factors that regulate/control decomposition.



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**17.** Define Productivity. What is primary productivity? Give brief description of factors that affect primary productivity.



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**18.** How will you calculate net primary productivity?



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**19.** What is the limiting factor in productivity in deep oceans?



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**20.** Expand PAR.



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**21.** Write equation for calculating assimilation efficiency.



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**22.** How will you calculate photosynthetic efficiency?



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**23.** How do ecosystem receive nutrients?



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**24.** How will you calculate retention in a nutritional cycle?



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**25.** Cite an example to show that an organisms can occupy two different trophic levels in an ecosystem.



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**26.** Name two omnivores.



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**27.** What is meant by 'Ten percent law'?



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**28.** What does the base of an ecological pyramid represent?



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29. Which pyramid is always upright?



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30. Why is the pyramid of biomass in sea generally inverted ?



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31. What are ecological pyramids?



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**32.** Name two commonly used parameter for constructing pyramids.



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**33.** Mention one similarity between hydrarch and xerarch successions.



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**34.** Among the crustose, foliose and fructose lichens, which one is a pioneer species?



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**35.** Define climax community.



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**36.** What are the four major cycles of biosphere?





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**37.** Name two ways that fix nitrogen in the atmosphere.



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**38.** what is commensalism ? give example



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**39.** Name organisms that perform the function of nitrogen fixation.



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**40.** Why do we refer phosphorus cycle as one way path?



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**41.** How man affected phosphorus cycle?



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**42.** Name the process by which nitrogen is lost.



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**43.** What is the main source of sulphur in biological systems?



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**44.** Fill In the blanks: Plants are called as .because they- fix carbon dioxide.



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**45.** Fill In the blanks: In an ecosystem dominated by trees, the pyramid (of numbers) is \_\_\_\_\_ type.



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**46.** Fill In the blanks: In aquatic ecosystems, the limiting factor for the productivity is \_\_\_\_\_.



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**47.** Fill in the blanks :

Common detritivores in our ecosystem are .....



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**48.** Fill In the blanks: The major reservoir of carbon on earth is\_\_\_\_\_.



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

A. Producers

B. Primary consumers

C. Secondary consumers

## D. Decomposers

**Answer:**



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**50.** The second trophic level in a lake is :

A. Phytoplankton

B. Zooplankton

C. Benthos

D. Fishes

**Answer:**



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**51. Secondary producers are**

A. Herbivores

B. Producers

C. Carnivores

D. None of the above.

**Answer:**



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52. What is the percentage of photosynthetically active radiation (PAR), in the incident solar radiation

A. 1

B. 0.5

C. 1-5%

D. 2-10%

**Answer:**





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**53.** Differentiate between grazing food chain and detritus food chain.



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**54.** Distinguish between Production and Decomposition.



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55. Distinguish between: Upright and inverted pyramid



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56. Distinguish between: Food chain and Food web



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57. Distinguish between: litter and detritus





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**58.** Distinguish between: Primary and secondary productivity



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



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**60.** Define ecological pyramid and describe pyramids of number and biomass.



**Watch Video Solution**

**61.** Define Productivity. What is primary productivity? Give brief description of factors that affect primary productivity.



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**62.** Describe the process of decomposition of detritus under following heads:

Fragmentation, leaching, catabolism, humification and mineralization.



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



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**64.** Outline salient features of carbon cycling in an ecosystem.



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**65.** Name an organism found as secondary carnivore in an aquatic system.



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**66.** What does the base of an ecological pyramid represent?



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



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**68.** Arrange the following as observed in vertical stratification in a forest : Grass, Shrubly plants, teak Amaranthus.



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**69.** Name an omnivore which occurs in both grazing food chain and decomposer food chain.



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



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



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**72.** In the North East region of India, during the process of Jhum cultivation is followed

explain this technique



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



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



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**75.** What is the ultimate phase of life?



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**76.** Is the common edible mushroom an autotroph or heterotroph?



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77. why are oceans least productive?



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



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**79.** Why are nutrient cycles in nature called biotechnological cycles?



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**80.** Give any two examples of xerarch succession.



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**81.** Define self sustainability.



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



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**83.** Organisms at a higher trophic level have less energy available. Comment.



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



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**85.** Is an aquarium a complete ecosystem?



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



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**87.** Human activities interfere with carbon cycle. List any two such activities.



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



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**89.** 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 as ? How do microbes fulfill their energy requirements?



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**90.** Poaching of a tiger is a burning issue in today's world. What implication would this activity have on the functioning of the ecosystem of which the tigers are an integral part?



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**91.** In reaction to energy transfer in ecosystem, explain the statement "10 kg of deer's meat is equivalent to 1 kg of lion's flesh".



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**92.** Primary productivity varies from ecosystem to ecosystem. Explain.



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**93.** Sometimes due to biotic /abiotic factor the climax remain in a particular seral stage (pre climax) without reaching climax. Do you agree with this statement? If yes give a suitable example.



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



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**95.** What are the shortcomings of ecological pyramids in the study of ecosystem?



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**96.** How do you distinguish between humification and mineralisation?



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**97.** The rate of decomposition of detritus is affected by the abiotic factors like availability of oxygen, pH of soil substratum, temperature, etc. Discuss.



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**98.** Justify the following statement in terms of ecosystem dynamics. "Nature tends to increase the gross primary productivity, while

man tends to increase the net primary - productivity".



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**99.** Which of the following ecosystems will be more productive in term of primary productivity? Justify your answer.

A young forest, a natural old forest, a shallow polluted lake, alpine meadow.



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**100.** Write a short note on pyramid of biomass.



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**101.** Given below is a list of autotrophs and heterotrophs . With your knowledge about food chain, establish various linkages between the organisms on the principle of eating and being eaten. What is the inter-linkage established known as ?

Algae , hydrilla, grasshopper, rat, squirrel, crow, maize plant, deer, rabbit, lizard, wolf snake,



peacock, phytoplankton, crustaceans, whale, tiger, lion, sparrow, duck, crane cockroach, spider, toad, fish, leopard, elephant, goat, nympaea, Spirogyra.



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**102.** "The energy flow in the ecosystem follows the second law of thermodynamics." explain.



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

All producers are removed



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

All organisms of herbivore level are eliminated



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

All top carnivore population is removed.



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**106.** Give two examples of artificial or man-made ecosystems. List the salient features by which they differ from natural ecosystems.



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**107.** The biodiversity increases when one moves from the pioneer to the climax stage.

What could be the explanation?



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**108.** What is a bio-geochemical cycle?



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**109.** What will be the P/R ratio of a climax community and a pioneer community? What explanation could you offer for the changes seen in P/R ration of a pioneer community and the climax community?



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**110.** Decomposers like fungi and bacteria are:

autotrophs

hetertrophs

saprotrops

chemo-autotrophs

A. I and III

B. I and IV

C. II and III

D. I and II

**Answer:**



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**111.** The process of mineralisation by micro organism helps in the release of:

A. inorganic nutrients from humus

B. both organic nutrients from detritus

C. organic nutrients from humus

D. inorganic nutrients from detritus and  
formation of human

**Answer:**



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**112.** Productivity is the rate of production of biomass expressed in terms of:

$$(kcal\ m^{-3})\ yr^{-1}$$

$$g^{-2}\ yr^{-1})\ g^{(-1)}\ yr^{(-1)}\ kcal\ m^{(-2)}\ yr^{(-1)}$$

A. ii

B. iii

C. ii and iv

D. i and iii

**Answer:**





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**113.** An inverted pyramid of biomass can be found in which ecosystem?

A. forest

B. Marine

C. grassland

D. tundra

**Answer:**



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114. an inverted biomass pyramid



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115. Pyramid of numbers is :

A. always upright

B. always inverted

C. either upright

D. neither upright nor inverted

**Answer:**



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**116.** Among the following, where do you think the process of decomposition would be the fastest?

A. Tropical rain forest

B. Antarctic

C. Dry arid region

D. Alpine region

**Answer:**



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**117.** How much of the net primary productivity of a terrestrial ecosystem is eaten and digested by herbivores?

A. 0.01

B. 0.1

C. 0.4

D. 0.9

**Answer:**



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**118.** 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:**



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**119.** Climax community is in a state of:

A. non-equilibrium

B. equilibrium

C. disorder

D. constant change

**Answer:**



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**120.** 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:**



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**121.** 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 trees

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:**



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**122.** The reservoir for the gaseous type of biogeochemical cycle exists in

A. stratosphere

B. atmosphere

C. ionosphere

D. lithosphere

**Answer:**



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**123.** 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 consumers

**Answer:**



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

- A. Grassland
- B. Shrubby forest
- C. Desert

## D. Mangrove

**Answer:**



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**125.** 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 zone

D. Littoral zone

**Answer:**



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**126.** What are various climatic factors important for survival and continuation of an ecosystem?



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**127.** What are macrophytes? Give two examples of macrophytes.



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**128.** How do decomposers obtain food?



**Watch Video Solution**

**129.** Give two examples where there is transfer of matter from terrestrial to aquatic

ecosystem or vice-versa.



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**130.** How is biomass of a species expressed?



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**131.** State what does a standing crop of a trophic level represent?



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**132.** How do standing state of nutrient differ?



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



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**134.** Construct the food chain comprising the following

Snakes, Hawks, Rats , Plants.



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**135.** What are limitations of ecological pyramids?



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**136.** Why are green plants not found beyond certain depth in the ocean?



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**137.** List the biotic and abiotic components of ecosystem.



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**138.** Differentiate between producers and consumers.



**Watch Video Solution**

**139.** Show the processes involved in decomposition of detritus.



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**140.** Write a note on Solar energy and show fate of solar radiation incident on plant canopy.



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**141.** Why is it difficult to draw sharp boundaries between ecosystems?



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**142.** What is Habitat?



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**143.** What are the functions of ecosystem?



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**144.** What is food chain? List the kinds of food chains.



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**145.** Give a diagrammatic representation of trophic levels in an ecosystem.



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**146.** 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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**147.** Differentiate between grazing food chain and detritus food chain.



**Watch Video Solution**

**148.** Explain the terms standing crop, biomass and standing state.



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**149.** Explain the meaning of food web and illustrate with a ray diagram.



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**150.** make a table showing typical climate conditions in major forest types in India.



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**151.** What is eco-succession? Write its kinds and pattern. What are the causes of ecological succession.



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



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**153.** Where would you look for signs of secondary succession? When does secondary succession end?





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**154.** How does succession differ in terrestrial and aquatic system? Give salient points.



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



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



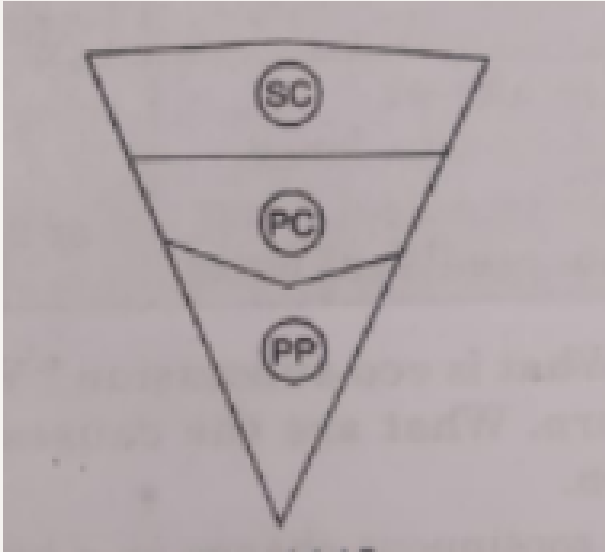
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**157.** "In a food-chain a trophic level represents a functional level, not a species. Explain."



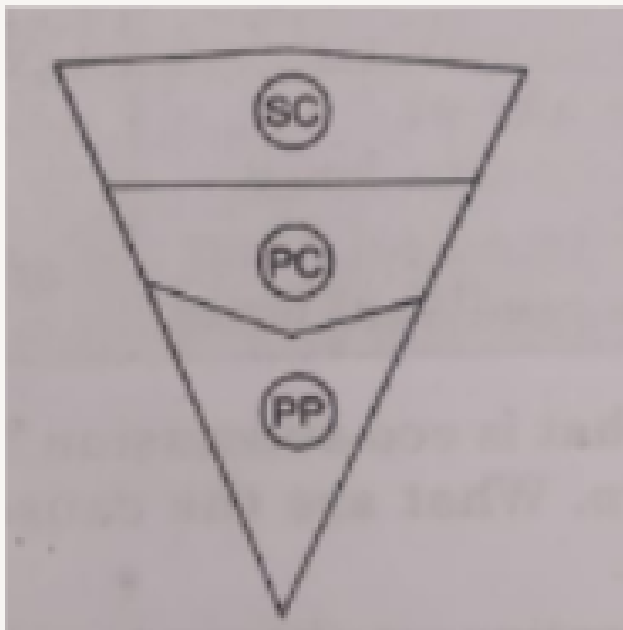
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158. Identify the type of pyramid formed

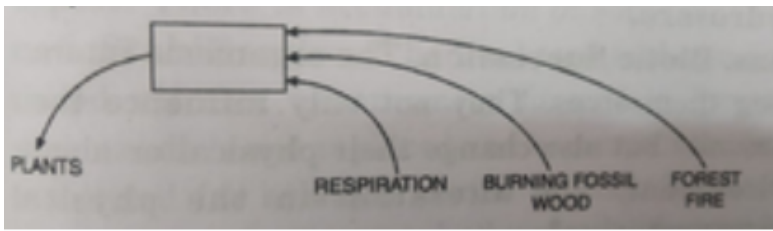


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**159.** Complete the pyramid by labelling PP, PC and SC.



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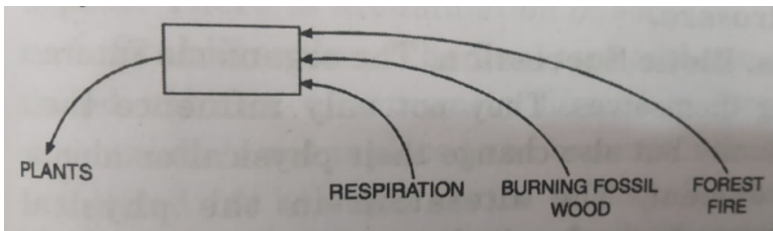
160.

The above diagram shows a simplified biotechnological cycle

Name the compound whose cycle is depicted.



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161.

The above diagram shows a simplified

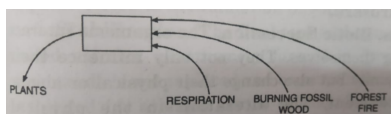
## biotechnological cycle

In what way do vehicles add this compound to the atmosphere?



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162.



The above diagram shows a simplified biotechnological cycle

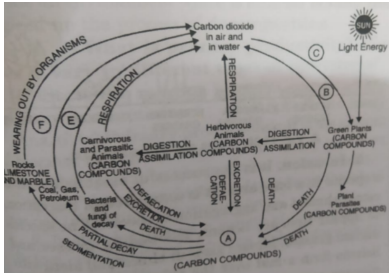
Suggest two ways of reducing this effect.



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**163.** Given below is a figure of carbon cycle in nature.



Write sources of carbon marked A.

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**164.** Construct a pyramid of biomass starting with phytoplankton. Label its three trophic

levels. Is the pyramid upright or inverted?

Justify your answer.



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**165.** What are ecosystem services? Briefly explain.



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**166.** Mention four significant services that a healthy forest ecosystem provide.



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**167.** What are the two main components of an ecosystem? Describe the physical factors which affect the distribution of organisms in different habitats.



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**168.** What is the ecological succession? Explain various events that occur during ecological

succession taking example of succession in a hydrosphere.



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**169.** Explain the process of succession.



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**170.** Give a diagrammatic representation of succession in a hydrosere.



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



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



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**173.** What is primary productivity? Why does it vary in different types of ecosystems?



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**174.** State the relation between gross and net primary productivity.



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175. Explain giving reasons that pyramid of energy is always upright.



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## Exercise

1. Edaphic factor refers to

A. Water

B. soil

C. relative humidity

D. altitude

**Answer:**



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2. 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:**



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



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4. Define self sustainability.



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



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6. Human activities interfere with carbon cycle.

List any two such activities.



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



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8. Differentiate productivity and decomposition.



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**9.** Define Productivity. What is primary productivity? Give brief description of factors that affect primary productivity.



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**10.** Define ecological pyramid and describe pyramids of number and biomass.



**Watch Video Solution**

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



**Watch Video Solution**

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



**Watch Video Solution**

**13.** Write important features of a sedimentary cycle In an ecosystem.



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