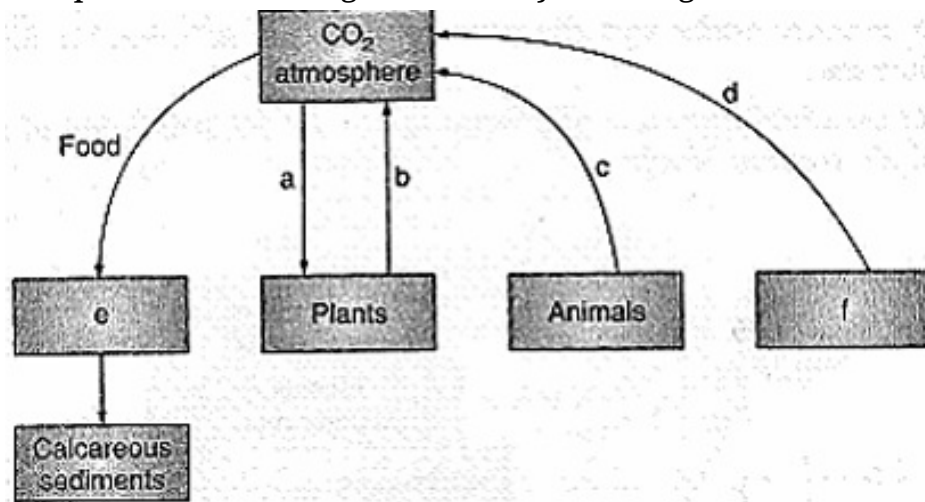

CBSE Test Paper 02

Ch-14 Ecosystem

1. Producers in the aquatic ecosystem are :
 - a. Shrubs
 - b. Herbacious plants
 - c. Phytoplanktons
 - d. Zooplanktons
2. Available organic matter for herbivores is represented by
 - a. Secondary productivity
 - b. Respiration
 - c. NPP
 - d. GPP
3. The value of ecosystem services of biodiversity is
 - a. Difficult to determine.
 - b. Without any price.
 - c. Easily calculated.
 - d. Cannot be estimated
4. If 20000J energy is present in transducers then 3°consumers will get:
 - a. 20J
 - b. 200J
 - c. 10000J
 - d. 2000J
5. Dead parts of plants and animals that fall on the earth surface constitute
 - a. Humus
 - b. Litter
 - c. Detritus
 - d. Detritivore
6. Cite an example of an inverted ecological pyramid. What kind of pyramid of energy would it have?
7. 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.

8. The ecosystem is called an interactive system. Name a functional aspect of the ecosystem which justifies the above statement.
9. Distinguish between gross primary productivity and net primary productivity.
10. What is sere? Which species can be named as dominant species?
11. Distinguish between: Primary and secondary productivity
12. Construct an ideal pyramid of energy when 10,00,000 Jules of sunlight is available. Label all its trophic levels.
13. Trace the succession of plants on a dry bare rock.
14. Complete the following of carbon cycle filling a, b, c, d, e and f.



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

CBSE Test Paper 02
Ch-14 Ecosystem

Answer

1. c. Phytoplanktons, **Explanation:** Phytoplanktons are small floating photosynthetic unicellular plant. In the aquatic ecosystem phytoplankton are producers that fix solar energy by the process of photosynthesis.
2. c. NPP, **Explanation:** The organic matter available for herbivores is called net primary productivity (NPP). Total amount of organic matter fix during photosynthesis is called Gross primary productivity (GPP).
3. a. Difficult to determine, **Explanation:** The value of ecosystem services of biodiversity is difficult to determine as it includes services like cultural and spiritual value along with life saving services for all organisms.
4. a. 20J, **Explanation:** At each trophic level only ten percent of energy is transferred from one trophic level to next trophic level from producer to consumers.
 $20000 \times \left(\frac{10}{100}\right)^3 = 20J$ So, only 20J of energy is available to tertiary consumers.
5. b. Litter, **Explanation:** Dead parts of plants and animals that fall on earth surface constitute litter. These litter get decomposed due to action of microbes to form humus and release nutrients in soil.
6. The pyramid of biomass in sea is an inverted pyramid. It would have an upright pyramid of energy.
7. Pioneer species - Phytoplanktons
Climax species - Forest (trees)
- There is an increase in the biomass (The small phytoplanktons are replaced by free floating angiosperms) hydrophytes which remain rooted in mud → sedges → grasses and at last trees
8. Energy exchange and flow of nutrient cycling (anyone).
9. Gross Primary Productivity (GPP):
 - It is the amount of organic matter synthesized by producers per unit area in unit time.
 - It refers to the total productivity including the energy utilized for respiration

by the producers.

- It depends on chlorophyll content.
- $GPP = \text{Rate of increase in body wt or rate of organic matter synthesized by producers} + \text{the rate of respiration (R)} + \text{other damages.}$

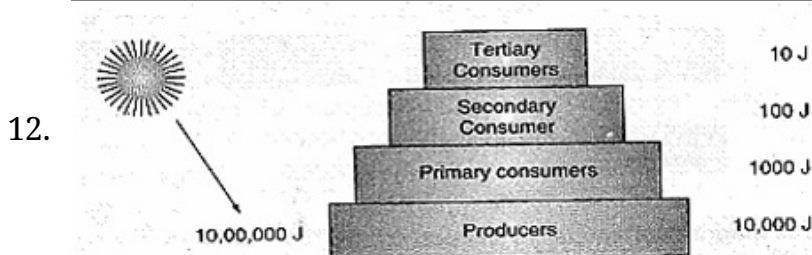
Net Primary Production (NPP):

- It is the amount of organic matter stored by producers per unit area in unit time.
- It refers to the net productivity that is converted to organic matter excluding the energy utilized for respiration (R) by the producers.
- It depends on chlorophyll content.
- $NPP = \text{Rate of organic matter synthesized by photosynthesis by producers} - \text{the rate of energy utilized for respiration (R)} + \text{other damages.}$

10. The entire sequence of development stages of biotic succession from pioneer to a climax community is called sere. Dominant species is that species which represent most numerous population in a seral or climax community.

11.

Primary	Secondary productivity
1. It is the rate of synthesis of organic matters by producers.	1. Rate of synthesis of organic matters by consumer..
2. It is due to photosynthesis.	2. It is due to herbivory and predation.
3. It is comparatively quite high.	3. It is small and decreases with rise of trophic level.
4. It is due to synthesis of fresh organic matter from inorganic raw materials by producers.	4. It is due to assimilation of food energy at consumers trophic level.



13. **Primary succession on rocks:** These are usually lichens which are able to secrete acids to dissolve rock, helping in weathering of rocks and soil formation.

These later pave way to some very small plants like bryophytes, which are able to take hold in the small amount of soil.

They are with time succeeded by herbs, shrubs and shrubs succeed in existence by bigger plants, and after several more stages.

Ultimately a stable climax forest community is formed.

14. ◦ a-Respiration,
 ◦ b-Photosynthesis,
 ◦ c-Respiration,
 ◦ d-Combustion of fossil fuels,
 ◦ e-Aquatic food chain and
 ◦ f-Coal and oil.
15. Decomposition is the physical and chemical breakdown of complex organic remains into inorganic raw materials for recycling. It is carried out by decomposers.

Process: Three types of processes occur during decomposition

- Fragmentation of detritus
- Catabolism
- Leaching

(1) Fragmentation of detritus: It is the break down of dead plants and animals into smaller particles.

(2) Catabolism: It involves secretion of digestive enzymes by decomposers on the detritus. It changes insoluble complex organic substances into simple and soluble organic compounds and inorganic substances.

(3) Leaching : Soluble simpler substances formed during decomposition along with percolation water pass down to deeper layers of soil.

Products: Decomposition process gives rise to two products

(i) Humus (ii) Inorganic nurients

Humus is a dark coloured amorphous substances and acts as reservoir of nutrients, maintenance of soil moisture and aeration