



CBSE NCERT Based Chapter wise Questions (2025-2026)

Class-XII

Subject: Biology

Chapter Name : Ecosystem (Chap : 12)

Total : 6 Marks (expected) [MCQ(2)-2 Marks, CBQ(1)-4 Marks]

Level - 1

MCQ Type :

1. The functional unit of nature is

- (A) Population (B) Community (C) Ecosystem (D) Biome

Hint : Includes both biotic and abiotic components

2. Which of the following are primary producers?

- (A) Herbivores (B) Carnivores (C) Green plants (D) Decomposers

Hint : Perform photosynthesis

3. Flow of energy in an ecosystem is

- (A) Cyclic (B) Bidirectional (C) Unidirectional (D) Random

Hint : Energy is lost as heat

4. Standing crop refers to

- (A) Total biomass at a given time (B) Energy content
(C) Number of organisms (D) Rate of productivity

Hint : Measured as dry weight

5. Which pyramid is always upright?

- (A) Pyramid of biomass (B) Pyramid of energy (C) Pyramid of numbers (D) All types

Hint : Energy decreases at each trophic level

6. Detritus food chain starts with

- (A) Producers (B) Consumers (C) Dead organic matter (D) Herbivores

Hint : Begins with waste materials

7. Net primary productivity is

- (A) $GPP - R$ (B) $GPP + R$ (C) $R - GPP$ (D) Only GPP

Hint : Energy available to consumers

8. Which gas is released during photosynthesis?

- (A) CO_2 (B) O_2 (C) N_2 (D) CH_4

Hint : By-product of light reaction

9. Major decomposers in ecosystem are

- (A) Algae (B) Fungi and bacteria (C) Herbivores (D) Carnivores

Hint : Break down organic matter

10. Ecological efficiency is about

- (A) Biomass transfer (B) Energy transfer (C) Population growth (D) Nutrient cycling

Hint : Transfer between trophic levels

Assertion and Reason:

Directions: Read the following questions and choose any one of the following four responses.

- A: Assertion and Reason both are correct and Reason is the correct explanation of Assertion.
- B: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion.
- C: Assertion is correct but Reason is wrong.
- D: Assertion is wrong but Reason is correct.

1. **Assertion (A):** Pyramid of energy is always upright.
Reason (R): Energy is lost as heat at each trophic level.

☐ A ☐ B ☐ C ☐ D

Hint : Apply second law of thermodynamics

2. **Assertion (A):** Decomposers are important in an ecosystem.
Reason (R): They recycle nutrients back to the environment.

☐ A ☐ B ☐ C ☐ D

Hint : Think about nutrient cycling

3. **Assertion (A):** Energy flow in an ecosystem is bidirectional.
Reason (R): Energy cannot be reused once lost.

☐ A ☐ B ☐ C ☐ D

Hint : Heat loss

4. **Assertion (A):** Primary productivity does not depend on plant species.
Reason (R): Different plants have different photosynthetic capacities.

☐ A ☐ B ☐ C ☐ D

5. **Assertion (A):** Detritivores are consumers.
Reason (R): They feed on dead organic matter.

☐ A ☐ B ☐ C ☐ D

Hint : Definition of detritivores

Very Short Answer Questions :

1. Define ecosystem.

Hint : Biotic + abiotic components

2. What is primary productivity?

Hint : Rate of biomass production

3. Name two components of ecosystem.

Hint : Living and non-living

4. What is standing crop?

Hint : Biomass at a time

5. What are decomposers?

Hint : Bacteria and fungi

Short Answer Questions :

1. Explain food chain with an example.

Hint : Linear transfer of energy

2. Write a note on detritus food chain.

Hint : Starts from dead matter

3. Explain pyramid of numbers.

Hint : Count of organisms

4. What is ecological efficiency?

Hint : Energy transfer percentage

5. Describe nutrient cycling.

Hint : Movement of nutrients

Long Answer Questions :

1. Describe the structure of an ecosystem.

Hint : Biotic and abiotic components

2. Explain energy flow in an ecosystem.

Hint : Unidirectional, 10% law

3. Describe different types of ecological pyramids.

Hint : Number, biomass, energy

4. Explain productivity in an ecosystem.

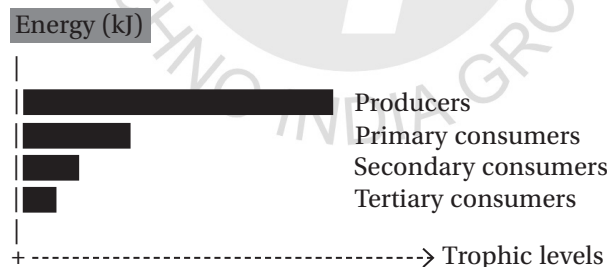
Hint : GPP, NPP, factors

5. Describe the role of decomposers in ecosystem.

Hint : Breakdown, recycling

Case Based Questions.

1. A grassland ecosystem consists of grasses, deer, lions, and decomposers such as bacteria and fungi. The grasses capture solar energy through photosynthesis and convert it into chemical energy. Only a small fraction of the energy fixed by grasses is transferred to deer, and an even smaller amount reaches lions. The remaining energy is lost as heat during respiration or remains unutilized. The graph below shows the decrease in available energy (kJ) at successive trophic levels.



Answer the following:

- (a) Name the producers in this ecosystem.

Hint : Think about photosynthesis

- (b) Which trophic level has maximum energy and why?

Hint : Energy decreases step by step

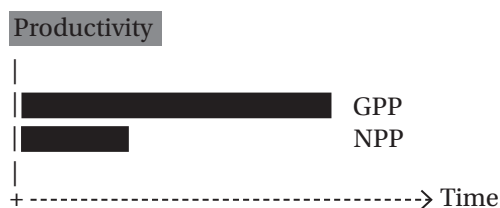
- (c) State the law that explains the reduction of energy at each trophic level.

Hint : Recall the 10% law

- (d) Why is the energy pyramid always upright?

Hint : Heat loss at each level

2. In a freshwater pond ecosystem, 'X' act as producers. They capture solar energy and convert it into organic matter. A part of this energy is used in respiration, while the rest is stored as biomass and becomes available to higher trophic levels. The graph below represents **Gross Primary Productivity (GPP)** and **Net Primary Productivity (NPP)** of the pond.



Answer the following:

- Identify 'X' in the pond ecosystem
- Define Gross Primary Productivity

Hint : Total photosynthesis

- How is Net Primary Productivity calculated?

Hint : GPP and respiration to be considered

- Why is NPP important for consumers?

Hint : Energy available to next level

3. An ecosystem remains stable due to continuous recycling of nutrients. When plants and animals die, their bodies accumulate as detritus. Decomposers such as bacteria and fungi break down this organic matter into simpler inorganic substances, which return to the soil and water.

Answer the following:

- Name the organisms responsible for decomposition

Hint : Microorganisms

- What is detritus?
- Why are decomposers called recyclers of the ecosystem?

Hint : Conversion to inorganic nutrients

- What will happen to nutrient cycling if decomposers are absent?

Hint : Nutrient accumulation and ecosystem imbalance

ANSWER

MCQs

1. Ⓒ	3. Ⓒ	5. Ⓑ	7. Ⓐ	9. Ⓑ
2. Ⓒ	4. Ⓐ	6. Ⓒ	8. Ⓑ	10. Ⓑ

Assertion-Reason

1. Ⓐ	2. Ⓐ	3. Ⓓ	4. Ⓓ	5. Ⓐ
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