

Q.1. Select true statement regarding ecosystem

- A.** An ecosystem is the functional unit of nature where organisms interact among themselves and with their physical environment.
- B.** Both biotic (plants, animals, microbes) and abiotic (soil, water, climate) components are integral parts of the ecosystem.
- C.** A pond, forest, desert, and grassland are all examples of ecosystems, whereas an aquarium is not an ecosystem.
- D.** Natural ecosystems are self-sufficient and self-regulating, while artificial ecosystems usually require human management.
- E.** The study of ecosystem includes structural aspects only, not functional aspects.

- (1) A, B, C are true
- (2) A, B, D are true
- (3) A, B, D, E are true
- (4) A, C, E are true

Q.2. Select correct options regarding to productivity

- A.** Productivity of an ecosystem refers to the rate of production of biomass per unit area per unit time.
- B.** Primary productivity is divided into Gross Primary Productivity (GPP) and Net Primary Productivity (NPP).
- C.** GPP is the total photosynthetic product, while $NPP = GPP - \text{respiration}$.
- D.** Secondary productivity is defined as the rate of formation of new organic matter by heterotrophs.
- E.** NPP is the energy available to herbivores and decomposers in an ecosystem.

- (1) A, B, C, E are true
- (2) A, B, D, E are true
- (3) A, C, D are true
- (4) B, D, E are true

Q.3. Select correct statements wrt productivity in ecosystems

- A.** Forest ecosystems show the highest productivity among terrestrial ecosystems.
- B.** Desert ecosystems are the least productive due to extreme conditions.
- C.** Open ocean has the highest productivity per unit area.
- D.** Coral reefs have high productivity comparable to tropical rainforests.
- E.** Productivity is uniform across all ecosystems irrespective of climate.

- (1) A, B, D are true
- (2) B, C, E are true
- (3) A, B, D, E are true
- (4) A, C, D are true

Q.4. Select correct statements regarding energy flow

- A.** Energy flow in an ecosystem is unidirectional.
- B.** Solar energy is captured by autotrophs, then transferred to herbivores and carnivores.
- C.** At each trophic level, only ~90% energy is transferred to the next level.
- D.** About 10% of energy is transferred from one trophic level to the next, as per Lindeman's 10% law.
- E.** Energy can be recycled within an ecosystem.

- (1) A, B, C are true
- (2) A, B, D are true
- (3) A, B, D, E are true
- (4) B, C, E are true

Q.5. Select incorrect statements wrt to food chains

- A.** Grazing food chain starts with producers (plants/algae).
- B.** Detritus food chain begins with dead organic matter.
- C.** Both food chains are completely independent and not connected.
- D.** In nature, grazing and detritus chains are often interlinked.
- E.** Detritus food chain does not contribute to nutrient cycling.

- (1) E only
- (2) A, C and D only
- (3) B, D and E only
- (4) C and E only

Q.6. Following statements are given for ecological pyramids select correct one

- A. Ecological pyramids are graphical representations of trophic structure and function.
- B. They can represent number, biomass, or energy at successive trophic levels.
- C. Pyramid of energy is always upright, while biomass pyramid in oceans may be inverted.
- D. In a grassland ecosystem, pyramid of numbers is inverted.
- E. In a tree ecosystem, pyramid of numbers is inverted.

- (1) A, B, C, E are true
- (2) B, C, D are true
- (3) A, B, D, E are true
- (4) A, C, E are true

Q.7. Select correct statement regarding Standing Crop

- A. Mass of living material at a trophic level at a given time.
- B. It is measured as biomass or number per unit area.
- C. It is fixed quantity that never change.
- D. It is dynamic and fluctuate with time and season.

- (1) A, B, C are true
- (2) A, B, D are true
- (3) C, D are true
- (4) A and B are true only

Q.8. Statements (A-E) are given wrt decomposition choose correct one from the following

- A. Decomposition is the breakdown of complex organic matter into simple inorganic substances.
- B. It involves steps like fragmentation, leaching, catabolism, humification, and mineralisation.
- C. Humus is a dark, resistant, amorphous substance that decomposes very rapidly.
- D. Mineralisation converts organic matter into inorganic forms.
- E. Warm, moist conditions with aerobic environment favour rapid decomposition.

- (1) A, B, C, E are true
- (2) A, C, D are true
- (3) B, C, E are true
- (4) A, B, D, E are true

Q.9. Statements (A-E) are given wrt to role of decomposers. Choose correct one

- A. Decomposers include bacteria and fungi.
- B. They secrete digestive enzymes into dead organic matter.
- C. They are crucial for nutrient cycling in an ecosystem.
- D. Without decomposers, nutrients would remain locked up in detritus.
- E. Decomposers function only in aquatic ecosystems, not terrestrial.

- (1) A, B, D are true only
- (2) A, C, D, E are true
- (3) B, C, D are true only
- (4) A, B, C, D are true

Q.10. Select correct from the following statement wrt 10% law for transfer of energy in food chain

- A. The 10% law of energy transfer was proposed by Raymond Lindeman.
- B. Only about 10% of energy of a trophic level is transferred to the next level.
- C. About 90% of energy is lost as heat, respiration, and excretion.
- D. This explains why food chains are short (3–5 trophic levels).
- E. This law applies only to terrestrial ecosystems, not aquatic ecosystems.

- (1) A, B, E are true
- (2) A, C, D, E are true
- (3) B, D, E are true
- (4) A, B, C, D are true

Q.11. Select correct statements regarding various productivity in ecosystem.

- A. Gross Primary Productivity (GPP) is the rate of capture of solar energy or biomass production by producers.
- B. A significant fraction of GPP is utilized by producers for respiration.

- C. Net Primary Productivity (NPP) represents the biomass available to herbivores and decomposers.
- D. Secondary productivity refers to energy fixed at the level of primary producers.
- E. In most ecosystems, NPP is less than GPP because of respiratory losses.

- (1) A, B, D, E are true
 (2) B, C, D are true
 (3) A, B, C, E are true
 (4) A, B, D are true

Q.12. Following are features related to Energy Flow in ecosystem. Choose correct one

- A. Solar energy is the primary source for all ecosystems except deep sea hydrothermal ecosystems.
- B. Energy flow in ecosystems is always unidirectional.
- C. Energy is lost as heat at every trophic transfer.
- D. The length of a food chain is limited due to progressive energy loss.
- E. Energy flow is a cyclic process within ecosystems.

- (1) A, and B are true only
 (2) A, B, C, D are true
 (3) B and D are true only
 (4) D and E are true only

Q.13. Choose correct statement from the following

- A. Plant captures only 2-10% of the PAR and this small amount of energy sustains the entire living world
- B. Leaching involves percolation of water soluble nutrients into deeper soil layers.
- C. Ecosystem is exempted from the second law of thermodynamics because energy flow in ecosystem follows 10% law
- D. Some molluscs are herbivores in aquatic ecosystem
- E. GFC takes place only in aquatic ecosystem

- (1) A, B, C, D are true
 (2) A, C, D, E are true
 (3) A, B, D are true
 (4) A, B, E are true only

Q.14. Select incorrect statement from the following

- A. Two types of nutrient cycling found in nature – gaseous and sedimentary.
- B. Atmosphere or hydrosphere is the reservoir for the gaseous type of cycle example carbon
- C. Species composition and stratification are two structural features of ecosystem
- D. Natural interconnection of food chains forms food web
- E. Dry, cold climates accelerate decomposition.

- (1) A, C and D only (2) A and B only
 (3) C and D only (4) E only

Q.15. Find out correct statement wrt to ecological pyramid of number

- A. A pyramid of numbers represents the number of individuals at each trophic level.
- B. In a grassland ecosystem, it is upright (many producers, fewer consumers).
- C. In a tree ecosystem, it can be spindle-shaped or inverted (few big trees, many insects).
- D. In a parasitic chain, pyramid of numbers is always upright.
- E. Pyramids of number do not consider biomass or energy.

- (1) A, B, C, E are true
 (2) A, C, D are true
 (3) B, C, E are true
 (4) A, B, D are true

Q.16. Choose correct options with wrt ecological pyramids of biomass

- A. A pyramid of biomass shows total dry weight of living matter at each trophic level.
- B. In terrestrial ecosystems, pyramid of biomass is usually upright.
- C. It is generally inverted in sea because biomass of fishes far exceeds that of phytoplankton
- D. The biomass of carnivores always exceeds that of producers.
- E. Biomass pyramids provide a more accurate picture of energy flow than number pyramids.

- (1) A, B, C, E are true
 (2) A, C, D are true
 (3) B, C, D are true
 (4) A, B, D, E are true

Q.17. Following statements are given for ecological pyramids of energy. Choose correct options

- A. A pyramid of energy represents the flow of energy at successive trophic levels.
- B. It is always upright due to unidirectional flow and energy losses.
- C. The law of thermodynamics supports the upright nature of energy pyramids.
- D. The pyramid of energy may be inverted in parasitic chains.
- E. Energy pyramids provide the most accurate picture of ecosystem functioning.

- (1) A, B, C, D are true
- (2) A, B, C, E are true
- (3) B, C, D are true
- (4) A, D, E are true

Q.18. Select incorrect statement regarding trophic levels

- A. Producers are autotrophs (plants, algae) that fix solar energy represent first trophic level
- B. Primary consumers are herbivores that feed directly on producers belongs to second trophic level
- C. Secondary consumers are carnivores that feed on herbivores.
- D. Tertiary consumers are top carnivores without predators.
- E. Omnivores may occupy more than one trophic level simultaneously.

- (1) A, B, C, D, E are true
- (2) A, B, D are true
- (3) A, C, D, E are true
- (4) B, C, D are true

Q.19. Choose correct statement related to importance of decomposers

- A. Decomposers recycle nutrients, making them available to producers.
- B. They form an essential link between biotic and abiotic components of ecosystems.
- C. In their absence, ecosystems would collapse due to nutrient unavailability.
- D. They contribute to soil fertility by mineralisation and humification.
- E. Decomposers function only in the detritus food chain, not in grazing food chain.

- (1) A, B, E are true
- (2) A, C, D, E are true
- (3) A, B, C, D are true
- (4) B, C, D, E are true

Q.20 From the statements given below, choose the correct option regarding productivity of ocean

- A. Oceans cover ~70% of the Earth's surface, yet their productivity per unit area is low.
- B. The photic zone (up to about 200 m) receives sunlight, but deeper layers remain dark, restricting photosynthesis to the surface region.
- C. In addition to light limitation at depth, nutrient availability is poor in most oceanic regions due to water stratification.
- D. Only regions of upwelling, estuaries, and coral reefs show high productivity in oceans.
- E. Oceans have low productivity because solar radiation does not penetrate water at all.

- (1) A, B, C, D are true
- (2) A, C, D, E are true
- (3) B, C, D, E are true
- (4) A, B, E are true

ANSWERS - KEY

Q	1	2	3	4	5	6	7	8	9	10
Ans.	(2)	(2)	(1)	(2)	(4)	(1)	(2)	(4)	(4)	(4)
Q	11	12	13	14	15	16	17	18	19	20
Ans.	(3)	(2)	(3)	(4)	(1)	(1)	(2)	(1)	(3)	(1)