

Name:

Ecology & Environment

Self Assessment Test - 1

*Time Allowed: 45 Mins.**Maximum Marks: 80*

INSTRUCTIONS

1. This Test Booklet contain 40 questions. Each question comprises four responses (answers). You will need to select the response which you want to mark on the OMR Sheet. In any case, choose **ONLY ONE** response for each question. More than one response will be treated as wrong answer.
2. You have to mark all your responses **ONLY** on the separate OMR Sheet provided.
3. All questions carry equal marks. (2 Marks Each)
4. For each question for which a wrong answer has been given by the candidate, one third (-0.33 %) of the marks assigned to that question will be deducted as penalty. There will be no penalty for a question which is left blank.

Syllabus:

- | | |
|-----------------------------------|--------------------------|
| 1. Environment and its Components | 6. Biogeochemical Cycles |
| 2. Ecology and its Principles | 7. Population Ecology |
| 3. Levels of Organization | 8. Organic Farming |
| 4. Properties of Ecosystem | 9. Biomagnification |
| 5. Ecosystem Dynamics | 10. Species Interaction |

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

1. Which of the following statements with respect to different ecosystems are correct?
 1. Faster moving water supports more biodiversity.
 2. Prairies are temperate grassland with few trees, large shrubs and tall grasses.
 3. Desert vegetation consists of bushes, shrubs and occasional trees.
 4. Higher altitude mountain vegetation consists of coniferous forests.

Codes:

- (a) 1 and 3
- (b) 1, 2 and 3
- (c) 3 and 4
- (d) All

2. Consider following statements about biotic interaction between different species:
 1. Commensalism - One benefits and other is unaffected.
 2. Amensalism - One benefits and other is harmed.
 3. Competition - Both are harmed.

Which of the above pairs are correctly matched?

- (a) 1 and 2
- (b) 2 and 3
- (c) 1 and 3
- (d) All

3. Consider the following statements with respect to the 'Niche':
 1. The ecological niche describes how an organism responds to the distribution of resources and competitors and it in turn alters those same factors.
 2. Niche construction is the process in which an organism can only alter its own environment.
 3. It is disadvantageous for species because it reduces the amount of competition for resources that species will encounter.

Which among the above given statements are incorrect?

- (a) 1 and 3
- (b) 2 and 3
- (c) 1, 2 and 3
- (d) 1 and 2

4. Which of the following statement with respect to Ecological Succession is incorrect?

- (a) In ecological succession a community undergoes predictable changes following a stable environment created by pre existed conditions.
- (b) Succession may be initiated either by formation of new, unoccupied habitat or by some form of disturbance of a community.
- (c) It leads to formation of climax community web of biotic interactions which allows other species to admit in existing habitat.
- (d) When ecological succession takes place newer species are superseded by still newer species.

5. Umbrella species are selected for making conservation-related decisions because protecting these species indirectly protects the many other species. Which of the following criteria are used for defining the Umbrella species?

1. It should be a wide-ranging species whose requirements include those of many other species.
2. It should be a species with large area requirements for which protection of the species offers protection to other species that share the same habitat.

Codes:

- (a) Only 1
- (b) Only 2
- (c) Both
- (d) None

6. Which of the following describes the relationship of Mutualism?

1. Pollination
2. Rhizobium bacteria and plants
3. Human and Bacteria
4. Zoochory

Codes:

- (a) 1, 2 and 3
- (b) 2, 3 and 4
- (c) 2 and 4
- (d) All

7. Consider the following statements related to the Y-shaped Model of Energy Flow:

1. It shows the interdependence between grazing food chain or detritus food chain.

2. It shows the two-way passage of energy from autotrophs to heterotrophs.
3. It shows that there is a gradual loss of energy at every level.

Which of the above statements is/are correct?

- (a) Only 1
 - (b) 2 and 3
 - (c) 1 and 3
 - (d) All
8. Which of the following statement defines the term "Paleoecological web"?
- (a) It reconstructs the functional significance of connections having strong interaction strength and greater bearing on community organization.
 - (b) It reconstructs flow of energy between nodes along links between a resource and a consumer.
 - (c) It reconstructs only the food all predators in the web eat.
 - (d) It reconstructs ecosystems from the fossil record.
9. Which of the following statement defines the term 'Genetic Drift'?
- (a) Genetic drift is the change in the type of genes in a population because of the random nature of reproduction.
 - (b) Genetic drift is the decrement in the fitness of organisms and increment in chance of extinction in a given genetic pool of a population.
 - (c) Genetic drift is a well organized process of genetic variation over time.
 - (d) Genetic Drift is the basic mechanism of evolution that improves genetic structure of organism.
10. Which of the following statements are true regarding Phosphorous cycle?
1. In it, phosphorous becomes available by weathering of rock first to decomposers.
 2. It does not have losses due to respiration.
 3. The atmosphere does not play a significant role in the movement of the phosphorous.
 4. It is one of the slowest biogeochemical cycle.

Codes:

- | | |
|----------------|----------------|
| (a) 1, 2 and 3 | (b) 2, 3 and 4 |
| (c) 1, 2 and 4 | (d) All |

11. Which of the following statement defines the term Allelopathy?

- (a) It is a type of interaction among species in which both populations benefit by the association but their relations are not obligatory.
- (b) It is a type of interaction among species in which the growth and survival of both populations is benefited, and neither can survive under natural conditions without the other.
- (c) It is a biological phenomenon where one plant inhibits the growth of another by the release of chemicals.
- (d) It is the interaction in which the species can no longer live without each other as they depend totally on each other to survive.

12. Which of the following is/are sedimentary Nutrient cycle?

1. Phosphorous Cycle
2. Calcium and Magnesium Cycle
3. Nitrogen Cycle
4. Carbon Cycle
5. Water Cycle

Select the correct answer using the codes given below:

- (a) 1, 2 and 3
- (b) 1 and 2
- (c) 1, 2, 4 and 5
- (d) 1, 3, 4 and 5

13. Which of the following statement defines the term "Species"?

- (a) A group of similar populations of organisms whose members are capable of interbreeding, and to produce fertile offspring (children).
- (b) A group of dissimilar populations of organisms whose members are capable of interbreeding, and to produce fertile offspring (children).
- (c) A group of similar populations of organisms belonging to the same trophic level whose members are capable of interbreeding, and to produce fertile offspring (children).
- (d) A group of similar populations of organisms living in defined area whose members are not capable of interbreeding, and to produce fertile offspring (children).

14. Which of the following statements is/are true about Ecotone?
1. It is a zone of junction of two or more diverse ecosystems.
 2. Both mangrove forests and grasslands are the examples of Ecotone.
 3. Edge effect occurs when the territorial size of ecotone is much larger than the adjacent ones.

Select the correct answer using the codes given below:

- (a) Only 1
- (b) 1 and 2
- (c) Only 3
- (d) All

15. Which of the following terms associated with the Ecosystem is/are correctly matched?

1. Net primary productivity of an ecosystem is the rate of production of organic matter during photosynthesis.
2. Catabolism is when Bacterial and fungal enzymes degrade detritus into simpler inorganic substances.
3. Secondary productivity is defined as the rate of formation of new organic matter by consumers.

Select the correct answer using the codes given below:

- (a) 1 and 2
- (b) Only 1
- (c) 2 and 3
- (d) All

16. Which of the following statements is/are true about trophic levels in an ecosystem?

1. The energy always flow from higher to lower trophic levels.
2. In an ecosystem there is always a high chance of having larger number of trophic levels for better movement of nutrients.
3. Food webs are more stable than a food chain in an ecosystem.

Codes:

- (a) 1 and 3
- (b) 2 and 3
- (c) Only 3
- (d) All

17. Which of the following is/are correct with respect to types of Ecology Community?

1. Major Community: It is dependent on other communities for its existence.
2. Minor Community: It is self regulating, self sustaining and independent unit.

Select the correct answer using the codes given below:

- (a) Only 1
- (b) Only 2
- (c) None
- (d) Both

18. Which of the following is/are the example of parasitic food chain?

1. Dead organic matter - Detritivores - Predators.
2. Trees - Fruit eating birds - Lice and bugs - Bacteria and fungi.
3. Zebra - Nematode - Filamentous bacteria.

Codes:

- (a) 1 and 2
- (b) 2 and 3
- (c) None
- (d) All

19. Which of the following statements is/are true about Ecological Pyramids?

1. In Pyramid of Biomass is determined by measuring dry weight of the organisms.
2. Inverted Pyramid of Biomass happens when the smaller weight of producers support consumers of larger weight.
3. Ecological pyramids have no place for detrivoves and decomposers though they play a vital role in ecosystem.

Codes:

- (a) 1 and 3
- (b) 2 and 3
- (c) Only 3
- (d) All

20. Which of the following pollutants is/are true about Bio-magnification?

1. It refers to the tendency of pollutants to concentrate as they move form one trophic level to another.
2. Long live, mobile and fat soluble pollutants lead to bio-magnification.
3. Herbivores are most affected by biological magnification.

Codes:

- (a) Only 2
- (b) 1 and 2
- (c) 2 and 3
- (d) All

21. Which of the following definitions related to the different kinds of species is/are correct?
1. Foundation species play a major role in creating or maintaining a habitat that supports other species.
 2. Cosmopolitan species are that whose range extends across all or most of the world in appropriate habitats.
 3. Indicator species are popular, charismatic species that serve as symbols and rallying points to stimulate conservation awareness and action.

Codes:

- (a) 1 and 2
- (b) 1 and 3
- (c) Only 1
- (d) All

22. Which of the following statements is/are true about Ecological Succession?
1. It is the process of change in the species structure of an ecological community over time.
 2. In this climax community is succeeded by the pioneer community.
 3. It is characterized by increased niche development and complexity of food webs.

Codes:

- (a) 1 and 2
- (b) Only 2
- (c) Only 3
- (d) 1 and 3

23. Which of the following will increase the population of a community in a region?
1. Dispersal
 2. Natality
 3. Mortality
 4. Immigration

Codes:

- (a) 1 and 4
- (b) 2 and 4

(c) 3 and 4

(d) Only 4

24. Which of the following categories of Ecosystem Services is/are correctly matched?
1. Provisioning Services : Proving food, raw material & water.
 2. Supporting Services : Carbon Sequestration.
 3. Cultural Services : Recreational activities.

Codes:

- (a) 1 and 3
- (b) 2 and 3
- (c) Only 3
- (d) All

25. Which of the following statements is/are true about Biogeochemical Cycles?
1. These cycles represent the energy and materials in circulation in an ecosystem.
 2. In gaseous cycle the reservoir is the atmosphere and in sedimentary cycle the reservoir is the earth's crust.
 3. In Carbon cycle, the CO₂ is released after the biodegradation of dead organic matter.

Codes:

- (a) 1 and 2
- (b) 2 and 3
- (c) Only 3
- (d) All

26. Consider the following statements regarding an ecosystem:
1. Non living components of the environment are not the part of ecosystem.
 2. Edaphic factors are the components of ecosystem.
 3. Biome is the form of sub continental ecosystem having similarity in vegetation.
 4. Ecosystem is the structural and functional unit of the biosphere.

Select the correct answer from below given codes:

- (a) 1 and 2
- (b) 2 and 3
- (c) 1 and 4
- (d) 2, 3 and 4

27. Human needs are modifying the ecosystems. Characteristics of human modified ecosystems are:
1. Species diversity is high due to insertion of invasive species.
 2. Food chains are simple and small.
 3. Attract large number of weeds.

Which of the above stated characteristics is/are correct?

- (a) Only 1
 - (b) 2 and 3
 - (c) 1 and 3
 - (d) All
28. As energy flows through subsequent trophic level, the amount of it gradually decreases. This happens because:
1. Organisms utilize energy in respiration.
 2. Energy is dissipated in the form of heat.

Which of the above statements is/are true?

- (a) Only 1
 - (b) Only 2
 - (c) Both
 - (d) None
29. Which of the following statements regarding Ecology is/are correct?
1. It is scientific study of the relationship of living organisms with each other and with their environment.
 2. The emphasis is on relationship between only biotic (living) component and not abiotic component (non living).

Select the correct answer using the codes given below:

- (a) Only 1
 - (b) Only 2
 - (c) Both
 - (d) None
30. Consider the following statements with respect to the range of tolerance terminologies:
1. Range of tolerance denotes the single factor that limits the growth, abundance, or distribution of the population of a species in an ecosystem.
 2. Ecological amplitude are the limits of environmental conditions within which an organism can live and function.

3. Threshold Effect is the harmful effect on organism due to small change in environmental conditions that exceeds the limit of tolerance of an organism or population of a species.

Which of the above stated terms is/are correctly matched?

- (a) Only 2
 - (b) 1 and 3
 - (c) 2 and 3
 - (d) All
31. In which of the following ways disposal of Phosphorous affect the trophic food web of a lake?
1. It will cause an algal bloom.
 2. Big zooplankton would increase because a lot of phytoplankton would be available.
 3. It will increase turbidity in water.

Codes:

- (a) 1 and 2
 - (b) 2 and 3
 - (c) 1 and 3
 - (d) All
32. Consider the following statements:
1. In bioaccumulation, there is an increase in concentration of a pollutant from the environment to the first organism in a food chain.
 2. In biomagnifications, there is increase in concentration from one link in food chain to another.
 3. In bioconcentration, the accumulation of a chemical in an organism exceeds that in water due to exposure to waterborne chemical.

Which of the above statements is/are correct?

- (a) 1 and 2
 - (b) 2 and 3
 - (c) Only 2
 - (d) All
33. Which of the following statements defines the difference between food chain and food web?
1. A food web indicates all possible transfer of energy and nutrients among the organisms in an ecosystem whereas a food chain traces only one pathway of the food.

2. Food web increases the stability of the ecosystem whereas separate food chain increases the instability of the ecosystem.
3. Both do not have any effect on improving the adaptability and competitiveness of the organism.

Select the correct answer using the codes given below:

- (a) 1 and 2
- (b) 2 and 3
- (c) 1 and 3
- (d) All

34. Light intensity, light duration and light quality control a number of life processes of organism. Which of the following activities is/are related to that phenomenon?

1. Photosynthesis
2. Bird Migration
3. Leaf Fall and Dormancy
4. Flowering

Codes:

- (a) Only 1
- (b) 1 and 3
- (c) 1 and 4
- (d) All

35. Consider the following statements related to the processes occurs in ecosystem:

1. Humification occur during decomposition in the soil which leads to accumulation of a dark colored amorphous substance.
2. Decomposition is largely an oxygen requiring process.
3. Mineralisation is the process by which substance become more concentrated in the bodies of consumers as one moves up the food chain.

Which of the above statements is/are correct?

- (a) 1 and 2
- (b) 2 and 3
- (c) Only 1
- (d) All

36. Which of the following statement is the best description of the term 'Allogenic Succession'?

- (a) It is the succession in which initially the green plants are much greater in quantity.

- (b) It is the succession brought about by living inhabitants of that community.
- (c) It is the succession brought about by non living inhabitants of that community.
- (d) It occurs when plants recognise an area in which the climax community has been disturbed.

37. An apex predator is a predator residing at the top of a food chain upon which no other creatures prey. Which of the following is/are the examples of Apex Predator?

1. Polar Bear
2. Whale shark
3. Electric eels
4. Hyenas

Codes:

- (a) 1, 2 and 4
- (b) 1 and 2
- (c) Only 2
- (d) All

38. Which of the following is correct with respect to 'Enrichment plantation'?

- (a) In this Single commercially valuable species extensively planted and other species eliminated.
- (b) It is a part of social forestry where different horticulture plants planted in given area to generate fuel and fodder.
- (c) It is a part of Agro forestry where plants and crops are planted side by side to prevent soil erosion.
- (d) It is technique of plantation where site specific Multi nutrient fertilizer applied to plants.

39. Which of the following statement correctly defines the term community ecology?

- (a) Community ecology is the study of the interactions among a collection of species that inhabit the same geographic area.
- (b) Community ecology defines the pyramid structure of communities in form of food web in freshwater ecosystem only.
- (c) Community ecology is the study of the interactions among a collection of species present in tropical region.
- (d) Community ecology is the study of the interactions among a collection of species present in polar region as biodiversity is less.

40. With reference to the Water Cycle, consider the following statements:

1. The hydrological cycle describes the movement of water on, in and above the earth.
2. Deep and shallow groundwaters constitute the highest percentage of the total water locked in the pores of sedimentary rocks.

3. The burning of fossil fuels has an effect on the water cycle also.

Which of the above statements is/are correct?

- (a) Only 1
- (b) 1 and 2
- (c) 1 and 3
- (d) All



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