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3 (Sem-1/CBCS) ZOO HC 2

2022

ZOOLOGY

(Honours)

Paper : ZOO-HC-1026

(Principles of Ecology)

Full Marks : 60

Time : Three hours.

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer : **(any seven)**

1×7=7

(a) An 'ecotone' is _____.

(i) transition area

(ii) site of interaction of two different biological communities

(iii) shared boundary of two or more ecosystems

(iv) All of the above

Contd.

- (b) A set of ecosystems is referred to as
- (i) biome
 - (ii) hydrosphere
 - (iii) community
 - (iv) cline
- (c) Which of the following is NOT a feature of *r*-selected species ?
- (i) Quick reproduction
 - (ii) Low survival rate of progenies
 - (iii) Large litter size
 - (iv) Paternal care
- (d) The final stable community in ecological succession is
- (i) climax
 - (ii) sere
 - (iii) pioneers
 - (iv) carnivores
- (e) Which of the following is NOT a gaseous biogeochemical cycle in ecosystems ?
- (i) Carbon
 - (ii) Nitrogen
 - (iii) Sulphur
 - (iv) Phosphorous

- (f) The pyramid of biomass is inverted in
- (i) forest ecosystem
 - (ii) grassland ecosystem
 - (iii) tundra
 - (iv) freshwater ecosystem
- (g) The concept of ecological pyramid was first proposed by
- (i) Odum
 - (ii) Charles Elton
 - (iii) A. G. Tansley
 - (iv) Ernst Haeckel
- (h) _____ is the ratio of energy flow at different points of a food chain.
- (i) Carrying capacity
 - (ii) Ecological efficiency
 - (iii) Birth rate
 - (iv) Food web
- (i) Energy flow in an ecosystem is
- (i) always bidirectional
 - (ii) never unidirectional
 - (iii) non-directional
 - (iv) always unidirectional

- (j) Identify the correct statement.
- (i) Every component of food chain forms trophic level.
 - (ii) Food web is an interrelation between different food chains.
 - (iii) Food chains are used to understand energy flow.
 - (iv) All of the above
- (k) Which of the following defines the study of the characteristics and parameters of a population ?
- (i) Demography
 - (ii) Mortality
 - (iii) Natality
 - (iv) Population density
- (l) Which of the following structures is observed in a diminishing population ?
- (i) Upright
 - (ii) Histogram
 - (iii) Bell-shaped
 - (iv) Urn-shaped

2. Write briefly on : **(any four)** 2×4=8

- (a) *r*-selection
- (b) Natality
- (c) Synecology
- (d) Limiting factors
- (e) Ecological efficiency
- (f) Gause's competitive exclusion
- (g) Species dominance
- (h) Edge effect

3. Write short notes on : **(any three)** 5×3=15

- (a) Climax community
- (b) Energy flow in ecosystem
- (c) Life tables and survivorship curves
- (d) Food web
- (e) Nitrogen cycle
- (f) In-situ wildlife conservation

(g) Exponential population growth

(h) Carrying capacity

4. Answer elaborately : **(any three)**

10×3=30

(a) What do you understand by population density? Explain with an example. Add a note on fecundity tables highlighting the importance in population ecology.

(b) Discuss with examples the characteristics of a community.

(c) Compare and contrast between grazing and detritus food chains. Discuss with an example on Y-shaped food chain.

(d) Discuss the Lotka-Volterra equation for competition and predation. Highlight the characteristics of *K*-selection strategy.

(e) Describe the concept of ecological succession with a suitable example.

(f) What is ex-situ conservation? Write briefly the management practices for wildlife conservation.

- (g) Discuss the density-independent factors of population regulation.
- (h) What do you understand by a limiting factor? Explain the laws of limiting factors. Add a note on Shelford's law of tolerance citing suitable examples.
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