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

(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-shapped

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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