2013

M.Sc. Part–II Examination

ZOOLOGY

PAPER—IX (Group—A)

Full Marks : 50

Time : 2 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Write the Answers to Questions of each Unit in separate Booklet.

ECOLOGY SPECIAL

Answer any *four* questions taking *two* from each unit.

Unit—I

[Soil Ecology]

1. What do you mean by humus. Mention its types. Discuss the role of soil fauna in nutrient cycle.

$2+4\frac{1}{2}+6$

2. How temperature, C/N ratio and pH control the functional activity of soil fauna.

$4+4\frac{1}{2}+4$

3. How is spatial heterogeneity related to soil biodiversity ? What are the factors that determine the spatial distribution of soil organism ? Narrate briefly the process of extraction and preservation of soil microarthropods and nematodes. Mention the ecological importance of microarthropods and nematodes. $2+2+4\frac{1}{2}+4$

4. Short notes (any three) : $12\frac{1}{2}$

   (a) Impact of monoculture and synthetic fertilizers on soil ecosystems.

   (b) Euedaphic Fauna.

   (c) Features of different horizons of a typical soil.

   (d) Rhizosphere,

   (e) Soil Ecological Management.

Unit—II

[Forest and Wildlife Ecology]

5. (a) Compare the nutrient cycling of the conferous, deciduous and tropical forests.

   (b) Tropical forests, despite having nutrient poor soils, support a high plant biomass and diversity. How is it possible ?

   (c) State briefly about the climate and vegetation cover of tropical rain forest biome. Give the names of some characteristics animals of this biome. $3\frac{1}{2}+3+6$

6. Mention seven forest types which are likely to be found in West Bengal. Describe vertical stratificant of plants and animals in a tropical forest. What is turn over time of elements in a forest ? $3+7+2\frac{1}{2}$

7. Write in brief about the present status, geographical distribution, feeding habit & breeding of *Antilope cervicapra*. Add a note on the sexual dimorphism. State the present red list status of this species. $7\frac{1}{2}+3\frac{1}{2}+1\frac{1}{2}$

8. Write short notes (any three) : $4+4+4\frac{1}{2}$

   (a) Inbreeding depression.

   (b) Red Data Book.

   (c) IUCN definition of protected areas.

   (d) Concept of Joint Forest Management.

   (e) Population status & major threats to *Panthera tigris tigris*.

———

FISHERY SPECIAL

Answer any *four* questions taking *two* from each unit.

Unit—I

[Fish Taxonomy and Biology]

1. (a) State the distinctive characters with examples of perciformes and pleuronectiformes.

   (b) Give examples of the following orders of fin fish :

   (i) Squaliformes;

   (ii) Torpediniformes;

   (iii) Cypriniformes;

   (iv) Clupeiformes;

   (v) Lamniformes;

   (vi) Ophiocephaliformes.

   (c) Add a note on lung fishes.

   $4+6+2\frac{1}{2}$

2. (a) Enlist the biotic and abiotic factors influencing fish growth.

   (b) Describe briefly the role of temperature, pH and ration size on fish growth.

   (c) Add a note on morphomatric study of fish.

   $3+6+3\frac{1}{2}$

3. (a) Calculate the FCR and PER value and comment on your result, when —

   Number of fish = 15.

   Weight of each fish = 10 g.

   Duration of Experimental Trial = 120 days.

Feed given to the fish = @ 6% bwd^{-1}.

Protein percentage in the formulated feed = 30%.

Final weight of total fish = 400 g.

(b) Enlist the different non-conventional fish feed resources used in India.

(c) Add a note on natural food of Indian major carps.

(d) Classify the fishes on their feeding habit.

$4\frac{1}{2}+3+3+2$

4. Write short notes (any *three*) : $4+4+4\frac{1}{2}$

   (a) Embryonic development of Indian major carp.

   (b) Lateral line sense organ of fish.

   (c) Study of fish migration.

   (d) Urinogenital structure of any Cypriniformes fish.

   (e) Parental care of fish (4 fishes).

   (f) Histological structure of fish gonad.

Unit—II

[Limnology and Oceanography]

5. (a) How you justify that the lakes are originated from different environmental activities.

   (b) Write notes on :

   (i) Thermal stratification;

   (ii) Periphytons.

   $7\frac{1}{2}+2\frac{1}{2}+2\frac{1}{2}$

6. Answer the following questions : $3+3+3+3\frac{1}{2}$

(a) Biotic community in a freshwater body.

(b) Planktonic lives and their rhythms.

(c) The uniqueness of a wetland.

(d) Oceanic Zones and their subdivisions.

7. Justify the following statements : $3+3+3+3\frac{1}{2}$

(a) Adaptive modifications of organisms in Iotic system.

(b) Physical properties of oceans.

(c) Classification of planktons on the basis of their size.

(d) Causes and effects of upwelling.

8. Write short notes (any *three*) : $4+4+4\frac{1}{2}$

(a) Cyelom orphosis ;

(b) Eutrophication ;

(c) Heat-flux ;

(d) Cryogenic Lake ;

(e) Lagoons ;

(f) CRZ.
