

2016

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.

FISHERY SPECIAL

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

Unit—I

[Fish Taxonomy and Biology]

Answer any *two* questions.

1. (i) Make difference between elasmobranch and teleosts fishes.

(Turn Over)

(ii) Give the example and four distinctive order characters of the following order —

- Coelacanthiformes ;
- Siluriformes ;
- Mastacembeliformes ;
- Rajiformes.

(iii) Add a note on Dipnoan fishes. $3\frac{1}{2}+(4\times 1\frac{1}{2})+3$

2. (i) How to calculate the growth rate of a fish?

(ii) Define Digestive Energy (DE) and Metabolizable Energy (ME).

(iii) Illustrate the growth curve of a fish.

(iv) Add a note on the different factors influences the energy need in fish.

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

3. (i) What do you mean by "Least Cost - best buy" technique in fish feed preparation.

(ii) Calculate the FCR and PER value and comment on your result when —

No of fish = 10

Initial weight of each fish = 11g

Final weight of each fish = 18g

Duration of experimental days = 60days

Feed given = @6% body weight

Prepare feed with 40% protein based feed.

(iii) Add a note on feed additive. $3+6+3\frac{1}{2}$

4. Write short notes on any *three* of the following :

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

- (a) How to estimate the fecundity of a fish?
- (b) Importance of bioluminance in fish.
- (c) State about parental care of fishes (3 fishes).
- (d) Pearson's Square method of fish feed formulation.
- (e) State about extinct fishes and fish as a living fossil.
- (f) Non Conventional fish feed resources.

Unit—II

[Limnology and Oceanography]

Answer any *two* questions.

5. Define Lake. Give a classificatory scheme of Lake based on its origin. How thermal stratification influence on lake productivity?

$$2\frac{1}{2}+5+5$$

6. Define tide. How does it form? Mention it's different types and state it's significance. Add a note on the "mangrove ecosystem".

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

7. (a) Give a classificatory scheme of plankton.
 (b) Briefly highlight the values of wetland.
 (c) Mention the difference between lotic and lentic water bodies based on their ecological properties.
 (d) Why upwelling is directly connected with fishery productivity?

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

8. Write short notes (any four) :

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

- (a) Different subzones in coastal environment;
 (b) Chemical components of sea water;
 (c) Biological Oceanography;
 (d) Marine pollution;
 (e) Vertical migration of Zooplankton.

ECOLOGY SPECIAL

Answer any four questions taking two from each unit.

Unit—I

[Soil Ecology]

1. What do you mean by Pedogenesis? Give a brief account of the different steps of pedogenesis. Discuss the role of Soil biota on pedogenesis.

2+3 $\frac{1}{2}$ +7

2. Classify Soil fauna on the basis of (a) body size, (b) duration of stay in soil, (c) habitat preference and (d) feeding habits. Cite examples in each case.

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

3. In what ways agricultural practices may affect soil fauna? Explain in brief the role of soil fauna in energy flow & nutrient cycle in soil sub-system.

4+8 $\frac{1}{2}$

4. Write short notes on the following :

5×2 $\frac{1}{2}$

- (a) Hygroscopic water ;
 (b) Tullgren funnels ;
 (c) Humus ;
 (d) Lateritic soil of South West Bengal ;
 (e) Role of nematodes as soil fauna.

Unit—II

[Biodiversity and Wildlife Ecology]

5. Give an account of the type of forests occurring in India. Explain why shifting cultivation on Jhum cultivation is

a cause of deforestation. What do you mean by compensatory aforestation. State the impact of deforestation.

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

6. Define biodiversity, species diversity, genetic diversity and ecological diversity. Explain why India is a megadiversity country. Hot-spots are under great threat. — Explain.

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

7. Briefly write about the past and present distribution, prey capture strategy, breeding and present red list status of *Panthera tigris*. Describe the sexual dimorphism in this species.

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

8. Write short notes (any three) :

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

- (a) Wildlife Protection act 1972.
- (b) Significance of Social Forestry.
- (c) Types of Threatened species.
- (d) SLOSS concept.
- (e) Plant stratification in Tropical Forest.