CSM – 28/17

Fisheries Science

Paper – I

Time : 3 hours

Full Marks : 300

The figures in the right-hand margin indicate marks.

Candidates should attempt Q. No. 1 from Section – A and Q. No. 5 from Section – B which are compulsory and any ***three*** *of the remaining questions selecting at least* ***one*** *from each Section.*

SECTION – A

1. Answer any **three** of the following : $20 \times 3 = 60$

   (a) Discuss, in detail, the role of fisheries and aquaculture in Indian economy and human health.

   (b) Classify different types of aquatic resources of Odisha. Describe the scope and utilization of freshwater resources for augmenting fish production in the state Odisha.

(c) What is taxonomy ? Write, in short, about the 'Binomial nomenclature'. Describe the commercially important families and genera of teleost fishes of Indian region.

(d) Write about different types of diasters found in fisheries and aquaculture. Discuss, in detail, about the disaster awareness related to fisheries and aquaculture.

2. (a) Discuss, in detail, about the food and feeding habits of commercially important fin fishes. 20

(b) Write the following in brief : 20

(i) Age and growth of fishes

(ii) Circulatory system of fishes

(iii) Important function of swim bladder

(iv) Breeding habits of commercially important fishes

(c) What do you mean by accessory respiratory organ ? Describe accessory respiratory organs in fishes with suitable diagram. 20

3. (a) What do you mean by fecundity ? Discuss about the different types of fecundities. Write, in brief, about the fecundity of fishes. How you can measure the fecundity of fishes ? 20

(b) Write the following in brief : 20

(i) Parental care of fishes

(ii) Endocrine glands in fishes and their functions

(iii) Microorganisms involved in nitrogen cycle

(iv) Bacteriological media

(c) What do you mean by fixative ? Write about different types of fixatives and their merits and demerits. What is staining and explain about different staining techniques ? 20

4. (a) Write, in detail, about spectrophotometry theory, principle, block diagram and uses in the biochemistry laboratory. 20

(b) Write the following in brief : 20

(i) Prokaryotic and eurkaryotic cells

(ii) Types of vitamins

(iii) Glycolysis

(iv) Protein synthesis

(c) What do you mean by microbes ? Write, in detail, about different types of microscopes and microscopy techniques. 20

SECTION – B

5. Answer any **three** of the following : 20×3 = 60

(a) Distinguish between lentic and lotic ecosystem. What is plankton ? Write, in detail, about the classification of plankton with suitable examples. Discuss, in brief, about the relationship between plankton and fisheries.

(b) Write the following in brief :

(i) Streams and Rivers

(ii) Thermal stratification

(iii) Food Chain and Food Web

(iv) Ponds and Lakes

(c) Differentiate between point and non-point aquatic pollution. Mention the types, sources and physicochemical properties of waste water. Briefly discuss operating principles of sewage treatment and effluent management.

(d) What do you mean by sexual dimorphism ? Describe the different stages of sexual maturity in commercially important fin fishes with diagram and mention the factors influencing its spawning habits.

6. (a) Write the following in short : 20

(i) Mangrove ecosystem

(ii) Tsunami and their effects

(iii) Major currents in Indian Ocean

(iv) Muddy shores

(b) What do you mean by productivity ? Explain different types of productivity. Discuss about various factors involved in regulating the productivity of aquatic ecosytem. Write about one method for measuring primary productivity of a freshwater ecosystem. 20

(c) Enlist major chemical components of sea water. Explain about upwelling and fishery productivity. Write, in detail, about the boring and fouling organisations. 20

7. (a) Write about the following in brief : 20

(i) Integrated Coastal Zone Management

(ii) Economics of Fish Farming

(iii) Odisha Fisheries Act

(iv) Project Planning and Formulation

(b) Write about the structure and function of fisherman cooperatives in India. List out the problems of fisherman cooperatives and accordingly mention the remedial measures for their growth and sustainability. 20

(c) Discuss, in details, about the concept, principle, scope and objectives of fisheries extension. Write briefly about the role of FFDA and ATMA for the development of fisheries and aquaculture in the state. 20

8. (a) Write about the following in short : 20

(i) Sampling methods

(ii) Measures of central tendency

(iii) Design of experiments

(iv) Presentation of statistical data

(b) What is statistics ? Discuss about the various types of testing hypothesis used in fisheries statistics and their scope and limitations. 20

(c) Write about the State Reservoir Fishery Policy of Odisha. What do you mean by extension programme planning ? Discuss, in detail, about the participation of organisations and involvement of people in planning with special reference to fisheries. 20