

FISHERIES SCIENCE

Paper—I

Time : Three Hours

Full Marks : 300

Candidates should attempt Question No. 1 from Section-A and Question No. 5 from Section-B which are compulsory, and any THREE of the remaining questions, selecting at least ONE from each Section. All questions carry equal marks.

SECTION—A

1. Answer any **THREE** of the following :—
 - (a) General taxonomic characters of commercially important marine fish family Thunnidae. 20
 - (b) Classify order Decapoda with special reference to commercially important crustaceans. 20
 - (c) Write an essay on the taxonomical characters of Cephalopoda with suitable commercial examples. 20

- (d) Order Clupeiformes—classify with special reference to commercially important fishes. 20
2. (a) Write a summary on the respiratory physiology of carps with illustrations and graphs. 20
- (b) Role of neuro-hormones on the reproductive physiology of fin fishes. 20
- (c) Write an essay on the spawning migration of European eel to Sargasso sea. 20
3. (a) Write a detailed account on the developmental biology of commercially important shrimp, *Penaeus monodon*. 20
- (b) Describe the parental care mechanism in freshwater Angel fish *Pterophyllum scalare*. 20
- (c) Write in detail about the role of X and Y organs in giant freshwater prawn *Macrobrachium rosenbergii*. 20
4. (a) Spell out the various management strategies to be followed for the conservation of marine fish biodiversity with special reference in the threatened and endangered marine organism. 20
- (b) What are all the quality indices generally estimated during the storage studies of fish and fishery

products ? And write their estimation procedures in detail. 20

- (c) Write an essay on the biochemical, serological and molecular test engaged for the identification of salmonella, shigella and vibrio species. 20

SECTION—B

5. Answer any **THREE** of the following :—

- (a) Classify the floor of the marine environment based on geomorphological features and mention their unique characteristics. 20

- (b) What is domestic sewage ? Describe its impact on aquatic environment and add a note on its treatment in India. 20

- (c) Describe different types of coral reefs and explain their major causes of destruction. 20

- (d) Explain the biological factors responsible for zonation on rocky inter tidal zone. 20

6. (a) Define productivity and explain factors limiting productivity in the sea. 20

- (b) What is marine fouling ? Explain the measures available to combat it. 20

- (c) Describe the growth kinetics of the phytoplankton and explain the seasonal succession of the phytoplankton in the tropical seas. 20

7. (a) Define estuary and explain the classification of tropical estuary based on geomorphological parameters. 20
- (b) Describe different types of lakes in India and enumerate the processes of evolution of lakes. 20
- (c) Explain bioaccumulation and biomagnification and describe the impact of organochlorine on marine birds and mammals. 20
8. (a) Comment on the growth and development of fisheries and aquaculture during different plan periods. 20
- (b) Describe the extension programme implemented for development of fisheries sector in India. 20
- (c) Explain the sampling method adopted for estimation of marine fish landings. 20