

CSM – 29/19
Fisheries Science
Paper – II

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) Describe hypophysation techniques and use of synthetic agents along with their principles in inducing breeding.
 - (b) Discuss present global scenario and trends of aquaculture.

- (c) Describe nutritional bioenergetics of fish and its application in the development of appropriate feeding strategy.
- (d) Discuss the important physic-chemical and biological indices of aquaculture ponds.
2. (a) Write, in detail, the principles of fish disease diagnosis for epidemic and endemic diseases. 20
- (b) Elaborate on selection of candidate species for aquaculture. 20
- (c) Discuss androgenesis and cryopreservation of gametes and its relevance in aquaculture. 20
3. (a) Discuss the principles and constraints of live stock integration in aquaculture practices. 20
- (b) Write on the important antinutritional factors in plant origin feed ingredients and their remedies. 20
- (c) Describe common bacterial, fungal and viral diseases of carps. 20

4. (a) Describe brood stock management of Indian major carps and freshwater prawns. 20
- (b) What is bioremediation ? Describe its relevance from intensive aquaculture prespective. 20
- (c) Elaborate on culture technique of freshwater prawn. 20

SECTION – B

5. Answer any three of the following : $20 \times 3 = 60$
- (a) Give a brief account of the different types of fish muscle proteins with special emphasis to myofibrillar proteins.
- (b) Define trawling and describe trawl fishing.
- (c) Briefly explain classification of fishing vessels based on their size and duration of voyage.
- (d) Define quality. Discuss the different factors that determine the seafood quality.
6. (a) Discuss about the role of fish in human nutrition with special reference to essential fatty acids. 20

- (b) Write down the application of HACCP system in seafood industry with process flow diagram. 20
- (c) Define value addition. Give few examples of value added fish products which are very popular from commercial point of view. 20
7. (a) Briefly explain different types of freezing systems with disadvantages, if any. 20
- (b) What is the principle of drying fish ? Briefly explain the factors which influence fish drying. 20
- (c) Briefly explain ISO-9000 series and BIS. 20
8. (a) Discuss about the different deteriorative changes of fish during frozen storage with remedial measures. 20
- (b) Describe, in brief, about the principal factors that determine the selection of fishing gear and methods. 20
- (c) Briefly explain agar agar, glucosamine hydrochloride, fish silage and pearl essence. 20

