

CSM – 29/21
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** questions of the following :

20×3 = 60

- (a) Discuss the principles behind classification of Extensive, semi-intensive and intensive culture. Make a comparative assessment of these three types of farming.
- (b) Write a note on importance of live feed. Write a brief account of different media and culture technique used for marine diatom culture.

- (c) Discuss the application of cryopreservation technique in Aquaculture. Prepare a flow chart in the process of germ cell cryopreservation technique for fish milt.
 - (d) Describe nutritional deficiency disease of fish. Write a note on pathogen-host-environment interaction in disease manifestation.
2. (a) Define carrying capacity in aquaculture pond. Write a note on the means of increasing carrying capacity and their limitations in aquaculture pond. 20
- (b) Write the importance of Bioremediation and Biofertilization. How it is different from the chemical processes ? 20
- (c) With a neatly drawn sketch describe different parts of Pituitary gland. Make an inventory of hormones and their actions in pituitary gland extract. 20
3. (a) Discuss the prophylaxis and remedial measures of commonly occurring parasitic and fungal diseases of Indian Major Carps. 20

- (b) Write the criteria of selection of species in polyculture of carps. Write a note on the importance of integrated farming in aquaculture with live stock and agriculture. 20
- (c) Discuss the nutritional requirement of fish and shell fishes. Write a note on different types of feeds used in aquaculture. 20
- 4: (a) Discuss marine pearl culture with long line and raft culture technique. Discuss the suitable site characteristics for marine pearl culture. 20
- (b) Describe the design and operation of Eco-hatchery. Write a note on Bundh breeding. 20
- (c) Discuss different types of vaccines used in fish. Write a note on quarantine protocol of imported live shellfishes. 20

SECTION – B

5. Answer any **three** questions of the following :
20×3 = 60
- (a) Write a note on protein denaturation and fatty acid oxidation.
- (b) Describe with suitable sketches trawling and gill netting in marine fishing.
- (c) Write the biochemical impacts of Salmonella and Aspergillus on preservation of processed fish and shellfish.

- (d) Discuss how fish can be considered as a complete food. Draw a sketch diagram of n-3 fatty acid with example.
6. (a) Describe IQF in shrimp processing. Write a note on warehousing and cold chain. 20
- (b) Write about the routine cares of fishing boats and gears used in coastal fishing. 20
- (c) Write short notes on Surimi and fish sausage. Discuss the means of increasing shelf life of processed fish products. 20
7. (a) Write a note on canning procedure of mackerel and prawns. What are Z value and F_0 value ? 20
- (b) State in brief : ISO9000 and BIS. 20
- (c) Discuss Carrageenan compounds and agar-agar. 20
8. (a) Explain the freezing techniques with their merits and demerits. 20
- (b) Discuss value addition. Write a note on the packaging materials used in fish processing. 20
- (c) Write a note on fishing accessories and deck equipments – briefly. 20

