

2019

Part – II

**INDUSTRIAL FISH AND FISHERIES**

**(Major)**

**Paper – IV**

Full Marks –90

Time : 4 Hours

*The figures in the right-hand margin indicate marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

1. Answer any **ten** questions from the following :

2×10=20

- (a) What do you mean by value added products? Give two such examples.
- (b) Define epitope and paratope.
- (c) Mention causative agent and symptoms of spring viremia of carp.
- (d) Define nutritional disease of fish. Give two examples.

- (e) Define minimal media.
- (f) What is macrophase ? State its function.
- (g) Classify different type of stressors.
- (h) Give an idea about closed fishing season in West Bengal.
- (i) Define HACCP.
- (j) What is Isinglass ? Mention its function.
- (k) Write down the two names of sea weed with their uses.
- (l) State the role of echosounder in fishing.
- (m) Mention the name of four plants used for boat building.
- (n) What is glazing ? State its importance.
- (o) What is freeze drying ? Mention its importance.
- (p) State the different mode of fish Vaccination.

### GROUP – A

(Fish pathology, Microbiology and Immunology)

2. Answer any **two** questions from the following :

- (a) (i) Define infectious and non-infectious disease with example.

- (ii) Discuss about the prophylactic measure taken for shrimp farm.
- (iii) Add a note on symbiosis and commensalism. 3+4+4
- (b) (i) Make a list of parasitic disease of fish.
- (ii) Discuss about the life cycle of any one parasite.
- (iii) Add a note on importance of probiotics in aquaculture. 2+5+3
- (c) (i) Enlist four bacterial and four fungal diseases of shrimp.
- (ii) Discuss different ways of fungal disease control in aquaculture.
- (iii) Add a note on white faecal disease of *Litopenaeus vannamei*. 3+5+2
- (d) Write notes on :  $2\frac{1}{2} \times 4$
- (i) Mineral deficiency disease of IMC.
- (ii) External defence mechanism of finfish.
- (iii) Different growth phases of bacteria.
- (iv) Control of protozoan disease of fish.

3. Answer any **one** question from the following :
- (a) (i) Classify bacteria on the basis of temperature and O<sub>2</sub> requirement.
- (ii) Discuss about cell mediated immunodefence mechanism of fish.
- (iii) Write note on defence mechanism of shrimp against bacterial disease.
- (iv) Add a note on aflatoxicaris in fish. 4+6+3+2
- (b) (i) Classify different types of media used for micro organism culture.
- (ii) Enlist the common ingredients of culture media and state their function.
- (iii) Discuss the mechanism of Gram staining. 6+5+4

### GROUP – B

(Fishing Method and post Harvest Technology)

4. Answer any **two** questions from the following :
- (a) (i) Discuss the different process of fish drying.
- (ii) State about the problem of Sun-drying.
- (iii) Add a note on prospects of dry fish industry in West Bengal. 6+2+2

- (b) (i) Discuss the preparation procedure of Surimi.
- (ii) State about different preservatives used in value added products preparation.
- (iii) Add a note on the expiry date of value added products.  $5+2\frac{1}{2}+2\frac{1}{2}$
- (c) Write notes on the following :  $2\frac{1}{2}\times 4$
- (i) Mechanism of 'SONAR' as fish finding device.
- (ii) FRP is a good boat building material.
- (iii) Principle of fish smoking.
- (iv) Preparation procedure of fish gelatin.
- (d) (i) Enlist different materials used for fishing gear preparation.
- (ii) State about active and passive fishing gear.
- (iii) Add a note on line fishing.  $3+4+3$

5. Answer any **one** from the following :  $15\times 1=15$

- (a) (i) Enlist important value added product prepared from fish.

- (ii) Discuss the fishmeal preparation procedure.
  - (iii) How to prepare prawn pickle ?
  - (iv) Add a note on the uses of chitin and chitosan. 3+5+4+3
- (b) Write short notes on the following : 3×5
- (i) Ferro-cement used as boat building material.
  - (ii) Turtle Exclusion Device (TED).
  - (iii) Fishing trap used in West Bengal.
  - (iv) Coating materials used in value added fish product.
  - (v) Gear preservation.
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