

**M.Sc. 3rd Semester Examination, 2019**

**FISHERIES SCIENCE**

**PAPER – FSC-301**

*Full Marks : 40*

*Time : 2 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*

**UNIT – I**

*(Fish Pathology and Disease Management)*

1. Answer any *two* questions from the following :  $2 \times 2$ 
  - (a) Define stressors with classification.
  - (b) What do you mean by immunostimulant ? Give examples of such commercial immunostimulants which are used in aquaculture.

*( Turn Over )*

(c) State about spring viremia of carp.

(d) What do you mean by primary infection and secondary infection ?

2. Answer any *two* questions from the following :  $4 \times 2$

(a) Discuss different classifications of fish diseases.

(b) Give an account on the modern aquaculture medicine.

(c) Write a note on nutritional diseases of fish.

(d) Discuss different steps of fish disease diagnosis.

3. Answer any *one* question from the following :  $8 \times 1$

(a) (i) How to understand that the fish is sick ?

(ii) Enlist different fungal diseases of Indian major carps with their causative agents.

(iii) Give an account of white spot disease of shrimp.

2 + 2 + 4

(b) (i) Enlist different bacterial diseases of shell fishes with their causative agents.

(ii) How to control bacterial diseases in fish ponds ?

(iii) Add a note on the regulation of use of antibiotics which are used in aquaculture. 4 + 2 + 2

## UNIT – II

### *(Fish Parasitology and Immunology)*

4. Answer any *two* questions of the following :  $2 \times 2$

(a) What are Natural killer cells.

(b) Write a short note on Digenian trematode infection in fish.

(c) Mention the name of pathogen and symptom of Ich disease in fish.

(d) Write a short note on Memory B cells.

5. Answer any *two* questions from the following :  $4 \times 2$

(a) Give an overview of anti-microbial proteins in innate immunity.

(b) Classify o-antibodies. Briefly describe the structure of a basic antibody with a suitable diagram.

(c) What is parasitism ? Explain different types of host in fish parasitism.

(d) Give an account of lymphoid organs and their function in teleost fish.

6. Answer any *one* question from the following :  $8 \times 1$

(a) (i) What are phagocytes ? Briefly describe the mechanism of phagocytosis. 4

(ii) Write a short note on T lymphocytes. Give an account of various classes of T lymphocytes. 4

(b) (i) Briefly discuss on flagellated protozoan infestation in fish and their treatment methods. 4

(ii) Write a note on parasitic crustacean in cultured fish and their control measures.

4

