

**2013**

**M.Sc.**

**3rd Semester Examination**

**AQUACULTURE MANAGEMENT & TECHNOLOGY**

**PAPER—AMT-304**

*Full Marks : 40*

*Time : 2 Hours*

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

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

*Illustrate the answers wherever necessary.*

**(Immunology, Vaccination and  
Diagnostic Equipments)**

1. Write in brief on *four* of the following : 2×4
- (a) Define antigen and haptan.
  - (b) What are the difference between 'Probiotic' and 'Prebiotic' ?
  - (c) Define DNA vaccine. Mention two names of fish / shrimp vaccines available in market in West Bengal.

(Turn Over)

- (d) Mention the role of Acrylamide and Bis-acrylamide used in SDS-PAGE.
- (e) How  $R_f$  value is calculated in paper chromatography?
- (f) Mention the role of heamocyte cell.
- (g) What is the full form of LSP? Mention its uses in aquaculture.
- (h) Define immunoglobulin. Mention the name of immunoglobulin observed in Elasmobranchs and Teleosts.

2. Answer any *four* of the following : 4×4

- (a) Explain fish health certificated and its importance in aquaculture.
- (b) Enumerate the structure of a typical immunoglobulin molecule.
- (c) Discuss cellular immune response in shrimp.
- (d) State the different modes on fish vaccine application.
- (e) Write down the principle of gel filtration chromatography and its application.
- (f) State the role of  $\beta$ -glycan in fish immunity.

(g) Write a name of Density gradient centrifugation and its application.

(h) Discuss a non specific defense mechanism in fish.

3. Answer any *two* of the following : 8×2

(a) (i) What is meant by zoomatic disease?

(ii) Discuss the modes of transmission of Anisakis nematode from fish to human.

(iii) Add a note of aquatic animal disease and public health fishery. 2+3+3

(b) (i) Write down the principle of Electrophoresis.

(ii) Enlist the different types of electrophoresis.

(iii) Discuss thin layer chromatography. 3+2+3

(c) (i) Define oxygenator component. Give two names of such components used in aquaculture.

(ii) Mention the names of two commercially available immunostimulus with their brand name, dosage and mode of action.

(iii) State the uses and dosage of the following commercially branded aquaculture products :  
'Bio Marine', 'Polgard', 'Problend', 'Hitek Powder'.  
2+2+4

- (d) (i) Enlist the characteristics of an immunoglobulin molecule.
- (ii) Define and classify epitope.
- (iii) Add a note on cell mediated immunity in bony fish. 2+2+4
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