UG/II/AQM/H/III/15

2015

AQUACULTURE MANAGEMENT

[Honours]

PAPER – III

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 *ten* questions from the following : 2 × 10

(*a*) What do you mean by NPU(%) value ?

(*b*) Define bio-energetics.

(*c*) Mention the characteristics of pectin and lecithin.

(*d*) Mention the source of Agar powder and Haematoxylin.

(*e*) Enumerate the role of temperature on enzyme activity.

(*f*) Mention the composition of Bristol solution.

(*g*) Differentiate virus from bacteria in respect to genetical point.

(*h*) Mention the scientific name of Brine shrimp and one blue green algae.

(*i*) Differentiate adjuvants from hapten.

(*j*) Mention the causes of rancidity during fish spoilage.

(*k*) Define humoral immunity.

(*l*) Define antioxidant with examples.

(*m*) What do you mean by microencapsulated diets ?

(*n*) Write down the causes and symptoms of white spot disease of shrimp.

(*o*) Define coenzyme. Write two important functions of coenzyme.

GROUP – A

2. Answer any *two* of the following : 10×2

(*a*) (*i*) Mention the natural feed and feeding habit of *Macrobrachium Rosenbergii* and *Penacus Monodon*.

(*ii*) Discuss the feed formulation technique using any example by square method of Hardy (1980).

(*iii*) Add a note on feed preservative. $4 + 4 + 2$

(*b*) (*i*) What do you mean by supplementary feed ?

(*ii*) Enlist different protein supplementary non-conventional fish feed ingredients.

(*iii*) Briefly describe the use of feed attractants and probiotics. 2 + 4 + 4

(*c*) (*i*) Why live foods are very important in aquaculture ?

(*ii*) Discuss about the Spirulina culture method in the laboratory.

(*iii*) Enlist the Candidate Species of phytoplankton and zooplankton in our West Bengal freshwater bodies. $2\frac{1}{2} + 4 + 3\frac{1}{2}$

(*d*) (*i*) Define the disease triangle concept.

(*ii*) Mention two fungal and two protozoan diseases of fish.

(*iii*) Discuss about the life cycle of *Argulus* sp.

(*iv*) Mention the treatment method of bacterial diseases. 2 + 2 + 3 + 3

3. Answer any *one* of the following : 15 × 1

(*a*) (*i*) Write a note on food pigments.

(*ii*) Discuss about the nutritional deficiency disease of fishes.

(*iii*) Narrate the large scale tubifex culture method in the laboratory.

(*iv*) Add a note on the protein digestion process in any one fishes. 2 + 5 + 5 + 3

(*b*) (*i*) Briefly describe specific and non -specific defence system in fish.

(*ii*) Mention the causes, symptoms and treatment method of EUS in fish.

(*iii*) Discuss about the black spot disease of shrimp.

(*iv*) Enlish the metazoan disease of fish and discuss any one of them. $4+4\frac{1}{2}+3+3\frac{1}{2}$

GROUP – B

4. Answer any *two* of the following : 10 × 2

(*a*) (*i*) What are differences between SEM and TEM ?

(*ii*) Discuss the different parts of light microscope.

(*iii*) State the principle of phase contrast microscope. 3 + 4 + 3

(*b*) (*i*) Write scientific name of following bacteria :

bacilli, cocci, spirals and coma shaped bacteria.

(*ii*) Discuss about the double staining method of histological slide.

(*iii*) Add a note on gram + ve and gram – ve bacteria. 4 + 4 + 2

(*c*) (*i*) Discuss about the ultrastructure of any fungal specien available in aquaculture pond.

(*ii*) Narrate the Rich Soup hypothesis of operain.

(*iii*) Add a note on the ultrastructure of flagellum. 4 + 4 + 2

(*d*) (*i*) Discuss about the role of bacteria in the nitrogen cycle in fish pond.

(*ii*) What do you mean by β-oxidation ?

(*iii*) Add a note on growth phages of bacteria. $3\frac{1}{2} + 3 + 3\frac{1}{2}$

5. Answer any *one* of the following : 15×1

(*a*) (*i*) Define autotrophic and heterotrophic bacteria.

(*ii*) What are the steps to be taken for culture of bacteria ?

(*iii*) Add a note on the effect of temperature on the growth of bacteria.

(*iv*) Discuss about the role of microbes in food chain. $3 + 5 + 4 + 3$

(*b*) (*i*) Define primary stain and counter stain with example.

(*ii*) Discuss in brief the cell mediated immunity in fish.

(*iii*) Classify different types of Immunoglobulin.

(*iv*) What do you understand by fish immunization ? Mention different fish immunization process. 3 + 4 + 4 + 4
