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UG/II/AQM/H/III/16(Old)

2016

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

[OLD SYLLABUS]

1. Answer any *ten* of the following : 2 × 10
- (a) Define probiotics.
 - (b) Write any three properties of Maltose.
 - (c) Define Biological value.

(Turn Over)

- (d) Enlist six categories of enzymes based on catalysed reaction recommended by IUBMB.
- (e) Write the systematic position of Tubifex.
- (f) What do you mean by pop-eye disease ?
- (g) Write the difference between a disease and a syndrome.
- (h) State the commercial importance of sea weeds.
- (i) Name two piscicides along with their application dose.
- (j) Write the working principle of phase contrast microscope.
- (k) Write the full form of MrNV and TSV.
- (l) Differentiate autotrophic and heterotrophic bacteria with an example for each.
- (m) What do you mean by Gram staining ?

(n) Write the principle of ELISA.

(o) Define bioremediation.

GROUP – A

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

(a) (i) Discuss the nutritional requirements of Indian major carps.

(ii) Write a note on anti-nutritional factors present in various fish feed ingredients.

(iii) What are the advantages of micro-encapsulated diets ? 4 + 4 + 2

(b) (i) Give a detailed classification of carbohydrates according to their degree of polymerisation.

(ii) Write a short note on essential amino acids.

(iii) What is scoliosis ? What is the cause of scoliosis ? 5 + 3 + 2

(c) (i) What is a live-feed ? Write the importance of live-feed in shrimp hatchery.

(ii) Explain the biology and culture method of rotifers.

(iii) Write the scientific name and classification system of brine shrimp. Add a note on hatching of artemia cyst.

2 + 4 + 4

(d) (i) Discuss in detail the principles and methods of fish disease diagnosis.

(ii) What is 'Ich' disease ? Name the causative agent and write its life cycle.

5 + 5

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

(a) (i) Compare and contrast the defense mechanism in fish and prawn.

(ii) Discuss the viral diseases of shrimps and their impact on Indian shrimp culture.

(iii) "Prevention is better than cure". Discuss the proverb narrating better management practices for shrimp farming. 5 + 5 + 5

(b) (i) Discuss the nutritional bio-energetics of a typical carnivore fish species.

(ii) Write a small note on feed attractants used in fish feeds.

(iii) Calculate the quantity of feed ingredients 'A'(with 10% protein) and 'B' (with 30% protein) to prepare 100 kg of feed of 25% protein by Hardy square method.

(iv) What are the advantages and disadvantages of natural feeds?

5 + 4 + 4 + 2

GROUP – B

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

(a) (i) Describe the classification of fish proteins in fish muscle based on their solubility.

(ii) Define autooxidation.

(iii) What are the structural changes associated with protein during freezing? 4 + 2 + 4

- (b) (i) What is a co-enzyme ? Write its functions.
- (ii) Describe the biosynthesis of ATP with the help of schematic diagram of ATP cycle.
- (iii) Write a small note on non-protein nitrogenous components present in fish. $3 + 5 + 2$
- (c) (i) Write the differences between bacterium and virus.
- (ii) Classify bacteria based on their shape with an example for each of them.
- (iii) Discuss characteristic features of protozoa and their role in aquaculture ponds. $3 + 3 + 4$
- (d) (i) Define resolving power.
- (ii) Describe the working principle and different types of electron microscope.
- (iii) What is a parfocal lens ? Write its uses in microscopy. $2 + 5 + 3$

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

(a) (i) Explain different stages of bacterial growth. What are the factors that influence growth of bacteria ?

(ii) Discuss different types of bacterial culture media with suitable examples.

(iii) Write the differences between synthetic and non-synthetic bacteria.

(iv) Write the differences between facultative and obligate aerobic bacteria with examples. 5 + 5 + 3 + 2

(b) (i) Describe innate and humoral immunity in fish.

(ii) Discuss the role of microorganisms in nutrient regeneration in aquaculture ponds.

(iii) What are adjuvants ? Describe their classification and applications in aquaculture. 5 + 5 + 5