

M.Sc. 2nd Semester Examination, 2011

**AQUACULTURE MANAGEMENT &
TECHNOLOGY**

(Fish Nutrition, Informatics & Ornamental Fish)

PAPER—AMT-202

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

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

(a) Differentiate 'Digestible Energy (DE)' and
'Metabolisable Energy (ME)' ?

(Turn Over)

- (b) Mention the composition of nutrient media of zooplankton culture.
- (c) Define FCR and PER.
- (d) Describe the role of additives in aqua-feed preparation.
- (e) Name two 'live bearer' and two 'egg laying' ornamental fishes.
- (f) Name commercially used one antioxidant and preservative which are commonly used in the aqua-feed preparation for long-term storage.
- (g) How would you calculate the relative growth and specific growth rate ?
- (h) What is demand feeder ?

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

- (a) Comment on "probiotics are species specific and area specific".
- (b) Discuss the role of vitamin-C in fish or shrimp nutrition and health management.

- (c) Explain the role of bio-filter and aerator in aquarium.
- (d) State the needs of propagation of plant in aquarium and why over plantation will not be desired.
- (e) Add a note on ornamental fish marketing in West Bengal.
- (f) Briefly discuss *Spirulina* culture in laboratory condition.
- (g) Write down the protocol for determination of 'Moisture' and 'Ash' content in fish feed.
- (h) Explain the essential criteria of diet formulation of fish feed.

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

- (a) (i) What do you mean by non-conventional fish feed resources? Enlist them.

(ii) With the help of square method of Hardy prepare 200 kg of fish feed with 30% protein by using following ingredients :

- (a) Rice bran 14% protein
- (b) Soybean meal 52% protein
- (c) Fishmeal 48% protein
- (d) Cornmeal 12 protein.

(iii) Add a note on antinutritional factors in fish feed ingredients. 2 + 4 + 2

(b) Discuss the factors for breeding of aquarium fish. Write the technique of breeding of Gold fish and Angel fish. Write down the advantages and disadvantages of use of live feed in aquarium fish management. 8

(c) (i) Define probiotics.

(ii) Enlist the different types of probiotics used in the shrimp farming pond of West Bengal.

(iii) Add a note on fute of probiotic farming in West Bengal. $1\frac{1}{2} + 4 + 2\frac{1}{2}$

- (d) (i) Write down the name of four each Exotic and Indigenous ornamental fishes.
- (ii) Enlist different ornamental objects used in home aquarium.
- (iii) Discuss the construction and management of home aquarium. 2 + 2 + 4
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