

M.Sc. DEGREE END SEMESTER EXAMINATION - APRIL 2026**SEMESTER 2 : AQUACULTURE AND FISH PROCESSING**

COURSE : 24P2AQCT06/21P2AQCT06 : BIOCHEMISTRY AND NUTRITION OF FIN FISH AND SHELL FISH

(For Regular 2025 Admission and Improvement/Supplementary 2024/2023/2022/2021 Admissions)

Time : Three Hours

Max. Weights: 30

PART A**Answer any 8 questions****Weight: 1**

1. Define pH and state its significance in aquaculture. (A, CO 1)
 2. What is Okazaki fragments? (U, CO 1)
 3. Define NPU. (A, CO 5)
 4. What is Gossypol? (R, CO 4)
 5. What is L-gulonolactone oxidase? (R, CO 1)
 6. Explain the mechanisms of heat loss in fishes. (An, CO 3)
 7. Give examples for protein and steroid hormones in fishes. (A, CO 2, CO 8)
 8. Give an account on the functions of amino acids in fish nutrition. (An, CO 5)
 9. What are Glycolipids? (R, CO 1, CO 3)
 10. Define Iodine number. (U, CO 1)
- (1 x 8 = 8)**

PART B**Answer any 6 questions****Weights: 2**

11. Briefly explain the fat digestion in fishes. (An, CO 1, CO 3)
 12. Explain the reaction of monosaccharides with acid and alkali. (A, CO 1)
 13. What is the significance of Antioxidants in feeds ? Which are the commonly used antioxidants? (A, CO 7, CO 8)
 14. What is meant by feed rotation? (A, CO 8)
 15. Explain isozymes citing suitable examples. (E, CO 1)
 16. Classify vitamins and explain its role in human metabolism. ()
 17. Give an account on the macrominerals and their function in fish nutrition. (E, CO 8)
 18. Explain the classification of amino acids. (An, CO 1, CO 5)
- (2 x 6 = 12)**

PART C**Answer any 2 questions****Weights: 5**

19. Explain biosynthesis and beta-oxidation of fatty acids. (U, CO 1)
20. Give a comparative account of proteins, lipids and carbohydrates as energy sources in fishes. Add a note on their dietary roles. ()
21. Describe the feeding and feed management in sustainable carp farming. (E, CO 7)
22. Write an essay on antinutritional factors in plant protein sources. (An, CO 5)

(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

| CO | Course Outcome Description | CL | Questions | Total Wt. |
|------|---|----|------------------------------------|-----------|
| CO 1 | CO 1 Understand the basic principles of biochemistry as applied to aquaculture organisms in relation with environmental factors | U | 1, 2, 5, 9, 10, 11, 12, 15, 17, 18 | 18 |
| CO 2 | Understand the application of different additives in aquaculture feeds | U | 7 | 1 |
| CO 3 | Describe the nutritional bioenergetics in fin fish and shell fish | U | 6, 9, 11 | 4 |
| CO 4 | Understand the classification of feed stuff and anti-nutritional factors present in its | U | 4 | 1 |
| CO 5 | Evaluation of quality of feed ingredients and finished feed | E | 3, 8, 17, 20 | 9 |
| CO 7 | Understand the management of feeding in aquaculture arms and hatcheries | U | 13, 19 | 7 |
| CO 8 | Understand the nutritional requirements of finfishes and shell fishes under culture condition | U | 7, 13, 14, 16 | 7 |

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;