

PG (CBCS)  
M.Sc. Semester- IV Examination, 2023  
FISHERIES SCIENCE  
PAPER: FSC 403

(AQUACULTURE ENGINEERING & ENVIRONMENT MANAGEMENT AND  
FISH GENETICS AND BIOTECHNOLOGY)

Full Marks: 40

Time: 2 Hours

**Write the answer for each unit in separate sheet**

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.

**UNIT: 403.1**

**AQUACULTURE ENGINEERING & ENVIRONMENT MANAGEMENT**

**F.M. - 20**

**GROUP-A**

1. Answer any **TWO** of the following questions: 2×2=4
- Define extensive aquaculture.
  - What is organic aquaculture?
  - What is the contribution of aquaculture in National GDP?
  - What do you mean by Semi closed recirculating system?

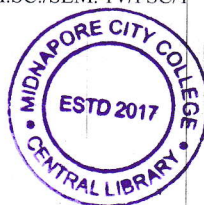
**GROUP-B**

2. Answer any **TWO** from the following questions: 2×4=8
- Briefly describe present status of world fish production.
  - What are the major criteria for site selection of brackishwater shrimp farms?
  - Describe different aeration system used in intensive aquaculture.
  - Write a short note on biological filtration system in aquaculture?

**GROUP-C**

3. Answer any **ONE** of the following questions: 1×8=8
- What is pond dyke? Describe methods of pond dyke (earthen type) construction with diagram. 2+6
  - Write briefly the ideal water and soil quality parameters needed for optimum production of *Macrobrachium rosenbergii*. 4+4

(P.T.O)



**UNIT: 403.2**  
**FISH GENETICS AND BIOTECHNOLOGY**

**F.M. - 20**

**GROUP-A**

4. Answer any **TWO** from the following questions:

2×2=4

- a) What is Selective breeding in Fish?
- b) Distinguish between natural gynogenesis and induced gynogenesis.
- c) What do you mean by intergeneric hybridization?
- d) What do you mean by hypophysation?

**GROUP-B**

5. Answer any **TWO** from the following questions:

2×4=8

- a) What is transgenic fish? Explain its importance in aquaculture development.
- b) Discuss different methods of sterilization in fish and its utility.
- c) What do you mean by Polyploidy in fish?
- d) Discuss about intra specific and interspecific hybridization in fishes.

2+2

**GROUP-C**

6. Answer any **ONE** from the following questions:

1×8=8

- a) Define genome manipulation. State the role of steroid hormone for sex reversal in fishes.
- b) Elaborate the process of DNA folding and packaging into a metaphase chromosome. Discuss briefly the karyotyping in fish.

2+6

5+3

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