

PG (CBCS)
M.SC. Semester- III Examination, 2023
FISHERIES SCIENCE
PAPER: FSC 302

**(FISH GENETICS AND BIOTECHNOLOGY AND AQUACULTURE
 ENGINEERING AND MANAGEMENT)**

Full Marks: 40

Time: 2 Hours

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.

Write the answer for each unit in separate sheet

UNIT: FSC 302.1

FISH GENETICS AND BIOTECHNOLOGY

GROUP-A

1. Answer any **TWO** of the following questions: 2×2=4
- a) State the importance of mono-sex fish culture.
 - b) What do you mean by Karyotype?
 - c) Why induced breeding is called hypophysation?
 - d) What do you mean by selective breeding?

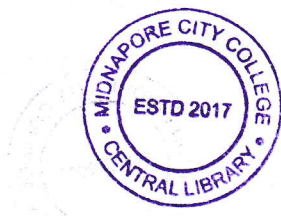
GROUP-B

2. Answer any **TWO** of the following questions: 2×4=8
- a) Write a note on structure of Nucleosome. 4
 - b) Write in brief the polyploidy in fish and its utility in aquaculture. 3+1
 - c) Define transgenic fish? Give an idea about molecular markers. 2+2
 - d) Briefly describe fish hybridization with suitable examples. 4

GROUP-C

3. Answer any **ONE** of the following questions: 1×8=8
- a) Elaborate the process of DNA folding and packaging in to a metaphase chromosome. 5+3
 Discuss hormonal manipulation in fish breeding technique.
 - b) Define gynogenesis? Write down the process of meiotic gynogenesis in fish with suitable diagram. State its advantages. 2+5+1

P.T.O



UNIT: FSC 302.2

AQUACULTURE ENGINEERING AND MANAGEMENT

GROUP-A

4. Answer any **TWO** of the following questions: 2×2=4
- Explain two major benefits of using organic manures in aquaculture.
 - State the major ecological benefits of IMTA?
 - Explain the concept of Aquamimicry.
 - What is monk sluice?

GROUP-B

5. Answer any **TWO** of the following questions: 2×4=8
- Describe the essential structural components of a pond dyke with proper diagram.
 - Discuss the strategies for efficient water management in the integration of fish with paddy cultivation.
 - Compare different types of sluice gates commonly used in intensive aquaculture.
 - Explain the role of a spillway in pond dyke design and construction, focusing on its importance in preventing overtopping during heavy rainfall.

GROUP-C

6. Answer any **ONE** of the following questions: 1×8=8
- Define Partitioned Aquaculture Systems (PAS) and describe how they differ from traditional open pond aquaculture systems. Discuss the advantages of PAS. 2+3+3
 - State the principles of organic aquaculture. Explain the significance of conducting an environmental impact assessment before establishing an aquafarm. What are the key parameters to evaluate during this assessment? 2+3+3
