

Please check whether you have got the right question paper.

- N.B:
1. **All** questions are **compulsory**.
 2. **All** questions carry **equal marks**.
 3. Draw neat, **labelled** diagrams wherever **necessary**.

- Q.1** Give an account of non-chromosomal inheritance in fishes. **12**
- OR**
- Q.1 a)** What is transgenic fish? Discuss the status and issues in brief. **06**
b) What are super-males? Describe the method of producing super-males. **06**
- Q.2** Discuss use of biochemical and molecular genetic markers in hybridization. **12**
- OR**
- Q.2 a)** Give an account of biotechnological tools used in aquaculture. **06**
b) Give an account of disease resistance in fishes. **06**
- Q.3** What are Anti-microbial peptides? Discuss their applications. **12**
- OR**
- Q.3 a)** Describe therapeutic proteins and their uses. **06**
b) What are probiotics? Discuss their applications. **06**
- Q.4** What is a stem cell culture? Discuss types, properties and characterization of stem cell culture. **12**
- OR**
- Q.4 a)** Give an account of Biofilm and subunit vaccines in fishes. **06**
b) Give an account of DNA markers and their application in aquaculture. **06**
- Q.5** Write short notes on **any three** of the following: **12**
- a) Mitochondrial inheritance
 - b) NOR Banding
 - c) Primary cell culture
 - d) Cell Banking
 - e) Nutraceuticals
 - f) Marker Assisted Selection (MAS)