



বিদ্যাসাগর বিশ্ববিদ্যালয়  
**VIDYASAGAR UNIVERSITY**  
**Question Paper**

**B.Sc. Major Examinations 2021**  
(Under CBCS Pattern)  
**Semester - III**  
**Subject : INDUSTRIAL FISH AND FISHERIES**  
**Paper : C 5 - T & P**

**Full Marks : 60 (Theory - 40 + Practical - 20)**

**Time : 3 Hours**

*Candidates are required to give their answers in their own words as far as practicable.  
The figures in the margin indicate full marks.*

**[ FISH GENETICS, ENDOCRINOLOGY AND REPRODUCTION ]**

**(Theory)**

**Group-A**

1. Answer any **three** of the following questions : 12×3=36
- (a) Give an overview of restriction endonucleases. Briefly write on application of recombinant DNA technology in aquaculture. 6+6
- (b) What is a mutation? Explain different types of mutations with suitable diagram. 2+10
- (c) Briefly describe hybridization in fish with suitable example. Add a note on gynogenesis in fish. 6+6

- (d) Discuss about the exogenous factors that affects gonadal maturation in fish. Mention the name of hypophysial hormones. 8+4
- (e) Give an account of mode of reproduction in fish with suitable examples. 12
- (f) What is transgenic fish? Mention different steps involved in transgenic fish production. State its application in aquaculture. 12

### Group-B

2. Answer any *two* of the following questions : 2×2=4
- (a) Write the significance of DNA fingerprinting.
- (b) Explain open reading frame (ORF) in a DNA sequence.
- (c) What is the function of sexual dimorphism in fishes?
- (d) Write short not on pheyomones in fish.

### Practical

#### Group - A

1. Answer any *one* of the following questions : 15×1=15
- (a) Draw a labelled diagram of a teleostean pituitary gland. Write the procedure of preparation and preservation of pituitary gland extract. 6+6+3
- (b) Draw a label different unit of modern carp hatchery complex. Mention the optimum level of water parameter to be maintained in carp hatching pool. 10+5
- (c) Write the identifying characters of the fry of the following species : 5×3=15
- (i) Labeo rohita
- (ii) Cirrhinus mrigala
- (iii) Catla catla
- (iv) Ctenopharyngodon idella

(v) *Clarias batrachus*

**Group - B**

2. Answer any **one** of the following questions : 5×1=5
- (a) Write the procedure of calculation of GSI. Mention its significance. 3+2
- (b) What is induced gynogenesis? State its importance. 3+2
- (c) Write the name of synthetic compounds used in fish breeding. Mention the does for IMC for induced breeding. 2+3
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