2025

3rd Semester Examination

4-Years B.F.Sc.

Paper : BFSC-306

(Genetics and Breeding)

Full Marks : 50 Time : Two Hours

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

Group - A

1. Answer any ***ten*** questions : 2×10=20

(a) What is genotype? How does it differ from phenotype?

(b) Define hybridization. Mention any two objectives of hybridization in fish.

(c) What do you mean by lethal genes?

(d) What is non-disjunction?

(e) Differentiate between pericentric and paracentric inversion.

(f) What do you mean by panmictic population?

P.T.O.

(g) Explain Mendel's law of segregation.

(h) Differentiate between sex-influenced and sex-limited traits.

(i) What is the role of Extender in cryopreservation?

(j) Define pleiotropism with example.

(k) Mention the assumptions of Hardy-Weinberg Law.

(l) Which cryoprotectants are most effective in preserving carp male gamete?

(m) Explain incomplete dominance with suitable example.

(n) What is the difference between androgenesis and gynogenesis in fish?

(o) What is tautomeric shift?

Group - B

2. Answer any ***six*** questions : 5×6=30

(a) An allele R, for red body colour, is dominant over allele *r*, for white body colour. In a sample of 900 ornamental fish, 891 are red and 9 are white. Calculate the allelic frequencies within this population, assuming that the population is in H-W equilibrium.

(b) Describe the structure of eukaryotic chromosomes and outline the types of chromosomes on the basis of position of centromere.

(c) Describe the process of induced polyploidy in fish with suitable diagram.

(d) Write a note on sex reversal in fish with its importance.

(e) Define cryopreservation. Write down the objectives of cryopreservation of fish gametes.

(f) Describe epistasis, citing examples of epistasis with phenotypic ratio.

(g) What do you mean by quality fish seed? State the importance of seed certification.

(h) How does a high heritability value for a trait influence a breeding program? Explain the concept of phylogenetic traits in aquaculture.

(i) Give an account of induced gynogenesis in fish with its importance.

(j) What do you mean by inbreeding depression? Write a note on significance of selective breeding program in aquaculture.