

2023

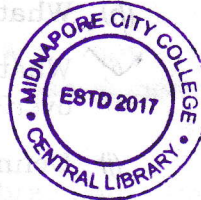
BFSC 3rd Semester Examination

Genetics and Breeding

PAPER — BFSC-306

Full Marks : 50

Time : 2 hours



The figures in the right-hand margin indicate marks.

*Candidates are required to give their answers
in their own words as far as practicable.*

Illustrate the answers wherever necessary.

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

✓(a) What do you mean by incomplete dominance? Give an example.

✓(b) Define genome manipulation.

✓(c) What are gynandromorphs?

(2)

- (d) Write short note on sex-linked inheritance.
- (e) What is silent mutation? Give an example.
- (f) Mention the name of two fish species which show natural gynogenesis.
- (g) Define Mendel's law of segregation.
- (h) What is extender?
- (i) What do you mean by linkage and crossing over?
- (j) Define androgenesis.
- (k) Give an example of polygenic inheritance.
- (l) State Hardy-Weinberg principle of equilibrium.
- (m) Distinguish between Permeating and Non-permeating cryoprotectants.
- (n) What do you mean by codominance?
- (o) Differentiate between transition mutation and transversion mutation.

2. Answer any six questions from the following :

5×6=30

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

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(Continued)



(3)

- (a) Write a note on epistasis with suitable example.
- (b) Briefly describe fish hybridization with suitable examples.
- (c) Describe the process of production of induced meiotic gynogen in fish.
- (d) Define cryopreservation. Write down the steps of cryopreservation of fish gametes.
- (e) What do you mean by inbreeding? State the consequences of inbreeding in fish.
- (f) Briefly describe different types of numerical chromosomal aberration.
- (g) Within a population of butterflies, the colour brown (B) is dominant over the colour white (b). And, 40% of all butterflies are white. Given this simple information, which is something that is very likely to be on an exam, calculate the following :
- (i) The percentage of butterflies in the population those are heterozygous
- (ii) The frequency of homozygous dominant individuals

1+4=5

2+3=5

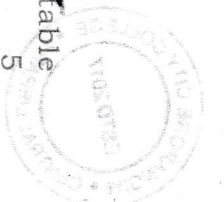
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(Turn Over)





(4)

✓ Define transgenic fish. Mention its importance in the development of aquaculture. 2+3=5

✓ Describe polyploidy in fish with suitable diagram. 5

(c) Describe the process of production of induced mutation in fish. ★★★

Define cryopreservation. Write down the steps of cryopreservation of fish gametes. X

What do you mean by inbreeding? State the consequences of inbreeding in fish. ✓

Briefly describe different types of numerical chromosomal aberrations. ✓

(A) Within a population of butterflies, the colour brown (B) is dominant over the colour white (b). And 40% of all butterflies are white. Given this simple inheritance, which is something that is very likely to be on an exam, calculate the following:

(i) The percentage of butterflies in the population that are heterozygous.

(ii) The frequency of homozygous dominant individuals.

(iii) The frequency of homozygous dominant individuals.