



QP CODE: 25050548



Reg No :

Name :

MSc DEGREE (CSS) EXAMINATION DECEMBER 2025

First Semester

M Sc BIOSTATISTICS

Core Courses - ST020104 - STATISTICAL GENETICS AND ECOLOGY

2019 Admission Onwards

BF2C1FFF

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. What is meant by gene?
2. Define fitness.
3. State Hardy-Weinberg equilibrium.
4. What is allele frequency and why is it important?
5. Compare Interference and Coincidence.
6. What are the different levels of ecology?
7. State Natural selection
8. What is meant by Isoclines?
9. Define genetic diversity.
10. Discuss Evolutionarily stable strategy.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Explain Dihybrid test cross.
12. Model how the frequency of X linked gene approach to equilibrium.
13. Compare Random mating and Non random mating with examples.
14. Distinguish between Two-point cross and Three-point cross.
15. Derive the model for linear growth.





16. What are the advantages and disadvantages of Leslie Matrices?
17. Describe Waterhole census.
18. Write a note on Simpson Index.

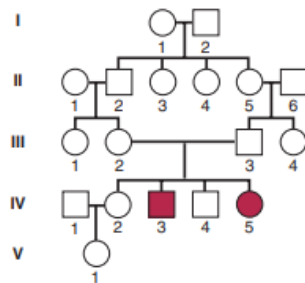
(6×2=12 weightage)

Part C (Essay Type Questions)

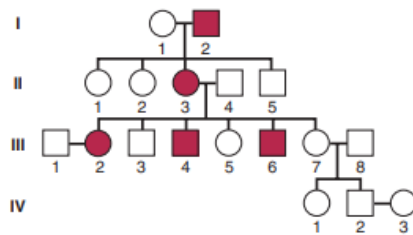
Answer any **two** questions.

Weight 5 each.

19. What assortative mating? Explain how it is different from disassortative mating
20. a) Discuss on Pedigree analysis.
b) In the following pedigrees, determine whether the trait is more likely to be due to a dominant or a recessive allele. Assume the trait is rare in the population.



(a)



(b)

21.
 1. Write a note on Survivorship curve.
 2. Explain the importance of Weibull distribution in ecological context.
22. What is meant by point to individual nearest neighbor distance in Poisson forest? Derive maximum likelihood estimator of parameter λ . Is this estimator unbiased? If not obtain its bias and also give unbiased estimator of λ .

(2×5=10 weightage)

