SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
M.Sc.Biostatistics - END SEMESTER EXAMINATIONS - NOV' 2024
SEMESTER - I
24PBSET1A01 - Statistical Genetics

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Illustrate the concept of genetic maps and explain their importance in studying heredity.
2. Explain gene frequency and relate it to population genetics, providing an example to show its significance.
3. Solve common statistical problems in human genetics and prepare a brief explanation of their implications.
4. Explain the concept of polygenic traits and describe their significance in genetics.
5. Show how the Chi-square test is applied to genetic data, and compute the expected results for a Mendelian ratio, providing an example to explain the process.
6. Apply the principles of linkage detection using back cross data and classify the key factors involved in estimating linkage.
7. Explain the concept of a multiple allelic system and describe its significance in genetics.
8. Determine the concept of heritability and explain its importance in genetics.

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Elucidate different types of linkage and crossing-over, and predict their effects on genetic variation with relevant examples.
10. Classify various types of gene interactions and explain the expected outcomes in both monohybrid and dihybrid crosses.
11. Ascertain the principles of Hardy-Weinberg equilibrium and determine how they affect gene frequencies in a population, justifying your findings with examples.

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12. Prepare an analysis of human blood groups based on multiple allelic inheritance, predicting their evolutionary significance.

II - Compulsory question $(1 \times 10 = 10$ Marks)

13. Analyse the different mating methods in genetics, contrasting their advantages and disadvantages for trait enhancement.

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