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PG

M.Sc. Semester-I Examination, 2021

GENETICS AND PLANT BREEDING

PAPER: GPB 104 (Theory + Practical)

(PRINCIPLES OF QUANTITATIVE GENETICS)

Full Marks: 65 **Time: 4 Hours**

THEORY

Answer any FOUR questions from the following: **4X10 = 40**

1. What is diallel analysis? Accroding to Hayman (1954), what are its basic assumptions? What are the merits of combining ability? 2+5+3
2. Briefly describe Metroglyph analysis. Explain the genotype, phenotypic and environmental variance. Describe the significance of path coefficient analysis in plant breeding. 2+4+4
3. Mention the differences between broad sense and narrow sense heritability. Discuss the application of MAS and QTL mapping in crop improvement. 4+6
4. Write down the inferences that can be drawn from the Vr-Wr graph depending upon the position of regression line. What are the draw backs of diallel analysis? 5+5
5. What is Line × Tester analysis and describe its utility? What are the different types of biparental mating? 6+4
6. 6. What is mapping population? Describe different kinds of mapping populations. Describe the steps of QTL mapping. 2+3+5
7. Differentiate qualitative and quantitative inheritance. Differentiate full diallel and half diallel. 5+5
8. Write short notes on the following (any five): 5×2
    a) ANOVA
    b) Selection differential
    c) D^2 analysis d) Genetic advance
    d) GXE interaction
    e) Combining ability
    f) Line x Tester analysis
    g) Partial diallel analysis

PRACTICAL

Answer any ONE question from the following: **1X15=15**

1. How to estimate diallel mating system. Explain with table. 15
2. What are the different types of diallel matting system? 10

OR

3. What is Quadriallel analysis and Triallel analysis. Explain about the system? 15
4. Explain, line x tester analysis with example. 10

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