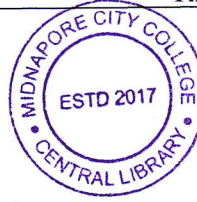


M.Sc. Semester-I Examination, 2022
(AGRICULTURE) IN GENETICS AND PLANT BREEDING
PAPER: GPB 503
(FUNDAMENTALS OF QUANTITATIVE GENETICS)

Full Marks: 50

Time: 2 Hours

GROUP-A1. Answer any **FIVE** questions from the following:

2 X 5 = 10

- a) Define quantitative genetics.
- b) Explain LOD?
- c) What is heterozygous and homozygous population? Give example for each.
- d) Why path coefficient analysis is carried out after correlation analysis?
- e) What is glyph?
- f) Differentiate between PCA and D² analysis.
- g) What are the different factors responsible for acclimatization?
- h) Explain adaptability.

GROUP-B2. Answer any **FOUR** questions from the following:

5 X 4 = 20

- a) Who give the concepts of D² statistics? Explain the merits and Demerits D² statistics. 1+4
- b) What do you mean by QTL? Distinguish between Simple and complex interval mapping. 2+3
- c) What is selection index? Briefly explain different categories of selection index. 1+4
- d) Who developed the procedure of diallel cross analysis? Explain the inferences of Vr-Wr graph. 1+4
- e) Write down the main features of partial diallel analysis. Differentiate between diallel and partial diallel cross. 3+2
- f) What is joint scaling test? Explain the six parameter model of generation mean analysis. 2+ 3
- g) What is breeding value? Explain the main features of breeding value. 2+3
- h) How do you estimate direct, indirect and residual effect? Explain with examples.

(P.T.O.)

(2)

GROUP-C**3. Answer any TWO questions from the following:****10 X 2 = 20**

- a) List the classification genetic variances suggested by Fisher (1918), Wright (1935) and Mather (1949). Briefly explain about additive, dominance and epistatic variance. 4+6
- b) What is gene action? Explain the main features of gene action. Write down the factors affecting the gene action. 2+4+4
- c) What are the different models to test genotype into environment interaction in crop improvement programme? Explain a model in details mentioning the significance of each parameter in plant breeding programme. 4+6
- d) What is heterosis? Describe different theories of heterosis. How can heterosis be exploited in crop plants. 1+5+4

