

M.Sc. (Ag.) Examination, 2019
Semester-II
Genetics and Plant Breeding
Course : GPB-504
(Principles of Quantitative Genetics)

Time : 3 Hours

Full Marks : 50

Questions are of value as indicated in the margin

Answer **any five** questions from the following

1. Describe the six parameter model for generation mean analysis as described by Jinks and Jones. What are its advantages and disadvantages? 6+4=10
 2. What is diallel analysis? According to Hayman (1954), what are its basic assumptions? What are the merits of combining ability? 2+5+3=10
 3. What is stability analysis? Describe stability and buffering. What are the different models of stability analysis? What is the basic principle of AMMI analysis? 1+2+6+1=10
 4. Mention the differences between broad sense and narrow sense heritability. Discuss the application of MAS and QTL mapping in crop improvement. 4+6=10
 5. What are the different types of gene action and which of them are fixable? What is meant by Principal Component Analysis and what conclusions are drawn from it? Describe the properties of quantitative characters. 3+4+3=10
 6. Describe the multiple factor hypothesis as proposed by Nilsson Ehle. Give the importance of correlation and path analysis. 6+4=10
 7. What is Line $\times$ Tester analysis and describe its utility? What are the different types of biparental mating? 6+4=10
 8. Write short notes on the following (**any five**) : 5 $\times$ 2=10
 - a) ANOVA b) Biplot analysis c) D^2 analysis d) Residual effect in path analysis
 - e) GXE interaction f) Combining ability g) Scaling test h) Partial diallel analysis
-