

Use Separate Answer
Script for each Group

M. Sc. Examination, 2018

Semester – II

Botany

Paper: MBC-23

(Molecular Biology & Plant Biotechnology)

Time: Three Hours

Full Marks: 48

Questions are of value as indicated in the margin

Group-A (Molecular Biology)

Answer *any three* questions

1. Describe the molecular structure of an expression vector with special reference to the regulatory mechanism of gene expression from this vector. 8
2. What are the parameters that are crucial to PCR reaction? Describe how the PCR technique has revolutionized the development of molecular biology. 4+4=8
3. What is a DNA probe? Describe its utility in screening of genomic DNA library. Why is it necessary to construct genomic DNA library? 2+4+2=8
4. What is Klenow fragment? Why is it used in Sanger dideoxy DNA sequencing? Describe briefly the Sanger sequencing method. 2+2+4=8
5. Write short notes on the following: 2x4=8
 - a) Origin of replication
 - b) Sigma factor
 - c) T_m of DNA
 - d) Reporter gene

Group-B (Plant Biotechnology)

Answer *any three* questions

1. Write short notes on: 2x4=8
 - a) Meristemoids
 - b) Nurse culture technique
 - c) Role of osmoticum in protoplast culture
 - d) Micropropagation
2. What is cytodifferentiation? Outline the major steps involved in establishing primary culture of an angiosperm plant. 2+6=8
3. How does somatic embryogenesis differ from organogenesis? Discuss the method of induction and development of somatic embryos using friable callus giving emphasis on nutritional requirements. 2+6=8
4. Briefly describe the steps associated with the technique of cryopreservation. Which explant is best suited for cryopreservation and why is it so? 7+1=8
5. What is callus? State the characteristic features of different kinds of callus generated in tissue culture. Discuss the basic steps involved in regeneration of shoots and roots via organogenesis. 1+3+4=8