

B.Sc. (Honours) Examination, 2019
Semester-VI
Botany
Paper: BBE-61 (Elective)
(Plant Biotechnology)

Time: Three hours

Full marks: 40

Questions are of value as indicated in the margin.

Answer Question **No. 1** and **any four** from the rest.

1. Answer **any eight** of the following: 1×8=8
 - i) Name two vitamins used in plant tissue culture medium.
 - ii) What is the minimum size of particle that can be removed through HEPA filter?
 - iii) What is the most common carbon source added in the culture medium?
 - iv) What is redifferentiation?
 - v) Name the most commonly used amino acid in the plant tissue culture medium.
 - vi) What is cell suspension culture?
 - vii) Name the gelling agent commonly used for preparation of solid culture medium?
 - viii) Name two auxins used as nutrient in plant tissue culture.
 - ix) What is a chemically undefined medium?
 - X) Why activated charcoal is added to the culture medium?
 - xi) Who has coined the term micropropagation?
 - xii) What is steam sterilizing technique?
 2. Write down the method of pollen culture in detail. What are the advantages of pollen culture?
How can diploidisation of haploid plant be achieved? 4+2+2=8
 3. Briefly describe the characteristics of a plasmid vector used in recombinant DNA technology. What is the important role of enzyme DNA ligase? What are the achievements of recombinant DNA technology? 4+1+3=8
 4. Write down the method of protoplast isolation from a single plant cell. How can protoplast viability be assessed? What are the different methods of protoplast culture commonly practiced in plant tissue culture? 3+1+4=8
 5. Why meristem culture is important for the production of virus free plant? Briefly describe the different stages of micropropagation. 3+5=8
 6. How can synthetic seeds be produced? What are the applications of somatic embryogenesis? What is indirect embryogenesis? 3+3+2=8
 7. What is meant by totipotency of plant cells? Mention its importance in plant tissue culture. Present the schematic diagram for direct and indirect embryogenesis. 2+2+1+3=8
 8. Define callus. How is callus tissue initiated and maintained? Discuss the morphological characteristics of callus tissue. 1+4+3=8
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