**B.Sc. (Honours) Examination, 2018**
**Semester –VI**
**Botany**
**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) What is HEPA filter?
   ii) Name the chelating agent used in nutrient medium for plant tissue culture.
   iii) What is micropropogation?
   iv) What is defined medium?
   v) Name two surface sterilizing agents.
   vi) What is cytodifferentition?
   vii) Why is sucrose added in the culture medium?
   viii) What is totipotency?
   ix) What is meristemoid?
   x) What is compact callus?
   xi) Name two chemicals used in assessing viability of protoplast.
   xii) What is synthetic seed?
2. Write down the different methods of protoplast culture. Draw a flowchart for protoplast culture. Mention the names of enzymes used for protoplast isolation. 4+2+2=8
3. What are the two routes of somatic embryogenesis? Which growth regulators are important to induce somatic embryogenesis? Briefly mention the application of this process. 3+2+3=8
4. How can a haploid plant be regenerated from pollen? Why is pollen culture preferred over another culture? What is indirect androgenesis? 4+2+2=8
5. What is organogenesis? Outline the different steps of organogenesis for the production of plants *in vitro.* Mention the importance of meristem culture. 2+4+2=8
6. Define culture medium? What are the basic components required for preparation of an ideal Tissue culture medium? Why is antibiotics added in a culture medium? Name two widely used culture media for plant tissue culture. 1+4+1+2=8
7. Briefly describe the structure of Ti plasmidof *Agrobacterium tumifaciens.* What are restriction endonucleases? Explain the role of these enzymes in recombinant DNA technology. 5+1+2+8
8. What are the advantages of callus culture? Write down the different methods of cell suspension culture initiated by callus. 2+6=8

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