

Faculty of Science
B.Sc. (CBCS) III Year (Practical) Examination

Subject: Botany

Semester: VI

Elective Paper: I

Paper - VI: (B) – Tissue Culture and Biotechnology

(DSE – 2: ELECTIVE)

Question Bank

Time: 2½ Hours

Max. Marks: 50

Note: Answer all questions. Draw well labeled diagrams wherever necessary

- I. Conduct the experiment allotted to you. Write procedure, give results and inference (Procedure: 4 Marks + Experimentation: 6 Marks + Observations or recordings of results: 4 Marks + Inference: 4 Marks) 18 Marks
1. Isolation of plant DNA (Tomato).
 2. Production of synthetic seeds (sodium alginate).
 3. Preparation of plant tissue culture medium (basal medium: MS medium)
 4. Isolation of protoplasts.
- II. Write procedure, give results and inference (Procedure: 4 Marks + Observations or recordings of results: 4 Marks + Inference: 4 Marks) 12 Marks
5. Demonstration of micropropagation using explants like axillary buds and shoot meristems (inoculation of explants).
 6. Demonstration of Callus induction.
 7. Demonstration of anther culture.
 8. Demonstration and detail protocol of polymerase chain reaction for DNA amplification.
 9. Demonstration of *in vitro* sterilization and inoculation methods using leaf and nodal explants of tobacco, *Datura*, *Brassica* etc.
- III. Critical notes on 4 spotters (specimen/photograph/sketch without labeling) (Identification: 2 + Notes: 2 for each spotter) 4x4=16 Marks
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| 10. Laminar air flow hood | 24. Artificial/synthetic seeds |
| 11. Incubator | 25. Multiple shoots |
| 12. Autoclave | 26. Bt brinjal |
| 13. Culture medium | 27. Bt cotton |
| 14. Explants | 28. Golden rice, |
| 15. Callus | 29. Flavr Savr tomato |
| 16. Anther culture | 30. <i>Agrobacterium</i> -mediated gene transfer |
| 17. Embryo culture | 31. Gene transfer by electroporation |
| 18. Endosperm culture | 32. Gene transfer by Microinjection |
| 19. Micropropagation | 33. Gene transfer by Microprojectile bombardment |
| 20. Somatic embryogenesis | 34. Restriction digestion |
| 21. Hot air oven | 35. Gel electrophoresis of plasmid DNA |
| 22. Antibiotics | |
| 23. Vaccines | |
- IV. Record 4 Marks