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TRIVANDRUM

Sixth Semester B.Sc. Degree Examination, April 2022

First Degree Programme under CBCSS

Botany

BO 1661 — BIOTECHNOLOGY AND NANOBIOTECHNOLOGY

(2018 Admission)

Time : 3 Hours Max. Marks : 80

(Draw diagrams wherever necessary)

SECTION – A

Answer **all** questions. Each question carries **1** mark.

1. What are phagemids?
2. Give any two examples for genetically modified crops.
3. Name a microorganism that is used in the production of Vinegar.
4. Why agar is used in tissue culture medium?
5. Define nanotechnology.
6. What is meant by cytodifferentiation?
7. How virus free plants are produced by tissue culture?
8. What is autoclave?
9. Name the enzyme that is used for cleaving DNA molecules in rDNA technology.
10. What do you understand by denaturing of DNA?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer any **eight** of the following. **Each** question carries **2** marks.

11. Give an account of somatic hybrids.
12. What is gene library?
13. Distinguish between dedifferentiation and redifferentiation.
14. What is gene therapy?
15. Comment on nanoscale biomolecules.
16. What are *nif* genes?
17. Comment on edible Vaccines.
18. Write a short note on Atomic Force Microscope.
19. What is ELISA?
20. Write a short note on LB bacterial culture medium.
21. What is meant by somaclonal variations?
22. What are synthetic seeds?
23. What are dendrimers?
24. Write a brief account of plasmids.
25. How haploid plants are produced by tissue culture?
26. Give an account of direct uptake of DNA by protoplast.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** of the following. **Each** question carries **4** marks.

27. Give an account of somatic embryogenesis.
28. Explain the steps involved in protoplast culture.
29. Discuss biosafety and ethical issues associated with biotechnology.

30. Give an account of different types of nanoparticles.

31. Discuss the applications of recombinant microbes.

32. What is meristem culture? Explain the procedure.

33. Give an account of the applications of nanotechnology in life sciences.

34. Explain the steps involved in PCR.

35. Explain the industrial applications of microorganisms.

36. Explain the procedure of southern blotting.

37. Give an account of various tools and equipments used in tissue culture.

38. Explain the principle and procedure of gel electrophoresis.

(6 × 4 = 24 Marks)

SECTION – D

Write an essay on any **two** of the following. **Each** question carries **15** marks.

39. Explain physical methods of gene transfer techniques.

40. Describe the procedure of gel electrophoresis.

41. Give an account of the isolation and purification of DNA from plant cells.

42. Explain the application of biotechnology in industry and preservation of environment.

43. Explain Sanger's method of DNA sequencing.

44. Describe the composition and preparation of MS medium.

(2 × 15 = 30 Marks)
