

B. Sc. DEGREE EXAMINATION, APRIL 2024
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
SIXTH SEMESTER

COURSE : MAJOR – CORE
PAPER : PLANT BIOTECHNOLOGY
SUBJECT CODE : 19BT/MC/PB64
TIME : 3 HOURS MAX. MARKS: 100

SECTION A

Answer all the questions. (18 MARKS)

I. Choose the correct answer: (5 x 1 = 5)

1. The technique of culturing plant cells in a constantly agitated liquid medium is called
(a) Shoot culture (b) Suspension culture (c) Anther culture (d) Embryo culture
2. The production of protein from m-RNA is called
(a) Transcription (b) Translation (c) Post transcription (d) Post translation
3. The separation technique that uses the charge of the biomolecules for separation is called
(a) Ligation (b) Electroporation (c) Electrophoresis (d) Blotting
4. The expansion of BAC is
(a) Bacteria And Chromosome (b) Bacterial Artificial Chromosome
(c) Bacteria And Cloning (d) Bacteria Annealed Chromosome
5. Some of the ethical considerations surrounding the use of GMOs are
(a) The potential impact on biodiversity
(b) Uncertainty of their long-term effects on human health
(c) The long-term environmental consequences
(d) All of the above

II. Fill in the blanks: (5 x 1 = 5)

6. Haploid plants are produced in large numbers using _____ culture.
7. The lightly stained regions in the chromosome that are actively transcribed is called _____.
8. The enzyme that is involved in DNA ligation is called _____.
9. The technique of injecting DNA or RNA into the cell with the help of micropipette is called _____.
10. The protein produced by *Bacillus thuringiensis* is called _____.

III. State Whether True or False: (3 x 1 = 3)

11. In plant tissue culture, the process of formation of root and shoot from callus culture is called organogenesis.
12. RFLP is mainly based on the altered restriction enzyme sites which are results of mutations and recombination of genomic DNA .
13. Introduction of foreign gene into an organism raises concerns about the safety, ethics and unforeseen consequences.

IV. Match the following:**(5 x 1 = 5)**

- | | | |
|--------------------|---|---------------------------------|
| 14. Callus | - | <i>E. coli</i> |
| 15. Histones | - | Food vaccine |
| 16. DNA sequencing | - | Chromatin protein |
| 17. pUC 18 | - | Undifferentiated mass of cells. |
| 18. Banana | - | Frederick Sanger |

V. Answer any SIX of the following. Each answer should not exceed 50 words: (6 x 3 = 18)

19. Somaclonal variation
20. Totipotency
21. Autoradiography
22. Restriction enzymes
23. YAC
24. Microinjection
25. PEG
26. Bioethics
27. RAPD

SECTION – B**Answer any FOUR of the following. Each answer not exceeding 200 words. (4 x 6 = 24)**

28. Elucidate the steps involved in embryo culture.
29. Summarize the advantages and disadvantages of synthetic seeds.
30. Describe the structure of chloroplast genome.
31. Explicate DNA amplification using PCR.
32. Describe the mechanism by which ballistics transfer gene into plant cells.
33. What are edible vaccines? List the pros and cons of edible vaccines.

SECTION – C**Answer any TWO of the following. Each answer not exceeding 1000 words. (2 x 20 = 40)**

34. Give an account of protoplast culture.
35. Discuss the steps involved in the post transcriptional modification of the mRNA.
36. Elaborate the mechanism of gene transfer using *Agrobacterium*.
37. Describe the role of biotechnology for improved crop varieties against insect resistance.
