

(6 pages)

S.No. 6185 ✓

P 22 BOCC 1 A

(For candidates admitted from 2022–2023 onwards)

M.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Botany – Core Choice Course

**PLANT BIOTECHNOLOGY AND GENETIC
ENGINEERING**

Time : Three hours

Maximum : 75 marks

SECTION — A

Answer ALL the questions.

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

1. Which of the following are the recommended heat temperature and time periods for the moist heat sterilization method used in an autoclave?

- (a) 180° C for 5 minutes
- (b) 121° C for 15 minutes
- (c) 126° C for 3 minutes
- (d) 160° C for 45 minutes

2. Micro propagation involves

- (a) small explants used for vegetative multiplication of plants
- (b) microbes used for vegetative multiplication of plants
- (c) microspores used for vegetative multiplication of plants
- (d) megaspores and microspores used for non-vegetative multiplication of plants

3. The 1st engineered plasmid vector is

- (a) pBR322
- (b) pUC vectors
- (c) pSC101
- (d) pUC19

4. Which of the following does not play any role in the infection of plant cell by the Ti plasmid of *Agrobacterium tumefaciens*?

- (a) T-DNA
- (b) Virulence region
- (c) Host specificity region
- (d) 25 base pair repeats

5. Which is considered the first transgenic crop?
(a) Cotton
(b) Maize
(c) Tobacco
(d) None of the above
- (B) Fill in the Blanks : (5 × 1 = 5)
6. Formation of the primitive streak occurs during _____ stage of embryogenesis?
7. _____ is the phenolic compound present in tea.
8. The complementary strand of DNA sequence of AGGAGAA is _____
9. Amino benzyloxy methyl filter paper is commonly used in _____ blotting
10. The excess secretion of growth hormone cause _____

II. Answer ALL the question in a sentence or two.
(5 × 2 = 10)

11. What is meant by organogenesis?
12. Define germplasm.

13. Comment on cybrids.
14. What is electroporation.
15. Define bioremediation.

SECTION B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b)

16. (a) Write about the scopes of biotechnology.

Or

- (b) Discuss in brief on the sterilization steps for PTC media.

17. (a) Write short note on somatic hybridization.

Or

- (b) Write the methods of protoplast fusions.

18. (a) Discuss in brief about the amplification of genes by PCR.

Or

- (b) Briefly explain the working mechanism of western blotting.

19. (a) Discuss in detail on rDNA technology.

Or

(b) Explain in brief on the gene transfer methods in plants.

20. (a) Write short note on edible vaccines.

Or

(b) Discuss briefly about the biosafety levels.

SECTION C — ($3 \times 10 = 30$)

Answer any THREE questions.

21. Write an essay about micropropagation.

22. Discuss in detail on the steps for protoplast isolations.

23. Briefly describe the transfer of rDNA molecules into bacteria.

24. Give an elaborate note on *Agrobacterium* mediated gene transfer in plants.

25. Write detailed account on Herbicide resistant plants.
