

B. Sc. DEGREE EXAMINATION, APRIL 2019  
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY  
SIXTH SEMESTER

COURSE : MAJOR – CORE  
PAPER : PLANT BIOTECHNOLOGY AND GENETIC ENGINEERING  
TIME : 3 HOURS MAX. MARKS: 100

**SECTION A**

Answer all the questions. (18 MARKS)

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

- Formation of new organs from the callus  
(a) morphogenesis (b) micropropagation (c) propagation (d) embryo culture
- The insecticidal property of *Bacillus thuringiensis* is due to the presence of  
(a) tannin (b) flavone (c) protein (d) sterol
- Biohydrogen is produced by ----- process  
(a) photobiological (b) chemical (c) biosynthetic (d) chemosynthetic
- One of the methods used to construct genomic library  
(a) from mRNA copies (b) shot gun technique (c) transcriptase method (d) splicing method
- A technique where electrical field is applied to facilitate protoplast fusion derived from two different plants  
(a) recombination (b) electrophoresis (c) electroporation (d) casting

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

- The father of tissue culture is \_\_\_\_\_.
- An organism that has been modified by the application of recombinant DNA technology is called \_\_\_\_\_ organism.
- Bioethanol is produced by the process of \_\_\_\_\_.
- Ligation is the process of joining of two DNA molecules by forming \_\_\_\_\_ bonds.
- Recombinant DNA technology is also known as \_\_\_\_\_.

**III. State Whether True or False:** (4 x 1 = 4)

- The aim of pollen culture is to get haploid plants by induction embryogenesis.
- Bollgard is the transgenic tomato formed using Bt gene
- The upper limit of foreign DNA to be inserted in BAC is about 300 – 3000 kb.
- Gene gun is used as a major tool in genetic transformation of crops.

**IV. Match the following:** (4 x 1 = 4)

- |                          |   |                |
|--------------------------|---|----------------|
| 15. Bio crude            | - | cloning vector |
| 16. Callus               | - | milky latex    |
| 17. ICGEB                | - | embryoid       |
| 18. Replicating molecule | - | biosafety      |

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

19. Explant
20. Cybrid
21. Bioethics
22. Petroplants
23. Recombinant vaccine production
24. Gobar gas
25. pUC18
26. Restriction endonuclease
27. Microprojectile

**SECTION – B**

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

28. Mention the applications of tissue culture in Horticulture and in the Pharmaceutical Industry.
29. Discuss the role of edible vaccines.
30. Write notes on bioethanol.
31. Describe genomic libraries.
32. Explain Electroporation.
33. Write notes on GM Plants.

**SECTION – C**

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

34. Write an essay on protoplast culture.
35. Describe the role of transgenic plants in crop improvement.
36. Explain Southern and Northern blotting methods.
37. Discuss gene transfer technique using Agrobacterium.

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