

B. Sc. DEGREE EXAMINATION, APRIL 2023  
BRANCH V (a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY  
SIXTH SEMESTER

COURSE : MAJOR – CORE  
PAPER : PLANT BIOTECHNOLOGY  
TIME : 3 HOURS

MAX. MARKS: 100

SECTION A

Answer all the questions.

(18 MARKS)

I. Choose the correct answer:

(5 x 1 = 5)

- The pair of hormones required for a callus to differentiate are\_\_\_\_\_.
  - Ethylene and Auxin
  - Auxin and cytokinin
  - Auxin and Abscisic acid
  - Cytokinin and gibberellin
- Which of the following is not a post-translational modification?
  - Lipidation
  - Protein phosphorylation
  - Proteolytic processing
  - DNA methylation
- The technique for specific identification of RNA molecules
  - Southern blotting
  - Northern blotting
  - Western blotting
  - Dot blotting
- Agarose can be extracted from which of the following?
  - Lycasusican esculentum*
  - Ficum benghalensis*
  - Gracilaria esculentus*
  - Agrostis stolonifera*
- Bt cotton is a \_\_\_\_\_
  - Cloned plant
  - Transgenic plant
  - Hybrid plant
  - Mutated plant

II. Fill in the blanks:

(5 x 1 = 5)

- An instrument used for wet sterilization is \_\_\_\_\_
- Post transcriptional modification of mRNA in eukaryotes is called \_\_\_\_\_
- \_\_\_\_\_ was the first restriction endonuclease that was discovered
- In PCR the denaturation takes places at \_\_\_\_\_ °C
- The protein crystals of *B. thuringiensis* contain toxic \_\_\_\_\_ protein.

III. State Whether True or False:

(3 x 1 = 3)

- Molecular biology can be defined as the use of biomolecules to solve problems, or to make useful products.
- Bacillus thuringiensis* is a gram positive soil bacterium.
- In agarose gel electrophoresis, DNA will be attracted to the negative electrode.

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

- |                                       |                  |
|---------------------------------------|------------------|
| 14. <i>Gibberella fujikuroi</i>       | – BAC            |
| 15. <i>Bacillus thuringiensis</i>     | – BamHI          |
| 16. <i>Escherichia coli</i>           | – GA             |
| 17. <i>Agrobacterium tumefaciens</i>  | – Cry proteins   |
| 18. <i>Bacillus amyloliquefaciens</i> | – Cloning vector |

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

19. G Haberlandt
20. Androgenesis
21. Cybrids
22. Methanogenesis
23. DNA Ligase
24. PCR
25. Ti Plasmid
26. PEG
27. RAPD

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

28. Briefly explain about protoplast isolation.
29. Discuss on post transcriptional modification.
30. Explain the construction of Genomic libraries.
31. Explain the construction of pUC 18.
32. Summarise the role of electroporation in gene transfer.
33. Write short notes on biosafety measures.

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

34. Elucidate the basic techniques of plant tissue culture with concept and its application.
35. Describe the structure and function of plant genome organisation.
36. Write an essay on procedure for obtaining herbicide resistance plant. Add a note on transgenic plants.
37. Give a detailed account of *Agrobacterium* mediated gene transfer mechanism.

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