

(6 pages)

Reg. No. :

Code No. : 6414

Sub. Code : HBOM 33

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2014.

Third Semester

Botany

PLANT BIOTECHNOLOGY

(For those who joined in July 2012 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Nuclease which digests RNA but not DNA
(a) Endonuclease (b) Exonuclease
(c) DNA ligase (d) RNase
2. A plasmid vector which consists of the COS site of phage lambda
(a) Cosmid (b) Polysome
(c) Plasmid (d) Chromosome

3. A tumour inducing soil-borne bacterium used as plasmid vector is
(a) Azospirillum (b) Agrobacterium
(c) Acetobacter (d) Azotobacter
4. Delivery of interested DNA with heavy microparticles accelerated to a high velocity is
(a) Micro projectile bombardment
(b) Microinjection
(c) Macroinjection
(d) Electroporation
5. Specific sequences of DNA where polymerase initiates transcription is
(a) Terminators (b) Promoters
(c) Marker genes (d) Inducer
6. Most vectors carry marker genes which allow recognition of transformed cells and are described as
(a) Replication (b) Integration
(c) Transmission (d) Selectable marker
7. The somatic embryos encapsulated with sodium alginate refers to
(a) Somaclone (b) Callus
(c) Synthetic seeds (d) Explants



8. A population of organisms each containing a DNA molecule inserted through cloning vector is

- (a) Data bank (b) Gene bank
(c) Gene map (d) Gene gun

9. In tissue culture, the cytoplasmic hybrids refer to

- (a) Haploids (b) Somatic hybrids
(c) Hybrids (d) Cybrids

10. The Genetic Engineering Approval Committee of the Ministry of Environment and Forests has the power to permit large scale use of

- (a) Organic plants (b) Native plants
(c) GMOs (d) Hybrids

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Write notes on :

- (i) DNA ligase
(ii) Alkaline phosphatase.

Or

(b) What are cosmids? Enumerate its functions.

Page 3

Code No. : 6414

12. (a) Write short notes on Octopine and Nopaline.

Or

(b) What is Microprojectile Bombardment? Brief its application in biotechnology.

13. (a) Write notes on CAT system.

Or

(b) Brief the direct method of selection of recombinants.

14. (a) What are synthetic seeds? Brief its advantages.

Or

(b) Explain the terms Androgenesis and Gynogenesis with suitable examples.

15. (a) Mention the application of micropropagation.

Or

(b) Write notes on Intellectual Property Rights.

Page 4

Code No. : 6414

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PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) What are plasmids? How do they work as cloning vectors?

Or

- (b) Write an essay on the scope and constraints of Biotechnology.

17. (a) What do you mean by gene transfer? Explain the direct DNA transfer methods.

Or

- (b) Explain the role of tDNA transfer and Ri plasmid in plant Biotechnology.

18. (a) Write an essay on selection of correct promoter sequence in recombinant technology.

Or

- (b) Define and describe the role of

- (i) Marker Genes
- (ii) Promoters
- (iii) Terminators
- (iv) Alien genes.

Page 5

Code No. : 6414

19. (a) What is Somaclonal variation? How can it be induced? Describe the potential of this source in crop improvement.

Or

- (b) Write notes on :

- (i) Laminar Air Flow Cabinet
- (ii) Suspension culture
- (iii) Callus
- (iv) Haploid plants.

20. (a) Write an essay on protoplast culture and regeneration of plants with suitable examples.

Or

- (b) Write an essay on the operation of biosafety guidelines in India.

Page 6

Code No. : 6414

