(6 pages) **Reg. No. :** .....

Code No. : 7414 **Sub. Code : HBOM 33**

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2015.

Fourth 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. An extrachromosomal, self-replicating, circular double stranded DNA molecule found in *Agrobacterium tumifaciens* is

   (a) DNA (b) Ti Plasmid

   (c) Chromosome (d) Polysome

2. An enzyme that removes nucleotides from 5' end of double stranded DNA is

   (a) Exonulease

   (b) DNA ligase

   (c) Alkaline phosphatase

   (d) Endonuclease

3. Protoplast fusion derived from two different plants by the application of electric field is

   (a) Electoporation (b) Excision

   (c) Fusogen (d) Denaturation

4. A large plasmid present in A. rhizogens causing formation of adventitious roots is

   (a) Phagemid (b) Ri-plasmid

   (c) Ti-plasmid (d) Bacteriophage

5. Specific sequences of DNA where polymerase initiates transcription is

   (a) Terminators (b) Promoters

   (c) Marker genes (d) Inducer

6. The gene of about 100 nucleotide long and continuous with the operator gene is

(a) Promoter (b) Regulator

(c) Repressor (d) Operator

7. An unorganized mass of plant cells capable of cell division and growth invitro

(a) Clone (b) Carrier

(c) Callus (d) Cosmid

8. The somatic embryos encapsulated with synthetic chemical refers to

(a) Somaclone (b) Synthetic seeds

(c) Callus (d) Explants

9. In tissue culture, the cytoplasmic hybrids refer to

(a) Haploids (b) Somatic hybrids

(c) Hybrids (d) Cybrids

10. Due to environmental concern, many countries and NGOs have opposed the release of

(a) Organic plants (b) Native plants

(c) Hybrids (d) GMOs

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Write short notes on scope and constraints of Biotechnology.

Or

(b) Mention the importance of cosmids.

12. (a) Write short notes on Ti and Ri based plasmids.

Or

(b) Brief the methods of direct DNA transfer.

13. (a) Brief the DNA probe method for selection of recombinants.

Or

(b) Write short notes on 35S promoters of CaMV.

14. (a) Mention the common culture media used for tissue culture and discuss the role of different constituents of these media.

Or

(b) Write notes on the application and limitation of cryopreservation.

15. (a) Brief the challenges and problems faced in micropropagation.

Or

(b) What is biosafety? Mention its application.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Write an essay on enzymes used in genetic engineering.

Or

(b) Elaborate on gene cloning principles and strategies.

17. (a) Explain the role of T-DNA transfer and Ri- plasmid in Plant Biotechnology.

Or

(b) Give an illustrated account of gene transfer.

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

Or

(b) Write short notes on the following: (i) promoters (ii) terminators (iii) marker genes.

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

Or

(b) Brief the following :

(i) Micropropagation

(ii) Suspension culture

(iii) Callus

(iv) Embryoid

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

Or

(b) What is Intellectual Property Rights? Discuss in detail the different forms of its protection.

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