

(6 pages)

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M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2016.

Third Semester

Botany

PLANT BIOTECHNOLOGY

(For those who joined in July 2012-2015)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Vehicles for transferring DNA from one cell to another
(a) RNA (b) cosmid
(c) *vir* gene (d) vector
2. Nuclease enzyme which digests RNA but not DNA is
(a) Endonuclease (b) exonuclease
(c) RNase A (d) DNA ligase

3. Delivery of interested DNA with heavy microparticles accelerated to a high velocity is
(a) microinjection
(b) microprojectile bombardment
(c) macroinjection
(d) electroporation
4. A tumor inducing soil-borne bacterium used as plasmid vector is
(a) *Azospirillum*
(b) *Agrobacterium*
(c) *Acetobacter*
(d) *Azotobacter*
5. The sequence that signals the end of transcription
(a) terminators
(b) promoters
(c) marker genes
(d) probe
6. An individual whose genes on a chromosome results from one or more cross over events
(a) replication
(b) regeneration
(c) transmission
(d) recombinant

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7. The somatic embryos encapsulated with sodium alginate refers to
 - (a) somaclone
 - (b) callus
 - (c) synthetic seeds
 - (d) explants
8. Very popular methods of production of haploid culture is through
 - (a) somatic
 - (b) protoplast fusion
 - (c) callus
 - (d) anther
9. Any process carried out in sterile condition is
 - (a) in silico
 - (b) in vitro
 - (c) in situ
 - (d) in vivo
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 short notes on DNA ligase and alkaline phosphatase.
Or
(b) Comment on plasmids.
12. (a) Write notes on Ri based plasmids.
Or
(b) What is microprojectile bombardment? Brief its application in biotechnology.
13. (a) What do you mean by gene transfer and brief the techniques involved.
Or
(b) Write short notes on alien genes.
14. (a) What do you mean by callus and sub-culture? Discuss.
Or
(b) Explain the terms androgenesis and gynogenesis.
15. (a) Write the application of micropropagation.
Or
(b) Write short notes on patents.



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 Biotechnology.

Or

- (b) Enumerate the gene cloning principles and strategies.

17. (a) Give an illustrated account of gene transfer.

Or

- (b) Explain the following: electroporation and microinjection.

- 18 (a) Write an essay *Agrobacterium* derived promoters.

Or

- (b) What is recombinant DNA? How would you select it? — Explain.

19. (a) Write an account of cell and organ differentiation. Describe briefly and distinguish between shoot bud differentiation' and 'somatic embryogenesis'

Or

- (b) Write short notes on: callus, cryopreservation and synthetic seeds.

20. (a) Give a brief account of different methods of sterilization. Add a note on culture medium and its requirements in tissue culture.

Or

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

