

(6 pages)

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Code No. : 5440

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M.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2023.

Fourth Semester

Botany – Core

APPLIED BIOTECHNOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The formation of embryoids from the pollen grains in the tissue culture medium is due to _____.
(a) Organogenesis
(b) Test tube culture
(c) Double fertilization
(d) Cellular totipotency

2. Synthetic seeds are produced by the encapsulation of somatic embryos with _____.
(a) Sodium acetate (b) Sodium nitrate
(c) Sodium chloride (d) Sodium alginate
3. Which of the following vectors is used in crop improvement and crop management?
(a) *Agrobacterium* (b) Plasmid
(c) Cosmid (d) Phasmid
4. Amplification of specific region can be done by using primers for specific regions. If the PCR product is _____ and is in sufficient quantity, then sequence can be determined _____.
(a) non-specific, directly
(b) non-specific, indirectly or directly
(c) specific, directly
(d) specific, indirectly
5. Golden rice is a promising transgenic crop. When released for cultivation, it will help in
(a) Alleviation of vitamin A deficiency
(b) Pest resistance
(c) Herbicide tolerance
(d) Producing a petrol-like fuel from rice

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6. Which of the following gene detoxifies herbicide phosphinothricin?

- (a) Nitrilase
- (b) Glutathione S-transferase (GST)
- (c) Phosphinothricin acetyl transferase
- (d) All of these

7. Which of the following is the most common bacteria used for bioleaching?

- (a) *Spirillum* (b) *Coccus*
- (c) *Bacillus* (d) *Streptococcus*

8. Which of the following is a disadvantage of an immobilized enzyme?

- (a) Immobilization process allows continuous process
- (b) Immobilization mean additional cost
- (c) Increase productivity
- (d) Immobilization prevents loss of activity

9. Biomass is useful to produce _____.

- (a) Chemicals
- (b) Fibres
- (c) Biochemicals
- (d) Transportation fuels

10. What is the clinical application of monoclonal antibodies?

- (a) Biosensors
- (b) Transplant rejection
- (c) Infectious disease
- (d) Purification of drugs

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Demonstrate the suspension culture.

Or

(b) Experiment with production of secondary metabolites.

12. (a) Describe Ri plasmids.

Or

(b) Explain transposons as vectors.

13. (a) Discuss transgenic traits in golden rice.

Or

(b) Describe transgenic traits in Flavr Savr.



14. (a) Examine biodegradation.

Or

- (b) Write notes on the biosensors.

15. (a) Elaborate the methods of gene therapy.

Or

- (b) How to develop the antibodies?

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Describe the application of plant tissue culture in crop improvement.

Or

- (b) Determine the identification and uses of haploids.

17. (a) Explain amplification of gene by PCR.

Or

- (b) Examine the 35S promoters of CaMV.

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18. (a) Outline the herbicide resistant transgenic plants.

Or

- (b) Experiment with virus resistant transgenic plants.

19. (a) Describe *in situ* type of bioremediation.

Or

- (b) Evaluate the large scale production of fungal enzymes.

20. (a) Explain the production of monoclonal antibodies and its applications.

Or

- (b) Discuss production of vaccines.

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