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S – 7638

Reg. No. :

Name :

Third Semester M.Sc. Degree Examination, February 2024

Botany

BO 233 : PLANT BIOTECHNOLOGY

(2001-2002 Admission)

Time : 3 Hours

Max. Marks : 75

- I. Answer **all** the questions in **one** word or sentence.
 1. Name any four plant parts that can be used as explants in tissue culture.
 2. Write any two applications of plant tissue culture.
 3. Name any four plant hormones.
 4. Name a country where edible GM crops are permitted.
 5. Name two organelles in plants, which have their own DNA.
 6. Name a bacteria most commonly used for gene cloning.
 7. Name a natural genetic engineer of plants.
 8. Name the only GM crop that is commercially cultivated in India.
 9. Name any two plant secondary metabolites.
 10. Who is the father of plant tissue culture?

(10 × 1 = 10 Marks)

P.T.O.



II. Answer the following questions in **not** more than **50** words.

11. (a) Briefly explain amplified fragment length polymorphism (AFLP).

OR

(b) Briefly explain restriction fragment length polymorphism (RFLP).

12. (a) Explain the function of 'cytokinins' in plant tissue culture.

OR

(b) Explain the function of 'auxins' in plant tissue culture.

13. (a) Name two antibiotics used for selection of molecular vectors. Why are they used?

OR

(b) Explain Ligation of DNA.

14. (a) Explain restriction digestion. Name any two enzymes used for this.

OR

(b) Write four applications of gene cloning.

15. (a) Explain microinjection-based plant transformation.

OR

(b) Explain electroporation.

(5 × 2 = 10 Marks)



III. Answer the following question in not more than **150** words.

16. (a) What is surface sterilization? Explain its importance in plant tissue culture. How do we surface sterilize explants?

OR

- (b) Explain direct and indirect regeneration. Draw the appropriate diagram.

17. (a) Explain somatic embryogenesis and the stages involved. Draw the appropriate diagram.

OR

- (b) What is haploid culture? Explain its importance.

18. (a) Write five applications of GM crops, with examples.

OR

- (b) What are Ti and Ri plasmids.

19. (a) Explain the significance of haploids in crop improvement with appropriate examples.

OR

- (b) Explain PCR. Draw the appropriate diagram.

20. (a) What are transposons? Explain how they can be used as vectors.

OR

- (b) What is somaclonal variation? How do they occur? Write their applications.



21. (a) What are bioreactors. Explain their applications.

OR

(b) What do you mean by 'germplasm'? Write the strategies for in vitro conservation of germplasm.

22. (a) What are genomic DNA libraries? Write their applications.

OR

(b) What are cDNA libraries? Write their applications.

(7 × 5 = 35 Marks)

IV. Answer the following question in **not** more than **250** words.

23. (a) What is molecular cloning? Draw the steps to clone a DNA segment into a plasmid and explain.

OR

(b) Explain biolistic method of gene transfer in plants. Draw the appropriate diagram. Write the advantages and disadvantages of this method.

24. (a) Explain how *Agrobacterium* transfers DNA to plants. Draw the diagram.

OR

(b) Explain Sanger's dideoxy method of DNA sequencing.

(2 × 10 = 20 Marks)

