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K – 4924

Reg. No. :

Name :

Third Semester M.Sc. Degree Examination, February 2021

Botany

BO 233 : MOLECULAR BIOLOGY, IMMUNOLOGY AND PLANT BIOTECHNOLOGY

(2019 Admission)

Time : 3 Hours

Max. Marks : 75

SECTION – A

I. Answer the following questions. :

1. What is the function of 3'- 5' exonuclease activity of DNA polymerase during DNA replication?
2. Differentiate between dedifferentiation and redifferentiation,
3. What is germplasm?
4. What gene manipulation technique was used to produce flavrsavr tomato?
5. What are known by the nickname 'Molecular scissors'?
6. Differentiate between innate immunity and acquired immunity
7. What are bioreactors?
8. What are cell lines?
9. What is cDNA?
10. Microarrays made it possible to study the expression of a group of interacting genes. Justify the statement.

(10 × 1 = 10 Marks)

P.T.O.



SECTION – B

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

11. (a) What causes the formation of somaclonal variation?

OR

(b) Write a brief account on the production of haploids and their uses.

12. (a) Draw a rough sketch showing the important features of Ti plasmid.

OR

(b) Give a list of the plant growth regulators commonly used in plant tissue culture media.

13. (a) 'YAC is essentially a plasmid containing a few yeast chromosomal components'. Justify.

OR

(b) What are molecular chaperones?

14. (a) What is MHC? What is its function?

OR

(b) Describe the methods used to isolate plant protoplast.

15. (a) 'PCR can be used as between alternative to gene cloning'. Substantiate.

OR

(b) Comment on biopiracy and its implications.

(5 × 2 = 10 Marks)



SECTION – C

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

16. (a) What is end replication problem? Explain how it is resolved.

OR

(b) Write a brief account on meristem culture.

17. (a) Describe the procedure and applications of ELSA.

OR

(b) Describe the procedure and applications of DNA foot printing.

18. (a) Compare real time PCR and RTPCR?

OR

(b) Describe RIA.

19. (a) Compare and contrast RFLP and AFLP.

OR

(b) Describe the different types of vaccines.

20. (a) What is micropropagation? Describe the stages involved and the applications of micropropagation.

OR

(b) Explain the mechanism of action of CRISPR/Cas9 genome editing system.

21. (a) What is antigen processing and presentation? Comment on its significance.

OR

(b) Describe briefly, the structure and activities of different classes of antibodies.



22. (a) What is terminator gene technology? Comment on its implications.

OR

(b) Write a brief account on the next generation DNA sequencing methods.

(7 × 5 = 35 Marks)

SECTION – D

VI. Answer the following questions in not more than **250** words.

23. (a) What are molecular markers? How are they recognized and mapped? Explain their advantages with examples.

OR

(b) Describe hybridoma technology. Explain the applications of it.

24. (a) Write an essay on the issues of concern to mankind raised by GMOs and GMFs.

OR

(b) Write a brief outline of tissue culture protocol. Mention the advantages and disadvantages of tissue culture.

(2 × 10 = 20 Marks)

