20P4032

Reg. No ..... Name .....

M. Sc DEGREE END SEMESTER EXAMINATION - MARCH 2020

SEMESTER 4 : BOTANY

COURSE : **16P4BOTT15 : TISSUE CULTURE AND MICROBIAL BIOTECHNOLOGY**

(For Regular - 2018 Admission & Supplementary 2017/2016 Admissions)

Time : Three Hours Max. Marks: 75

Section A

Answer any 8 (2 marks each)

1. What is meant by chemically undefined medium?
2. What is pigmented callus tissue?
3. How does gibberelin affect cytodifferentiation?
4. Comment on the role of *in-vitro* induced variability in effecting somaclonal variation.
5. Write any one method for diploidization of haploids.
6. What is the possible role of PEG as fusogen agent in protoplast fusion?
7. What is microbial insecticide?
8. What are the methods used for tissue engineering?
9. How *in vitro* mutagenesis using synthetic oligonucleotides is helpful for enzyme engineering?
10. Explain slow cooling and rapid cooling methods of freezing.
11. What are cryoprotectants? Give examples.
12. Write a short note on plant secondary metabolites.

(2 x 8 = 16)

Section B

Answer any 7 (5 marks each)

13. Briefly explain hydrated and desiccated types of synthetic seed production.
14. What is the important role of auxin and cytokinin in relation to organogenesis?
15. Comment on the role of pre-existing variability in effecting somaclonal variation.
16. Define androgenesis. Explain the protocol for anther culture.
17. Discuss the use of protoplast culture for genetic modification in plants.
18. What are the non-therapeutic applications of stem cell research?
19. Explain the methods, advantages and applications of cell immobilization.
20. What are the methods for short or medium-term storage of plant germplasm?
21. What are the potential advantages of *in vitro* conservation of plant germplasm?
22. What is the significance of agitation in a plant cell bioreactor?

(5 x 7 = 35)

Section C
Answer any 2 (12 marks each)

23. What are synthetic seeds? Explain various methods to produce synthetic seeds.

OR

24. Explain the methods of production of haploid plants and explain its applications.

25. What are bioreactors ? Write an account on various types of bioreactors.

OR

26. Write an essay on immobilization of plant cells for the production of secondary metabolites.

(12 x 2 = 24)