

2019

Part – II

**BIO-TECHNOLOGY**

(HONOURS)

Paper – IV

Full Marks – 90

Time : 4 Hours

*The figures in the right-hand margin indicate marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

**GROUP – A**

Answer **any two** of the following questions:

15×2

1. (a) Discuss CAM Pathway.
  - (b) Compare grafting and layering.
  - (c) Mention process for production of artificial seed.
- 5+5+5

**P.T.O.**

2. What is endosperm ? What are the precursors of auxin and cytokinin ? How auxin to cytokinin ratio affects the formation of root and shoot in the tissue culture media ? Define double fertilization. What is artificial seed ? Describe the procedure of artificial seed production . 2+2+1+2+2+6
3. (a) Draw and discuss different parts of a bioreactor. 3+5
- (b) Discuss different process for purification of protein. 7
4. (a) Write down role of Gibberellins in agriculture 5
- (b) What is vernalization ? How it is related with germination ? 2+3
- (c) Discuss double fertilization process in plant. 5

### GROUP – B

Answer any **five** questions from the following :

8×5

5. Discuss process of cryopreservation, mention its roles. 5+3
6. Mention role of herbicide resistant plants in agriculture . What is golden rice ?

7. What is phytoremediation ? How remediation can be done in a heavy metal contaminated pond ? 2+6
8. What is bioconversion ? Mention the process of biomass conversion through biological process. 2+6
9. Discuss different process for secondary sewage treatment. 8
10. Write notes on rheology of fermented broth. 8
11. What is enzyme immobilization ? Mention advantages and disadvantages of immobilized enzyme ? 2+6
12. Write down process for industrial production of citric acid.

### **GROUP – C**

Answer any five questions from the following :

4×5

13. What are exo-polysaccharides ? Mention their medical uses.
14. Differentiate primary and secondary metabolites.
15. Mention utility of pollen culture.

16. Discuss Cytoplasmic male sterility .
  17. Mention limitations of agrobacterium mediated gene transfer.
  18. Mention different process of indoor air pollution.
  19. What are the effects when a reverted ecological pyramid is formed.
  20. Mention the process of monocotyledonous seed formation.
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