UG/II/BIOT/H/IV/18 (New)

2018

BIOTECHNOLOGY

[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

[NEW SYLLABUS]

GROUP–A

Answer any **two** of the following questions : 15 × 2

1. (*a*) What are the popular methods for production of transgenic plants ?

(*b*) Distinguish between :

(*i*) '*I*' budding and '*T*' budding

(*ii*) hybrid and cybrid.

(*c*) Mention advantages of polyploidy and hybrid vigour. 5 + (2 + 3) + 5

2. (*a*) Illustrate different types of grafting with suitable diagrams.

(*b*) Describe CAM pathway of plants.

(*c*) Define cybrid. 6 + 6 + 3

3. (*a*) Distinguish between *in situ* and *ex situ* bioremediation.

(*b*) What is bioleaching ? Describe the process of oil degradation by *Pseudomonas Putida.*

(*c*) Write a note on microbial desulfurization of coal. 4 + (2 + 4) + 5

4. (*a*) How will you sterilize media ?

(*b*) Write a short note on microbial growth kinetics.

(*c*) Write down the large scale production process of a recombinant protein that you have studied ? 4 + 5 + 6

GROUP – B

Answer any **five** questions from the following : 8 × 5

5. Mention advantages of GM crops in respect to Bt cotton and golden rice. Define electroporation. 6 + 2

6. Write down the importance of Seed bank. What do you mean by artificial seed ? 5 + 3

7. What are the biotechnological processes involved in waste-water treatment ? 8

8. Define biotic community ? What are bio-indicators ? Describe the process of biomonitoring citing suitable examples. 2 + 2 + 2

9. Distinguish between cross pollination and self pollination, mentioning one each of their advantages and disadvantages. Write down the full form of NBPGR, EMBL. 4 + 2 + 2

10. Mention industrial and environmental applications of biosensor with example. What is secondary sewage treatment ? 5 + 3

11. Describe the gene transfer method by eletroporation. Name two herbicide resistant transgenic plants. 6 + 2

12. Discuss different methods of sterilization of media and air. How recombinant proteins are purified ? 5 + 3

GROUP – C

Answer any **five** questions from the following : 4 × 5

13. What are accessory pigments ? What is their role in photosynthesis ? 2 + 2

14. What is the significance of aeration and agitation in a bioreactor ? 2 + 2

15. Mention types and applications of proteases. 2 + 2

16. What do you mean by protoplast fusion ? 4

17. What do you mean by biomonitoring ? How plants help in detecting the environmental pollution ? 2 + 2

18. What are the agricultural application of auxins ? 4

19. Define acid rain. How it is related with formation of stone cancer in Tajmahal ? 2 + 2

20. Name each of a bacteria and fungus used in ethanol production. What are the pharmaceutical applications of ethanol ? 2 + 2