2016

BIOTECHNOLOGY

[Honours]

PAPER – VI

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** questions from the following : 15 × 2

1. (*a*) What are the differences between primary and secondary metabolities ?

   (*b*) Describe the process of microbial production

of glucose isomerase as performed in industries.

(*c*) Why slow addition of glucose is required for penicillin production ?

(*d*) Give a brief account of preservation of industrially important microbes. 2 + 5 + 3 + 5

2. (*a*) Briefly describe the characteristic features of stem cells. State its use in human health care.

(*b*) Write down the basic principle and use of cryopreservation. 9(4 + 5) + 6(3 + 3)

3. (*a*) What are primary and secondary pollutants ? Mention the impact and control measure of thermal pollution on environment.

(*b*) Differentiate B.O.D from C.O.D. How does sewage can be treated aerobically ?

2 + 5(3 + 2) + 8(3 + 5)

4. (*a*) Describe the process of embryogenesis.

(*b*) What are triploids ? How are they produced ?

(*c*) Briefly highlight the testing process for viability of protoplasts.

(*d*) Point out the practical applications of suspension culture. 4 + 5(1 + 4) + 3 + 3

5. (*a*) What are cell lines ?

(*b*) State the reasons behind immortalization of few cell lines.

(*c*) Give a brief account of cell banks.

(*d*) Briefly discuss the production of hormones through genetically modified organisms.

(*e*) Mention the applications of protein engineering in pharmacentical science.
2 + 3 + 2 + 5 + 3

6. (*a*) Mention the advantages and disadvantages of continuous fermentation.

(*b*) Discuss the process of development of bioinsecticides with examples.

(*c*) How reforestation of soils containing heavy metals have been made possible ?

(*d*) What are degradative plasmids ? 5 + 4 + 3 + 3

GROUP – B

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

7. Describe the steps involved in the production of microbial Lipase. 8

8. (*a*) Mention the role of microbes for improving soil fertility.

   (*b*) Write a short note on fuel production from biomass. 4 + 4

9. (*a*) Compare the methods, advantages and disadvantages between bioprocessing and chemical processing.

   (*b*) Add a note on the principle of tertiary treatment of sewage. 5 + 3

10. (*a*) What is serum free media ? What are its advantages ?

    (*b*) Write short notes on : Hematopoetic stem cells. (2 + 2) + 4

11. (*a*) Describe the process of biotransformation of steroids.

    (*b*) Give a brief account of protoplast fusion technology. 4 + 4

12. (*a*) Mention the differences between Totipotent and Pleuripotent

    (*b*) Add a note on Toxicogenomics. 4 + 4

13. (*a*) What is synthetic seed ? Mention the steps to prepare synthetic seed.

    (*b*) Add a note on Growth regulations in plant culture. (2 + 2) + 4

14. Write down the basic steps of in-vitro fertilization. 8

GROUP – C

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

15. Write short notes on : Single Cell Protein. 4

16. Discuss the economic benifits of use of biofuels. 4

17. Describe the process of high-temperature composting. 4

18. What is Ti-plasmid ? What is its applications in genetic engineering. 4

19. Write a note on gene therapy. 4

20. What is patent ? Mention the process of patenting. 4

21. What is cell proliferation ? How it is measured ? 2 + 2

22. Describe the methods of cryopreservation. 4