

2017

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

[**OLD SYLLABUS**]

GROUP – A

Answer any two questions from the following :

- 15 × 2
1. (a) What are the advantages of bioprocessing
over chemical processing ? 2

- (b) Describe the strategies involved in designing media for bacterial production of an enzyme. 3
- (c) Define biotransformation. Give examples of steroids produced through microbial biotransformation. Describe the advantages and disadvantages of obtaining steroids by this process. 2+2+4
- (d) What is SCP? 2
2. (a) Discuss the major sources and control measures of noise pollution. 2+2
- (b) Write short note : Vermicomposting. 4
- (c) What is vermiwash? 2
- (d) Discuss the recent developments in production of stress tolerant plant varieties. 3
- (e) What are degradative plasmids? 2
3. (a) Describe the process of embryogenesis. 5
- (b) Discuss the process and practical applications of single cell suspension culture. 4 + 3

- (c) What are the differences between hybrids and cybrids? 3
4. (a) What are the advantages of animal cell culture? 2
- (b) Describe the instruments and equipments used to simulate an ideal environment for animal tissue culture. 4
- (c) Discuss the process and importance of fate mapping of stem cells. 2 + 2
- (d) Describe the steps involved in in-vitro fertilization. 5
5. (a) Give a brief account of the processes and practical applications of gene therapy. 4 + 4
- (b) Describe the methods used for characterization of cell lines. 5
- (c) How the cell lines are maintained? 2
6. (a) Give an account of industrial production of Penicillin. 8

- (b) Discuss the advantages of biofuels over conventional fuels. 3
- (c) Describe the production of biodiesel. 4

GROUP – B

Answer any five questions from the following :

- 8 × 5
7. (a) What is MPN ? How is it determined ? 2 + 2
- (b) Give brief account of activated sludge. 4
8. (a) Mention the different strategies involved in reforestation of soils contaminated with heavy metals. 4
- (b) Describe the uses of microbes for degradation of pollution causing pesticides. 4
9. (a) Describe the importance of implementing bioethics in research. 4
- (b) Discuss the various laws constituted in relation to environmental protection from GMOS. 4

10. Describe the techniques of embryogenesis and their application. 8
11. Mention the scientific names of the plants used for obtaining the following products : 8
- (i) Jute
 - (ii) Linen
 - (iii) Black pepper
 - (iv) Mustard oil
 - (v) Wood for furniture
 - (vi) Ephedra
 - (vii) Digitalin
 - (viii) Tea.
12. (a) What are the cell banks ? Give an outline of their usefulness. 1 + 4
- (b) Describe the process of microinsemination. 3
13. (a) What is ELISA ? Describe the double sandwich technique. 2 + 4
- (b) Define toxicogenomics. 2

14. (a) Describe the use of enzymes in clinical diagnosis of blood sugar level. 4
- (b) Which strategies are being employed for development of new generation antibiotics ? 4

GROUP – C

Answer any five questions from the following :
4 × 5

15. Describe the technique of tumour formation on plants using *A. rhizogenes*. 4
16. What is replicative senescence ? Why is this implemented ? 4
17. Give an outline of the technique for creation of meristem culture. 4
18. Give an account of techniques for preservation of industrially important microbial strains. 4
19. What are single cell suspension cultures ? How can those be used for selection of variants ? 2 + 2
20. Write short note on DNA vaccines. 4

21. Discuss the strategies involved in reduction of resistance formation by microbes to the drugs. 4
22. Give a brief account of use of biosensors for rapid clinical analysis of samples. 4
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