

2015

**MICROBIOLOGY**

[ 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 questions, taking at least one question from each Subgroup : 15 × 2

**Subgroup – A(a)**

1. (a) Distinguish between active and passive immunity. 4

(b) What is opsonization? Describe the mechanism of opsonization with special reference to phagocytic cell. 2+4

(c) Distinguish between isotype, allotype and idiotype determinant with reference to immunoglobulin molecule. 5

2. (a) What do you mean by host susceptibility? 3

(b) Describe the role of cell-mediated immunity for spreading of bacterial disease in body. 2+4

(c) Write the chemical nature and mode of action of penicillin. 3+3

Subgroup – A(b)

3. (a) Describe the process of food preservation with special reference to microbial intoxication. 8

(b) Describe the factors affecting product yielded by fermentation. 7

4. (a) Describe why fermentive foods are more beneficial to health. 5

- (b) Describe the causes and mechanism of botulism. 2+3
- (c) What is dual fermentation ? Mention its importance. 2+3

**GROUP – B**

Answer any five questions, taking at least two questions from each Subgroup : 8 × 5

**Subgroup – B(a)**

5. (a) What are the synthetic chemotherapeutic agents ? 2
- (b) Mention their antimicrobial property by mentioning their mode of action. 6
6. (a) Write the names of hepatitis B virus antigen by mentioning their features. 2 ÷ 2
- (b) Explain why the pathogenesis of hepatitis B virus is immuno-mediated rather than cytopathic. 4

7. (a) Define an antigen. How does it react with antibody? 2+2
- (b) Give an account on primary and secondary immuno response. 4
8. (a) What is monoclonal antibody? How does it differ from polyclonal antibody? 2+2
- (b) Discuss the significance of HAT for the production of monoclonal antibody. 4

Subgroup – B(b)

9. (a) What are the fermentive dairy products? 3
- (b) Describe their production by mentioning the micro-organisms. 5
10. (a) Mention the harmful and beneficial effects of food additives. 2+2
- (b) State the importance of anaerobic fermentation in microbial biotechnology. 4
11. (a) What is batch fermentation? 2

- (b) What are the limitations of batch fermentation? 3
- (c) Explain why vegetables are more susceptible to fungal spoilage. 3
12. (a) Describe the different types of aeration process in fermenter by mentioning their importance. 5
- (b) Write a brief note on canning. 3

GROUP – C

Answer any **five** questions, taking at least **two** questions from each Subgroup : 4 × 5

Subgroup – C(a)

13. Mention the role of FADD in cytotoxicity. 4
14. Draw and describe the structure of Immunoglobulin M. 4
15. Write a note on drug resistance. 4
16. Mention the functions of cytokines. 4

Subgroup – C(b)

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| 17. State the nutritional value of mushroom.              | 4 |
| 18. Briefly write your comments on chemical preservation. | 4 |
| 19. Write a short note on endotoxin.                      | 4 |
| 20. State the industrial applications of amylase.         | 4 |
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