

(i) Printed Pages : 2 Roll No.

(ii) Questions : 9 Sub. Code :

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Exam. Code :

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**Bachelor of Science (FYUP) 4th Semester
(2056)**

MICROBIOLOGY

Paper : IMMUNOLOGY

Common with B.Sc. Bio-Technology 4th Sem. FYUP

Time Allowed : Three Hours] [Maximum Marks : 67

Note :— Attempt five questions in all, selecting one question from each unit. Question no. 1 is compulsory.

1. Write short notes on the following (Compulsory):

- | | |
|--------------------------------|---|
| (a) Hematopoiesis | 2 |
| (b) Adjuvants | 2 |
| (c) Lymphokines | 2 |
| (d) Tumor Necrosis Factor | 2 |
| (e) Skin Immune Reactions | 2 |
| (f) Colony Stimulating Factors | 2 |
| (g) Agglutination Reaction | 2 |
| (h) HLA full form. | 1 |

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UNIT-I

2. Write detail on Inflammation and explain its stages and biological significance. 13
3. Describe development of immune cells. 13

UNIT-II

4. Explain antigen-antibody interactions with special reference to precipitation reaction. 13
5. Describe the principle, procedure and applications of Radio Immuno Assay (RIA). 13

UNIT-III

6. Explain the structure and functions of MHC molecules. Differentiate between MHC-I and MHC-II. 13
7. Discuss the development, maturation and activation of T-cells in the immune system. 13

UNIT-IV

8. Explain the immunological basis of transplantation and describe graft rejection mechanisms. 13
9. Write detailed notes on the immunology of malignant diseases and the role of the immune system in cancer defense. 13