

**NTK/KW/15 – 6991**

**Fourth Semester Examination for the Degree  
of Bachelor of Pharmacy**

**PHARMACEUTICAL MICROBIOLOGY AND  
IMMUNOLOGY-II**

**Paper - 4 T 5**

Time : Three Hours ]

[ Max. Marks : 80

- N. B. : (1) Question No. 1 is Compulsory.  
(2) Solve any four questions from the remaining.  
(3) Draw neat labeled diagram wherever necessary.

1. Solve any **five** questions :—

- (a) Explain the term D value, and Z value.
- (b) What are antigens ? Explain in short.
- (c) Differentiate between exotoxins and endotoxins.
- (d) Comment on sources of contamination in aseptic area.
- (e) Give the applications of gaseous sterilization and radiation sterilization.
- (f) Differentiate between vaccines and sera.
- (g) Write the applications of antigen antibody reactions in medical and general microbiology. 5×4=20

2. (a) Classify the methods of sterilization. Explain the filtration as method of sterilization. 8

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Contd.

- (b) Discuss in short sterilization indicators. 7
3. (a) Describe the method of preparation of diphtheria antitoxin. 8
- (b) Write a note on tuberculin as diagnostic agent. 7
4. Describe the non-specific defense mechanism of host. 15
5. Explain antigen-antibody reactions. 15
6. What are hypersensitivity reactions? Describe the different types of hypersensitivity reactions. 15
7. Write short note on (any **three**) :—
- (a) Types of Immunity.
- (b) Laminar air flow unit.
- (c) Phenol coefficient test.
- (d) ELISA. 5x3=15