

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. In an 'antibiotic susceptibility assay' against Ciprofloxacin; different strains of pathogenic bacteria showed varied levels of susceptibility. With reference to the table provided, answer the following:

(CO-II) [2+2+1 = 5]

Bacterial Strain	Diameter of the zone of inhibition
A	12 cm
B	20 cm
C	3 cm
D	15 cm

- Compare and arrange the order of susceptibility of strains A, B, C, and D against Ciprofloxacin providing suitable reason for your order.
- Elaborate the method employed.
- Mention application of the assay in diagnostics and therapeutics.

Q2. **Case study:** Isha was infected with Corona Virus; she took medicines for treatment of the infection and was cured in 20 days. Divyanshi took two doses of the Covid-19 vaccine which works against Corona Virus.

(CO-V) [2+2+1 = 5]

- Analyzing both cases, discuss the type of immunity and duration of immunity acquired by the two individuals with reasons.
- Provide an immunological analysis (Primary immune response details) for both individuals.
- What would be the difference in type of immune response shown by Isha and Divyanshi if they encounter a second infection with the same virus?

Q3. Compare the 'Lytic' and 'Lysogenic' cycle of viral multiplication, and draw diagrams to support your explanation. (CO-II) [5]

Q4. With reference to ABO blood typing answer the following: (CO – III) [1+2+3 = 6]

- I. Define agglutination.
- II. Mention important precautions which must be taken while performing such test.
- III. Blood Samples were collected from four individuals and mixed with three antibodies Anti-A, Anti-B and Anti-D on separate glass slides leading to agglutination. Identify the blood group in each case and provide suitable explanation for your interpretations.

(YES indicates presence and NO indicates absence - of Agglutination)

Sample Name	Anti-A	Anti-B	Anti-D
W	YES	YES	YES
X	YES	NO	NO
Y	NO	YES	YES
Z	NO	NO	NO

Q5. Write Short Notes on: (CO – IV) [2 X 3 = 6]

- a) Applications and advantages of ELISA
- b) Types of antibodies
- c) Advantages and Limitations of Radio Immuno Assay

Q6. Write Long Notes with diagrams on: (CO – IV) [2 X 4 = 8]

- a. Phagocytosis
- b. Inflammation