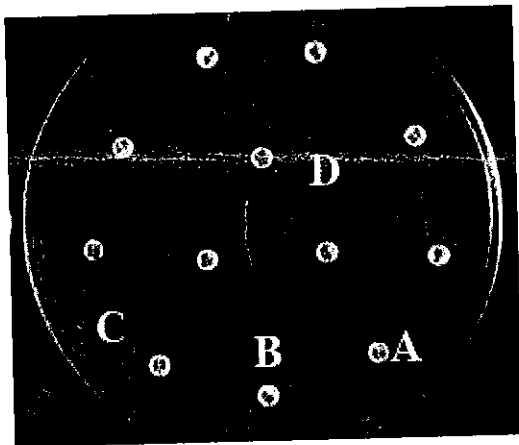MAX. MARKS: 25

COURSE CODE (CREDITS): 18B11BI312
COURSE NAME: MICROBIOLOGY & IMMUNE SYSTEM
COURSE INSTRUCTORS: Dr. Rahul Shrivastava

MAX. TIME: 1 Hour and 30 Minutes

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

Q1. In an 'antibiotic susceptibility assay' against pathogenic bacteria, different antibiotics showed varied levels of susceptibility. With reference to the figure provided answer the following: (CO-II) [2+2+1 = 5]

i. Compare the order of susceptibility of antibiotics A, B, C, and D against the pathogen providing suitable reason for your order.

ii. Elaborate the method employed.

iii. Illustrate application of the assay in diagnostics and therapeutics.

Q2. Give reasons **FOR or AGAINST** the following statement. (CO-III) [1 X 5 = 5]

i. Human Pathogenic bacteria are mostly 'Mesophilic' in nature.

ii. High concentration of salt in pickles increases its shelf life.

iii. 95% ethyl alcohol is a better antibacterial agent than 75% ethyl alcohol.

iv. Fungi are usually responsible for spoilage of acidic foods.

v. Pasteurization is used extensively in the beverage industry as it kills 100% of the microorganisms.

Q3. Compare the 'Lytic' and 'Lysogenic' cycle of viral multiplication with suitable diagrams. (CO-II) [5]

Q4. Calculate the average number of bacteria present in soil from the following data, 100µl of sample was used for plating each time: (CO-V) [4]

Sample No.	Dilution Factor	CFU	Sample No.	Dilution Factor	CFU
Sample 1	-4	48, 60	Sample 3	-8	126, 228
Sample 2	-6	54, 78	Sample 4	-10	0, 2

Q5. Differentiate between an obligate and a facultative aerobe. Name the enzymes most likely to be present in an obligate aerobe and function of the enzymes. (CO-I) [3]

Q6. What is meant by 'indirect' measurement of microbial growth? Elaborate any two methods used for indirect growth measurement of bacteria. (CO-I) [3]