Seat No. : _____

NI-114

November-2025

B.Sc., Sem.-V

SEC(1) - 356 : Microbiology

(Introduction to Air Microbiology)

(NEP)

Time : 1:00 Hour] **[Max. Marks : 25**

Instructions : (1) **All** questions are compulsory.

(2) Figures on the right indicate marks.

(3) Mention correct question number against the answer.

(4) Draw figures wherever necessary.

1. (a) Describe sources of air borne microorganisms. **5**

1. (b) Write a note on bactericidal vapours. **5**

OR

1. (a) Write a note on air borne diseases. **5**

1. (b) Write a note on clean room environment. **5**

2. (a) Describe principle and procedure of settling plate technique. **5**

2. (b) Describe the working principle of Laminar Air Flow cabinet. **5**

OR

2. (a) Describe the principle and procedure of fumigation of laboratory air by using $KMnO_4$ and Formaldehyde. **5**

2. (b) Differentiate Triple layer mask and N95 mask. **5**

3. Give short and specific answers in **1-2** lines only : (Any **05** out of **06**) **5**

(1) What are droplet nuclei ?

(2) What are bioaerosols ?

(3) Give an example of air borne viral disease.

(4) Give an example of chemical disinfectant.

(5) Write full name of HEPA filter.

(6) Which wavelength (in nm) of the UV spectrum is most bactericidal ?

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November-2025

B.Sc., Sem.-V

SEC(2) - 356 : Microbiology

(Introduction to Biostatistics)

(NEP)

Time : 1:00 Hour] **[Max. Marks : 25**

Instructions : (1) **All** questions are compulsory.
(2) Figure on the right indicate marks.
(3) Mention correct question number against the answer.
(4) Draw figures wherever necessary.

1. (a) Explain Arithmetic Mean, Median and Mode. Mention one advantage and limitation of each. **5**

1. (b) Explain the different types of data with suitable examples. **5**

OR

1. (a) Explain the construction and interpretation of line diagrams, bar charts, histograms and pie charts. **5**

1. (b) Describe Mean deviation and Standard deviation with suitable examples. **5**

2. (a) The following table shows the number of bacterial colonies observed in 50 Petri plates after incubation: **5**

Number of Colonies (*x*)	Number of Plates (Frequency, f)
0-10	5
10-20	8
20-30	12
30-40	15
40-50	10

Calculate the Arithmetic Mean number of bacterial colonies per plate.

2. (b) The following table shows the diameters of bacterial colonies (in mm) measured from 40 Petri plates. Calculate the Median diameter of the colonies. **5**

Colony Diameter (mm)	Number of Colonies (Frequency, f)
0-5	4
5-10	6
10-15	10
15-20	12
20-25	8

OR

2. (a) The following table shows the diameter of fungal colonies (in mm) measured after 48 hours of incubation on 40 Petri plates. Calculate the Arithmetic Mean diameter of colonies. **5**

Colony Diameter (mm)	**Number of Colonies (Frequency, f)**
0-5	6
5-10	10
10-15	12
15-20	8
20-25	4

2. (b) The following table shows the number of bacterial colonies counted on different Petri plates after incubation. Calculate the Mode of the data. **5**

Number of Colonies (per plate)	**Number of Plates (Frequency, f)**
0-10	5
10-20	9
20-30	14
30-40	8
40-50	4

3. Answer any **five** out of **six** : **5**

(1) Define range.

(2) What is variance ?

(3) Why graphical representation of data is important in statistics ?

(4) The diameters (in mm) of bacterial colonies are 4, 6 and 8. Find the Mean Deviation from the mean.

(5) The number of bacterial colonies on 3 plates is 2, 4 and 6. Find the Standard Deviation (SD).

(6) The following data show the number of bacterial colonies observed on 5 nutrient agar plates after incubation : 5, 8, 10, 7, 5. Calculate the Arithmetic Mean number of colonies per plate.

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