Roll No. | | | | | | | | | | | | **Total No. of Pages : 03**

Total No. of Questions : 11

Master of Science (Medical Microbiology) (Sem.–3)

BIOSTATISTICS

Subject Code : MMB-302-21

M.Code : 92526

Date of Examination : 18-06-2025

Time : 3 Hrs. **Max. Marks : 70**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains EIGHT questions carrying FIVE marks each and students have to attempt any SIX questions.**
3. **SECTION-C will comprise of two compulsory questions with internal choice in both these questions. Each question carries TEN marks.**

SECTION-A

l. Write short notes on :

a. What is the probability of picking a card that was red or black?

b. Define degrees of freedom with example.

c. Write any three assumptions for ANOVA.

d. Define Confidence interval.

e. Define research design and its significance.

f. Draw a graph which shows positive and negative correlation.

g. Define variable.

h. Define uncertainity with example.

i. Give the relation between standard deviation and variance with formulas.

j. Write the significance of regression analysis.

SECTION - B

2. **Obtain the regression equations for the given data :**

X:	9	11	5	8	7
Y:	6	2	10	4	8

3. Give an account of karl pearson's coefficient of correlation and rank correlation.

4. In a sample of eight observations, the sum of squared deviations of items from the mean was 84.4. In another sample 10 observations, the value was found to be 102.6. Test whether the difference is significant at 5% level. [Critical value of F for $V_1 = 7$ and $V_2 = 9$ degrees of freedom is 3.29 and $V_1 = 8$ and $V_2 = 10$ degrees of freedom is 3.07 .]

5. A bag contains 30 balls numbered from 1 to 30. One ball is drawn at random. Find the probability that the number of the ball drawn will be a multiple of a) 5 or 7 and b) 3 or 7.

6. Give an account of biological variations.

7. Write a note on Precautions and Significance of Report Writing.

8. What do you mean by descriptive statistics and explain its importance in brief.

9. Describe research process and problem. Justify your answer with suitable examples.

SECTION - C

10. **Perform One way ANOVA for the following data :**

Treatment

A	**B**	**C**	**D**
7	4	8	15
8	14	6	16
12	9	16	12
10	11	12	9
8	12	18	13

(Table Value $F_{(0.05)}$ for 3,16 is 3.25)

OR

Discuss in detail about Regression analysis.

11. **Atenolol was given to 8 patients and difference in their blood pressure was recorded to be**
Before Atenolol : 112, 113, 118, 120, 119, 113 ,110, 122 and

After Atenolol : 116, 120, 117, 125, 126, 111, 111, 117 .

Is it reasonable to believe that the drug has no effect on change in Blood Pressure? **[$t_{0.05}$ (v=7) is 2.366].**

OR

Write a note on :

a. Z test

b. Techniques in report writing.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.