

Roll No. 

|  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|

Total No. of Pages : 02

Total No. of Questions : 18

**Pharm.D (Sem.-4)**  
**BIOSTATISTICS AND RESEARCH METHODOLOGY**  
**Subject Code : 4.4**  
**M.Code : 71572**

Time : 3 Hrs.

Max. Marks : 70

**INSTRUCTION TO CANDIDATES :**

1. SECTION-A contain SEVEN questions. Attempt any FIVE questions. Each question will carry TWO marks.
2. SECTION-B contain EIGHT questions (Short Essay Type). Attempt any SIX questions. Each question will carry FIVE marks.
3. SECTION-C contain THREE questions (Long Essay Type). Attempt any TWO questions. Each question will carry FIFTEEN marks.

**SECTION-A**

- Q1 Define level of significance and P value.
- Q2 Compare one way and two way ANOVA.
- Q3 Discuss the need for the application of computer in the inventory control.
- Q4 What is statistical power of a study?
- Q5 The frequency distribution of marks in Biostatistics obtained by 100 students in class is given below. Construct histogram for the data.

| Marks          | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|
| No.of students | 06    | 10    | 12    | 30    | 12    | 21    | 7     | 2     |

- Q6 Give advantages of computerized accounting system.
- Q7 What is Yate's correction factor? When it is applied in Chi square test?

**SECTION-B**

- Q8 What is an Interventional study? What is the best design for an interventional study?
- Q9 What are the main sections of report writing format?

Q10 Calculate mean, median and mode from the following data :

|                        |    |    |    |    |    |    |
|------------------------|----|----|----|----|----|----|
| <b>Marks less than</b> | 10 | 20 | 30 | 40 | 50 | 60 |
| <b>No. of students</b> | 8  | 23 | 45 | 65 | 75 | 80 |

Q11 Write a note on Wilcoxon rank sum test.

Q12 The rates of diffusion of carbon dioxide through two soils of different porosity are given below :

|                    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|--------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| <b>Fine soil</b>   | 20 | 31 | 18 | 23 | 23 | 28 | 23 | 26 | 27 | 26 | 12 | 17 | 25 |
| <b>Coarse soil</b> | 19 | 30 | 32 | 28 | 15 | 26 | 35 | 18 | 25 | 27 | 35 | 34 |    |

Test the significance of difference in the rates of diffusion through the two soil types.  
( $t = 1.67$ )

Q13 Explain various types of data distribution.

Q14 Write down objectives and advantages of computer-based patient record database management.

Q15 Give advantages of computerized literature retrieval system.

### SECTION-C

Q16 Write a descriptive note on designing methodology for research proposal. (15)

Q17 Write in detail applications of computer in community pharmacy. (15)

Q18 (a) Discuss the role of statistical methods in epidemiology. (8)

(b) Calculate Karl Pearson's coefficient of correlation from the following data : (7)

|          |    |    |    |    |    |    |    |    |    |
|----------|----|----|----|----|----|----|----|----|----|
| <b>X</b> | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 |
| <b>Y</b> | 74 | 78 | 70 | 66 | 62 | 54 | 58 | 52 | 46 |

**NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC case against the Student.**