

School of Medical and Allied Sciences

**Bachelor of Pharmacy
Semester End Examination - Jul 2024**

**Duration : 180 Minutes
Max Marks : 75**

Sem VIII - BPHT8001 - Biostatistics and Research Methodology

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

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|-----|--|-------|
| 1) | List the role of "Design Of Experiments" in the context of experimental design. | K1(2) |
| 2) | Classify the Kruskal-Wallis test and its application in statistical analysis. | K2(2) |
| 3) | Find the mode of the following data set: {5, 4, 2, 1, 4, 6, 8, 8, 10,8}. | K1(2) |
| 4) | Explain the significance of incorporating innovative methods in research methodology for advancing biostatistics. | K2(2) |
| 5) | Define blocking in the context of experimental design. | K1(2) |
| 6) | Explain importance of proper experimental design in ensuring the validity and reliability of results obtained from Industrial and Clinical trials. | K2(2) |
| 7) | Write two merits and two demerits of the mode. | K1(2) |
| 8) | What is the probability of getting 5 in a single throw of a dice. | K2(2) |
| 9) | Define confounding affect the results of a factorial experiment. | K1(2) |
| 10) | Write down the regression equations of x on y and y on x. | K2(2) |
| 11) | Calculate the standard deviation for the following distribution: Class: 20-30 30-40 40-50 50-60 60-70 70-80 80-90 Frequency: 3 61 132 135 140 51 2 | K3(5) |

OR

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|-----|--|-------|
| | Find the mean of the following data set: {3, 5, 7, 9, 9, 11}. | K1(5) |
| 12) | List the recent advancements in research methodology address the challenges of analyzing data from single subject research. Provide example to illustrate their applications. | K4(5) |
| 13) | Apply your knowledge on the process of hypothesis testing in both Simple and Multiple regression models. | K3(5) |
| 14) | Compute the rank correlation coefficient for the following data: X: 68 64 75 50 64 80 75 40 55 64 Y: 62 58 68 45 81 60 68 48 50 70 | K4(5) |
| 15) | A football team keeps records of the number of goals it scores per match during a season. Find The Mode. No of goals: 0 1 2 3 4 5 Frequency: 8 10 12 3 5 2 | K3(5) |
| 16) | The correlation coefficient between two variables X and Y is $r = 0.60$. If $b_{xy} = 1.50$, $b_{yx} = 2.00$, and mean of X and Y and are 10 and 20 respectively, find the equations of the | K4(5) |

regression lines of (a) y on x, (b) x on y.

OR

Analyze the importance of research in scientific inquiry, emphasizing the need for both theoretical and practical investigations

K4(5)

17) Analyze the advantage of factorial design

K5(5)

18) The Edison Electric Institute has published figures on the number of kilowatt hours used annually by various home appliances. It is claimed that a vacuum cleaner uses an average of 46 kilowatt hours per year. If a random sample of 12 homes included in a planned study indicates that vacuum cleaners use an average of 42 kilowatt hours per year with a standard deviation of 11.9 kilowatt hours, does this suggest at the 0.05 level of significance that vacuum cleaners use, on average, less than 46 kilowatt hours annually? Assume the population of kilowatt hours to be normal

K6(10)

19) Determine the process of hypothesis testing in simple regression models. Include the steps involved and the interpretation of results.

K5(10)

OR

A random sample of 100 recorded deaths in United State during past year showed an average life span of 71.8 years. Assuming a population standard deviation of 8.9 years, does this seem to indicate that mean life span today is greater than 70 years. Use 0.05 level of significance.

K5(10)