PAPER ID-311027

Roll No: | | | | | | | | | | | | | |

BPHARM
(SEM VIII) THEORY EXAMINATION 2023-24
BIOSTATISTICS AND RESEARCH METHODOLOGY

TIME: 3 HRS **M.MARKS: 75**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **10 x 2 = 20**

a.	Define Biostatistics.
b.	Discuss the importance of median in pharmaceutical research.
c.	Describe the Poisson distribution.
d.	Explain the null hypothesis.
e.	Describe power of study with an example.
f.	Illustrate the Histogram, and Pie Chart.
g.	Elaborate the term "blocking" in the context of two-level factorial designs.
h.	Describe design of experiment, and its utilization to optimize clinical trials.
i.	Write the significance of Cohorts studies in new drug development.
j.	Summarize the benefits of using response surface methodology in pharmaceutical research.

SECTION B

2. Attempt any *two* parts of the following: **2 x 10 = 20**

a.	Analyze the different types of statistics that are commonly used in pharmacy. Explain their roles in pharmaceutical research and development.
b.	Explain various types of clinical studies and describes various phases of clinical trials.
c.	Explain mean. Write any two merits of mean. Find mean and median of the following dataset:

Class	0-20	20-40	40-60	60-80	80-100
Frequency	17	28	32	24	19

SECTION C

3. Attempt any *five* parts of the following: **5 x 7 = 35**

a.	Calculate standard deviation of the weight of the batch of medicine for the following data: A pharmaceutical company wants to test the purity of a new batch of medicine. They take a sample of 10 pills and measure their weight in milligrams (mg). The results are as follows: 37, 39, 40, 41, 42, 44, 45, 47, 50, 55
b.	Differentiate between Type I and Type II errors in hypothesis testing for regression models. Describe the methods to control these errors.
c.	Explain the Wilcoxon rank sum test, and its importance in statistical analysis. Compare how does it differ from the t-test.
d.	Illustrate the term "Plagiarism", and why is it considered unethical in academic and research settings.
e.	Explain the application of EXCEL and SPSS programs in statistical research analysis.
f.	Describe the term "historical design." Illustrate the steps involved in conducting a historical Design study.
g.	Discuss in detail about factorial design. Explain the role of randomization in a factorial design.