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BPHARM
(SEM VIII) THEORY EXAMINATION 2025-26
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 Dependent and Independent Variables with examples.
b.	A single dice is thrown 42 times, find the standard deviation and mean for probability of getting 4 is 1/6.
c.	There are 100 cards. These cards are no. from 1 to 100. One card drawn at random. What is the probability that the no. is perfect square.
d.	What are Type I and Type II errors?
e.	How will you differentiate between one way ANOVA and two way ANOVA test?
f.	How would you differentiate between coefficient of correlation and regression?
g.	Write the applications of nonparametric tests.
h.	What is plagiarism? Discuss briefly.
i.	Standard error of the mean and its significance?
j.	Define Karl Pearson's coefficient of correlation.

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

a.	What are the two broad categories of research studies? Explain cohort study with example. Also write its advantages and disadvantages.
b.	What are factorial design? How would you demonstrate 2^2 and 2^3 factorial designs with examples? What are the pros and cons of factorial design?
c.	What do you understand by binomial distribution? A die thrown 6 times. Consider "getting of odd no." is a success, then what is the probability of: i. 5 successes, ii. at least 5 successes & iii. at most 5 successes.

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

a.	Discuss the hypothesis testing of parametric data.
b.	Classify different types of data; explain any three measures of dispersion with examples.
c.	Using Poisson's distribution, solve the problems. If the probability of an individual who suffer a reaction from a particular injection is 0.001. Determine the probability that out of 2000 individuals: i. Exactly three & ii. More than 2 individuals will suffer a bed reaction (use $e^{-2} = 0.1351$).
d.	What do you mean by blocking and confounding system for two-level factorials?
e.	Discuss the applications of EXCEL and SPSS programs in statistical analysis.
f.	What are non-parametric tests? Explain the chi-square test-Goodness of fit test.
g.	Describe Central Composite Design and Box Behnken Design. What are the basic differences between these designs.