PAPER ID-420592

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

BPHARMA
(SEM VIII) THEORY EXAMINATION 2021-22
BIOSTATISTICS AND RESEARCH METHODOLOGY

Time: 3 Hours *Total 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.	What is Wilcoxon Rank Sum test?
b.	What are the arithmetic mean and geometric mean?
c.	What will be the value of the median, if in a moderately skewed distribution, arithmetic mean is 35.6 and the mode is 38.9?
d.	How can you construct the pie chart?
e.	What do you mean by plagiarism?
f.	What are the Type I and Type II errors?
g.	What do you mean by blocking system for two-level factorials?
h.	How will you differentiate between one way ANOVA and two way ANOVA test?
i.	What are the merits and demerits of mode?
j.	How would you differentiate between coefficient of correlation and regression?

SECTION B

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

a.	When do you use Binomial distribution? Explain various properties of Binomial distribution. What do you think whether Poisson distribution a limiting case of Binomial distribution or not? If yes then describe the limit conditions. If the mean of the Binomial distribution is 40 and standard deviation is 6 then calculate n, p and q.
b.	Can you distinguish between sample and population? What are the advantages and limitations of sampling? Write the name of the different types of sampling. Explain each type of probability sampling in detail.
c.	What are the two broad categories of research studies? Explain cohort study with example. Also write its advantages and disadvantages.

SECTION C

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

a.	Illustrate various measures of dispersion. How will you calculate the standard deviation from the following data: 10, 12, 14, 18, 25, 30, 35, 40?
b.	What do you mean by report writing? Illustrate various steps of report writing.
c.	What is clinic trial? Explain various phases of clinic trials.
d.	Describe Central Composite Design and Box Behnken Design. What are the basic differences between these designs?
e.	How can you distinguish between small sample and large sample? Describe all the major steps involved in one sample t-test. https://www.aktuonline.com A sample of 20 items has mean 42 units and standard deviation 5 units. Test the hypothesis that it is a random sample from a normal population with mean 45 units. Given: $t_{(19)}(0.05) = 2.093$(Test at 5% level of significance)
f.	Analyze the purpose of curve fitting. Fit a straight line to the following data by least square method. x: 0 1 2 3 4 y: 1 1.8 3.3 4.5 6.3
g.	What is factorial design? How would you demonstrate 2^2 and 2^3 factorial designs with example? What are the pros and cons of factorial design?

Printed Pages: 01 **Sub Code:BP-801T**

Paper Id: 231442 **Roll No.**

B PHARM
(SEM VIII) THEORY EXAMINATION 2022-23
BIOSTATISTICS AND RESEARCH METHODOLOGY

Time:3 Hours ***TotalMarks: 75***

Note: Attemptall Sections.

SECTION A

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

a. Null hypothesis.
b. Define Karl Pearson's coefficient of correlation.
c. Confidence interval.
d. Write the applications of nonparametric tests.
e. Define degrees of freedom.
f. Define one-tailed and two-tailed tests.
g. What is Plagiarism?
h. Define the Power of a study.
i. Standard error of the mean and its significance?
j. Report writing in the research study.

SECTION B

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

a. Definehypothesis? Whatare the differenttypes of hypothesis? Explain how you willformulate a hypothesis with a suitable example.
b. Explain the types and advantages of factorial design in formulation development.
c. Describe the different measures of central tendency. Calculate the mean and standard deviation for the given data on the mid-arm circumference(cm) of 16 children –14, 12, 13, 10, 11, 13, 14, 12, 12, 11, 10, 13, 12, 11, 10, 14

SECTION C

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

a. Classify differenttypes of data; explainany three measures of dispersion with examples.
b. Discuss the hypothesis testing of parametric data.
c. Explain types of correlation and correlation coefficient. Give suitable examples.
d. Explain ANOVA and write its applications.
e. Define Plagiarism in Research? How to remove Plagiarism in a Research Paper?
f. What are non-parametric tests? Explain the chi-square test-Goodness of fit test.
g. Discuss the applications of EXCEL and SPSS programs in statistical analysis.

PAPER ID-410057

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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.	Write all the measures of dispersion.
b.	Define Variance.
c.	Discuss method of least squares.
d.	What is Confidence interval?
e.	Define degree of freedom.
f.	Define one- tailed and Two- tailed test.
g.	Explain the formulation of Null hypothesis and Alternative hypothesis.
h.	How can you describe Pie chart?
i.	Differentiate between un-constrained and constrained variable.
j.	Define role of randomization in a factorial design.

SECTION B

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

a.	Describe the different measures of central tendency. Calculate the mean and standard deviation for the given data on the mid-arm circumference(cm) of 16 children –14, 12, 13, 10, 11, 13, 14, 12, 12, 11, 10, 13, 12, 11, 10, 14
b.	Define hypothesis. What are the different types of hypothesis? Explain how you will formulate a hypothesis with a suitable example.
c.	Explain in detail about 2^3 factorial designs. Elaborate its merit and demerits in experimental research.

SECTION C

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

a.	
b.	Forthe following blood pressure measurements 100,98,101,94,104,102,108,108. Calculate the coefficient of range.
c.	Classify the different types of sampling that could be used in a study on the prevalence of a specific disease in a population.
	Using least square method fit a straight line to the following data

X	0	1	2	3	4
Y	1	1.8	3.3	4.5	6.3

d.	Discuss Blocking and confounding system in detail.
e.	Explain the term “Historical design”. Illustrate the steps involved in conducting
f.	Explain the detail about Karl Pearson’s correlation utilized to analyze data in pharmaceutical company’s study that aims to establish the relationship between drug dosage and its effectiveness.
g.	Discuss the term “Plagiarism”. Why is it considered unethical in academic and research settings?

Paper ID : 250407

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BPHARM
(SEM VIII) THEORY EXAMINATION 2024-25
BIOSTATISTICS AND RESEARCH METHODOLOGY

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

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

SECTIONA

1. Attempt *all* questions in brief. **10x2 =20**

a.	Define Statistics and Biostatistics.
b.	What will be the value of the median,if in a moderately skewed distribution, arithmetic meanis35.6and the mode is 38.9?
c.	Write in brief about ANOVA.
d.	Thereare100cards.Thesecardsareno.from1to100.One card draw natrandom.What is the probability that the no. is perfect square.
e.	Write the significance of non-parametric test.
f.	Write various stages of research design.
g.	Write the importance of hypothesis testing in simple linear regression model.
h.	Write importance of Design of Experiments.
i.	Define Dependent & Independent Variables with examples.
j.	Explain briefly, why factorial analyss isused?

SECTIONB

2. Attempt any *two* parts of the following: **2x10 =20**

a.	What do you understand by binomial distribution? Explain various properties of Binomial distribution. If the mean of the Binomial distribution is 40 and standard deviation is 6 then calculate n, p and q.
b.	What are the two broad categories of research studies? Explain cohort study with example. Also write its advantages and disadvantages.
c.	What is factorial design? How would you demonstrate 2^2and2^3 factorial designs with examples? What are the pros and cons of factorial design?

SECTIONC

3. Attempt any *five* parts of the following: **7x5 =35**

a.	Describe the different measures of central tendency. Calculate the mean and standard deviation for the given data on the mid-arm circumference(cm)of16children–14,12,13,10,11,13,14,12,12,11,10,13,12,11, 10,14.
b.	Define Probability with its formula. A cardi sdrawn from a well shuffled packof52cards.Find the probability of: i. A red colour card, ii. A king, iii. An Ace & iv. A Black club cards.
c.	Describe Regression. From the given data, calculate regression equation and correlation coefficient taking deviation of item from the mean of x and y series. x=1357946 y=2437562
d.	What is clinical trial? Explain various phases of clinical trials.
e.	What do you mean by blocking and confounding system for two-level factorials?
f.	Discuss the applications of EXCEL and SPSS programs in statistical analysis.
g.	Describe Central Composite Design and Box Behnken Design.What are the basic differences between these designs.

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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.	What do you mean by 'frequency distribution'?
b.	Define Karl Pearson's coefficient of correlation.
c.	Cite an example of multiple regression.
d.	Differentiate between 'normal distribution' and 'binomial distribution'.
e.	State the applications of Mann-Whitney U test.
f.	Mention the need for design of experiments.
g.	Name two major statistical software used for clinical trial approach.
h.	What do you mean by hypothesis testing in multiple regression models?
i.	State the advantages of factorial design.
j.	Define 2^3 factorial design.

SECTION B

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

a.	The average weight of acetaminophen in a medication is supposed to be 80 mg, but the average weight of 50 random samples is 79.95 mg with a standard deviation of 0.18. i) Identify the null and alternative hypothesis. ii) Under what conditions is the null hypothesis accepted? iii) Determine if these differences in average weight are significant.
b.	Write a brief note on Hypothesis testings in multiple regression models.
c.	Describe in brief an optimization technique for pharmaceutical preparations.

SECTION C

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

a.	Explain the properties of Normal distribution and Poisson's distribution.
b.	Write in brief the significance of conducting one way and two ways ANOVA.
c.	Describe the significance of using plagiarism software in pharmaceutical research.
d.	Explain the steps involved in statistical analysis of data using SPSS technique.
e.	Describe the central composite design used in Response Surface methodology.
f.	Differentiate between response surface plot and counter plot graph.
g.	State and explain the steps involved in 2^2 factorial designs.