

Faculty of Pharmacy

End Semester Examination May 2025

PY3CO34 Biostatistics & Research Methodology

Programme	:	B.Pharm.	Branch/Specialisation	:	-
Duration	:	3 hours	Maximum Marks	:	75

Note: All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary.
 Notations and symbols have their usual meaning.

Section 1 (Answer all question(s))

Q1. Define standard deviation with example.	Marks CO BL 2 1 1						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Rubric</th> <th style="text-align: center;">Marks</th> </tr> </thead> <tbody> <tr> <td>Define</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Example</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>	Rubric	Marks	Define	1	Example	1	
Rubric	Marks						
Define	1						
Example	1						
Q2. Define biostatics and frequency distribution.	2 1 1						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Rubric</th> <th style="text-align: center;">Marks</th> </tr> </thead> <tbody> <tr> <td>Definition of Biostatistics</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Definition of Frequency distribution</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>	Rubric	Marks	Definition of Biostatistics	1	Definition of Frequency distribution	1	
Rubric	Marks						
Definition of Biostatistics	1						
Definition of Frequency distribution	1						
Q3. Define correlation.	2 2 1						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Rubric</th> <th style="text-align: center;">Marks</th> </tr> </thead> <tbody> <tr> <td>Definition</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Rubric	Marks	Definition	2			
Rubric	Marks						
Definition	2						
Q4. Give the formula for finding probability.	2 2 1						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Rubric</th> <th style="text-align: center;">Marks</th> </tr> </thead> <tbody> <tr> <td>Formula</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Rubric	Marks	Formula	2			
Rubric	Marks						
Formula	2						
Q5. Enlist any two types of plagiarism.	2 3 1						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Rubric</th> <th style="text-align: center;">Marks</th> </tr> </thead> <tbody> <tr> <td>Two Types (Each of 1 Mark)</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Rubric	Marks	Two Types (Each of 1 Mark)	2			
Rubric	Marks						
Two Types (Each of 1 Mark)	2						
Q6. Define research and histogram.	2 3 1						
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Rubric	Marks						
Definition of Research	1						
Definition of Histogram	1						
Q7. Give examples of any two statistical software.	2 4 1						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Rubric</th> <th style="text-align: center;">Marks</th> </tr> </thead> <tbody> <tr> <td>Two Examples (Each of 1 Mark)</td> <td style="text-align: center;">2</td> </tr> </tbody> </table>	Rubric	Marks	Two Examples (Each of 1 Mark)	2			
Rubric	Marks						
Two Examples (Each of 1 Mark)	2						

Q8. What is multiple regression model?

2 4 1

Rubric	Marks
Multiple Regression is a special kind of regression model that is used to estimate the relationship between two or more independent variables and one dependent variable. It is also called Multiple Linear Regression(MLR).	2

Q9. Define 2^2 design.

2 5 1

Rubric	Marks
Definition	2

Q10. Write any two advantages of factorial design response.

2 5 1

Rubric	Marks
Any two Advantages (Each of 1 Mark)	2

Section 2 (Answer any 2 question(s))

Q11. Explain in detail all the measures of central tendency along with formula.

Marks CO BL
10 1 2

Rubric	Marks
Measure of Central Tendency types	6
Formula with explanation	4

Q12. Discuss in detail different types of probability distributions with suitable mathematical expressions.

10 2 2

Rubric	Marks
Types	5
Expression for each	5

Q13. Classify different types of mean and state their definition. Brief about Karl Pearson's coefficient of correlation. Discuss binomial distribution and Poisson's distribution.

10 1 2

Rubric	Marks
Classification and Definition (2 Mark)	5
Karl Pearson's coefficient of correlation-3 Mark	
2.5 for each	5

Section 3 (Answer any 2 question(s))

Q14. Explain Kruskal-Wallis test with example.

Marks CO BL
5 3 2

Rubric	Marks
Explanation	3
Example	2

Q15. Discuss briefly different non-parametric tests.

5 3 2

Rubric	Marks
Types with examples	5

Q16. Describe various types of study designs for clinical trials.

5 3 2

Rubric	Marks
Described all types	5

Section 4 (Answer any 2 question(s))

Marks CO BL

Q17. Discuss in detail different software used for statistical analysis.

5 4 2

Rubric	Marks
All Types explanation	5

Q18. Explain hypothesis testing in detail

5 4 2

Rubric	Marks
Definition	1
Technique explanation	4

Q19. Explain SPSS as statistical analysis tool.

5 4 2

Rubric	Marks
Definition	1
Method explanation with Example	4

Section 5 (Answer all question(s))

Marks CO BL

Q20. Discuss factorial designs with their advantages.

5 5 2

Rubric	Marks
Factorial Design method	3
Advantages	2

Q21. Explain all the steps of hypothesis testing in multiple regression model.

5 5 2

Rubric	Marks
All steps- 1 mark each	5

Q22. Elaborate optimization techniques.

5 5 2

Rubric	Marks
5 Techniques each carry one mark	5
