

PRACTICE SET

End Semester Examination, Dec 2025

Program: BPT

Semester: VII

Course name: Research Methodology and Biostatistics

Course code: 23A703

Course Outcomes	Description
CO1	Define the basic concepts and ethical considerations of research and its significance in physiotherapy practice
CO2	Formulate research questions, hypotheses, and design appropriate research studies including qualitative and quantitative methods.
CO3	Describe and apply various sampling methods, data collection tools, and research instruments used in clinical research
CO4	Apply descriptive and inferential statistical techniques to analyse and interpret research data.

Section A

(13 x 5marks= 65)

1. Write short notes on: Criteria of good research [CO1] [Unit1] [LOT] [REMEMBER]
2. Write about Section of Research Methodology? [CO2] [Unit1] [LOT][UNDERSTAND]
3. Write short notes on: Objectives of research [CO1] [Unit1] [LOT] [REMEMBER]
4. Write about “Test of Measurements”. [CO1] [Unit2] [LOT] [REMEMBER]
5. Describing about Types of Research Design. [CO2] [Unit3] [LOT] [REMEMBER]
6. Define Biostatistics and illustrate the flowchart about Types of Biostatistics. [CO1][Unit4] LOT][REMEMBER]
7. Define the following: Data, Variable, Population, Sample, and Interferential Biostatistics. [CO2] [Unit4] [LOT][REMEMBER]
8. The blood groups of 30 students of Class VIII are recorded as follows: A, B, O, O, AB, O, A, O, B, A, O, B, A, O, O, A, AB, O, A, A, O, O, AB, B, A, O, B, A, B, O. Represent this data in the form of a frequency distribution table. [CO4] [Unit 5] [LOT][APPLY]
9. Consider the marks obtained by 10 students in a mathematics test as given below: 55, 36, 95, 73, 60, 42, 25, 78, 75, 62, Calculate Range of the above-Mentioned Data. [CO4] [Unit 5] [LOT][APPLY]
10. Write short notes on Normal distribution. [CO2] [Unit 5] [LOT][Remember]
11. Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18.[CO4] [Unit5][LOT][REMEMBER]
12. Write short notes on: Level of significance. [CO4] [Unit 6] LOT][Remember]
13. Write a Short Notes on Population and Sampling .[CO3] [Unit 6] [LOT][Remember]

Section B

(21 x 10 marks= 210)

14. Explain Research Methods vs Research Methodology, [CO1] [Unit1] [LOT] [UNDERSTAND]
15. Differentiate between Qualitative and Quantitative data. [CO2] [Unit5] [HOT] [ANALYZE]
16. Distinguish between: Reliability and Validity. [CO1] [Unit2] [HOT] [ANALYZE]
17. Explain About Problems Encountered by Researchers in India.[CO1] [Unit1] [LOT] [UNDERSTAND]
18. Describe Research Plan? [CO2] [Unit2] [LOT] [UNDERSTAND]
19. Describe Process of Research? [CO2] [Unit2] [LOT][Remember]
20. Importance of Measurement of Scaling in Research? [CO2] [Unit2] [LOT] [UNDERSTAND]
21. Explain about steps of Sample Design. [CO3] [Unit3] [LOT] [UNDERSTAND]
22. Write a detailed explanation about Systematic and stratified sampling. [CO3] [Unit3] [LOT] [APPLY]
23. Write a Short note on need of Research Design? [CO3] [Unit3] [LOT] [UNDERSTAND]
24. Write a Short note on Random Sampling? [CO3] [Unit3] [LOT] [UNDERSTAND]
25. What do you mean by research? Explain its significance in modern times. [CO1] [Unit3] [LOT] [UNDERSTAND]
26. Explain the concept of research by highlighting its key features and objectives. Discuss how research contributes to solving contemporary problems in modern society. [CO1] [Unit 3] [LOT][UNDERSTAND]
27. Define the Statistical Abbreviation with Their Full forms:
 - a. BR
 - b. MR
 - c. MMR
 - d. GRR
 - e. FR
 - f. IMR
 - g. RR
 - h. NRR
 - i. Sex Ratio
 - j. Incidence Rate [CO1] [Unit4][LOT][Remember]
28. Write definition on the following: [CO1] [Unit 5] [LOT][Remember]
 - i. Frequency distribution
 - ii. Relative frequency
 - iii. Cumulative frequency
 - iv. Quantitative data
 - v. Qualitative data.
 - vi. Variability
 - vii. Biological variability
 - viii. Standard deviation
 - ix. Coefficient of variation
 - x. Interferential Biostatistics
29. Write a short note on Data Collection and Secondary Data Collection? [CO4] [Unit 5] [LOT][Remember]

30. The following number of goals were scored by a team in a series of 10 matches: 2, 3, 4, 5, 0, 1, 3, 3, 4, 3 Find the mean, median and mode of these scores. [Unit 5] [CO3] [LOT][APPLY]
31. Blood serum cholesterol levels of 10 subjects are as under:
 240, 260, 290, 245, 255, 288, 272, 263, 277, 250.
 Calculate mean and Standard Deviation with the help of assumed mean. [CO3] [Unit5] [LOT][APPLY]
32. What is Normal Distribution of Curve. Write down about its Characteristics: [CO4] [Unit 6] [LOT][Remember]
33. Write in detail about X^2 Test [CO4] [Unit 6] [LOT][Remember]
34. Define' T-test, give different situations in which the unpaired and paired t-tests are applied.[CO4][Unit 6][LOT][Remember]
35. What is ANOVA? Describe about it. [CO4] [Unit 6] [LOT][Remember]

Section C

(10 x 20 Marks = 200Marks)

36. Design a clear explanation of what research means and develop an argument highlighting its significance in modern times. Construct a logical outline of the steps involved in the research process.[CO1] [Unit 1] [HOT][ANALYSE]
37. Formulate a reasoned argument supporting or refusing the statement – “Research is much concerned with proper fact-finding, analysis, and evaluation.” Justify your stance with suitable examples and reasoning.[CO1] [Unit 1] [HOT][ANALYSE]
38. Analyze and differentiate between various types of research. Compare an experimental approach with a survey method, explaining how their objectives, techniques, and outcomes vary.[CO1] [Unit 1] [HOT][ANALYSE]
39. Develop a detailed discussion on the concept of a research problem and construct a framework explaining why defining the problem is essential. Propose the key issues a researcher should address while formulating a research problem, using relevant examples.[CO2] [Unit 2] [HOT][CREATE]
40. Critically analyze the following components of research problem formulation:[CO2] [Unit 2] [HOT][ANALYSE]
- Experience survey
 - Pilot survey
 - Components of a research problem
 - Rephrasing the research problem
- Explain how each contributes to improving research accuracy and design.
41. Design and describe various research designs suitable for experimental and hypothesis-testing studies, explaining how each can be applied to develop a scientifically valid research plan.[CO5] [Unit 3] [HOT][ANALYSE]
42. Analyze the concept of ‘Sample Design’ and evaluate the major factors a researcher must consider when developing an effective sampling strategy for a research project.[CO5] [Unit 3] [HOT][ANALYSE]
43. Create a comprehensive explanation on the applications of computers in biostatistical analysis, and develop an informative overview of their roles in hospital establishments, nursing homes, and clinical practice among academic practitioners.CO1] [Unit 4] [HOT][CREATE]

44. Analyze and define the concepts of mean, median, mode, and range. Calculate the mode for the given frequency distribution

CLASS-INTERVAL	0-10	10-20	20-30	30-40	40-50	50-60
FREQUENCY	5	9	12	20	14	10

and interpret its significance in understanding data trends.[CO3] [Unit 5]
[HOT][ANALYZE]

45. Formulate a detailed discussion on the concept and characteristics of a hypothesis. Construct a comparison between null and alternate hypotheses and design an explanation of different types of hypothesis testing methods[CO4] [Unit 6]
[HOT][CREATE]

SUMMARY SHEET
Course Outcome Wise

CO	Question	Marks
CO1	1,3,4,5,7,16,17,25,26,27,36,37,38,43	165
CO2	2,6,8,11,12,18,19,20,39,40	95
CO3	15,21,22,23,24,30,31,44	85
CO4	9,10,13,14,29,32,33,34,35,45	90
	TOTAL	475

Unit Wise

	Question	Marks
Unit1	1,2,3,14,16,17,36,37,38	85
Unit2	4,5,18,19,20,39,40	80
Unit3	6,21,22,23,24,25,26,41,42	105
Unit4	7,8,27,43	60
Unit5	11,15,31	25
Unit6	14,15,32,33,34,3,45	70
	TOTAL	475

Bloom Taxonomy Wise

	Question	Marks
BTLLOT	1-13,14,17-35	255
BTLHOT	15,16,36-45	220
	TOTAL	475

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Disclaimer: - This is a Practice Set. The Question in End term examination will differ from the Practice set. This Practice set is meant for practice only.