

BACHELOR OF PHYSIOTHERAPY (BPT)
FOURTH YEAR EXAMINATION, SEPTEMBER-2026

PAPER –V: RESEARCH METHODOLOGY & BIOSTATISTICS

[Time allotted: Three Hours]

[Max Marks: 70]

Note: Attempt all questions

Draw suitable diagrams wherever necessary

A: Short answer questions:

(7 x 9 = 63)

- Q. 1.** What are the characteristics of a 'Good Research'? Discuss the significance of Literature Review in writing a Research Protocol.
- Q. 2.** Distinguish between:
- Nominal and ordinal scale of measurement
 - Qualitative and quantitative data
- Q. 3.** Describe the construction of any two types of graphical representation of statistical data with reference to qualitative data.
- Q. 4.** Write short notes on:
- Aims and Objectives of research
 - Skewness
- Q. 5.** Explain each measure of central tendency, clearly mentioning the formula for each.
- Q. 6.** Differentiate between probability and non-probability sampling. Discuss non-probability sampling methods in detail.
- Q. 7. a.** What are parametric tests? State clearly the assumptions for student's t- test.
- b.** The following data shows the effect of hypnosis on the blood pressure among the patients with primary and secondary hypertension. Test the effectiveness of hypnosis in reducing systolic Blood Pressure. (Given that the tabulated value is 2.11 at 5% level of significance)

Group I: Primary Hypertension (mmHg)	122	134	120	126	124	120	122	130	128	136
Group II: Secondary Hypertension (mmHg)	132	130	120	122	126	124	120	124	126	130

- Q. 8. a.** Differentiate between correlation and correlation coefficient.
- b.** Find Karl Pearson correlation coefficient between two variables X and Y.

X	25	30	36	45	65	70
Y	20	25	36	40	35	50

- Q. 9. a.** Differentiate between parametric and non-parametric statistical methods.
- b.** Find out association between mutation & sex from the following data. Given the Chi-square test statistic with 1 df at 0.05 is 3.84.

Mutation	Sex		
	Male	Female	Total
Muted	10	10	20
Normal	15	5	20
Total	25	15	40

P.T.O....

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(MCQ)

Time allotted for MCQ - 15 minutes

B: MCQs (Single response type):

(½ x 14 = 07)

Select the most appropriate answer and encircle the alphabet against it.

1. The first step of research is:
 - a. Selecting a problem
 - b. Searching a problem
 - c. Finding a problem
 - d. Identifying a problem
2. The experimental study is based on:
 - a. The manipulation of variables
 - b. Conceptual parameters
 - c. Replication of research
 - d. Survey of literature
3. The probability of Type 1 error is referred as?
 - a. $1-\alpha$
 - b. β
 - c. α
 - d. $1-\beta$
4. Formulation of hypothesis may NOT be required in:
 - a. Survey method
 - b. Historical studies
 - c. Experimental studies
 - d. Normative studies
5. What does p-value represent in hypothesis testing?
 - a. The probability of making a Type I error
 - b. The probability of making a Type II error
 - c. The probability of observing the null hypothesis when it is true
 - d. The probability of observing the alternative hypothesis when it is true
6. Which of the following correlation coefficients indicates the strongest linear relationship between two variables?
 - a. 0.20
 - b. 0.10
 - c. -0.80
 - d. 0.30
7. The research that applies the laws at the time of field study to draw more and more clear ideas about the problem is:
 - a. Applied research
 - b. Action research
 - c. Experimental research
 - d. None of these
8. When a research problem is related to heterogeneous population, the most suitable sampling method is:
 - a. Cluster Sampling
 - b. Stratified Sampling
 - c. Convenient Sampling
 - d. Lottery Method
9. A null hypothesis is:
 - a. When there is no difference between the variables
 - b. The same as research hypothesis
 - c. Subjective in nature
 - d. When there is difference between the variables
10. Which correlation coefficient best explains the relationship between creativity and intelligence?
 - a. 1.00
 - b. 0.6
 - c. 0.5
 - d. 0.3
11. A common test in research demands much priority on:
 - a. Reliability
 - b. Useability
 - c. Objectivity
 - d. All of the above
12. An investigator wants to know the similarity of the peak flow respiratory rates, on an average, among the four groups- non-smokers, light smokers, moderate smokers and heavy smokers> Which statistical test of significance will you advise?
 - a. Two-way analysis of Variance
 - b. One-way Analysis of Variance
 - c. Pearson's correlation coefficient
 - d. Contingency chi-square test
13. In regression analysis, the variable that is being predicted is the:
 - a. Response, or dependent, variable
 - b. Independent variable
 - c. Intervening variable
 - d. Is usually x
14. In SPSS, what is the "Data Viewer"?
 - a. A table summarizing the frequencies of data for one variable
 - b. A spreadsheet into which data can be entered
 - c. A dialog box that allows you to choose a statistical test
 - d. A screen in which variables can be defined and labeled