REV-01
BPT/95/47/52

2025/12

SET B

BACHELOR OF PHYSIOTHERAPY
FIFTH SEMESTER
RESEARCH METHODOLOGY
BPT – 505

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

Objective

Time: 30 min. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. Which of the following is true about the t-score in a t-test?
   a. A large t-score indicates the groups are similar
   b. A small t-score indicates the groups are different
   c. A large t-score indicates the groups are different
   d. The t-score is not compared to any critical value

2. The t-test helps to compare-
   a. The means of two data sets to see if they are different
   b. The variances of two populations
   c. The standard deviations of two populations
   d. The probability of the null hypothesis

3. What is the significance level (α) when a confidence interval of 95% is given?
   a. 0.01 b. 0.05
   c. 0.1 d. 0.005

4. In hypothesis testing, the critical region consists of:
   a. Values that lead to rejecting the null hypothesis
   b. The total sample data
   c. Values used to calculate the p-value
   d. The values where the null hypothesis cannot be rejected

5. What does a p-value in hypothesis testing indicate?
   a. The significance level chosen for the test
   b. The probability of correctly accepting the null hypothesis
   c. Whether the results are statistically significant or not
   d. The difference between the population mean and sample mean

6. What is the primary purpose of hypothesis testing?
   a. To analyze the p-value
   b. To determine if the sample mean is equal to the population mean
   c. To verify if the results of an experiment are statistically significant
   d. To test if the null hypothesis is always true

7. What characteristic ensures that a research problem can be tested and validated?
   a. Interesting b. Verifiable
   c. Logical d. Contemporary

8. Which of the following is NOT a characteristic of a good research problem?
   a. Clear and unambiguous
   b. Based on assumptions
   c. Logical and systematic
   d. Empirical

9. A research problem must be understood thoroughly and reframed into meaningful terms from which point of view?
   a. Theoretical
   b. Theoretical
   c. Practical
   d. Logical

10. Which of the following ensures validity and reliability of research finding?
   a. Research report
   b. Research methodology
   c. Hypothesis
   d. Literature review

11. Research methodology ensures replicability by:
   a. Keeping procedures secret
   b. Avoiding detailed documentation
   c. Clearly documenting methods used
   d. Ignoring previous studies

12. Reliability in research means:
   a. Measuring what was intended
   b. Consistency of results
   c. Novelty of topic
   d. Clarity of language

13. Which of the following focuses on "how" research is done?
   a. Research design
   b. Research methods
   c. Research methodology
   d. Hypothesis testing

14. Research methodology can be best described -
   a. Collection of unrelated techniques
   b. Systematic science of analyzing how research is conducted
   c. Mere description of results
   d. Historical overview of studies

15. Which of the following is considered part of research methods?
   a. Survey, case study, interview
   b. Ethical guidelines
   c. Validity testing
   d. Replicability

16. What is the first step in writing research objectives?
   a. Conducting statistical analysis
   b. Defining the research variables
   c. Identifying the research problem
   d. Selecting a journal

17. Descriptive research primarily answers which kind of questions?
   a. Why
   b. What
   c. How
   d. When

18. What type of research objective aims to generate new ideas about a topic?
   a. Descript
   b. Exploratory
   c. Predictive
   d. Diagnostic

19. Which of the following is NOT a SMART criterion for writing research objectives?
   a. Specific
   b. Arbitrary
   c. Measurable
   d. Time-bound

20. Where does the word research come from?
    a. Ancient Greek "recherche"
    b. Ancient Egypt "recherché"
    c. Middle French "recherche"
    d. None of these

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Descriptive

Time : 2 hrs. 30 min. **Marks : 50**

[Answer question no.1 & any four (4) from the rest]

1. Describe the steps involved in writing research objectives. How does the use of the SMART criteria (Specific, Measurable, Achievable, Relevant and Time-bound) ensure clarity and feasibility in research? **10**

2. What do you mean by literature review? Define primary, secondary, and tertiary sources of literature with one example each **2+8=10**

3. Write down Five differences of research methodology and research methods **10**

4. **a.** What do you mean by hypothesis testing? **2+4+4 =10**
   b. Describe two hypotheses.
   c. Is it true that vitamin C has the ability to cure or prevent the common cold? Or is it just a myth? There's nothing like an in-depth experiment to get to the bottom of it all. Set up a hypothesis for this with significance lavel 0.5 and p value 0.03. Also give conclusion of the test.

5. **a.** Define Sampling. **2+3+5 =10**
   b. Discuss the importance and objectives of sampling in research.
   c. Explain how sampling helps in achieving accuracy, economy, and feasibility in data collection

6. **a.** Differentiate between the Independent Sample t-test and Paired Sample t-test. Give one example where each would be appropriately applied. **5+5=10**

   b. A company wants to improve its sales. The previous sales data indicated that the average sale of 25 salesmen was $50 per transaction. After training, the recent data showed an average sale of $80 per transaction. If the standard deviation is $15, find the t-score. Has the training provided improved the sales? (*Tabulated value of t-statistics at 5% level of significance for 24 df is 1.711*)

7. What do you mean by research design? Discuss different characteristics of research design. **2+8=10**

8. Write Short notes on *any two*: **2×5=10**
   - **a.** Academic research paper VS literature review
   - **b.** Applied research and pure/basic research
   - **c.** First category and second category of research methods
   - **d.** Difference between sampling error and non-sampling error?

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