

N.V.K.S.D. COLLEGE OF EDUCATION
(AUTONOMOUS)

M.Ed. Degree Third Semester Examination, December 2025
(For the candidates admitted during the academic year 2024-2025)

**Tool Course: ADVANCED RESEARCH METHODOLOGY AND
STATISTICS**

Course code: MED3TC003

Time: 3 Hours

Maximum Marks: 70

SECTION A (10 x 1 = 10 marks)

Answer ALL the questions by selecting the appropriate answers.

1. The probability of rejecting a true null hypothesis is known as
 - a) Type I error
 - b) Type II error
 - c) Power of the test
 - d) Level of confidence
2. When the direction of the relationship is specified in advance, the type of test used is
 - a) Two-tailed test
 - b) One-tailed test
 - c) Z-test
 - d) Chi-square test
3. In APA style, identify the correct way to cite a book in the reference list
 - a) Smith, J. (2020). *Educational Research*. New York: Pearson.
 - b) Smith, J. (2020). *Educational Research*. Pearson, New York.
 - c) Smith, J. (2020). *Educational Research*. New York: Pearson Education Ltd.
 - d) Smith, J. (2020). *Educational Research*. Pearson.
4. Mendeley and Zotero are mainly used for
 - a) Data analysis
 - b) Editing images and tables
 - c) Reference management and citation
 - d) Statistical computation
5. The option best defines *research ethics* is
 - a) Rules for analyzing data
 - b) Moral principles guiding responsible conduct in research
 - c) Methods for writing reports
 - d) Techniques for improving research visibility
6. Submitting the same research findings to more than one journal without acknowledgment is an example of
 - a) Redundant publication
 - b) Falsification
 - c) Selective reporting
 - d) Plagiarism
7. The software commonly used to detect plagiarism in academic writing is
 - a) SPSS
 - b) EndNote
 - c) Turnitin
 - d) NVivo6

8. Choose from the following, that is *not* an assumption of a parametric test
 - a) Normal distribution of data
 - b) Homogeneity of variance
 - c) Independence of observations
 - d) Ordinal level of measurement
9. The test used to compare two related samples (e.g., pre-test and post-test of the same group) is called as
 - a) Independent sample t-test
 - b) Correlated or paired sample t-test
 - c) Coefficient of Correlation
 - d) ANCOVA
10. The main purpose of Analysis of Covariance (ANCOVA) is to
 - a) Measure central tendency
 - b) Calculate effect size
 - c) Compare two proportions
 - d) Adjust the effect of covariates on the dependent variable

SECTION B (5 x 2 = 10 marks)

Answer all the FIVE questions in about 100 words each.

11. Explain the concept of *effect size* and its role in determining sample size in hypothesis testing.
12. Describe the characteristics of a good research report.
13. What is meant by intellectual honesty in research?
14. Differentiate between fabrication and falsification in scientific misconduct.
15. How would you formulate a testable hypothesis for a study investigating the impact of collaborative learning strategies on student achievement in secondary schools, and explain why hypothesis is essential to the research process?

SECTION C (6 x 5 = 30 marks)

Answer any SIX questions in about 200 words each.

16. Explain how software supports the researcher in maintaining academic integrity and efficiency in citation management
17. Explain the concept of *factorial design* and its importance in experimental research.
18. Discuss the essential components of a dissertation that help in maintaining academic quality.
19. Analyze the distinctions between one-tailed and two-tailed hypothesis tests and illustrate their role in statistical decision-making in educational research.
20. How will you ensure ethics in your research
21. What are parametric tests? Mention two examples.
22. The following table shows the test scores of students taught by three different teaching methods (A, B, and c). Use One-Way ANOVA to

determine whether there is a significant difference among the three groups.

Teaching Method	Scores
A	8, 9, 6, 7
B	5, 4, 6, 5
C	9, 10, 8, 9

23. What are the basic assumptions and uses of *t-test*?

SECTION D (2 x 10 = 20 marks)

Answer BOTH the questions in about 500 words each.

24. a) Discuss the procedure for testing a hypothesis, highlighting the roles of the null hypothesis, level of significance, statistical power, and possible errors (Type I and Type II). Illustrate your answer with an example.
(Or)

b) Explain the concepts and applications of major non-parametric tests such as the Chi-square test, Sign test, and Mann-Whitney U test. Discuss situations in which these tests are more suitable than parametric tests.

25. a) Discuss the importance of ethics and intellectual honesty in maintaining research integrity. Include in your answer the role of citation index and publication visibility in ensuring quality research.
(Or)

b) Describe the process of qualitative data analysis. How are the data classified, interpreted, and analyzed using computer-based tools in modern research? Illustrate your answer with suitable examples.

