

**THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATION COUNCIL OF TANZANIA
DIPLOMA IN SECONDARY EDUCATION EXAMINATION**

762

**EDUCATIONAL RESEARCH, MEASUREMENT AND
EVALUATION**

Time: 3 Hours.

Tuesday, 13th May 2003 a.m

Instructions

1. This paper consists of sections A, B and C.
2. Answer **all** questions in sections A, **two (2)** questions from section B and **one (1)** question from section C.
3. Question **11** is **compulsory**.
4. Section A carries 36 marks, section B carries 40 marks and section C carries 24 marks
5. Cellular phones and unauthorized materials are **not allowed** in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

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SECTION A (36 marks)

Answer **all** questions in this section.

1. Define educational evaluation.
2. Mention four characteristics of a good research title.
3. State four reasons for sampling in educational research.
4. Give four limitations of using essays as a test format.
5. List three roles of a literature review in a proposal.
6. State four threats to internal validity in quasi-experiments.
7. Mention four principles for constructing multiple-choice items.
8. Explain four purposes of a table of specifications in test construction.
9. Give two situations where median is preferred to mean in reporting results.

SECTION B (40 marks)

Answer two questions from this section. Question 11 is compulsory.

10. (a) Define measurement error and distinguish between random error and systematic error.
(b) Explain four practical strategies a test developer can use to reduce measurement error in school-based examinations.
11. (a) The following are Biology scores for 14 students:
38, 42, 45, 50, 55, 57, 60, 62, 65, 67, 70, 72, 78, 85.
(i) Calculate the median.
(ii) Calculate the mean (nearest whole number).
(iii) Calculate the variance and standard deviation (nearest whole number).
(iv) Transform $X = 85$ and $X = 38$ to T-scores using mean 50 and standard deviation 10.
(b) Interpret the two T-scores in part (iv) for a head teacher who is not familiar with statistics, highlighting what each says about the learner's standing in the group.

12. A researcher intends to evaluate the effect of a formative assessment intervention on Form Three Mathematics achievement across 12 schools in two regions.
- (a) Propose an appropriate research design and justify the choice.
 - (b) Specify population, sampling frame, sampling technique, and sample size with reasons.
 - (c) Describe four data quality assurance procedures you would apply from instrument development to fieldwork.
 - (d) Outline a data analysis plan linking each research question to suitable statistics.
13. A new reading comprehension test is being validated for Form Two students.
- (a) Explain how you would establish content validity using expert judgment and a content validity index.
 - (b) Explain how you would establish construct validity using exploratory factor analysis, including assumptions to check.
 - (c) Explain how you would establish criterion-related validity using both concurrent and predictive approaches, specifying appropriate external criteria.

SECTION C (24 marks)

Answer one question from this section.

14. Tanzania plans to report school performance using standardized scores rather than raw scores.
- (a) Explain the logic of standard scores (z, T, stanines) and how they enable fair comparisons across forms and years.
 - (b) Discuss four risks of misinterpretation or misuse of standardized scores at school, district, and national levels, and propose practical safeguards for each.
15. You are tasked to overhaul a national high-stakes examination to improve reliability and fairness.
- (a) Propose four structural changes to the test blueprint and item formats that would increase reliability without inflating test length excessively.
 - (b) Propose four policy or operational changes in administration, scoring, and reporting that would reduce bias and enhance equity, explaining the mechanism for each.

16. An experimental study will randomize classrooms to a digital learning tool in English language teaching.
- (a) Identify and discuss four ethical issues specific to this cluster-randomized trial in Tanzanian schools.
 - (b) For each issue, propose concrete mitigation measures that are realistic for public-school settings and aligned with local regulations.