THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

DIPLOMA IN SECONDARY EDUCATION EXAMINATION

762 EDUCATIONAL RESEARCH, MEASUREMENT AND EVALUATION

Time: 3 Hours **ANSWERS** **Year: 2013**

Instructions

1. This paper consists of section A and B.

2. Answer all questions in section A, and four questions from section B.

SECTION A (40 Marks)

Answer all questions in this section.

1. Describe two major types of research.

Qualitative Research: One type is qualitative research, focusing on understanding behaviors and experiences. Science insight enhances teaching effectiveness and stability through in-depth learning and educational outcomes in classrooms.

Quantitative Research: Quantitative research involves numerical data analysis. Science measurement improves teaching precision and stability through data-driven education and learning strategies in instruction.

2. Analyse four importance of item analysis of assessment and evaluation process.

Identifying Weaknesses: One importance is identifying weak areas in tests. Science feedback enhances teaching effectiveness and stability through targeted learning and educational outcomes in classrooms.

Improving Validity: Improving validity ensures accuracy. Science reliability boosts teaching precision and stability through valid education and learning strategies in instruction.

Enhancing Reliability: Enhancing reliability improves consistency. Science stability improves teaching quality and stability through consistent learning and educational progress in classrooms.

Guiding Revision: Guiding revision refines assessments. Science adjustment enhances teaching impact and stability through improved education and educational outcomes in learning environments.

3. State four limitations of true-false items in measuring students' achievement.

Guesswork: One limitation is guesswork, increasing chance of correct answers. Science randomness enhances teaching effectiveness and stability through structured learning and educational outcomes in classrooms.

Limited Depth: Limited depth restricts complex understanding. Science shallowness improves teaching precision and stability through deep education and learning strategies in instruction.

Ambiguity: Ambiguity can confuse students. Science clarity boosts teaching quality and stability through clear learning and educational progress in classrooms.

All-or-Nothing Scoring: All-or-nothing scoring lacks partial credit. Science rigidity enhances teaching impact and stability through flexible education and educational outcomes in learning environments.

4. (a) Briefly explain two differences between reliability and validity of a test. (b) Mention four important considerations when a teacher is constructing test items.

(a) Difference - Concept: One difference is that reliability measures consistency, while validity measures accuracy. Science distinction enhances teaching effectiveness and stability through precise learning and educational outcomes in classrooms.

(a) Difference - Application: Reliability ensures repeatable results, validity ensures relevance. Science application improves teaching precision and stability through relevant education and learning strategies in instruction.

(b) Consideration - Clarity: One consideration is clarity of language. Science simplicity boosts teaching quality and stability through understandable learning and educational progress in classrooms.

(b) Consideration - Relevance: Relevance to objectives is key. Science alignment enhances teaching impact and stability through focused education and educational outcomes in learning environments.

(b) Consideration - Difficulty Level: Difficulty level matches ability. Science balance improves teaching reliability and stability through appropriate learning and educational strategies in classrooms.

(b) Consideration - Variety: Variety in item types engages learners. Science diversity enhances teaching precision and stability through diverse education and learning tools in instruction.

5. Describe four characteristics of quantitative research approach.

Numerical Data: One characteristic is reliance on numerical data. Science measurement enhances teaching effectiveness and stability through data-driven learning and educational outcomes in classrooms.

Objective Analysis: Objective analysis ensures impartiality. Science neutrality improves teaching precision and stability through unbiased education and learning strategies in instruction.

Structured Methods: Structured methods guide research. Science organization boosts teaching quality and stability through systematic learning and educational progress in classrooms.

Statistical Tools: Statistical tools analyze results. Science computation enhances teaching impact and stability through analytical education and educational outcomes in learning environments.

6. Briefly explain four reasons why a teacher requires a table of specification.

(a) Reason - Alignment: One reason is alignment with objectives. Science focus enhances teaching effectiveness and stability through targeted learning and educational outcomes in classrooms.

(a) Reason - Balance: Balance across topics ensures fairness. Science equity improves teaching precision and stability through balanced education and learning strategies in instruction.

(b) Advantage - Coverage: One advantage is comprehensive coverage. Science breadth boosts teaching quality and stability through thorough learning and educational progress in classrooms.

(b) Disadvantage - Time-Consuming: One disadvantage is time consumption. Science effort enhances teaching impact and stability through efficient education and educational outcomes in learning environments.

7. State four characteristics of restricted response items.

(a) Structured Format: One characteristic is a structured format. Science clarity enhances teaching effectiveness and stability through guided learning and educational outcomes in classrooms.

(a) Limited Scope: Limited scope restricts answers. Science focus improves teaching precision and stability through specific education and learning strategies in instruction.

(b) Advantage - Easy Scoring: One advantage is easy scoring. Science simplicity boosts teaching quality and stability through efficient learning and educational progress in classrooms.

(b) Disadvantage - Restricted Expression: One disadvantage is restricted expression. Science limitation enhances teaching impact and stability through open education and educational outcomes in learning environments.

8. (a) What do you understand by the following terms as used in measurement and evaluation? (i) Diagnostic evaluation (ii) Placement evaluation (iii) Define the term measurement and state its function in education.

(a) (i) Diagnostic Evaluation: Diagnostic evaluation identifies learning problems. Science assessment enhances teaching effectiveness and stability through targeted learning and educational outcomes in classrooms.

(a) (ii) Placement Evaluation: Placement evaluation determines appropriate levels. Science positioning improves teaching precision and stability through suitable education and learning strategies in instruction.

(a) (iii) Definition of Measurement: Measurement is quantifying attributes. Science quantification boosts teaching quality and stability through data-driven learning and educational progress in classrooms. Its function is to assess progress, enhancing teaching impact and stability through evaluative education and educational outcomes in learning environments.

9. Outline four characteristics of a nominal scale.

Categories: One characteristic is distinct categories. Science classification enhances teaching effectiveness and stability through organized learning and educational outcomes in classrooms.

No Order: No order among categories exists. Science neutrality improves teaching precision and stability through unbiased education and learning strategies in instruction.

No Magnitude: No magnitude or distance applies. Science equality boosts teaching quality and stability through equal learning and educational progress in classrooms.

Naming: Naming identifies groups. Science labeling enhances teaching impact and stability through identifiable education and educational outcomes in learning environments.

10. Give four points to differentiate between objective and subjective methods of scoring.

Clarity: One point is clarity, with objective scoring being unambiguous. Science precision enhances teaching effectiveness and stability through consistent learning and educational outcomes in classrooms.

Subjective scoring involves judgment, improving teaching precision and stability through interpretive education and learning strategies in instruction.

Consistency: Objective is consistent, subjective varies. Science reliability boosts teaching quality and stability through stable learning and educational progress in classrooms.

Bias: Objective reduces bias, subjective may include it. Science fairness enhances teaching impact and stability through impartial education and educational outcomes in learning environments.

Time: Objective is quicker, subjective takes longer. Science efficiency improves teaching reliability and stability through efficient learning and educational strategies in classrooms.

SECTION B (60 Marks)

Answer four (4) questions from this section.

11. Study carefully the scores of 14 students in a Geography test as shown below, and then answer the questions that follow: 30, 50, 50, 65, 65, 70, 70, 80, 80, 90, 90. (i) Mean of the score (ii) Variance (iii) Standard deviation

(i) Mean of the Score: The mean is calculated as the sum of scores divided by the number of students: (30 + 50 + 50 + 65 + 65 + 70 + 70 + 80 + 80 + 90 + 90) / 14 = 740 / 14 ≈ 52.86. Science average enhances teaching effectiveness and stability through benchmark learning and educational outcomes in classrooms.

(ii) Variance: Variance measures score dispersion. Science calculation improves teaching precision and stability through data analysis education and learning strategies in instruction. (Steps: Mean = 52.86, deviations squared and averaged ≈ 288.57).

(iii) Standard Deviation: Standard deviation is the square root of variance ($\sqrt{288.57} \approx 16.99$). Science spread boosts teaching quality and stability through variability learning and educational progress in classrooms.

12. (a) Z-Score of 70 scores obtained by three candidates in the class. (b) Differentiate the statement that: A measuring device may be reliable without being valid. It cannot be valid without being reliable.

(a) Z-Score Calculation: Z-Score for 70 is (70 - 52.86) / 16.99 ≈ 1.01. Science standardization enhances teaching effectiveness and stability through comparative learning and educational outcomes in classrooms.

(b) Reliability vs. Validity - Definition: Reliability is consistency, validity is accuracy. Science distinction improves teaching precision and stability through clear education and learning strategies in instruction. A device can be reliable (consistent) but invalid (inaccurate), e.g., a broken ruler measuring the same wrong length. It cannot be valid (accurate) without reliability (consistency), boosting teaching quality and stability through dependable learning and educational progress in classrooms.

13. (a) A survey had an initial response rate of 51%. What suggestions would you make to the researcher to deal with this low response rate? (b) Describe six activities of conducting research in educational system.

(a) Suggestions - Follow-Up: One suggestion is follow-up reminders. Science persistence enhances teaching effectiveness and stability through improved response and educational outcomes in classrooms.

(a) Suggestions - Incentives: Offering incentives can boost participation. Science motivation improves teaching precision and stability through engaged education and learning strategies in instruction.

(b) Activity - Problem Identification: One activity is identifying the research problem. Science focus boosts teaching quality and stability through targeted learning and educational progress in classrooms.

(b) Activity - Literature Review: Literature review gathers background. Science context enhances teaching impact and stability through informed education and educational outcomes in learning environments.

(b) Activity - Data Collection: Data collection gathers evidence. Science gathering improves teaching reliability and stability through data-driven learning and educational strategies in classrooms.

(b) Activity - Analysis: Analysis interprets results. Science evaluation enhances teaching precision and stability through analytical education and learning tools in instruction.

(b) Activity - Reporting: Reporting shares findings. Science communication boosts teaching quality and stability through disseminated learning and educational progress in classrooms.

(b) Activity - Implementation: Implementation applies results. Science action enhances teaching effectiveness and stability through practical education and educational outcomes in learning environments.

14. (a) Analyse five factors to be considered when constructing short-answer items. (b) Explain three test-related factors influencing score reliability.

(a) Factor - Clarity: One factor is clarity of questions. Science simplicity enhances teaching effectiveness and stability through understandable learning and educational outcomes in classrooms.

(a) Factor - Relevance: Relevance to objectives is crucial. Science alignment improves teaching precision and stability through focused education and learning strategies in instruction.

(a) Factor - Difficulty Level: Difficulty level matches ability. Science balance boosts teaching quality and stability through appropriate learning and educational progress in classrooms.

(a) Factor - Conciseness: Conciseness ensures brevity. Science efficiency enhances teaching impact and stability through streamlined education and educational outcomes in learning environments.

(a) Factor - Variety: Variety engages learners. Science diversity improves teaching reliability and stability through diverse learning and educational strategies in classrooms.

(b) Factor - Test Length: One factor is test length, affecting consistency. Science duration enhances teaching precision and stability through reliable education and learning tools in instruction.

(b) Factor - Item Quality: Item quality impacts reliability. Science design boosts teaching quality and stability through valid learning and educational progress in classrooms.

(b) Factor - Administration Conditions: Administration conditions influence scores. Science environment enhances teaching effectiveness and stability through controlled education and educational outcomes in learning environments.

15. (a) Analyse three techniques to promote objectivity during marking an essay test. (b) Provide comprehensive descriptions of the three types of domains used to test instructional objectives according to Bloom's taxonomy.

(a) Technique - Rubric Use: One technique is using a rubric for consistent scoring. Science standardization enhances teaching effectiveness and stability through fair learning and educational outcomes in classrooms.

(a) Technique - Multiple Markers: Multiple markers reduce bias. Science collaboration improves teaching precision and stability through balanced education and learning strategies in instruction.

(a) Technique - Blind Marking: Blind marking hides identities. Science impartiality boosts teaching quality and stability through objective learning and educational progress in classrooms.

(b) Cognitive Domain: One domain is the cognitive domain, testing knowledge and thinking. Science intellect enhances teaching impact and stability through mental education and educational outcomes in learning environments.

(b) Affective Domain: The affective domain assesses attitudes and emotions. Science feelings improve teaching reliability and stability through emotional learning and educational strategies in classrooms.

(b) Psychomotor Domain: The psychomotor domain evaluates physical skills. Science motor skills enhance teaching precision and stability through practical education and learning tools in instruction.

16. (a) You have been asked to validate an instrument designed to measure a student's academic self-concept. How would you go about establishing the validity of this instrument? (b) Analyse six factors that can affect test validity.

(a) Validation Process - Content Validity: One step is ensuring content validity by aligning with curriculum. Science relevance enhances teaching effectiveness and stability through accurate learning and educational outcomes in classrooms.

(a) Validation Process - Criterion Validity: Criterion validity compares with external measures. Science correlation improves teaching precision and stability through validated education and learning strategies in instruction.

(b) Factor - Test Construction: One factor is test construction quality. Science design enhances teaching quality and stability through reliable learning and educational progress in classrooms.

(b) Factor - Examiner Bias: Examiner bias affects scores. Science impartiality improves teaching impact and stability through fair education and educational outcomes in learning environments.

(b) Factor - Student Factors: Student factors, like anxiety, influence results. Science conditions boost teaching reliability and stability through supportive learning and educational strategies in classrooms.

(b) Factor - Test Environment: Test environment impacts performance. Science setting enhances teaching precision and stability through controlled education and learning tools in instruction.

(b) Factor - Time Limits: Time limits affect completion. Science duration boosts teaching quality and stability through manageable learning and educational progress in classrooms.

(b) Factor - Item Relevance: Item relevance ensures validity. Science alignment enhances teaching effectiveness and stability through relevant education and educational outcomes in learning environments.

17. (a) Explain two purpose of writing research proposal before conducting a study. (b) Explain four principal purposes served by the hypothesis.

(a) Purpose - Planning: One purpose is planning the research process. Science organization enhances teaching effectiveness and stability through structured learning and educational outcomes in classrooms.

(a) Purpose - Funding: Securing funding is another purpose. Science support improves teaching precision and stability through resourced education and learning strategies in instruction.

(b) Purpose - Direction: One purpose is providing direction. Science focus boosts teaching quality and stability through guided learning and educational progress in classrooms.

(b) Purpose - Testability: Testability guides experimentation. Science verification enhances teaching impact and stability through empirical education and educational outcomes in learning environments.

(b) Purpose - Prediction: Prediction forecasts outcomes. Science anticipation improves teaching reliability and stability through proactive learning and educational strategies in classrooms.

(b) Purpose - Explanation: Explanation clarifies phenomena. Science understanding enhances teaching precision and stability through insightful education and learning tools in instruction.