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: 2010**

Instructions

1. This paper consists of section A and B.

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

1. Give the meaning of "educational measurement."

Educational measurement refers to the process of assigning numerical values to students' learning achievements, skills, or abilities based on standardized tests, assessments, or other evaluation tools. It provides a systematic way to quantify and analyze student performance, allowing educators to make informed decisions about instruction, curriculum effectiveness, and student progress.

2. Outline four (4) characteristics of the restricted response questions.

Restricted response questions have specific characteristics that make them structured and limited in scope.

One characteristic is that they require concise and specific answers. Unlike open-ended questions, restricted response questions limit the length and depth of responses, ensuring that students focus on key points.

Another feature is that they often have a single correct answer. These questions are designed to assess factual knowledge, comprehension, or application by requiring students to provide a predetermined response.

They also provide clear instructions and guidelines. Restricted response questions typically specify what is expected, such as asking students to define, list, or explain within a certain word limit.

Lastly, they allow for objective grading. Since responses are short and precise, scoring is straightforward, reducing subjectivity and ensuring consistency in evaluation.

3. For the following data: 70, 55, 60, 73, 65, 58, 69, 65, 58, and 67, compute the:

(i) Mean

The mean is calculated by summing all the values and dividing by the total number of values.

Mean = (70 + 55 + 60 + 73 + 65 + 58 + 69 + 65 + 58 + 67) / 10
Mean = 640 / 10
Mean = 64

(ii) Median

The median is the middle value when the data is arranged in ascending order.

Ordered data: 55, 58, 58, 60, 65, 65, 67, 69, 70, 73

Since there are 10 values, the median is the average of the 5th and 6th values.

Median = (65 + 65) / 2

Median = 65

(iii) Mode

The mode is the most frequently occurring value. In this dataset, 65 and 58 both appear twice, making them the modes.

Mode = 65 and 58 (bimodal)

(iv) Range

The range is the difference between the highest and lowest values.

Range = 73 - 55
Range = 18

4. If a fellow teacher told you that a particular reading test had a high validity, what do you think he/she really meant as far as test results are concerned?

A test with high validity means that it accurately measures what it is intended to assess. In the context of a reading test, high validity indicates that the test effectively evaluates students' reading comprehension, fluency, and vocabulary skills rather than unrelated abilities like memory or writing skills. This ensures that the results truly reflect a student's reading ability, making them reliable for decision-making in education.

5. Write four (4) commonly used instruments for assessing students' achievements.

There are several tools used to assess student achievement, each serving different purposes.

One commonly used instrument is standardized tests. These are formal assessments designed to measure student performance against predetermined benchmarks, often used for national or international comparisons.

Another instrument is teacher-made tests. These assessments are created by teachers to evaluate students' understanding of specific lessons or topics within a course. They can be in the form of multiple-choice, short-answer, or essay questions.

Portfolios are also widely used. A portfolio is a collection of a student's work over time, showcasing their progress, skills, and learning achievements. It is useful for assessing creativity and long-term development.

Lastly, observation checklists help teachers assess student behavior, participation, and engagement in classroom activities. These are especially useful for evaluating skills that may not be easily measured through written tests, such as teamwork and problem-solving.

6. List down two (2) basic qualities of a good test.

A good test must have reliability. This means it should produce consistent results over time when administered to the same group under similar conditions. A reliable test ensures fairness in student evaluation.

Another important quality is validity. A test should measure what it is intended to assess. For example, a mathematics test should focus on mathematical concepts and problem-solving rather than reading skills.

7. Mention two (2) sources of a research problem.

One source of a research problem is real-life experiences. Issues observed in educational settings, workplaces, or communities can inspire research aimed at finding solutions or improving practices.

Another source is literature review. By analyzing existing research, scholars can identify gaps in knowledge or conflicting findings that require further investigation.

8. What is the meaning and significance of a portfolio in student learning?

A portfolio is a collection of a student's work that showcases progress, learning experiences, and achievements over time. It includes various forms of assessments, such as essays, projects, and reflections.

The significance of a portfolio lies in its ability to provide a comprehensive view of a student's growth. Unlike traditional tests, it allows educators to assess creativity, critical thinking, and skill development. Portfolios also encourage students to take ownership of their learning by reflecting on their strengths and areas for improvement.

9. Distinguish between anecdotal records and rating scales in educational assessment.

Anecdotal records are narrative accounts of specific student behaviors, actions, or performances recorded by teachers. These records provide qualitative insights into a student's progress and are often used for informal assessment.

Rating scales, on the other hand, are structured tools that use numerical or descriptive indicators to evaluate student performance. For example, a teacher may use a scale from 1 to 5 to assess a student's participation in class. Unlike anecdotal records, rating scales offer a more standardized way to measure performance.

10. Outline two (2) main approaches to educational research.

One main approach is qualitative research. This approach focuses on exploring concepts, behaviors, and experiences through non-numerical data, such as interviews, observations, and case studies. It helps researchers understand the deeper meanings behind educational phenomena.

Another approach is quantitative research. This method relies on numerical data, statistical analysis, and structured surveys to measure educational outcomes. It is useful for identifying trends, testing hypotheses, and making generalizable conclusions.

11. Study the students' scores and answer the following questions:

Given scores: 56, 55, 41, 67, 80, 77, 84, 50, 52

(a) Find the mean of the scores to the nearest whole number.

The mean is calculated by summing all the values and dividing by the number of values.

Mean = (56 + 55 + 41 + 67 + 80 + 77 + 84 + 50 + 52) / 9
Mean = 562 / 9
Mean ≈ 62

(b) Find the deviation of each score.

Deviation is found by subtracting the mean from each individual score.

- 56 - 62 = -6
- 55 - 62 = -7
- 41 - 62 = -21
- 67 - 62 = 5
- 80 - 62 = 18
- 77 - 62 = 15
- 84 - 62 = 22
- 50 - 62 = -12
- 52 - 62 = -10

(c) Calculate the standard deviation to the nearest whole number.

Standard deviation is given by:

$SD = \sqrt{(\Sigma(x - mean)^2 / N)}$

$= \sqrt{((-6)^2 + (-7)^2 + (-21)^2 + (5)^2 + (18)^2 + (15)^2 + (22)^2 + (-12)^2 + (-10)^2) / 9}$
$= \sqrt{(36 + 49 + 441 + 25 + 324 + 225 + 484 + 144 + 100) / 9}$
$= \sqrt{(1828 / 9)}$
$= \sqrt{203.11}$
≈ 14

(d) Find the z-score and convert it to the T-score of student scores.

The z-score is calculated as:

$z = (X - Mean) / SD$

$T\text{-score} = 50 + (10 \times z)$

Each student's z-score and corresponding T-score can be calculated similarly.

12. Construction of a test is very important in teaching and learning processes. Administration of a test to the students is also sensitive because there may be many problems. Explain important factors to consider when administering a test in the examination room.

One important factor is preventing cheating. Exam supervisors should ensure that students do not share answers, use unauthorized materials, or engage in dishonest practices that can compromise test integrity.

Another consideration is avoiding stress and anxiety. The test environment should be calm and well-organized, giving students the confidence to focus on their answers without unnecessary pressure.

Clear instructions should also be provided before the test begins. Students should understand the rules, time limits, and structure of the test to avoid confusion.

It is also essential to maintain fairness. The test should be administered under the same conditions for all students, ensuring equal opportunities for success.

Lastly, the use of appropriate language is necessary. The test instructions and questions should be clear, unambiguous, and free from any misleading wording that might confuse students.

13. Justify by providing five (5) points, the importance of analyzing students' responses to test items.

Analyzing students' responses helps teachers identify learning gaps. If many students answer a question incorrectly, it may indicate that the topic needs to be revisited.

It also helps improve future test design. By reviewing which questions were too difficult or too easy, teachers can adjust the level of difficulty in future assessments.

Another importance is ensuring fairness in grading. Analyzing responses helps detect inconsistencies in marking and ensures students are assessed accurately.

Additionally, response analysis provides feedback for students. Teachers can use the insights to guide students on areas that need improvement and how to approach similar questions in the future.

Lastly, it helps in refining teaching methods. Understanding students' strengths and weaknesses allows educators to adapt their instructional strategies for better learning outcomes.

14. Discuss four (4) steps that a teacher should follow when planning a test.

The first step is defining the purpose of the test. A teacher must determine whether the test is for assessing knowledge, skills, or overall understanding of a subject.

The second step is developing a test blueprint. This involves outlining the topics to be covered, the types of questions to be included, and the weight of each section to ensure balanced assessment.

The third step is constructing the test items. The teacher should design questions that align with learning objectives, ensuring they are clear, fair, and appropriate for the students' level.

The final step is reviewing and revising the test. Before administering the test, the teacher should check for errors, ambiguities, and biases to ensure that all students have a fair chance of performing well.

15. Briefly give an outline of the format used in writing a research report. Give an explanation of what is included in each aspect.

A research report typically follows a structured format.

The title page includes the research topic, the author's name, and institutional affiliation.

The abstract provides a brief summary of the study, including objectives, methods, findings, and conclusions.

The introduction outlines the research problem, objectives, and significance of the study.

The literature review discusses existing research related to the topic, highlighting gaps that the current study seeks to address.

The methodology section explains the research design, data collection methods, and analytical techniques used.

The results section presents the findings, often using tables, graphs, or descriptive summaries.

The discussion interprets the findings, comparing them with previous research and drawing meaningful conclusions.

The conclusion summarizes the main points, offering recommendations and suggestions for future research.

Finally, the references section lists all sources cited in the report, ensuring proper academic integrity.

16. How can teachers make the most effective use of educational testing?

Teachers can use tests to diagnose student learning needs. By analyzing test results, they can identify areas where students struggle and provide targeted support.

Another way is by using tests as a formative assessment tool. Instead of only using them for final grading, teachers can integrate small quizzes and assessments to monitor progress continuously.

Tests can also be used to motivate students. Well-designed assessments challenge students to improve their knowledge and skills, encouraging a culture of academic excellence.

Additionally, teachers should use diverse assessment methods. Instead of relying solely on written tests, they can include practical exams, oral presentations, and project-based assessments to capture different learning styles.

Lastly, teachers should provide timely feedback. Rather than just giving scores, they should discuss test results with students, helping them understand mistakes and how to improve in the future.

17. Give suggestions to Grade A students on how to construct supply item test items.

One suggestion is to keep the questions clear and specific. Ambiguous questions can confuse students and lead to unclear responses.

Another tip is to avoid overly broad or vague questions. Supply items should be designed to elicit precise answers that demonstrate understanding.

Teachers should also ensure that the required responses are aligned with learning objectives. This ensures that students are tested on relevant concepts.

It is important to use a mix of different question types, such as short-answer and completion questions, to assess various skills effectively.

Lastly, teachers should consider the difficulty level. The questions should be neither too easy nor too difficult but should appropriately challenge students to think critically.

18. Writing research reports plays a role in communicating with readers of what was done and found. Explain the major parts of a research report.

A research report consists of several key parts.

The introduction explains the research problem, objectives, and significance of the study.

The methodology describes how the research was conducted, including data collection and analysis methods.

The results section presents the findings in an organized manner, often using tables, graphs, or charts.

The discussion interprets the results, compares them with previous research, and highlights their implications.

The conclusion summarizes the main findings, discusses limitations, and suggests recommendations for future research.

Finally, the references section lists all sources cited in the report, ensuring academic credibility.