



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF EDUCATION

DEPARTMENT OF EARLY CHILDHOOD EDUCATION & EDUCATIONAL
COMMUNICATION & TECHNOLOGY

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF EDUCATION

ECE209: STATISTICS, TESTS AND MEASUREMENTS

DATE:

TIME:

INSTRUCTIONS

Answer Question One and Any Other Two Questions

QUESTION ONE

- a) For each of the following indicate the scale (or level) of measurement and state the type of variable:
- (i) Temperature in degrees Celsius
 - (ii) Volume of milk containers in cubic centimeters from Zero to 200 cubic centimeters.
 - (iii) Rooms 101-250 at the Safari Park Hotel.
 - (iv) Tutorial Fellow, lecturer, Senior Lecturer, Associate Professor and Professor
 - (v) The weights of all the form two students in a secondary school. (10 marks)
- b) Distinguish between the following terms as used in statistics:
- i) Positively skewed distribution and negatively skewed distribution;
 - ii) A sample and Population;
 - iii) A test and an examination;
 - iv) Ogive and a Frequency table;
 - v) Unimodal distribution and a bimodal distribution (10 marks)
- c) State two differences between norm-referenced and criterion-referenced tests. (4 marks)

- d) Item analysis results showed that 63 out of 80 students in the upper group answered an item correctly and 43 out of 80 students in the lower group answered it correctly. Comment on the quality of the item based on the above information. (6 marks)

QUESTION TWO

- a) Differentiate between the following terms as used in educational testing and evaluation:
- i. Measurement and evaluation;
 - ii. Achievement test and aptitude test;
 - iii. Formative evaluation and summative evaluation;
 - iv. Concurrent validity and predictive validity;
 - v. Test-retest and split-half methods of estimating reliability. (10 marks)
- b) Explain how the following stake holders may benefit from the teaching and learning situation;
- i. School administrators;
 - ii. Students;
 - iii. Teachers;
 - iv. School Guidance and Counselors ;
 - v. Parents. (10 marks)

QUESTION THREE

The data below shows a sample of scores obtained on a form one Mathematics test:

23, 15 ,18 ,31 ,20, 18 ,22, 18 ,18, 15 ,14 ,23,17 ,28 ,20 ,22, 20 ,19 ,21 ,18.

- a) Prepare an ungrouped frequency distribution table for the data (3 marks)
- b) Using the data above, Compute the following measures of
- i) central tendency:
 - Mode; (2 marks)
 - Median; (2 marks)
 - Mean. (2 marks)
 - ii) Variability
 - Range; (1 mark)
 - Mean deviation; (4 marks)

Standard deviation;

(4 marks)

- c) Using the measures of central tendency obtained in (i) above, describe the shape of the distribution; (2 marks)

QUESTION FOUR

- a) Distinguish between the following sets of terms:
- i) Test reliability and test validity.
 - ii) Descriptive statistics and inferential statistics.
 - iii) Norm-referenced and criterion-referenced testing.
 - iv) Essay type of tests and objective type of tests.
 - v) Positively skewed distribution and negatively skewed distribution. (10 marks)
- b) Discuss five functions of tests and measurements in a school situation. (10 marks)

QUESTION FIVE

- a) Outline four characteristics of a normal curve (4 marks)
- b) Explain three factors that may influence the reliability of teacher made tests. (6 marks)
- c) Distinguish between the following terms
- i. Statistics and parameter
 - ii. Split-half and parallel form methods of estimating reliability
 - iii. Standard and standardized scores
 - iv. Difficulty index and item discrimination Index
 - v. Assessment and evaluation (10 marks)