

460



MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

(MMUST)

UNIVERSITY EXAMINATIONS

2023/2024 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DEGREE OF

BACHELOR OF EDUCATION (SCIENCE)

MAIN EXAM

COURSE CODE: ESM 311

TIME: 2 HOURS

COURSE TITLE: MATHEMATICS EDUCATION

DATE: 15/12/2023

TIME: 8:00-10:00AM

INSTRUCTIONS TO CANDIDATES

Question 1 is Compulsory and carries 25 marks. Answer ANY OTHER three Questions each carrying 15 marks

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

1. (a) State the **FOUR** criteria which a lesson objectives must satisfy **(4 Marks)**
(b) Prepare a 40- minute mathematics lesson on the topic; “How to solve pairs of linear equations simultaneously using the substitution and elimination methods” **(12 Marks)**
(c) State any **THREE** objectives of teaching mathematics in secondary education. **(3Marks)**
(d) Using suitable examples, justify the inclusion of any two of the following topics in the mathematics curriculum:-
 - Rational Numbers
 - Algebra
 - Calculus **(6 Marks)**
2. (a) Briefly explain the meaning of the phrase “ a strategy for teaching mathematics” **(3 Marks)**
(b) Identify and discuss the main components of a strategy for teaching mathematics **(12 Marks)**
3. (a) By using suitable examples, explain any **TWO** major purposes of classroom assessment **(2 Marks)**
(b) Discuss the merits and demerits of including CAT marks in the overall assessment of students at KCSE mathematics **(4 Marks)**
(c) Using suitable examples, describe the major stages in test construction **(9 Marks)**
4. Generate a problem solving model comprising of **FIVE** stages and explain what the problem solver is expected to do at each stage **(15 Marks)**
5. (a) Distinguish between Behaviorist and the Cognitive theories of learning **(6 Marks)**
(b) Discuss the major contributions of any **ONE** of the following persons and their implications in the teaching and learning of mathematics
 - (i) Jerome Bruner
 - (ii) Zulian Dienes **(9 Marks)**