



UNIVERSITY EXAMINATIONS

2ND SEMESTER 2023/2024 ACADEMIC YEAR

THIRD YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF EDUCATION (ARTS/SCIENCE, BSC.
AGED)

EDCI 332: METHODS OF TEACHING MATHEMATICS

STREAM: R

TIME: 2 HRS

DAY: THURSDAY (2.30-4.30PM)

DATE: 18/4/24

THIS QUESTION PAPER CONSISTS OF FOUR (4) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.



INSTRUCTIONS: Answer question **ONE** and any other **TWO** questions

QUESTION ONE (30 MARKS)

- (a) (i) Differentiate between expository and heuristic approaches in Mathematics (2 marks)
- (ii) Use the heuristic approach to show how you can teach the Pythagoras theorem (4 marks)
- (b). Using examples, differentiate between vertical and horizontal relationships in mathematics (4 marks)
- (c). Outline four reasons that led to the abolition of “Traditional mathematics curriculum” in Kenya. (4 marks)
- (d). State six behaviors used by teachers to vary the stimulus in a mathematics lesson. (6 marks)
- (e). Discuss four reasons why problem solving should be intentional in the teaching of mathematics. (4 marks)
- (f). Identify four reasons why teaching and learning materials are important in mathematics (4 marks)
- (g). Explain the relevance of Vygotsky’s (1978) social cultural theory in the teaching and learning of mathematics (2 marks)

QUESTION TWO (20 MARKS)

- (a) i. Distinguish between inductive and deductive approaches in the teaching of mathematics (4 marks)
- ii. Give a mathematical example to demonstrate each approach. (6 marks)
- (b) i). Describe Gagne’s (1968) contribution towards the teaching and learning of mathematics. (2 marks)
- ii). State two advantages of the contribution (2 marks)

(c). Using examples, explain the three levels of discovery in the teaching of mathematical concepts according to Bruner (1961). (6 marks)

QUESTION THREE(20 MARKS)

(a). Using examples, differentiate between a primary concept and a secondary concept in mathematics. (4 marks)

(b) (i). Explain the three stages in the teaching of mathematical concepts according to Bruner (1961). (6 marks)

(ii). State the implication of the order in the stages in the learning of mathematics. (2 marks)

(c). Explain Polya's (1965) steps in mathematical problem solving (8 marks)

QUESTION FOUR (20 MARKS)

(a). Outline four merits of using objective tests in assessing student performance in mathematics. (4 marks)

(b) i. Explain the following levels of abilities in the cognitive domain

- Knowledge
- Comprehension
- Application
- Analysis (4 marks)

ii. Give an example of a mathematical item that can be tested in each case. (8 marks)

(c). Describe four functions of homework in the teaching and learning of Mathematics (4 marks)

QUESTION FIVE (20 MARKS)

(a) (i). Discuss the four stages of intellectual growth of the mind of a learner according to Piaget (1965), and relate them to mathematics. (8 marks)

- (ii). State two implications of Piaget’s work in the learning of mathematics. (2 marks)
- (b). Identify four reasons why a scheme of work is important in the teaching of mathematics. (4 marks)
- (c) (i). Describe the drill and practice techniques in the teaching of mathematics (2 marks)
- (ii). Using examples, differentiate between “instrumental” and “relational” understanding in mathematics (4 marks)

