



(*Knowledge for Development*)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2021/2022 ACADEMIC YEAR

FORST YEAR SECOND SEMESTER

MAIN EXAMINATION

FOR THE POST GRADUGUATE DIPLOMA IN EDUCATION

COURSE CODE: ESM 722E

COURSE TITLE: MATHEMATICS EDUCATION

DATE: 2ND SEPTEMBER 2022

TIME: 9.00-11.00 am

INSTRUCTIONS TO CANDIDATES

Answer Question One and any other TWO Questions

TIME: 2 Hours

This Paper Consists of 3 Printed Pages. Please Turn Over.

QUESTION ONE

- (a) Explain the key distinction between mathematics and mathematics education (2 mks)
- (b) Briefly explain by giving an example the value of a mathematics teacher having an understanding of the history of mathematics. (3 mks)
- (c) Explain three differences between absolutist and dynamic views of mathematics. (3 mks)
- (d) Briefly explain the reasons why it's important for a teacher to set an instructional objective. (3 mks)
- (e) Explain giving specific examples any two learner factors that can promote or hinder the use of discussion method in class. (4 mks)
- (f) Explain three distinctions between formative and summative evaluation. (3mks)
- (g) Discuss the professional value of maintaining the following documents by a mathematics teacher.
 - (i) Analysis of test results (1mk)
 - (ii) Learners' progress records (2mks)
 - (iii) Record of work covered (2mks)
- (h) Explain four factors for effective use of an audio – visual material. (4mks)
- (i) Jerome Bruner argues that child's development does not involve a series of stages but rather mastery of three modes of representation called modes. Identify and explain the three modes. (3mks)

QUESTION TWO

Discuss the contribution of Robert Gagne to the development of the current mathematics curriculum in Kenya (20 marks)

QUESTION THREE

- (a) Identify and discuss any three factors that informed the change of mathematics curriculum from traditional mathematics to new or modern mathematics. (9 mks)
- (b) Explain giving examples two ways in which the mathematical philosophy or view held by a teacher influences his/her choice of teaching methods. (8 mks)
- (c) Explain giving specific example how instructional objectives influence the choice of instructional resources to be used in class. (3 mks)

QUESTION FOUR

- (a) Differentiate between the following:
 - (i) Formative and summative evaluation (2mks)
 - (ii) Assessment and Evaluation (2 marks)

- (iii) Test and measurement (2 marks)
- (iv) Objective and subjective test (2 marks)

(b) Identify the Key characteristics of a good test and describe the process of test preparation in mathematics (12 marks)

QUESTION FIVE

- a) Teaching and learning resources are essential in the mathematics instructional process
 - (i) Describe any **THREE** attributes of a good mathematics textbook as an instructional resource (6 marks)
 - (ii) Highlight any **TWO** reasons that justify the chalkboard as the commonly used instructional resource in Kenyan schools (2 marks)
- b) Most mathematics teachers in Kenyan schools perceive the lecture method as essential during the instructional process
 - (i) Explain any **THREE** circumstances under which this method is useful in the instructional process (6 marks)
 - (ii) State any **THREE** limitations associated with this method in the instructional process (3 marks)
 - (iii) Suggest any **THREE** ways a teacher may vary the stimulus during the instructional process (3 marks)

END