



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL COMMUNICATION AND
TECHNOLOGY (COMTECH)

THIRD YEAR SECOND SEMESTER EXAMINATION FOR
BACHELOR OF EDUCATION (ARTS)

ECT 302: TEACHING METHODS IN MATHEMATICS

DATE: 9/12/2021

TIME: 8:30 – 10:30 AM

INSTRUCTIONS: Answer question **one** and any other **two** questions

1.
 - a) One of the aims of teaching mathematics is “To develop the ability to communicate precisely in symbolic form. Discuss. (10 marks)
 - b) Describe **five** ways in which the KCSE mathematics syllabus does not fully guide the teacher. (10 marks)
 - c) Discuss the circumstances under which a mathematics teacher may use the following approaches.
 - (i) Inductive Approach
 - (ii) Expository Approach in teaching Pythagoras theorem. (10 marks)
2.
 - a) Describe the interrelationship between a Mathematics lesson plan, a scheme of work and a syllabus. (6 marks)
 - b) Assessment should not merely be done **TO** students rather it should be done **FOR** students. Discuss. (7 marks)
 - c) Students’ attitude towards mathematics contribute to student task engagement and hence performance outcomes. Discuss. (7 marks)
3.
 - a) The following question was set by a form four mathematics teacher at Makutano

secondary school, “A father is 42 years old while his son is 12 years old. In how many years’ time will the father be three times as old as the son?” (5 marks)

- i) Prepare a making scheme for the question. (5 marks)
- ii) Highlight some of the errors candidates are likely to make in solving the question. (5 marks)

iii) Explain how the teacher would address these errors. (4 marks)

- b) Explain why a mathematics teacher should be versed with the contribution of the Gestalt psychology to learning (6 marks)

4. a) Discuss **five** ways in which a textbook can be used to support learning. (10 marks)

- b) Assume you are teaching the topic simultaneous equations and the subtopic is: Using graphical method to solve simultaneous equations, write:

- i) An objective in cognitive domain
- ii) An objective in psychomotor domain
- iii) List four learning activities that may aid the learner to interact with the content. (6 marks)

c) Contrast between behaviorist and constructivist theories. (4 marks)

5. The chalk board is the most popular and readily available teaching aid in most schools. It is the kind of mirror which reflects what kind of teachers we are. It is an extremely powerful aid in communication.

- a) Discuss three factors that the teacher should take into consideration when using the chalk board in a mathematics lesson. (10 marks)

b) Hence demonstrate how a teacher would effectively utilize the blackboard when solving $2x^2 + 17x = 9$ on the board in his/her class. (10 marks)