



MACHAKOS UNIVERSITY

University Examinations 2020/2021 Academic Year

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL COMMUNICATION AND TECHNOLOGY

THIRD YEAR SPECIAL/ SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF EDUCATION

ECT 302: MATHEMATICS TEACHING METHODS

DATE: 26/3/2021

TIME: 2.00-4.00 PM

INSTRUCTIONS

ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Discuss **five** aims of teaching mathematics (10 marks)
- b) Explain George Polya's heuristics to problem solving (10 marks)
- c) Explain **five** reasons of testing in mathematics (10 marks)

QUESTION TWO (20 MARKS)

- a) Outline Piaget's stages of intellectual development, stating the importance of each stage to learning of mathematics (10 marks)
- b) Explain **five** reasons of using teaching resources when teaching mathematics (10 marks)

QUESTION THREE (20 MARKS)

- a) Discuss five functions of models in the teaching of mathematics (10 marks)
- b) Explain four ways in which the secondary school mathematics syllabus does not guide the teacher (4 marks)
- c) Explain **three** reasons why it is important for a Mathematics teacher to plan for teaching (6 marks)

QUESTION FOUR (20 MARKS)

- a) Describe the series of stages you would follow to lead learners to discover that, for any two perpendicular lines l_1 and l_2 whose gradients are M_1 and M_2 respectively, $M_1M_2 = -1$ (10 marks)
- b) i Explain the meaning of the following terms as used in teaching and learning of mathematics
- Expository approach
 - Discovery approach (4 marks)
- ii Explain the circumstances under which a mathematics teacher would result to using the following approaches
- Expository approach
 - Discovery approach (6 marks)

QUESTION FIVE (20 MARKS)

- a) Illustrate **five** ways in which problem solving is important in teaching and learning of mathematics . (10 marks)
- b) Explain each of the five types of mathematical knowledge that the secondary school mathematics curriculum exposes to students (10 marks)