University Examinations for 2019/2020 Academic Year

SCHOOL OF EDUCATION

DEPARTMENT OF COMMUNICATION TECHNOLGY

THIRD YEAR SECEOND SEMESTER EXAMINATION FOR BACHELOR OF EDUCATION (SCIENCE)

BACHELOR OF EDUCATION (SPECIAL NEEDS)

BACHELOR OF EDUCATION (ARTS)

ECT 302: MATHEMATICS TEACHING METHODS

DATE: **TIME:**

INSTRUCTIONS:

Answer Question ONE and any other TWO questions.

QUESTION ONE

(a) Explain five reasons why teaching and learning resources are important during a mathematics lesson (10mks)

(b) Explain George Polya's heuristics of problem solving (10 marks)

(iv) Discuss fivelimitations of the secondary school mathematics syllabus

in the 8-4-4 system of Education. (10 marks)

QUESTION TWO

(c) Explain four reasons of testing learners in mathematics. (4marks)

(b) Explain the circumstances under which a mathematics teacher may result to using the following approaches:

(i) Expository approach

(ii) Discovery approach (6 marks)

(b) Explain each of the five types of mathematical knowledge, that the secondary school mathematics curriculum exposes to students. (10marks)

QUESTION THREE

a) Discuss the importance of Bruner's stages of teaching mathematical

concepts to the leaner. (6mks)

b) Assume you are teaching the subtopic 'proof of perpendicularity using gradients',
   i) Write one objective in each of the following domains;
      Cognitive domain
      Psychomotor domain
   ii) List two learning activities that may help the learner to interact with the content
   iii) Write two learning resources that are relevant. (6mks)

c) State two differences between each of the following instructional theories as used in the context of teaching mathematics.

(i) Constructivism

(ii) Behaviorism (8mks)

QUESTION FOUR

(a) Outline five aims of teaching Mathematics. (5mks)

a) Explain five guiding factors in choosing a mathematics class text. (5 marks

c) Explain the rationale for problem solving in the teaching and learning of mathematics. (10mks)

QUESTION FIVE

b) Explain five reasons why it is important for a mathematics teacher to prepare schemes of work. 10mks

(c) Show the steps that you would follow to lead learners to discover that

the matrix $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$ describes quarter turn rotation about the origin (10 marks)