THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

MAIN EXAMINATION

AUGUST - DECEMBER 2018 TRIMESTER

FACULTY OF EDUCATION

DEPARTMENT OF UNDERGRADUATE STUDIES IN EDUCATION

REGULAR PROGRAMME

ED 304: SUBJECT METHODS MATHEMATICS

Date: DECEMBER 2018	Duration: 3 Hours
INSTRUCTIONS: Answer Question ONE and any other THREE Questions	

.Q1. a)   Explain the contributions of Piaget's theory of learning on mathematics education   **(6Marks)**

b)   Using the fractions Syllabi provided set ONE question and explain how it tests each of the following skills

  i)   Knowledge
  ii)   Comprehension
  iii)   Synthesis   (9marks)

c)   Describe the nature of mathematics and explain how your knowledge of its nature will influence your teaching methods.   **(6marks)**

d)   Using any topic of your choice illustrate how you would use the following concepts in Mathematics teaching:

  • a class demonstration
  • Elements of the formal stage of dene's theory   **(4marks)**

Q2. a)   Using any topic in mathematics, outline how you will select choose teaching strategy(s)   **(8marks)**

b)   Problems and problem solving are of paramount importance in mathematics learning.

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i) Define a Mathematical Problem
ii) Explain what is meant by mathematical problem solving **(7marks)**

Q3. a) Critique the use of calculators in a Mathematics class **(6marks)**

b) Explain how the general aims of mathematics affect the teaching of the subject in secondary schools. **(9marks)**

Q4. a) Analyze **Four** features of a good Mathematics examination Paper **(8marks)**

b) Analyze the statement below made by a Mathematics teacher. **(7marks)**

''I never explain a problem that no one in the class can work. I will give hints, but if no one is interested enough to work the problem, I will not just give an answer away''

Q5. a) Assess challenges involved ICT integration in mathematics teaching and learning **(7marks)**

a) Using specific Examples, Explain Four types of Misconceptions in a Mathematics Classroom and explain how they you can help learners to overcome them. **(8marks)**

Q6. a) Write a 40 minutes lesson plan on a subtopic in fractions **(5marks**
   i) Identify the concepts that are lacking in each of the learners work shown below

(1)
$$2x - 1 = 8$$
$$x - 1 = 4$$
$$x = 4 + 1$$
$$x = 5$$

(2)
$$2(x + 3) = 5$$
$$2x = 5 - 3$$
$$2x = 2$$
$$x = 1$$

(3)
$$\frac{x-3}{2} = 7$$
$$\frac{x}{2} = 10$$
$$x = 20$$

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ii)   In your opinion what reasons would each of the above
        learners give for their mistakes.   **(3marks)**

iii)   Explain how you would teach linear equations to prevent the
        above mistakes. Give a psychological backing for your
        answer.   **(4 marks)**

END

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