



# **MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY EXAMINATIONS  
2017/2018 ACADEMIC YEAR  
THIRD YEAR FIRST SEMESTER**

**SCHOOL OF EDUCATION  
BACHELOR OF EDUCATION**

**COURSE CODE: CIM 311  
COURSE TITLE: SUBJECT METHODS IN  
MATHEMATICS**

**DATE: 23/4/2018**

**TIME: 8.30-10.30 AM**

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**INSTRUCTIONS TO CANDIDATES**

**DURATION: 2HOURS**

**Answer Question ONE and any other TWO**

*This paper consists of 4 printed pages. Please turn over.*

## QUESTION ONE

- a) Briefly explain your understanding of the following approaches to the teaching of mathematics
- i. Inductive approach (2marks)
  - ii. Deductive approach (2marks)
  - iii. Using inductive approach explain to learners how to derive the quadratic formula (5marks)
- b) Explain the relationship between Mathematics and the world we live in. (3marks)
- c) With examples, clearly distinguish between the surface structure and the deep structure in Mathematics (4marks)
- d) Explain why secondary school students in Kenya are taught Mathematics (3marks)
- e) Highlight Three criticisms that were leveled against modern Mathematics which lead to its dead through a presidential directive in 1981 (3marks)
- f) Explain the following terms as used in mathematics education
- i. Mathematics as a tool (2marks)
  - ii. Mathematics as art? Creative art (2marks)
- g) *Mathematics knowledge is classified on the basis for its assertion.* Explain the difference between **Priori** knowledge and **Posteriori** knowledge in Mathematics (4marks)

## QUESTION TWO

- a) Briefly explain the following learning tools in Mathematics giving the advantages of each:
- i. Traditional tools (4 marks)
  - ii. Social tools (4 marks)
- b) Explain the implications of Piaget's theory on the teaching and learning of mathematics. (4marks)
- c) Discuss three advantages of the using each of the following assessment methods in Mathematics
- i. Formative (3marks)
  - ii. Summative (3marks)
- d) Examination malpractice has become common in Kenyan schools. Identify three possible causes of such malpractice and provide possible solutions to curb them (6 marks)

### QUESTION THREE

- a) i. Explain two major differences between the behaviourists and cognitive development theories in their attempt to describe the nature of learning **(2marks)**
- ii. Identify and explain four major contributions of behavioural theories and the impact they have on the teaching and learning of Mathematics in Kenyan secondary schools. **(8marks)**
- b) Identify and describe the difference between the traditional Mathematics of the 1960s and the present 8-4-4 secondary mathematics curriculum in terms of:
- i. objectives **(2marks)**
  - ii. content **(2 marks)**
  - iii. Methodology **(2 marks)**
- c). Explain two activities/experiences that you can involve your learners in order to effectively teach mathematics as a language of communication **(4marks)**

### QUESTION FOUR

- a) As a mathematics teacher, it is your duty to effectively present content to your learners. Explain three related characteristics that you should consider when selecting a method of teaching the subject in your lesson **(6marks)**
- b) Explain each of the following views of Mathematics
- i. Absolutism **(2marks)**
  - ii. Logicism **(2marks)**
  - iii. Constructivism **(2marks)**
- c) i. Explain the four stages of a mathematics lesson **(3marks)**
- ii State four reasons why you as a mathematics teacher should prepare a scheme of work. **(4marks)**

## QUESTION FIVE

- a) Describe the types of marks in Mathematics assessment **(3marks)**
- b) Zoltan Diene (1973) came up with a theory of teaching and learning mathematics through play. Explain what goes on in each of the following teaching and learning Mathematics:
- i. Free Play **(1mark)**
  - ii. Learning to Play by rules **(1mark)**
  - iii. Comparison stage **(1mark)**
  - iv. Representation stage **(1mark)**
  - v. Symbolization stage **(1mark)**
  - vi. Formalization stage **(1mark)**
- c) Describe any three penalties that can be issued during marking of mathematics test **(3marks)**
- d) i. how will you show your learner that  $\log_a b = 1/\log_b a$  giving all the statements you make while working out the problem. **(4marks)**  
ii Mark the working of d)I above using the KNEC method of scoring Mathematics test. **(4marks)**

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