



(Knowledge for Development)

## **KIBABII UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**2021/2022 ACADEMIC YEAR**

**THIRD YEAR SEMESTER ONE**

**MAIN EXAMINATION**

**FOR THE DEGREE BACHELOR OF EDUCATION (ARTS) & BACHELOR  
OF EDUCATION (SCIENCE)**

**COURSE CODE:** ESM 311

**COURSE TITLE:** MATHEMATICS EDUCATION

**DATE:** 20/05/2022      **TIME:** 2:00 pm - 3:00 pm

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### **INSTRUCTIONS TO CANDIDATES**

Answer Question One and any other TWO Questions

**TIME:** 2 Hours

This Paper Consists of 3 Printed Pages. Please Turn Over.

### **QUESTION ONE**

A teacher covered the topic indicated on the extract of the syllabus provided in a certain term.

Using the extract;

Develop a test blue print of 10 items to be administered at the end of the topic (5 marks)

Discuss the major cognitive apprenticeships espoused by the syllabus extract provided  
(12 marks)

With reference to the topic

Prepare a one-week scheme of work (8 marks)

Prepare a 40 minutes lesson plan focusing on (5 marks)

### QUESTION TWO

Discuss the contribution of Robert Gagne to the development of the current mathematics curriculum in Kenya (20 marks)

### QUESTION THREE

Discuss the evolution of the 8-4-4 mathematics curriculum in Kenya. (20 marks)

### QUESTION FOUR

A teacher covered the topics indicated on the extract of the syllabus provided in a school term.

Explain any **THREE** challenges the teacher may have faced during the teaching and learning during the term (6 marks)

Formulate **ONE** essay type item from any topic and show the scoring key for the item  
(5 marks)

Describe the main stages of problem solving as postulated by George Polya (4 marks)

Explain how you will help students solve the item formulated (b) above (5 marks)

### QUESTION FIVE

Teaching and learning resources are essential in the mathematics instructional process

Describe any **THREE** attributes of a good mathematics textbook as an instructional resource  
(6 marks)

Highlight any **TWO** reasons that justify the chalkboard as the commonly used instructional resource in Kenyan schools (2 marks)

Most mathematics teachers in Kenyan schools perceive the lecture method as essential during the instructional process

Explain any **THREE** circumstances under which this method is useful in the instructional process  
(6 marks)

State any **THREE** limitations associated with this method in the instructional process  
(3 marks)

Suggest any **THREE** ways a teacher may vary the stimulus during the instructional process  
(3 marks)

## EXTRACT FROM THE SYLLABUS

60.0.0 STATISTICS (2) (27 Lessons)

### Specific objectives

By the end of the topic, the learner should be able to:

- a) state the measures of central tendency
- b) calculate the mean using the assumed mean method
- c) make cumulative frequency table
- d) estimate the median and the quartiles by
  - (i) calculation and
  - (ii) ogive
- e) define and calculate the measures of dispersion: range, quartiles, interquartile range, quartile deviation, variance and standard deviation
- f) interpret measures of dispersion.

### 60.2.0 Content

60.2.1 Mean from assumed mean .

60.2.2 Cumulative frequency table.

60.2.3 Ogive.

60.2.4 Median.

60.2.5 Quartiles.

60.2.6 Range.

60.2.7 Interquartile range

60.2.8 Quartile deviation

60.2.8 Variance

60.2.9 Standard deviation

Notes –

Revise statistics (I)

- For measures of dispersion include both ungrouped and grouped data
- Relate quartiles with percentages.

Suggested Resources - Square boards; -Graph papers; - Data from real life situations

Suggested Further Assessment Practical exercises - Test on unit 60.0.0