



**KIBABII UNIVERSITY COLLEGE**

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**UNIVERSITY REGULAR EXAMINATIONS**  
**2013 /2014 ACADEMIC YEAR**  
**1<sup>ST</sup> YEAR 2<sup>ND</sup> SEMESTER EXAMINATIONS**  
**(MAIN EXAMINATION)**  
**REGULAR(PSSP)**  
**FOR THE DEGREE OF BACHELOR**  
**EDUCATION (ARTS)**

**COURSE CODE:** ESM 101

**COURSE TITLE:** QUANTITATIVE SKILLS 1

**DATE:** 16<sup>TH</sup> APRIL 2014

**TIME:** 2:00P.M. – 5:00P.M.

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**INSTRUCTIONS TO CANDIDATES:**

Answer Question ONE and any other THREE Questions

**QUESTION ONE.**

- a) Distinguish between finite and infinite sets. (2mks)
- b) Given the sets  $A = \{ \text{Positive integers less than } 40 \}$  and  $B = \{ \text{All positive odd numbers multiples of } 3 \text{ less than } 50 \}$ :  
List the elements of the following sets:-
- i)  $A - B$  (2mks)
- ii)  $B - A$  (2mks)
- c) Simplify  $5\frac{2}{3} - \frac{3}{8}$  of  $3\frac{5}{7} + 1\frac{7}{13}$ . (4mks)
- d) Matrix  $A = \begin{bmatrix} 3 & 2 \\ -1 & -2 \end{bmatrix}$  (4mks)
- Determine  $A^{-1}$
- e) State any five characteristics of a good graph (5mks)
- f) Determine the three measures of central tendency for the data below (6mks)  
26,38,27,16,18,98,67,39,45,65,76,43,49,87,86,56,43,23,21,42,87,64,32,43,35,48,45,37,39,48

**QUESTION TWO.**

The data below was capture by pupils during a field trip.

Classes	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Frequency	5	6	15	10	5	4	2	2

Use the date to compute the:-

- i) Mean. (5mks)
- ii) Median. (5mks)
- iii) The mode (5mks)

**QUESTION THREE.**

The steel production in a company is as presented in the table below.

Year	1990	1991	1992	1993	1994	1995	1996	1997
Production	352	366	361	366	400	435	420	419

- i) Compute moving averages of order 3. (5mks)
- ii) Represent the information on a graph. (6mks)
- iii) Comment on the trend. (4mks)

**QUESTION FOUR.**

Given the matrix  $B = \begin{pmatrix} 7 & 1 & 49 \\ 2 & 1 & -7 \\ 3 & 2 & 1 \end{pmatrix}$

- i) Show that  $\det B = \det B^T$ . (5mks)
- ii) Find the inverse of Matrix B. (5mks)
- iii) Determine the value of  $A^2 - A$ . (5mks)

**QUESTION FIVE.**

In a school of two hundred and seventy two students, seventy of them belong to the science club; thirty are members of both the science club and the debating club.

- a) Find the number of members of the debating club. (7mks)
- b) Use Venn diagrams to represent the following sets
  - i)  $A \cup B \cup C$  (1mk)
  - ii)  $A \cap B \cap C$  (1mk)
  - iii)  $\Sigma - (A \cup B \cup C)$  (1mk)
  - iv)  $\Sigma - (A \cap B \cap C)$  (1mk)
  - v)  $A - B$  (1mk)
  - vi)  $(A \cap B \cap C)'$  (1mk)
  - vii)  $\Sigma - (A \cup B \cup C)'$  (2mks)