(45)

(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

2017/2018 ACADEMIC YEAR

FIRST YEAR SECOND SEMESTER

MAIN EXAMINATION

PART TIME PROGRAM

FOR THE DEGREES OF BACHELOR OF EDUCATION (ARTS) AND BACHELOR OF EDUCATION (EARLY CHILDHOOD EDUATION)

COURSE CODE: ESM 101

COURSE TITLE: QUANTITATIVE SKILLS I

DATE: 6/12/2018 **TIME:** 8.00AM - 10.00AM

INSTRUCTIONS TO CANDIDATES

Answer Question **One** and Any **other Two** (2) Questions

TIME: 2 Hours

This Paper Consists of **4 Printed Pages**. Please Turn Over.

QUESTION ONE (30 MARKS)

(a) There are 60 undergraduate students in an ESM 101 Class. Given that 10 of them drink alcohol but do not smoke, and 5 of them smoke but do not drink alcohol, how many smoke and drink alcohol? (4 marks)

(b) Highlight the THREE principles of graph construction (3 marks)

(c) State any THREE components of a time series (3 marks)

(d) Evaluate $4\ ^1/_3 + 2\ ^1/_6 - \ ^1/_3$ of $2\ ^1/_3 \div \frac{1}{3}$ (4 marks)

(e) Find the inverse of $\begin{pmatrix} 4 & 6 \\ 3 & 4 \end{pmatrix}$ and hence or otherwise solve the following simultaneous equations:

$4x + 6y = 15$

$3y + 4y = 11$ (8 marks)

(f) Distinguish between the following as used in sets theory, statistics and matrices

i) Union and intersection of two sets A and B (2 marks)

ii) Measures of central tendency and measures of dispersion (2 marks)

iii) Identity matrix and square matrix (2 marks)

iv) odd number and a composite number (2 marks)

QUESTION TWO (20 MARKS)

The data below shows the marks obtained by students in an examination

40	46	51	41	33	65	48	43	36	71
74	39	56	50	58	40	37	68	37	25
54	55	55	49	38	44	59	73	44	50
47	56	61	41	40	42	58	66	38	39

(a) Constructs a frequency distribution table with interval 25-34, 35-44,..(3 marks)

(b) Estimate the mean, mode and media mark and comment. (7 marks)

(c) Show that P50=Q2=D5 (6 marks)

(d) Estimate the standard deviation of the marks (4 marks)

QUESTION THREE (20 MARKS)

A survey of 100 randomly selected students gave the following information: 45 take mathematics, 41 take English, 40 take History, 15 take Mathematics and English, 18 take

Mathematics and History, 17 take English and History while 7 take all the three subjects. Using the information,

a) Present the information on a Venn diagram (4 marks)
b) Determine the number of students who
i) take none of the subjects (2 marks)
ii) Take only one of the subjects (2 marks)
iii) Take two and only two of the subjects (2 marks)
iv) Take English but not mathematics (2 marks)
v) Do not take history and English (2 marks)
vi) Neither take mathematics nor English (2 marks)
vii) Either take history or English but not mathematics (2 marks)
viii) Do not take history (2 marks)

QUESTION FOUR (20 MARKS)

The food production in a country was recorded as shown in the table below.

Year	2000	2001	2002	2003	2004	2005	2006	2007
Production(tons)	454	460	521	498	504	621	624	597

a) Compute the moving averages of order
i) 3 (4 marks)
ii) 5 (4 marks)
b) Represent the two moving averages on a trend graph (6 marks)
c) Explain the observed trends (2 marks)
d) List any **two** methods of estimating trends (2 marks)

QUESTION FIVE (20 MARKS)

Given the matrix; $\begin{pmatrix} 2 & 2 & 4 \\ 4 & 2 & 2 \\ 2 & 4 & 2 \end{pmatrix}$

i) Determine its inverse (10mks)

ii) Hence or otherwise solve the following system of simultaneous equations.

$2x + 2y + 4z = -2$

$4x + 2y + 2z = 4$

$2x + 4y + 2z = 6$ (10mks)