TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Business & Social Studies

DEPARTMENT OF LIBERAL STUDIES & COMMUNITY DEVELOPMENT

UNIVERSITY EXAMINATIONS FOR DEGREE IN

BACHELOR OF SCIENCE IN DEVELOPMENT STUDIES

BMC 4201: BUSINESS STATISTICS

SUPPLEMENTARY/SPECIAL EXAMINATIONS

SERIES: MARCH 2014

TIME: 2 HOURS

INSTRUCTIONS:

– Answer Question **ONE (Compulsory)** and any other **TWO** questions.

This paper consists of Three printed pages

QUESTION 1 (Compulsory)

a) There are 150 students in a class. The distribution of their marks in a statistics test is as follows:

Class	Frequency (f)
0 – 9	3
10 – 19	10
20 – 29	17
30 – 39	X
40 – 49	35
50 – 59	Y
60 – 69	18
70 – 79	10
80 – 89	5
90 - 99	2

Required:

i) Find the value of X, given that the median mark is 44.357. **(5 marks)**
ii) Find the value of Y, given that the modal mark is 43.0. **(4 marks)**
iii) Draw a less than Ogive of the above data. **(6 marks)**
iv) Use the Ogive in (iii) above to estimate the 70^{th} percentile. **(3 marks)**
v) Use the same Ogive to estimate the first quartile. **(2 marks)**

b) Explain the procedure that is generally followed in testing hypothesis about population mean. **(10 marks)**

QUESTION 2

a) i) Different a sample frame from a sample. **(3 marks)**
ii) Explain any **THREE** reasons why a statistician would find it more suitable to study a sample. **(6 marks)**

b) From the following data relating to the income of employees at Mambo-Leo stores during the year 2012, compute the standard deviation and the coefficient of variation. **(11 marks)**

Income	**Number of employees (£)**
300 – 399	30
400 – 499	46
500 – 599	58
600 – 699	76
700 – 799	60
800 – 899	50
900 – 999	20
1,000 – 1,099	10
1,100 – 1,199	12
1,200 – 1,299	9

QUESTION 3

a) The following data is provided by a Research Institute.

X	1	2	3	4	5
Y	2	5	5	8	7

Required:
Obtain the regression equation:
Y on X **(10 marks)**

b) i) What is an Index number? **(2 marks)**
ii) From the following data, calculate index numbers for 2011 taking 1999 as the base year following:
- Laspeyre's Index number **(5 marks)**
- Paasche's Index number **(5 marks)**

	Rice		**Wheat**		**Maize**	
Year	**Price**	**Quantity**	**Price**	**Quantity**	**Price**	**Quantity**
1999	20	80	12	90	5	150
2011	25	100	18	120	10	180

QUESTION 4

a) Differentiate a component bar chart (actual) from a multiple bar chart. **(3 marks)**

b) Construct a Z-Chart for the data below. **(17 marks)**

	Jan.	**Feb.**	**Mar**	**Apr.**	**May**	**June**	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**
2011	35	38	50	60	57	48	65	55	45	63	70	60
2012	45	48	55	55	60	44	70	65	55	49	75	65

QUESTION 5

A random sample of 400 persons was selected from each of three age-groups and each person was asked to specify which of three types of TV channels he/she preferred. The results are shown in the following table.

	TV CHANNELS			
Age group	**KBC**	**CITIZEN**	**KTN**	**TOTAL**
Under 30	120	30	50	200
30 – 44	10	75	15	100
45 and above	10	30	60	100
Total	**140**	**135**	**125**	**400**

Required:
Test the hypothesis that the populations are homogeneous with respect to the TV channel preferred.
(20 marks)