MURANGA UNIVERSITY COLLEGE

(A constituent College of Jomo Kenyatta University of Agriculture & Technology)

MAIN CAMPUS

SUPPLIMENTARY/ SPECIAL UNIVERSITY EXAMINATIONS

2015/2016 ACADEMIC YEAR

FIRST/SECOND YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF COMMERCE/BACHELOR OF BUSINESS INFORMATION TECHNOLOGY/BACHELOR OF ENTREPRENEURSHIP AND SMALL ENTERPRISES MANAGEMENT

COURSE CODE: HBC2110/BHE2101

COURSE TITLE: INTRODUCTION TO BUSINESS STATISTICS/

DATE: **TIME:** 2HOURS

INSTRUCTIONS TO CANDIDATES

Question ONE (1) is Compulsory
Answer ANY OTHER TWO (2) questions

QUESTION ONE (30mks)

(a) The mean of 200 observations was 50. Later on, it was discovered that two observations were wrongly read as 92 and 8 instead of192 and 88. Find out the correct mean. (4mks).

(b) The growth rate in enrolment of students at Aberdares University College for the last five years is given below.

Year	2010	2011	2012	2013	2014
Growth rate (%)	6	50	12	16	18

(i) Calculate the average growth rate in enrolment. (3mks).

(ii) If the student population at the end of year 2009 was 6000, use the mean calculated above to estimate the student population at the end of year 2014. (2mks).

(c) The following table gives the distribution of daily wages of 500 unskilled workers in a factory.

Daily Wages (Sh.)	**Number of workers**
Below 200	10
200 - 250	25
250 – 300	145
300 – 350	220
350 – 400	70
400 and above	30

Calculate Bowley's co-efficient of Skewness. (5mks).

(d) Define the following terms as used in probability. (4mks).

(i) Random experiment. (1mk)

(ii) Event (1mk)

(iii) Compound events. (1mk)

(iv) Mutually exclusive events. (1mk)

(e) Calculate the co-efficient of variation from the following data. (7mks).

Profits (Sh. Millions)	**Number of Companies**
0 – 10	8
10 – 20	12
20 – 30	20
30 – 40	30
40 – 50	20
50 – 60	10

(f) A buyer of electric bulbs bought 100 bulbs each of the two famous brands. Upon testing them, he found that brand A had a mean life of 1500 hours with a standard deviation of 50 hours whereas brand B had a mean life of 1530 hour with a standard deviation of 60 hours, can it be concluded at 5% level of significance that the two brands differ significantly in quality of the bulbs. (5mks).

QUESTION TWO (20mks)

(a) Mention five qualities of a good measure of variation. (5mks).

(b) Find an appropriate measure of skewness from the following distribution. (7mks).

Age (years)	**Number of employees.**
Below 20	13
20 – 25	29
25 – 30	46
30 – 35	60
35 – 40	112
40 – 45	94
45 – 50	45
50 and above	21

(c) An automobile manufacturing firm is bringing out a new model. In order to map out its advertising campaign, it wants to determine whether the model appeal depends on age group or not. The firm takes a random sample from persons attending a preview of the new model and obtained the results summarized below.

			Age groups		
Persons who	**under 20**	**20-40**	**40-50**	**50 and over**	**Total**
Liked the car	146	78	48	28	**300**
Disliked the car	54	52	32	62	200
Total	**200**	**130**	**80**	**90**	**500**

Test at 5% level of significance whether the model appeal and age groups are independent. (8mks).

QUESTION THREE (20mks)

(a) Mention five problems that may be encountered in the construction of index numbers. (5mks).

(b) Strengths tests carried out on samples of two yarns spun to the same count gave the following results.

	Sample size	**Sample mean**	**Sample variance**
Yarn A	4	52	42
Yarn B	9	42	56

The strengths are expressed in kilograms. Is the different in mean strengths significant of real difference in the mean strengths? (5mks).

(c) In trying to evaluate the effectiveness in its advertising campaign, a time compiled the following information.

Year	2006	2007	2008	2009	2010	2011	2012	2013
Advertising Expenditure (sh "000")	12	15	15	23	24	38	42	48
Sales (sh millions)	5.0	5.6	5.8	7.0	7.2	8.8	9.2	9.5

Obtain the regression equation of sales on advertising expenditure. Estimate the probable sales when advertisement expenditure is sh. 60,000. (10mks).

QUESTION FOUR (20mks)

(a) Mention four mathematical properties of standard deviation. (4mks).

(b) Construct Fisher Ideal index from the following data using 2013 as the base year. (8mks).

	2013		2014	
Commodity	Price	value	price	value
A	10	100	12	144
B	15	75	20	120
C	8	80	10	110
D	20	60	25	50
E	50	500	60	540

(c) Fit a straight line trend for the following data estimate the sales for 2020. (8mks).

Year	2008	2009	2010	2011	2012	2013	2014
Sales (sh. Millions)	33	35	60	67	68	82	90