(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY
(MMUST)

UNIVERSITY main EXAMINATIONS

2015/2016 ACADEMIC YEAR

SECOND year FIRST semester examination

FOR THE DEGREE
OF
BACHELOR OF COMMERCE

COURSE CODE: BCO 204

COURSE TITLE: **BUSINESS STATISTICS 1**

DATE: TUESDAY 16/08/2016   **TIME:**   8.00-10.00AM

INSTRUCTIONS TO CANDIDATES
Answer question **ONE** and any other **Two** questions

TIME: **2 HOURS**

MMUST observes ZERO tolerance to examination cheating

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

QUESTION ONE (COMPULSORY) (30 MARKS)

a) Discuss the relative advantages and disadvantages of the postal questionnaire and the personal interview as a means of collecting data. (4marks)

b) The first four central moments of a distribution are 0, 16, -36 and 120. Comment on the skewness and kurtosis of the distribution. (4marks)

c) The data below relates the weekly maintenance cost (Ksh '000') to the age (in months) of ten machines of similar type in a manufacturing company. Calculate the product moment correlation coefficient between age and cost. (10 marks)

Machine	1	2	3	4	5	6	7	8	9	10
Age (x)	5	10	15	20	30	30	30	50	50	60
Cost (y)	190	240	250	300	310	335	300	300	350	395

d) From the following data calculate index numbers for 2015 taking 2010 as base year and using the following formulae; (12marks)

i) Laspeyre's

ii) Paasche's

iii) Fisher's

iv) Marshall Edgeworth

	2010		2015	
	Price (Ksh)	Quantity in bags	Price (Ksh)	Quantity in bags
Maize	65	20	135	30
Wheat	95	8	160	7
Beans	150	5	320	8

QUESTION TWO (20 MARKS)

a) Give a specific business, commercial or industrial example of when: (4marks)

i. The median would be used in preference to the arithmetic mean;

ii. The mode would be used in preference to the median;

b) In two factories X and Y engaged in the same industry, average weekly wages and standard deviations are as follows.

Factory	Average weekly wages (Ksh)	Standard deviation of wages (Ksh)	Number of wage earners
X	460	50	100
Y	490	40	80

Required:

    i)   Which factory shows greater variability in the distribution of wages? (4 marks)

    ii)   What is the mean and standard deviation of all the workers in two factories taken together? (8 marks)

c) The probability that a contractor will get a plumbing contract is 2/3 and the probability that he will not get an electric contract is 5/9. If the probability of getting at least one contract is 4/5, what is the probability that he will get both? (4 marks)

QUESTION THREE (20 MARKS)
a) Using the following information show that AM>GM>HM hence compute median and mode. (15 marks)

Sales Ksh '000'	0 - 5	5 – 10	10 - 15	15 - 20	20 – 25	25 - 30
Frequency	2	8	10	15	12	3

b) Write short notes on multi-stage sampling as a method of data collection. (5 marks)

QUESTION FOUR (20 MARKS)
The managers of a company are preparing revenue plans for the last quarter of 2013/2014 and for the first three quarters of 2014/2015. The data below refer to one of the main products

Revenue	April –June Quarter 1 Ksh. '000'	July - Sept Quarter 2 Ksh. '000'	Oct - Dec Quarter 3 Ksh. '000'	Jan – March Quarter 4 Ksh. '000'
2010/2011	49	37	58	67
2011/2012	50	38	59	68
2012/2013	51	40	60	70
2013/2014	50	42	61	-

Required:
   a) Calculate the four quarterly moving average trend for this set of data.   (10 marks)
   b) Calculate the seasonal factors using either the additive model or the multiplicative model but not both.   (5 marks)
   c) Explain, but do not calculate, how you would use the results in parts (a) and (b) of this question to forecast the revenue for the last quarter of 2013/2014 and for the first three quarters of 2014/2015. (5 marks)

QUESTION FIVE (20 MARKS)
a) The following information relates to Comrades Sacco Limited

Year	2008	2009	2010	2011	2012	2013
Turnover (Ksh. 10m)	106	125	147	167	187	220
Profit before Taxation (Ksh. 10m)	10	12	16	17	18	22

   i)   Plot a scatter diagram showing the relationship between profit before taxation and turnover.   (5 marks)

   ii)   Calculate the least squares regression line of profit before taxation. (8 marks)

   iii)   Comment generally on your results. (2 marks)

b) Outline five importance of Time Series analysis to a business Manager (5 marks)

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