



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF SCIENCE AND
TECHNOLOGY
(MMUST)**

**UNIVERSITY EXAMINATIONS
SPECIAL/ SUPPLEMENTARY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

FIRST YEAR SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF COMMERCE AND BACHELOR OF SCIENCE
(ACCOUNTING)**

COURSE CODE: BCB 107/ BSA 204

COURSE TITLE: BUSINESS STATISTICS

DATE: WEDNESDAY, 3RD AUGUST 2022 TIME: 8:00 – 10:00AM

INSTRUCTIONS TO CANDIDATES

1. The Paper Contains Two Sections: Sections I and II
2. Answer **All Questions in Section I** and **Any Two Questions in Section II**
3. Clearly show your workings for each question
4. All rough work must be done in the Answer Booklet and cancelled
5. Graphs should be clearly illustrated in the Graph Papers.

TIME: 2 HOURS

MMUST observes ZERO tolerance to examination cheating

This paper consists of 4 printed pages. Please turn over ►

SECTION I: COMPULSORY (30 MARKS)*(Answer all Questions from this Section)***QUESTION ONE**

- a) The following data relates to the ages of workers in a company:

20	18	25	68	23	25	16	22	29	37
35	49	42	65	37	42	63	65	49	42
53	48	65	72	69	57	48	39	58	67

Required:

- i) Construct a frequency table with class 15 – 35 inclusive (03 marks)
- ii) Construct a histogram using the frequency table in (i) above (04 marks)
- b) A sales manager has eight field representatives working under him. A local consulting firm at a fee of Kshs 3,500 per man is conducting a three-day seminar on sales to which the sales manager would like to send all the eight of his field representatives. However, his budget will allow him to send only three men. How many ways are there for him to compose this group of three? (03 marks)
- c) The following is a distribution of monthly salaries for the employees in a certain firm

Salary (Kshs. '000)	Number of Employees
0 – 10	26
10 - 20	5
20 –30	60
30 – 40	84
40 – 50	136
50 – 60	40
60 – 80	25
80 – 100	16
100 –150	6
150 –200	2

Required:

- i) Draw a Lorenz curve for salary distribution of employees. Comment on the distribution. (06 marks)
- ii) Calculate Pearson's coefficient of skewness. Comment on the skewness of the distribution. (04 marks)
- d) In the following situations, which method of data collection would you use, give reasons:
- i) A survey of consumer acceptance of a new detergent before it is placed on the market (02 marks)
- ii) Data on percentage expenditure incurred on children educated by middle income earners (02 marks)
- iii) Information on the adequacy of the social security measures and changes to be made (02 marks)
- iv) Data on COVID- 19 cases in Kenya during 2020 (02 marks)
- v) Number of vehicles passing in a certain highway (02 marks)

SECTION II (40 MARKS)**(Answer any Two Questions from this Section)****QUESTION TWO**

- a) With which characteristic movement of time series would you mainly associate each of the following statements? Explain your reason for your choice.
- i) A need for increased beans production in a country due to a constant increase in population. (02 marks)
 - ii) The monthly number of millimetres of rainfall in a city over 10 year's period (02 marks)
 - iii) An era of prosperity in the economy. (02 marks)
 - iv) An eruption of fire delaying production for three weeks. (02 marks)
- b) The table below shows the catch levels of fish from Kenya's fresh water inland lakes from the years 2010 to 2010.

Year	Catch Levels (in Million Tonnes)
2010	66.6
2011	84.9
2012	88.6
2013	78.0
2014	96.8
2015	93.2
2016	111.6
2017	88.3
2018	117.0
2019	115.2
2020	111.0

Required:

- i) Graph the data on a graph paper and use a semi average method to fit a linear trend (10 marks)
- ii) Estimate the catch levels of fish during the years 1999 and 2011 (02 marks)

QUESTION THREE

- a) A cost accountant has derived the following information about basic weekly wage rates (W) and the number of people employed (E) in the factories of a large chemical company.

Basic Weekly Rates (KShs.) and Number of Employees in Thousands

Technical Group of Employees Item	July 2010		July 2011		July 2012	
	W	E	W	E	W	E
Q	60	5	79	4	80	4
R	60	2	65	3	70	3
S	70	2	85	2	90	1
T	90	1	110	1	120	2

Required:

- i) Compute a Laspeyres index number for the July 2011 basic weekly wage rates, with July 2010 = 100. (04 marks)
 - ii) Calculate a Paasches index number for the July 2012 basic weekly wage rates, with July 2010 = 100. (04 marks)
 - iii) Compute Fishers price indices for the July 2012 basic weekly wages rates with July 2010 = 100. (04 marks)
- b) Discuss the problems encountered in constructing consumer price index. (08 marks)

QUESTION FOUR

The data below shows the volume of sales by 120 salespersons in the month of January 2021:

Sales (Shs.)	Number of sales persons
100,000 – 149,000	8
150,000 – 199,000	14
200,000 – 249,000	16
250,000 – 299,000	18
300,000 – 349,000	20
350,000 – 399,000	17
400,000 – 449,000	15
450,000 – 499,000	12

Required:

- a) Calculate the coefficient of quartile deviation (06 marks)
- b) Compute the following:
 - i) Mean (use assumed mean $A = 324,500$) (04 marks)
 - ii) Median (04 marks)
 - iii) Standard Deviation (04 marks)
 - iv) Coefficient of variation (02 marks)

QUESTION FIVE

- a) A market survey conducted in four towns in Western Province pertaining to preference for brand 'A' soap. The responses are shown below:

Ratings	Kakamega	Kanduyi	Luanda	Chavakali
Yes	45	55	60	50
No	35	45	35	45
No opinion	5	5	5	5

Required:

- i) What is the probability that a consumer selected at random preferred 'A' (04 marks)
 - ii) What is the probability that a consumer preferred brand 'A' and was from Luanda (02 marks)
 - iii) What is the probability that a consumer preferred brand 'A' given that he was from Luanda (04 marks)
 - iv) Given that a consumer preferred brand 'A', what is the probability that he was from Chavakali (04 marks)
- b) Bungoma residents were surveyed to determine their readership of newspapers available 50% of residents read the morning paper, 60 % read the evening paper and 20 % read both. Find the probability that a resident selected reads the morning paper, evening paper or both (06 marks)