TECHNICAL UNIVERSITY OF MOMBASA
UNIVERSITY EXAMINATIONS 2022
EXAMINATIONS FOR THE DEGREE OF BCOM, BBA, BBIT AND BBOM
(YEAR 2 SEMISTER ONE)

BMS 4201: BUSINESS STATISTICS

<u>**DATE: APRIL 2022**</u>   **DURATION:** 2 HOURS

INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER TWO

QUESTION ONE

a. Represent the following data by a suitable diagram

Year	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Profit, Kshs. "000"	28	29.9	30.2	27	32.5	40.6

(4 marks)

b. Given the following data pertaining to income distribution for 1500 employees:

Income	18-20	20-22	22-24	24-26	26-28	28-30	20-32	32-34	34-36
Staff	10	35	140	300	370	320	200	75	35

Required to determine the

  i.   Mean **(3 marks)**
 ii.   Mode **(3 marks)**
iii.   Median **(3 marks)**
 iv.   Standard Deviation **(3 marks)**
  v.   Draw the histogram and ogive curve **(6 marks)**

c. Every average has its own peculiar characteristics. It is difficult to say which average is the best.
    Comment briefly

(4 marks)

d. If oranges for £1 are bout at 10 pence each and for another £1 are bought at 5 pence, the average price would be 6.67 pence and not 7.5 pence. Explain and verify

(3 marks)

QUESTION TWO

a. Distinguish between correlation and regression.

(4 marks)

b. The following is the age and the corresponding blood pressure of 10 subjects randomly selected subjects from a large city.

Age	38	41	42	45	50	52	55	60	62	65
Blood Pressure	120	115	130	120	132	135	140	145	140	149

i. Draw the scatter diagram of this data and comment.
ii. Compute the correlation coefficient and compare with part a.
iii. Write the equation of regression and estimate the coefficients.
iv. Estimate the blood pressure of someone who is 40 years of age.

(16 marks)

QUESTION THREE

a. In the context of time series analysis, explain with a graph the following: Trend, Seasonality, Cyclical and Random Residual.

(6 marks)

b. Suppose we have the following quarterly data on widget sales

Sales of widgets in '000s

		Quarter 1	Quarter 2	Quarter 3	Quarter 4
Year	1	20	32	62	29
	2	21	42	75	31
	3	23	39	77	48
	4	27	39	92	53

The trend line has been deduced as: Trend line = 28.74+1.84x

Required
i. Use the trend line to calculate the estimated sales for each quarter
ii. Average the percentage variations to find the average seasonal variations
iii. Compute seasonally adjusted forecast based on the Trend estimate and Seasonal variation
iv. Estimate Year 5 forecast.

(14 marks)

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QUESTION FOUR

a. Contrast different types of kurtosis?

(3 marks)

b. Distinguish between Karl Pearson's and Bowley's measures of skewness.

(4 marks)

c. Define what is moments.

(3 marks)

d. Compute the first four moments from the following data (you may use assumed mean, A=25):

Class Intervals	0-10	10-20	20-30	30-40
Frequency (f)	1	3	4	2

(10 marks)

QUESTION FIVE

a. Explain the difference between mutually exclusive events and independent events.

(2 marks)

b. An aacountant has a file with ten accounts receivables. The file has four accounts out of the ten, being overdue. The accountant selects two accounts from the file randomly each ata a time, without replacement.
Required
   i.   A probability tree of the possible outcome   **(3 marks)**
   ii.   The probability that both accounts are overdue   **(2 marks)**
   iii.   The probability that none of the accounts selected are overdue   **(2 marks)**
   iv.   The probability that one of the accounts is overdue and the other one is not overdue

(3 marks)

c. Twenty five army inductees were tested to determine their blood type. The data set is as follows:

<div align="center">

A   B   B   AB   O
O   O   B   AB   B
B   B   O   A   O
A   O   O   O   AB
AB   A   O   B   A

</div>

Required
   i.   Construct a frequency distribution for the data   **(4 marks)**
   ii.   Determine the relative and percentage frequecies   **(2 marks)**