MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF BUSINESS ADMINISTRATION

SECOND YEAR SPECIAL/ SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF COMMERCE

BMS 200: BUSINESS STATISTICS

DATE: 24/3/2021   **TIME: 8.30-10.30 AM**

INSTRUCTIONS:

Answer Question <u>ONE</u> and any other <u>TWO</u> Questions.

QUESTION ONE (30 MARKS)

a)   State and explain five uses of statistics in business management.   (5 marks)

b)   Distinguish between discrete and continuous distribution.   (2 marks)

c)   Discuss any two primary data collection methods.   (4 marks)

d)   How different is:

   i.   Probability distribution of a discrete variable from probability distribution of
         a continuous random variable   (2
         marks)

   ii.   Distinguish between null and alternative hypothesis   (2 marks)

e)   Distinguish between the following terminologies

   i.   Regression analysis and correction analysis   (2 marks)

   ii.   Coefficient of correction and coefficient of determination   (2 marks)

f)   The managing director of XYZ wholesalers has received complaints from the trade
     union that the monthly salaries of his employees at the various retail outlets vary
     widely. The accountant of the firm has provided the data below with respect to the
     two largest retail outlets as follows

Monthly salary Shs 000	No.of employees Machakos branch	No.of employees Kisumu branch
5-10	3	1
10-15	20	22
15-20	16	15
20-25	6	8
25-30	2	8
30-35	2	4

35-40	1	2

Required

    i.   The mean monthly salary for each branch   (2 marks)

    ii.   The median monthly salary for each branch   (4 marks)

    iii.   The standard deviation of monthly salary for each branch   (5 marks)

QUESTION TWO (20 MARKS)

The table below shows the quantities of four types of cereals consumed by certain household in the years 2007 and 2008 and the unit price for each type of cereals

Type of cereals	2010		2011	
	Price per kg.sh	Quantity kg	Price per kg.sh	Quantity kg
Maize	50	100	80	120
Rice	80	140	100	120
Beans	40	150	80	110
Peas	50	100	90	100

Required

Using year 2010 as the base year, calculate

a)   Lasperyres price index   (5 marks)

b)   Paasches price index   (5 marks)

c)   Fishers ideal price index   (5 marks)

QUESTION THREE (20 MARKS)

a)   Describe the relationship of mean ,median, and mode in skewed data   (5 marks)

b)   For the construction of price index numbers several factors should be put into consideration. Discuss these factors   (8 marks)

c)   A box contains 4 green apples and 8 red apples which are identical in all aspects except colour. A customer picks 2 apples at random from the box one at a time without replacement.

    i.   Present this information using a probability tree diagram.   (3 marks)

ii. Hence determine the probability that all the apples picked are of different colours. (4 marks)

QUESTION FOUR (20 MARKS)

a) Table below shows the cost of transportation incurred by two companies for the month of April

Cost of transportation Sh."000"	Number of companies
100-120	17
120- 140	53
140- 160	199
160- 180	264
180-200	200
200 - 220	157
200 - 240	110

Required

    i. Mean cost of advertising (5 marks)

    ii. Standard deviation (3 marks)

    iii. The coefficient of skewness. Comment on your result. (4 marks)

    iv. State properties of a normal probability distribution. (2 marks)

b) A company produces light bulbs whose life follows a normal distribution with a mean of 1200hours and a standard deviation of 250 hours. If we select a light bulb at random, what is the probability that its lifetime will be:

    i. Less than 900 hours

    ii. Greater than 1300 hours

    iii. Between 900 and 1300 hours (9 marks)

c) What criteria must a binomial probability distribution meet (1 mark)

d) From past records, the probability that a machine will need correcting adjustments during 9 days production run is0.2. if there are 6 of these machines running on a particular day, find the probability that:

    i. No machine needs correcting (2 marks)

ii.	Just one machine needs correcting	(2 marks)
iii.	Exactly two machine needs correcting	(2 marks)
iv.	More than two machine needs correcting	(2 marks)

QUESTION FIVE (20 MARKS)

a) Discuss four characteristics of a good measure of central tendency.   (8 marks)

b) The following distribution gives the patterns of overtime hours worked by 100 employees of a manufacturing company in the month of October 2005

Overtime hours worked	Number of employees
0-10	2
11-20	1
21-30	4
31-40	10
41-50	8
51-60	6
61-70	30
71-80	25
81-90	9
91 and above	5

Required:

i.	Median overtime hours	(5 marks)
ii.	Modal overtime hours	(5 marks)
c)	What are the limitations of using index numbers?	(2 marks)