UNIVERSITY EXAMINATION

2022/2023 ACADEMIC YEAR

SECOND YEAR SEMESTER ONE

MAIN EXAMINATION

FOR THE DEGREE OF

BACHELOR OF COMMERCE / BACHELOR OF BUSINESS MANAGEMENT
AND BACHELOR OF COOPERATIVE AND ENTREPRENEURSHIP
MANAGEMENT.

COURSE CODE: BCO 212/BBM 211/BCO 214

COURSE TITLE: BUSINESS STATISTICS

DATE: 04/08/2023   TIME: 11-7PM

INSTRUCTIONS TO CANDIDATES
Answer Question One and Any other Two Questions

TIME: 2 Hours

SECTION A

QUESTION ONE

a) The data below shows the average time taken by workers to travel to work in an industrial town in Kenya.

Time (minutes)	Number of workers
8	8
14	12
12	34
9	43
7	50

Determine the interquartile range of the workers' travel time   4mks

b) Highlight three disadvantages of the mode as a measure of central tendency.   3mks

c) Determine the quartile deviation of the daily expenses in ksh of 7 persons given below.
14, 8,9,16,25,30,40   4mks

d) The arithmetic mean of the following frequency distribution was found to be 1.46.

Number of accidents	0	1	2	3	4	5	
Number of days(frequency)	46	x	y	25	10	5	Total=200 days

Calculate the values of x and y.   4mks

e) Given below are the arithmetic mean, the median and the standard deviation of two distributions. Determine which distribution is more skewed.

   i)   A.M = 22, Median = 24 standard deviation = 10

   ii)   A.M = 22, Median = 25 standard deviation = 12   4mks

f) 2% of the population have a certain blood disease in a serious form; 10% have it in a mild form; and 88% don't have it at all. A new blood test is developed; the probability of testing positive is 9/10 if the subject has the serious form, 6/10 if the subject has the mild form, and 1/10 if the subject doesn't have the disease. I have just tested positive.
What is the probability that I have the serious form of the disease?   3mks

g) Identify three uses of index numbers.   3mks

h) Ten mechanics were asked to assemble a piece of machinery. The minutes they took to assemble it in the morning (x) and the minutes they took to assemble it in the afternoon (y) were obtained and the following quantities were computed.

   Σ $x = 142$, Σ $y = 166$ Σ $xy = 2434$ Σ $x^2 = 2085$ Σ $y^2 = 2897$.

determine the coefficient of association ' r' between the two times of assembling the piece of machine. 4mks

SECTION B (ANSWER ANY TWO QUESTIONS)
QUESTION TWO

a) Outline five differences between correlation and regression. 8mks

b) The following data gives the experience in years of machine operators and their performance ratings given by the number of good parts turned out per 100 pieces:

Operator	1	2	3	4	5	6	7	8
Experience(X)	16	12	18	4	3	10	5	12
Performance ratings(Y)	87	88	89	68	78	80	75	83

i) Estimate the regression line of performance ratings on experience. 10mks
j) Estimate the probable performance if an operator has 7 years of experience. 2mks

QUESTION THREE

a) The correlation coefficient and the covariance between two variables X and Y are 0.25 and 3.6 respectively. If the variance of X is 36, find the standard deviation of Y. 5mks

b) The following table relates to age of employees and the number of days they reported sick in a month. Calculate the Karl Pearson's coefficient of correlation and interpret it. 10mks

employees	1	2	3	4	5	6	7	8	9	10
Age(X)	30	32	35	40	48	50	52	55	57	61
Sick days(Y)	1	0	2	5	2	4	6	5	7	8

c) Two judges X and Y in a beauty contest ranked the 12 entries as follows:

X	1	2	3	4	5	6	7	8	9	10	11	12
Y	12	9	6	10	3	5	4	7	8	2	11	1

Compute the rank correlation coefficient. 5mk

QUESTION FOUR

(i)   An insurance company has this data :

The probability of an insurance claim in a period of one year is 4 percent for persons under age 30 2 percent for persons over age 30 and it is known that 30 percent of the targeted population is under age 30. What is the probability of an insurance claim in a period of one year for a randomly chosen person from the targeted population? 10mks

(ii)   The arithmetic mean and the standard deviation of a series of 20 items were calculated by a student as 20 and 5 respectively. But while calculating them, an item 13 was misread as 30. Find the correct standard deviation.   10mks

QUESTION FIVE

a) Discuss five problems in the construction of index numbers.   10mks

b) Determine the Pearson's coefficient of skewness from the following distribution using the mean, mode and standard deviation and comment about it.
    10mks

Wages(ksh)	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
No of labourers	8	16	30	45	62	32	15	6