REFORMED CHURCH UNIVERSITY

FACULTY OF COMMERCE

BACHELOR OF COMMERCE HONOURS DEGREE IN ACCOUNTING

QUANTITATIVE ANALYSIS FOR BUSINESS

HACC 120

PART 1 SEMESTER 2

Total Marks [100]

DATE: June 2023

Time: 3 Hours

INSTRUCTIONS

1. This paper has ***six (6)*** questions
2. Answer question ***one (1)*** and ***any*** other **three (3)**
3. Each question carries ***25 marks***
4. Start each question on a new page

1. A psychologist recorded the time that she spent on counselling sessions with victims of Gender Based Violence from a local College and produced the following table

Time (minutes)	Number of Students
5-10	16
11-16	19
17-22	15
23-28	22
29-34	20

a) Calculate the

i) Mean and comment [3]

ii) Median and comment [3]

iii) Mode and comment [3]

iv) Variance and comment [3]

v) Standard deviation and comment [2]

vi) Semi- interquartile range and comment [3]

b) Find the coefficient of the variation of the distribution. Comment on the distribution [4]

c) Find the degree of skewedness of the distribution. Comment on the findings. [4]

2. The profits to be realized from a certain business venture, to the nearest \$500, are believed to follow the probability distribution shown below.

X	-1000	-500	0	500	1000	1500
P(X=x)	0.1	0.2	0.1	***P***	0.2	0.2

a) Determine the value of ***p.*** **[2]**

b) Find the probability that the business venture

i) Makes loss [3]

ii) Realizes profit of at least \$1000 [3]

c) Find

i) the expected earnings of the business [4]

ii) standard deviation of profits for the business [5]

d) Is the venture likely to be successful? Explain. [2]

e) The demand for the second hand Japanese cars in Zimbabwe is normally distributed with a mean of 2000 cars sold per month and standard deviation of 50 cars. What is the probability that:

i) At most 2000 cars will be sold in one month? [2]

ii) Between 1600 and 1800 cars will be sold in one month? [2]

iii) Comment on each of these probabilities in relation to what decision the business should take (2)

3. The prices ($000) and ages (in years) of ten imported used cars of a specific model are as follows:

Age (years)	Prices ($000)
6	15
9	9
7	12
6	13
8	10
10	6
9	9
11	5
5	20
7	12

a) State the dependent and independent variables [2]

b) Plot a scatter diagram and comment [3]

c) Using the method of least squares, estimate the regression equation and comment [4]

d) Interpret the meaning of the slope in part ***b*** above. [1]

e) Predict the prices of the car for an age is 5 [3]

f) Calculate the correlation coefficient, r and integrate its meaning [4]

g) Calculate the coefficient of the determination, r^2 and interpret its meaning. [4]

h) Calculate the Spearman's rank of correlation coefficient, r and its meaning [4]

4. a) An investor wants to invest $15000 in two types of bonds. He earns 12% in the first type and15% in the second type. Find his investment if each of his total earnings is $1950. [5]

ii. The total production costs of a packaging machine machinery manufacturer are found to be an average of $60 000 per day. The cost accountant finds that the fixed cost are $32 000 per day and direct costs average $7 000 per machine. Using a graph, calculate the average number of machines produced per day. [11]

b. Solve the following simultaneous linear equations;

i. $3x+ 10y = 180$

$6x + 15y = 300$ [3]

ii. $3x + 3y +4z = 100$

$2x +4y + 6z = 140$

$5x + 8y + 3z = 145$ [4]

iii) Find two consecutive numbers such that 5 times the smaller number is equal to 5 more than the greater number.

[2]

5. A company buys five products with the following characteristics

Item	Number of units bought		Price paid per unit	
	Year 0	Year 1	Year 0	Year 1
A	130	151	8	10
B	139	153	22	25
C	183	181	28	24
D	184	104	30	35

a) Find the simple quantity index for product A and interpret its meaning [3]

b) Construct a simple quantity index for A and interpret its meaning [3]

c) Calculate the simple value index for item D and interpret its meaning [4]

d) Calculate the unweighted aggregate quantity aggregate quantity index and interpret it. [4]