BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE
DEPARTMENT OF HUMAN RESOURCES MANAGEMENT
Course: HCM102 /BS102 Quantitative Analysis for Business I (3)
Duration: 3 HOURS

INSTRUCTIONS FOR CANDIDATES

1. Answer any **two** questions from section A and any **two** questions from section B.

INFORMATION FOR CANDIDATES

1. All questions carry equal marks.
2. No unauthorised items must be brought into the examination room.

MATERIALS ALLOWED

1. Scientific Calculator
2. Statistical Booklet
3. Graph Paper

SECTION A: Answer any **two** Questions

QUESTION 1

The following data gives the value in millions of dollars of orders received by a company in a week:

Class	0- < 10	10- < 20	20- < 30	30 -< 40	40 -< 50	50 - < 60	60 - < 70
Frequency	4	3	5	12	18	14	4

Required:
Construct:

i) histogram.

(5)

ii) frequency polygon.

(10)

iii) less than ogive curve.

(10)

(25 marks)

QUESTION 2

Hourly wages paid to different employees of a company are given in the table below:

Hourly Wage $	350-360	360-370	370-380	380-390	390-400	400-410	410-420	420-430
Frequency	1	2	2	4	5	6	3	2

Calculate:

i) Mean age (5)

ii) Median age (5)

iii) Standard Deviation (5)

iv) Co-efficient of variation (5)

v) Co-efficient of skewness (5)

[25 marks]

QUESTION 3

a) The amount of time required per individual at a bank teller's window has been found to be approximately normally distributed with a mean $u=$ 130 seconds and a standard deviation $\sigma=$ 45 seconds.

What is the probability that a randomly selected individual will;

i)   require less than 100 seconds to complete a transaction? (5)

ii) spend between 2.0 minutes and 3.0 minutes at the teller's window? (5)

b) The reported scores on nationally standardized achievement test for high school graduates have a mean of $u = 500$ with a standard deviation $\sigma = 100$. The scores are approximately normally distributed. What is the probability that the score of a randomly chosen individual will be ;

i) between 500 and 650.

(5)

ii) more than 600.

(5)

iii) less than 400.

(5)

[25marks]

Section B: Answer any two Questions

QUESTION 4

a) Solve the following linear equations using Cramer's rule.

$$3x - 4y = 1$$
$$7x + y = 23$$

(10)

b) Use Cramer's Rule to solve for X_1 , X_2 and X_3

$$-2X_1 - X_2 - 3X_3 = 3$$
$$2X_1 - 3X_2 + X_3 = -13$$
$$2X_1 - 3X_3 = -11$$

(15)

[25 marks]

QUESTION 5

a) The graphs of supply and demand functions are given below:

$P = 2Q^2_S + 10Q_S + 10$
$P = -Q^2_D - 5Q_D + 52$

Calculate the equilibrium price and quantity.

(10)

b) The demand and supply functions of a good are given by:

$P = -2Q_D + 50$
$P = 0.5 Q_S + 25$

where P, Q_D and Q_S denote the price, quantity demanded and quantity supplied respectively.

(i) Determine the equilibrium price and quantity.

(5)

(ii) Determine the effect on the market equilibrium if the government decides to impose a fixed tax of $5

(10)

[25 marks]

QUESTION 6

a) A principal of $10 000 is invested at 12 % interest for 1 year, determine the future value if interest is compounded;

i) Annually

(5)

ii) Quarterly

(5)

iii) Semi-annually

(5)

iv) Monthly

v) Continuously

<div align="right">(5)</div>

<div align="right">(5)</div>

<div align="right">[25 marks]</div>

End of Paper