BINDURA UNIVERSITY OF SCIENCE EDUCATION

JUN 2024

FACULTY OF COMMERCE

DEPARTMENT OF HUMAN RESOURCES MANAGEMENT

Course: HCM 102/ BS102 Quantitative Analysis for Business I (1)

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

Distinguish between the following: giving relevant examples.

i) descriptive and inferential statistics (5)
ii) population and sample (5)
iii) probability and non-probability sampling (5)
iv) discrete and continuous data (5)
v) primary and secondary data (5)

[25]

QUESTION 2

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

Hourly Wage $	35- 36	36-37	37-38	38- 39	39-40	40- 41	41- 42	42-43
Frequency	1	2	2	4	5	6	3	2

Calculate:

i) Standard Deviation (10)

ii) Co-efficient of Variation (10)

iii) Coefficient of Skewness and comment (5)

[25]

QUESTION 3

a) 25 % of the houses in a certain area have swimming pools. If 5 houses from this area are selected at random. What is the probability that

i) no one has a swimming pool. (5)

ii) at least 2 have a swimming pool. (5)

iii) exactly one has a swimming pool. (5)

b) Customers arrive at a shopping mall on random basis with an average of 2 customers per hour.

What is the probability that

i) more than 3 customers will arrive in an hour. (5)

ii) less than 4 customers will arrive in a 4 hour period. (5)

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Section B: Answer any two Questions

QUESTION 4

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

$4x - 3y = 6$
$-2x + 5y = 4$ (10)

b) Use Cramer's Rule to solve for P_1, P_2 and P_3

$2P_1 + 4P_2 + P_3 = 77$
$P_1 + 3P_2 + 7P_3 = 114$
$P_1 + P_2 + 3P_3 = 48$ (15)

[25]

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]

QUESTION 6

A principal sum of $5000 is invested at annual interest rate of 6%. Find the future value of this sum after 5 years if the interest rate is:

i) compounded annually (5)

ii) compounded monthly (5)

iii) compounded continuously (5)

iv) compounded quarterly (5)

v) half yealy (5)

[25]

End of Paper