KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
DIPLOMA IN HUMAN RESOURCE MANAGEMENT
DBA 1104:QUANTITATIVE METHODS

Date: 12th April 2022
Time:2.30pm-4.30pm

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANYOTHER TWO QUESTIONS
QUESTION ONE (30MARKS)

a) Outline 2 advantages of mean as a measure of central tendency (2marks)

b) Solve the following equation $4x^2$-4x-3=0 (3marks)

c) Solve the following simultaneous equations by using matrix algebra (4marks)

$$3x + 4y = 10$$
$$2x + 7y = 11$$

d) Find out the derivative of the following function (4marks)

$$y = x^3 + 3x^2 + 3$$

e) Compute median from the following data (2marks)

51, 65, 40, 44, 46, 55, 48, 62

f) State 3 characteristics of a good measure of dispersion. (3marks)

g) Given below are the marks obtained by 9 students (4marks)

45,32,37,46,39,36,41,48 and 36. Find the quartile deviation and its co-efficient.

h) Compute the chain base index numbers from given data (4marks)

YEAR	1990	1991	1992	1993	1994	1995	1996
CONSUMPTION (SH 000)	149	156	137	162	149	160	165

i) From a bag containing 4 white and 5 black balls, a man draws 3 at random with replacement. What is the chance of drawing 3 blacks balls? (4marks)

QUESTION TWO (20MARKS)

a) Seven methods of imparting business education were ranked by Diploma students of two universities as follows (10 marks)

Methods	A	B	C	D	E	F	G
Rank by student A	2	1	5	3	4	7	6
Rank by student B	1	3	2	4	7	5	6

Calculate rank correlation coefficient and comment on its value

b) In the following table are recorded data showing the test scores made by salesmen on an intelligence test and their weekly sales:(10 marks)

Salesmen	1	2	3	4	5	6	7	8	9	10
Test score	40	70	50	60	80	50	90	40	60	60
Sales (000Sh)	2.5	6.0	4.0	5.0	4.0	2.5	5.5	3.0	4.5	3.0

Calculate the regression line of sales on test scores and estimate the probable weekly sales volume if a salesmen makes a score of 100.

QUESTION THREE (20MARKS)

(a) Compute index numbers for 1996 from the following data taking 1986 as the base and using the following

   i. Laspeyres price index number   (3marks)

  ii. Paasches price index number   (3marks)

 iii. Fishers index number   (3marks)

 iv. Marshall-Edgeworth index   (3marks)

items	1986		1996	
	Price	Qty	Price	Qty
Rice	20	80	25	100
Wheat	12	90	18	120
Maize	5	150	10	180

(b) The following relates to the number of successful sales made by the salesmen employed by a large microcomputer firm in a particular quarter.

No of sales	50-59	60-69	70-79	80-89	90-99	100-109	110-119
No of sales men	7	81	192	312	218	82	18

Compute

a.   Mean   (2marks)

b.   Median   (3marks)

c.   Mode   (3marks)

QUESTION FOUR (20 MARKS)
a.   Given two matrices A and B

$$A=\begin{bmatrix} 2 & 3 \\ 1 & 4 \\ 5 & 2 \end{bmatrix} \quad B=\begin{bmatrix} 5 & 3 & 8 \\ 1 & 6 & 2 \end{bmatrix}$$

Determine the following;
   i.   Transpose of A   (3 marks)
   ii.   AB   (3marks)
   iii. B^T+A (3marks)
   iv. $(BA)^{-1}$ (3marks)

b.   Solve by Substitution method   (3Marks)

$$3x+2y=3$$
$$5x+3y=15$$

c.   Solve by Elimination method   (3Marks)

$$4x+3y=7$$
$$3x-2y=9$$

d.   Outline 2 uses of range as a measure of dispersion.   (2 Marks)

QUESTION FIVE (20 MARKS)

a. The table below shows the masses of 120 people.

Mass (kg)	40-49	50-59	60-69	70-79	80-89	90-99
No. of people	9	27	32	18	24	10

Compute

i.	Mean	(3 marks)
ii.	Mode	(3 marks)
iii.	Range	(2 marks)
iv.	Quartile deviation	(3 marks)
v.	Median	(4 marks)
vi.	Standard deviation	(5 marks)