KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
FOR THE CERTIFICATE IN INFORMATION TECHNOLOGY
CIT 1003- COMPUTATIONAL MATHEMATICS

Date: 08TH DECEMBER 2022
Time: 2:30PM – 4:30PM

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

a) State 4 advantages of mean as a measure of central tendency. (4 Marks)

b) From a bag containing 3 white and 4 red balls, a man draws 2 at random. What is the chance of drawing 2 red balls? (4 Marks)

c) Differentiate the following function $y = 5x^4 + x^6 - 2$. (2 Marks)

d) Use substitution method to solve the simultaneous. (5 Marks)

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

e) 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	50-60	60-70	70-80	80-90	90-100	100-110	110-120
No of sales men	7	11	5	6	9	3	8

Required
Calculate the median sales (4 Marks)

f) Convert 45_{10} to binary (3 Marks)

g) Convert 110101_2 to decimal (3 Marks)

h) Given the matrices A=$\begin{bmatrix} 3 & 8 \\ 5 & -2 \end{bmatrix}$, B=$\begin{bmatrix} 4 & 6 \\ -3 & 2 \end{bmatrix}$

Determine
    i. $B^T A$ (3 Marks)
    ii. $A + B$ (2 Marks)

QUESTION TWO (20MARKS)

a) Convert each of t following number system to their respective equivalents
- i. 64725_8 to decimal (3 Marks)
- ii. 6472_{16} to decimal (3 Marks)
- iii. 846_{10} to Octal (3 Marks)
- iv. 1110010011_2 to decimal (3 Marks)

b) 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 (3 Marks)
- iii. B^T+A (3 Marks)
- iv. BA (3 Marks)

QUESTION THREE (20MARKS)

a) Solve by Substitution method (5 Marks)
- i. 3x+2y=3
- ii. 5x+3y=15

b) Solve by Matrix method (5 Marks)
- i. y- 2x=2
- ii. 3y+x=20

c) Calculate the D_5 from the following data (5 Marks)

Class interval	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	20	25	36	72	51	40

d) Solve the following quadratic equation $3x^2 - 7x + 2$ (5 Marks)

QUESTION FOUR (20 MARKS)

a) The number of telephone calls received daily in a marketing department of a company for 200 days are given below;

No of calls	0-10	10-20	20-30	30-40	40-50
Frequency	4	7	12	9	18

Calculate the;

- (i) Mean (3 Marks)
- (ii) Median (4 Marks)
- (iii) Mode (2 Marks)

b) Compute for
- i) (i)Standard variation (5 Marks)
- ii) (ii) Co-efficient of variation (3 Marks)

c) List three advantages of median. (3 Marks)

QUESTION FIVE (20 MARKS)

a) Discuss five characteristic of a good average. (5 Marks)

b) The table below shows the masses of 120 people.

Mass (kg)	40-50	50-60	60-70	70-80	80-90	90-100
No. of people	9	27	32	18	24	10

Draw a cumulative frequency curve for the above data. (5 Marks)

Use the graph to estimate

i) The median mass (2 Marks)

ii) The number of people whose mass lies between 70.5 kg and 75.5 kg. (2 Marks)

c) Calculate Mode, Q_3 , P_{30} from the following data (6 Marks)

MARKS	NO.OF STUDENT
0-10	3
10-20	9
20-30	14
30-40	6
40-50	7