FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2023

(Regular/Improvement/Supplementary)

COMPUTER SCIENCE & MATHEMATICS (DOUBLE MAIN)

GDMA1B02T: BASIC STATISTICS & PROBABILITY

Time: 2 Hours   **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 Marks)

1. What is a questionnaire?

2. Distinguish between nominal and ordinal data.

3. Write a note on Bar diagrams.

4. Give the formula for the mean of combined group of 3 sets of observations with sizes n_1, n_2 and n_3.

5. Three samples of sizes 80, 40, and 30 having means 12.5, 13 and 11 respectively are combined. Find the mean of the combined sample.

6. Write down the normal equations for fitting a straight line $y = a + bx$.

7. Distinguish between positive and negative correlation. Give one example for each.

8. The sum of the squares of the differences between 10 ranks of two series is 33. Calculate rank correlation coefficient.

9. Define sample space of a random experiment and write down the sample space when an unbiased coin is tossed twice.

10. If $P(A) = \frac{4}{5}$ and $P(B) = \frac{3}{4}$ and $P(A \cap B) = \frac{2}{3}$, find $P[\bar{A} \cap (A \cup B)]$.

11. If A and B are any two events such that $P(A) = \frac{1}{3}$, $P(B) = \frac{1}{2}$, $P(A/B) = \frac{1}{4}$. Find $P(A \cap B)$.

12. If A and B are independent events, show that A^C and B^C are independent.

SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 30 Marks)

13. What is a Histogram? How will you construct it?

14. What are ogives? What are its uses?

15. What are the advantages of sampling over census?

16. Calculate Q.D for the following data:

Class :	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency:	4	8	15	8	5

(PTO)

17. Fit a straight line to the following data by the principle of least squares.

X:	0	1	2	3	4
Y:	1	1.8	3.3	4.5	6.3

18. From a group of 15 students consisting of 10 boys and 5 girls, 3 students are selected at random. Compute the probability that the selected group contains:

(a) No boys

(b) more girls than boys

19. The probability that a married man listens to radio is 0.4 and the probability that a married woman listens to radio is 0.5. The probability that a married man listens given that his wife does is 0.7. Find the probability that the couple listen to the radio.

SECTION C: Answer any *one* question. Each carries *ten* marks.

20. Calculate Karl Pearson's coefficient skewness and interpret the same for the following data.

Wages in Rs.	70 - 80	80-90	90 - 100	100-110	110-120	120 -130	130 -140
No. of persons	12	18	35	42	50	45	2

21. You are given the data relating to purchases and sales. Obtain the two regression equations and estimate the likely sales when the purchase equal to 100.

X:	62	72	98	76	81	56	76	92	88	49
Y:	112	124	131	117	132	96	120	136	97	85

(1 x 10 = 10 Marks)