Reg. No ..... Name **22U360**

END SEMESTER EXAMINATION : OCTOBER 2022

SEMESTER 3 : INTEGRATED M.Sc. PROGRAMME COMPUTER SCIENCE

COURSE : **21UP3CPCMT03 : PROBABILITY AND STATISTICS**

(For Regular - 2021 Admission)

Time : Three Hours **Max. Weightage: 30**

PART A

Answer any 8

1. Define random variable with example.
2. Find the H.M. of the numbers.1,1/2,1/3,.....1/10?
3. If f(x) = k(x-2), for x=3,4,5 is a probability distribution function (p.d.f.), find k?
4. Distinguish frequency curve and frequency polygon
5. Define Data.
6. The mean mark of 100 students was found to be 50.
   Later on it was found out that a score of 87 was misread as 78.
   Find the correct mean
7. Two unbiased dice are thrown, find the expected value of the sum of numbers on them ?
8. Using frequecy definition of probability show that $P(A \cup B) \leq P(A) + P(B)$
9. Find the coefficient of skewness if the difference between first and third quartiles is 8, sum of those two quartiles is 22 and median is 10.5 .
10. If the correlation coefficient is 2/3 and if one regresion coefficient is 7/9, obtain the other regression coefficient

(1 x 8 = 8 Weight)

PART B

Answer any 6

11. Frequencies of the observations 3.2, 5.8, 7.9 and 4.5 are respectively x, (x+3), (x-3) and (x+6). If the arithmetic mean is 4.876, then find the value of x ?
12. Define distributin funtion? What are the properties of distribution function?
13. Distinguish between correlation and regression
14. Explain the uses and limitations of statistics
15. Find the most likely price in Mumbai corresponding to the price of Rs.70/- at Calcutta from the following:

	Calcutta	Mumbai
Average price	65	67
Standard deviation	2.5	3.5

16. There are two options in a game. If the player wins (1) he will get Rs.200 with probability 0.7 and Rs.500 with probability 0.3, (2) he will get an assured amount Rs.300. Which option is beneficial for the player?

17. Write a short note on construction of Pie chart and its uses.

18. For the numbers 2,4,6,8,10 show that A.M>G.M.>H.M.

(2 x 6 = 12 Weight)

PART C

Answer any 2

19. Define marginal distribution? Given $f(x,y) = k\, e^{-x-2y}$ $x>0$, $y>0$. Find (1) k (2) obtain the marginal distributions

20. The following table shows the age (X) and the blood pressure (Y) of 8 persons

X : 52 63 45 36 72 55 47 25

Y : 62 53 51 25 79 43 60 33

Obtain the regression equation of Y on X and find the expected blood pressure of a person who is 49 year old

21. Draw less than and greater than ogives for the following frequency distribution of the marks obtained for 100 students in Mathematics.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	6	12	20	30	18	10	4

22. From the following data locate the values of median, quartiles 6^{th} decile and 70^{th} percentile,

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No.of students	5	8	7	12	28	20	10	10

(5 x 2 = 10 Weight)