

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - I Computer Science & Business Systems : WINTER : 2024
SUBJECT: STATISTICS, PROBABILITY & CALCULUS

Day : Wednesday
 Date : 04/12/2024

W-24131-2024

Time : 10:00 AM-01:00 PM
 Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable **CALCULATOR** is allowed.

Q.1 What are the methods of collecting primary data? (10)

OR

Q.1 Explain secondary data. (10)

Q.2 From the following data calculate the coefficient of rank correlation. (10)

x	48	33	40	9	16	65	24	16	57
y	13	13	25	6	5	20	9	9	19

OR

Q.2 Two random variables have the regression lines $3x+2y-15=0$ and $6x+y=25$. Find the mean values of x and y and the correlation coefficient. If the variance of x is 16, find the standard deviation of y from the data given. (10)

Q.3 Find the moment generating function of $f(x) = \theta e^{-\theta x}$; $\theta, x > 0$. (10)

OR

Q.3 Given the following table: (10)

X	-3	-2	-1	0	1	2	3
P(X)	0.05	0.10	0.3	0	0.3	0.15	0.10

Computer i) $E(X)$ ii) $V(2X+3)$ iii) $E(4X+5)$

Q.4 Let X follow binomial distribution with mean = 10 and variance = 5. Find (10)
 i) $P[X < 5]$ ii) $P[2 < X < 10]$

OR

Q.4 A coin with $p = \frac{1}{4}$ as the probability of head is tossed 6 times. Find the (10)
 probability of getting (i) 3 tails (ii) at least one tail (iii) at most 2 head.

Q.5 Solve : $(1+xy^2)dx + (1+x^2y)dy = 0$. (10)

OR

Q.5 Solve : $(x-y^2)dx + 2xy dy = 0$. (10)

Q.6 Evaluate : $\int_0^1 \int_x^{\sqrt{x}} (x^2 + y^2) dy dx$ (10)

OR

Q.6 Evaluate : $\int_0^1 \int_0^{\sqrt{1-y^2}} \frac{dx dy}{(1+e^y)\sqrt{1-x^2-y^2}}$ (10)
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