BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-I Computer Science & Business Systems : SUMMER : 2025
SUBJECT: INTRODUCTORY TOPICS IN STATISTICS, PROBABILITY & CALCULUS

Day : Wednesday
Date : 14/05/2025

S-27622-2025

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) Assume suitable data **WHEREVER** necessary.
4) Draw neat diagrams **WHEREVER** necessary.

Q.1 What is primary data? What precautions should be taken during its collection? **(10)**

OR

Q.1 What is secondary data? What are the methods of collecting secondary data? **(10)**

Q.2 Obtain regression lines for the following: **(10)**

X	2	4	6	8	10	12	14
Y	4	2	5	10	4	11	12

OR

Q.2 Find correlation coefficient for the following: **(10)**

X	42	44	58	56	89	98	65
Y	54	49	53	58	65	78	58

Q.3 A bag contains 7 black, 4 white and 5 blue balls. A person draws 4 balls from the bag at random. Find the probability that among the balls drawn there is at least one ball of each colour. **(10)**

OR

Q.3 Find the moment generating function of $f(x) = e^{-2x}\ 0 \le x < \infty$. **(10)**

Q.4 Four coins are tossed simultaneously. What is the probability of getting **(10)**
i) 2 heads ii) at least two heads

OR

Q.4 Assuming that one in 80 births is a case of twins, calculate the probability of 2 or more sets of twins on a day when 30 births occur. **(10)**

Q.5 Solve: $(1+x^2)\frac{dy}{dx} = 1-xy$ **(10)**

OR

Q.5 Solve: $(y+1)\,dx+(x-ye^y-2e^y)\,dy=0$ **(10)**

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)**

OR

Q.6 Evaluate: $\int_0^1 \int_{x^2}^{x} xy(x-y)\,dxdy$ **(10)**

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