

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2021-COURSE)
B. Tech. Sem - I Computer Science & Business System : WINTER- 2022
SUBJECT : STATISTICS, PROBABILITY & CALCULUS

Day : Wednesday

Time : 10:00 AM-01:00 PM

Date : 11/1/2023

W-24131-2022

Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat labelled diagrams **WHEREVER** necessary.
- 4) Use of non- programmable **CALCULATOR** is allowed.

Q.1 Explain secondary data in detail. (10)

OR

Q.1 What are the precautions to be taken while collecting primary data? (10)

Q.2 If X and Y are two random variables with same standard deviation and coefficient of correlation is r , show that correlation coefficient between X and $X+Y$ is $\sqrt{\frac{1+r}{2}}$ (10)

Q.2 Draw O-give curves and hence find the value of median graphically for the following distribution. (10)

Marks	0-10	10-20	20-30	30-40	40-50
Students	5	12	45	32	8

Q.3 Find the moment generating function of $f(x) = \frac{1}{2a}; -a \leq x < a$. (10)

OR

Q.3 Bag first contain 6 blue and 4 black balls. Bag second contains 3 blue and 6 black balls. Bag third contains 2 blue and 8 black balls. A bag is chosen at random, a ball is drawn randomly from this bag. It turns out to be blue. Find the probability that bag first was chosen. (10)

Q.4 The mean and variance of Binomial distribution are 6 and 2 respectively. Find $P[X \geq 1]$. (10)

OR

Q.4 In a Poisson's probability distribution if $3P(X=4) = P(X=5)$. Find $P[X=6]$. (10)

P. T. O.

Q.5 Evaluate $(2x - y + 1)dy - (x + 2y + 3)dx = 0$. (10)

OR

Q.5 Evaluate $(x^4 e^x - 2mxy^2)dx + 2mx^2 y dy = 0$ (10)

Q.6 Solve $\int_0^x \int_0^x x e^{-x^2/y} dy dx$ (10)

OR

Q.6 Evaluate $\iint \frac{1}{x^4 + y^2} dx dy$ over the region $y \geq x^2, x \geq 1$. (10)

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