2604E219

Candidate's Seat No :_____

APRIL– 2024
B. Sc. SEMESTER – II
STATISTICS
MINOR DSC - M-STA-123T
Probability Theory

Time: 1.00 Hours **Marks:25**

Q.1(A) Write classical, relative and axiomatic definitions of probability. (5)
Q.1(B) State and prove Chebyshev's Inequality. (5)

OR

Q.1(A) What is favourable cases? Prove that $0 \leq P(A) \leq 1$. (5)
Q.1 (B) State and prove Boole's Inequality. (5)

Q-2(A) Let X and Y be random variables with joint probability function f(x,y) then prove that E[XY]=E[X].E[Y]. Also discuss bivariate product moment. (5)
Q-2(B) Short note: Moments of Bivariate distribution (consider moments about x=0 & y=0). (5)

OR

Q-2(A) Define joint probability mass function, joint probability density function, conditional probability functions. (5)

Q-2(B) Write short note on product moments also obtain simplest form of product moment. (5)

Q.2 **Attempt any five out of six.** **(05)**

1 Define: mutually exclusive events.

2 Difference event - Give definition

3 Intersection of event - Give definition

4 Write the formula for conditional probability function of Y given X=x.

5 Write the formula for Expected value of Bivariate function for discrete data.

6 Write statement of Markov's Inequality