

Seat No. : _____

MI-210

May-2025

B.Sc., Sem.-II

DSC-M-STA-123T : Statistics (Minor) (Probability Theory)

Time : 1:00 Hour]

[Max. Marks : 25

1. (A) Short note : Bayes theorem. 5
- (B) State and prove Boole's Inequality. 5

OR

1. (A) Define complementary event and union of events with diagram. 5
- (B) State and prove Bonferroni's Inequality. 5
2. (A) Let X and Y be random variables with joint probability function $f(x, y)$ then prove that $E[X + Y] = E[X] + E[Y]$. 5
- (B) Short note : Moments of Bivariate distribution (consider moments about $x = 0$ & $y = 0$). 5

OR

2. (A) Write a note on conditional expectation. 5
- (B) Define distribution function and also state its properties. 5
3. Attempt any **five** out of **six**. 5
 - (1) Give any two examples of random experiment.
 - (2) Define : Trial.
 - (3) Write Sample space for tossing Three coins simultaneously.
 - (4) Write the formula for conditional probability function of X given Y= y.
 - (5) Write the formula for Expected value of Bivariate function for continuous data.
 - (6) Write statement of Chebyshev's Inequality.
