B.Sc. DEGREE EXAMINATION,ODD SEMESTER 2020
II Year III Semester
Mathematical Statistics - I

Max.marks :25

Answer any **FIVE** questions $(5 \times 5 = 25)$ Marks

1. State and prove Baye's theorem of probability.
2. The joint probability density function of a two-dimensional random variable (X,Y) is given by

   f(x,y) $= \begin{cases} 2 & ; \ 0 < x < 1, 0 < y < x \\ 0 & , \ elsewhere \end{cases}$

   (i) Find the marginal density functions of X and Y,

   (ii) Find the conditional density function of Y given X= x and conditional density function of X given Y = y, and

   (iii) Check for independence of X and Y.
3. State and prove Chebychev's inequality.
4. Derive mean and variance of Binomial distribution using M.G.F.
5. Derive M.G.F of Normal distribution.
6. Explain additive Property of Gamma Distribution.
7. Derive mean and variance of Beta Distribution of First Kind.