DEPARTMENT OF STATISTICS
Visva-Bharati University
Probability & Probability Dist (Code: CC-3)

Internal Test: II
Date: 23/07/21 (Friday)

Time: 45 + 10 Minutes   *Attempt All Questions*   Total Marks: 10

1. For DFs F, F_1, F_2 show that: $1 - \sum[1 - F_i(x_i)] \leq F(x_1, x_2) \leq \min F_i(x_i)$, for all real numbers x_1, x_2 if and only if F_i's are marginal DFs of F. [3]

2. Show that the function: $f(x) = \frac{1}{2}e^{-|x|}, \; -\infty < x < \infty$ is a pdf. Also find the DF associated with $f(x)$ and $P(X \geq 2)$. [3]

3. For the bivariate Cauchy RV (X, Y) with PDF: $f(x,y) = \frac{c}{2\pi(c^2+x^2+y^2)^{3/2}}, \; x, y \in \mathbb{R}, \; c > 0$. Find the marginal PDFs of X and Y. Find the conditional PDF of $Y|X = x$. [4]