Subject Name & Code: Mathematics-II BSC/106E	**Session: 2023-24**
Maximum Marks: 20	**Submission Date: 5th April 2024**

Assignment No-2

CO 4	To understand how regression analysis can be used to develop an equation that estimates how two variables are related and how the analysis of variance procedure can be used to determine if means of more than two populations are equal.

Q. No. 1. For a distribution, the mean is 10, variance is 16, γ_1 is 1 and β_2 is 4. Obtain the first four moments about the origin. Comment on the nature of the distribution.

Q. No. 2. State and prove Chebyshev inequality.

Q. No. 3. Let (X,Y) have the joint P.D.F. given by $f(x,y) = \begin{cases} 1 & if \ |y| < x, \ 0 < x < 1 \\ 0 & otherwise \end{cases}$ Show that the regression of Y on X is Linear but regression of X on Y is not Linear.

Q. No. 4. Let X and Y be joint distributed with the probability density function $f_{X,Y}(x,y) = \begin{cases} 2 - x - y, & 0 \le x \le 1, \ 0 \le y \le 1 \\ 0 & otherwise \end{cases}$ Are X and Y independent?