MANAV RACHNA UNIVERSITY, FARIDABAD
Department of Mathematics

Course: B.Tech. CSE **Semester: IV**
Session: 2020-2021 **Subject: Probability and Statistics (MAH202B-T)**

TUTORIAL - 03

1. Is the function given below a density function?

$$f(x) = \begin{cases} 0 & for\ x < 2 \\ \dfrac{3+2x}{18} & for\ 2 \le x \le 4 \\ 0 & for\ x > 4 \end{cases}$$

   Also find $P(2 \le X \le 3)$.

2. If $f(x) = \begin{cases} \frac{x+1}{2}, & -1 < x < 1 \\ 0, & elsewhere \end{cases}$ represents the density function of a random variable X. Find $E(X)$ and $VAR(X)$.

3. The frequency distribution of a measurable characteristic varying between 0 and 2 is as under:

$$f(x) = \begin{cases} x^3, & 0 \le x \le 1 \\ (2-x)^3 & 1 \le x \le 2 \end{cases}$$

   Calculate the standard deviation and also the mean deviation about mean.

4. Let X be a random variable defined by the density function

$$f(x) = \begin{cases} 3x^2, & 0 \le x \le 1 \\ 0, & otherwise \end{cases}$$

   Find $E(X),\ E(3X-2),\ E(X^2)$

5. The probability density p(x) of a continuous random variable is given by

$$p(x) = y_0\ e^{-|x|}, -\infty < x < \infty$$

   Find y_0