



Date: - 06-09-2024

Time : 2.30 to 3.30 p.m.

Answer for all the questions

1.

X is a random variable with probability density function

$$f(x) \begin{cases} x - 3 & ; & 0 < x < 1 \\ 5 - kx & ; & 1 < x < 3 \\ 0 & ; & \text{otherwise} \end{cases}$$

- (i) Find the value of k .
- (ii) Find the $Pr(X < 2)$
- (iii) Find the $Pr(0.5 < X < 5)$.
- (iv) Find the expected value of X .
- (v) Find the variance of X .
- (vi) Find the median of X .

2

- a. Suppose that a quiz consists of n True-False questions. A student hasn't studied for the exam and will just randomly guess the answers to each question. Suppose $n = 15$.
 - (i) Find the probability that the student will get 4 or fewer wrong answers?
 - (ii) Find the probability that the student will get more than 3 wrong answers?
 - (iii) Suppose that the questions are released one by one and immediately after the attempt to the question the answer will be marked as correct or incorrect.
 - I. What is the portability that first wrong answer occurred at the second question?
 - II. What is the portability that third wrong answer occurred at the seventh question?
- b. Suppose the average number of customers at an ATM in 10 -minute interval is 3 in a weekday. What is the probability that there will be more than 5 customers in 30 minutes interval at the ATM on a Monday?

