Short Questions

ExeRciSe

Q.7.01.   If E(X) = 3 then find E(2X-1) and E(X+1).

Q.7.02.   Find "K" for the probability distribution given below and find E(X):

x	0	1	2	3	4
f(x)	12/210	80/210	K	24/210	1/210

Q.7.03.   Given that P(x) = 0.2 for x = 2, 3, 4, 5, 6. Calculate E(X)

Q.7.04.   What value of "k" makes the following function a mass function?

$f(x) = kx^6$,   x = 0, 1, 2, 3

Q.7.05.   What value of "k" makes the following function a mass function?

$f(x) = k\,{}^7C_x$,   x = 0, 1, 2, 3, 4

Q.7.06   Find the value of "k" from the following probability distribution:

x	-2	-1	0	1	2	3
f(x)	0.1	0.1	0.2	2k	0.3	k

Also find probability distribution of X by replacing the calculated value of "k"

Q.7.07.   What value of "k" makes the following function a density function?

$f(x) = k(4-x)$, $1 < x < 3$

Q.7.08.   What value of "A" makes the following function a density function?

$f(x) = A(2x+3)$, $1 < x < 2$

Q.7.09.   Define random variable. Write down the properties of probability distribution.

Long Questions

ExeRciSe

Q.7.01.   Consider the following probability distribution:

x	0	1	2	3
P(x)	0.1	0.4	0.3	0.2

(i)   Calculate Mean and Variance
(ii)   Calculate E(3X-1)
(iii) Calculate Variance of (3X-1)

Q.7.02.   Find E(X), E(X^2) and V(X) from the following table:

x	0	1	2	3
f(x)	1/4	1/6	2/6	1/4

Q.7.03.   If $f(x) = \dfrac{1}{30}(5+2x)$, $1 \le x \le 4$

(i)   Show that f(x) is a density function
(ii)   Find $P(X \le 3)$ (iii)   Find $P(X = 3)$

Q.7.04.   A random variable X that can assume values between x = 2 and x = 5 have a
density function given by: $f(x) = \dfrac{2(1+x)}{27}$

(i)   Find $P(X > 4)$ (ii)   Find $P(2 < X < 3)$

Q.7.05.   Given that $f(x) = 0.25x$, $1 \le x \le 3$

(i)   Show that $P(1 < X < 3) = 1$
(ii)   Find $P(X \le 2)$ and $P(2 < X < 3)$

Q.7.06.   Given that $f(x) = k(x+1)$, $2 \le x \le 5$

(i)   Find "k"   (ii)   Find $P(2 < X < 3)$
(iii) Find $P(X \le 4)$ (iv)   Find $P(X = 4)$

Q.7.07.   Find the probability distribution of the No. of tails when two coins are tossed.

Long Questions

ExeRciSe

Q.7.08.   Find E(X), E(X^2), V(X) and S.D(X) from the following table:

x	-2	3	1
f(x)	1/3	1/2	1/6

Q.7.09   Find Mean and S.D if f(-1) = 3/8, f(0) = 2/8 and f(1) = 3/8

Q.7.10.   Check whether the following is a density function:

$$f(x) = \frac{5+2x}{30}, \qquad 0 \le x \le 4$$

(i)   Find $P(X < 2)$ (ii)   Find $P(2 < X < 3)$

Q.7.11.   A random variable X has a probability distribution:

x	0	1	2
f(x)	1/4	2/4	1/4

Find the value of Mean and Variance of the random variable X.

Q.7.12.   Given that $f(x) = \dfrac{1}{6}(5 - 2x)$, $0 \le x \le 2$

(i)   Find $P(X > 1)$ (ii)   Find $P(0.25 < X < 1.25)$
(iii)   Find $P(X < 0.75)$

Q.7.13.   Given that: $f(x) = \dfrac{2(5-x)}{25}$ $0 \le x \le 5$

(i)   Find $P(0 < X < 5)$ (ii)   Find $P(X > 3)$ (iii)   Find $P(X = 2)$

Q.7.14.   From the following table find E(X), E(X^2) and E(X+3)

x	1	2	3	4
f(x)	2/12	3/12	4/12	3/12