(Random Variable and Binomial distribution)

Sr.No.	mcqs
1	If E(X)=5, what value of E(2X+3)? (E means expectation here) (a) 25 (b) 13 (c) 7 (d) Can't be determined
2	What will be the mean of a binomial distribution if its variance is 3 and p=1/4? a) 2 b) 3 c) 4 d) 6
3	The mean and variance of a binomial variate X are 16 and 8. Find P(X>0). a) $1-\frac{1}{2^{32}}$ b) 0 c) $\frac{1}{2^{32}}$ d) None of these
4	An experiment consists of tossing a coin and a die. Let represents E_1 the occurrence of Head and E_2 represents getting a multiple of 3. Then $P(E_1 \mid E_2)$ represents probability of: a) Getting 3 or 6 when Head has shown up (b) Getting Head when 3 or 6 has shown (c) Getting Head and multiple of 3 or 6 together (d) Getting Head or multiple of 3 and 6 together.
5	The probability mass function of a random variable X is 0 expect at the points x=0,1,2. At these points, it has values p(0)=0.1, p(1)=2c and p(2)=0.5-c. What is the value of c? a) 4 (b) 0.4 (c) 0 (d) 0.1
6	Find mean if the probability density function is $f(x) = 2x, 0 < x < 1$. (a) 2 (b) 1/3 (c) 2/3 (d) 1
7	If c=1, then its Expectation is (a) 0 (b) 100 (c) π (d) 1
8	The expected value of a random variable is equal to its (a) mean (b) standard deviation (c) variance (d) co-variance
9	Let X be a random variable then which of the following statement is correct? (a) Var(3X+2)=3 Var(X)+2 (b) Var(3X-2)=9 Var(X) (c) Var(3X+2)=9 Var(X)+2 (d) Var(3X-2)=3 Var(X)-4

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10 The random variable X has the following distribution. Then P(X = 10) is:

X	1	2	4	10
P(x)	0.3	0.2	0.2	?

(a) 0.2 (b) 0.5 (c) 0.3 (d) 0.1

11 If X=5, then Var(X) is

(a) 5 (b) 1 (c) 0 (d) ∞

12 Given E(X) = 5 and E(Y) = -2, then E(X - Y) is:

(a) 3 (b) 5 (c) 7 (d) -2

13 If a random variable X satisfies Binomial distribution with mean 10 and p=0.2,then value of n is:

(a) 50 (b) 60 (c) 70 (d) 100

14 What is the variance of a Binomial variate $X \sim B\left(5, \frac{1}{5}\right)$?

1/5 (b) 4/5 (c) 5 (d) $\sqrt{\frac{4}{5}}$

15 If E(X)=2 then what is the value of E(2x-3)?

(a) 2 (b) 1 (c) -1 (d) 7

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28	Assuming that the chance of a traffic accident in a day on a Delhi road is 0.01. If there are 100 such roads in Delhi, on how many days of an April month, you would expect no traffic accident? (Given $e = 2.718$, $e^{-1} = 0.368$, $e^{-10} = 0.0005$. (a) 11 days (b) 7 days (c) 15 days (d) 3 days
29	The probability of a man hitting the target is 50%. How many times he must fire so that the probability of hitting the target at least once is more than 80%? (a) 2 b) 3 c) 4 d) 6
30	Lifetime of an electric bulb is a random variable with density $f(x) = kx^2$, where x is measured in years. If the minimum and maximum lifetimes of bulb are 1 and 2 years respectively, then the value of k is (a) 0.635 (b) 0.521 (c) 0.428 (d) 1