Quality Checkers Only way to fulfill your dreams	12th Science-: Maths Binomial Distribution	**DATE:** **TIME: 1 Hours** **MARKS: 25** SEAT NO:

Note:-

1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Section A

Q.1 Select and write the correct answer. **(4)**

1. The mean of binomial distribution is _____

   A) always more than its variance B) always equal to its variance

   C) always less than its variance D) always equal to its standard deviation

2. A die is thrown 100 times. If getting an even number is considered a success, then the standard deviation of the number of successes is _____

   A) $\sqrt{50}$ B) 5

   C) 25 D) 10

Q.2 Answer the following. **(3)**

1. Let X~ B (n, p). If E(X) = 5 and Var (X) = 2·5 , find n and p.
2. Given that X~ B (n, p). If p =0·6 and E(X) = 6, find n and Var (X).
3. Given that X~ B (n, p). If n = 10 and p = 0·4, find E (X) and Var (X).

Section B
Attempt any Four

Q.3 A bag consists of 10 balls each marked with one of the digits 0 to 9. If four balls are drawn successively with replacement from the bag, what is the probability that none is marked with the digit 0 ? **(2)**

Q.4 Let X ~ B (10, 0.2), Find P(X $\leq$ 8) **(2)**

Q.5 Given that X~ B (n, p).If n = 25 , E(X) = 10 find p and SD(X). **(2)**

Q.6 A biased coin with probability p of heads (0 < p < 1) is tossed until a head appears for the first time. If the probability that the number of tosses required is even is $\frac{2}{5}, p = ?$ **(2)**

Q.7 Let X~ B (n, p) .If n = 10 , E (X) = 5, find p and Var (X). **(2)**

Q.8 Mean and variance of a binomial variance X are 4 and 2 respectively. Then P(X = 1) ? **(2)**

Section C
Attempt any Two

Q.9 A computer installation has 10 terminals. Independently, the probability that any one terminal will require attention during a week is 0·1. Find the probabilities that (i) 0 (ii) 1 (iii) 2 (iv) 3 or more, terminals will require attention during the next week. **(3)**

Q.10 Find the probability of throwing at most 2 sixes in 6 throws of a single die. **(3)**

Q.11 On a multiple choice examination with three possible answers for each of the five questions, what is the probability that a candidate would get four or more correct answers just by guessing ? **(3)**

Section D
Attempt any One

Q.12 A person buys a lottery ticket in 50 lotteries, in each of which his chance of winning a prize is 1/100. find the probability that he will win a prize (i) At least once (ii) Exactly once (iii) At least twice. **(4)**

Q.13 If fair coin is tossed 10 times find the probability that it shows heads (i) 5 times (ii) In the first four tosses and tail in last six tosses. **(4)**