

- 1 What is truncation? State its importance.
- 2 If the probability function of a random variable X is
$$P(x) = k \binom{n}{x} p^x q^{n-x}, x = 1, 2, \dots, n; p + q = 1$$
, then find the constant  $k$ .  
 $0, \text{otherwise}$
- 3 Derive mean and variance of truncated binomial distribution, truncated at  $X=0$ .
- 4 Derive Truncated poisson distribution, truncated at  $X = 0$ .
- 5 Derive mean and variance of truncated poisson distribution, truncated at  $X=0$ .
- 6 State application of geometric distribution.
- 7 For Geometric Distribution, Show that Mean =  $q/p$  and variance =  $q/p^2$ .
- 8 Write a short note on negative binomial distribution.
- 9 For Negative binomial Distribution, obtain mean and variance.
- 10 In usual notations, the moment generating function.
- 11 Obtain Poisson distribution as a limiting form of negative binomial distribution, stating necessary conditions.
- 12 An item is produced to large numbers. The machine is known to produce 5% defectives. A quality control inspector is examining the items by taking them at random. What is the probability that at least 4 items are to be examined in order to get 2 defectives?
- 13 For Negative binomial Distribution, obtain the recurrent relation for the central Moment.
- 14 Suresh is a high school badminton player. In 70% cases, his services are sharp. During the match, what is the probability that Suresh makes his third point on his fifth service?
- 15 In question 14, What is the probability that Suresh makes his first point on his fifth service?
- 16 An oil company conducts a geological study that indicates that an exploratory oil well should have a 20% chance of striking oil. What is the probability that the first strike comes on the third well drilled?

17 With reference to question 16, What is the probability that the third strike comes on the seventh well drilled?

18 What is the mean and variance of the number of wells that must be drilled if the oil company wants to set up three producing wells?