

## [Glossary]

**Probability Distributions** 

Subject:

**Business Economics** 

**Course:** 

Paper No. & Title:

B. A. (Hons.), 1st Semester, Undergraduate

Paper – 102 Statistics for Business Economics

Unit No. & Title:

Probability and Distribution

Unit – 5

Lecture No. & Title: Lecture

Lecture – 2 Probability Distributions

## Glossary

Discrete random variable and discrete probability distribution: If a random variable which takes only discrete values is called a discrete random variable and corresponding distribution is called discrete probability distribution.

Mean and variance of random variable:

Mean = E(X) and variance =  $V(X) = E(X^2) - (E(X))^2$ 

Discrete uniform distribution:  $P(X) = \frac{1}{N}$ ; X=1,2,...,N, N is known integer.

Mean = (N+1)/2 and variance =  $(N^2 - 1) / 12$ Bernoulli distribution:

$$P(X = x) = p^{x}(1-p)^{1-x}, x = 0, 1; 0$$

Mean = p, Variance = 
$$p(1-p)$$

Binomial distribution:

$$P(X) = \binom{n}{x} p^{x} q^{n-x}; X=0,1,2...,n; 0 < P < 1; q=1-p$$

Mean = np, Variance = npq, here Mean > Variance.

Poisson distribution:

 $P(x) = \frac{e^{-\lambda}\lambda^{x}}{x!}, x = 0, 1, 2, ..., \lambda > 0. \text{ Mean } = \text{ Variance } = \lambda.$