

Shree Narayana College of Commerce

Bachelor of Commerce

Semester – 2

Subject Code – DSC-MSTA 123

Academic Year – 2024-25

Subject – Probability and Discrete
Probability distributions

Unit-1: Probability

- Q-1
- (a) Define the following terms
- (i) Sample space
 - (ii) Union of two events
 - (iii) Different events
 - (iv) Mutual exclusive events
 - (v) Equally likely events
 - (vi) definitions of probability
- (b) Three machines A, B and C produces 25%,35% and 40% of items daily in a factory. The percentage of defective items of these machines are respectively 1%, 3% and 2%. An items is taken at random from the production and is found to be defective. Find the probability that it is produced by machine B.

Unit-2: Mathematical Expectation

- Q-2
- a) State properties of Mathematical Expectation and properties of Variance.
- b) The probability distribution of a random variable x is as follows :

x_i	-1	0	1	2	3	4
px_i	0.2	0.3	0.1	0.1	0.1	0.2

Find the value of p and hence, also obtain the expected value of x .

Unit-3: Discrete Distribution I

- Q-3
- (a) There are 30 screws in a packet of which 5 are defective. If 5 screws are taken at random from the packet. Find the probability that
- (i) None of them is defective.
 - (ii) At the most one defective.
 - (iii) Also find mean and variance of defective screws.
- (b) State Properties of Poisson Distribution and Hyper geometric Distribution and Uses of both.

Unit-4: Discrete Distribution II

- Q-4
- (a) Write down properties of Negative binomial distribution and Geometric Distribution.
- (b) 25% of the bulbs are defective in a big lot of bulbs. Bulbs are inspected to one after the other from the lot find the probability at the 4th defective bulb will be obtain on the testing 10 bulbs. Also find mean and variance of defective bulbs.