Hindi Vidya Prachar Samiti's
Ramniranjan Jhunjhunwala College of Arts, Science and Commerce(Autonomous)

Programme: MSc. (Statistics) **Part-1** **Semester-1**

Practical- 1.1.1 **Generating & Visualizing Standard Discrete Probability Distributions** **Date:**

Q.1) Generate 10 observations on random variable X, if X follows

a) Discrete uniform (N=15)
b) Bernoulli (n=1,p=0.2)
c) Binomial (n=12,p=0.5)
d) Geometric (p=0.73)
e) Negative Binomial(r=5,p=0.3)
f) Poisson (λ=4)

Q.2) Consider 3 binomial distributions with n = 10 and p = 0.8, 0.5 and 0.2. Plot the spike plots to represent the pmfs of the three distributions.

Q.3) Compute PMF and CDF of Binomial (5,0.7) and plot both.

Q.4) Generate 100 observations from Binomial distribution with n=10 and p=0.2. Obtain mean and variance. Also plot graphs of CDF and PMF.

Q.5) A sports marketer randomly selects persons on the street until he encounters someone who attended a game last season. What is the probability the market encounters x = 3 people who did not attend a game before the first success when p = 0.20 of the population attended a game?

Q.6) Data from emergency wards in certain hospitals shows that there are an average of 4.5 accident cases registered in hospitals every day.
(i) What is the probability that 6 accidents will be registered the next day.
(ii) What is the probability that the number of accidents registered the next day is less than 6.

Q.7) Take n = 20, p = 0.2 and compute P(X=x) for x = 0,1,……..,n, using both binomial and Poisson models.Also visualize their graphs.

Q.8) Obtain probability distribution of X, where X is the number on the upper face of the die when a six- sided symmetric die is rolled. Simulate random samples of sizes 100, 200 and 500 respectively and verify the frequency interpretation of probability

Q.9) For Poisson distribution having lambda = 3, 5,9,13,22. Plot the pmf and comment.

Q.10) Display graphically, for small p, as n becomes large, and lambda = n.p is finite, Binomial distribution tends to Poisson distribution. (take p=0.1)