2) Discrete probability Distribution:

2.1) The probability of a man hitting a target is 1/6. How many times must he fire to the target so that, the probability of hitting the target at least once is more than 90%?

2.2) A super lodge has 10 rooms and 8 cars. A boarder has to make separate arrangements for sightseeing and can hire the cars from the owners. Generally 60% customers hire the car from the same owner. In the peak season owner when all the rooms are exhausted,

i) What is the probability that there will be more demand from the boarders for cars?
ii) Find (assuming 1 month = 30 days and rent of a room is 300 per day) the expected gross income per month from the lodge, if the chance of being occupied a room is 0.2.

2.3) Find the minimum number of throws of an unbiased die necessary to ensure that the probability of getting a six at least once is >= 0.5 (given log2 = 0.3010, log3 = 0.4771).

2.4) It is reported that a safety matches company produces 5% defective match sticks. Every match box contains 50 sticks. What is the probability of getting exactly 2 defective match sticks from a particular box?

2.5) A group of 3 singers and 4 dancers attended a cultural programme. 3 of them at random took dinner in a family. If they ware casually requested to sing a song, how they could honour their request. Prepare a distribution table. Find the mean and variance of the distribution.

2.6) A reputed company during its year ending defective sale, claims that 30$ of their goods are damaged or rejected quality. What is the probability that a customer, requiring 5 sets of fair quality, is to search for at least 8 sets?

2.7) A coin is tossed 5 timed successively and the number of heads appeared is recorded. 60 such sets of experiment are done. Following is the record of such frequency distribution.

No of heads	0	1	2	3	4	5
Frequency	2	5	22	18	10	3

Fit the binomial distribution from the observed distribution and calculate the expected frequencies.

2.8) Form the following observed frequency distribution fit a Poisson distribution and calculate expected frequencies.

x	0	1	2	3	4
f	122	60	15	2	1

2.9) Given the observed distribution:

x	0	1	2	3	4	5
f	214	125	41	16	3	1

Fit the negative binomial distribution and find expected frequencies.

2.10) Fit the following hypothetical distribution to Geometric distribution and find the expected frequencies:

x	0	1	2	3	4	5	6
f	460	140	45	25	18	10	2

2.11) Seven similar coins are tossed and the number of heads noted. The experiment is noted 100 times and the number of heads in each trail is given below. Fit a Binomial distribution and calculate the expected frequencies.

2	3	4	6	4	5	5	4	5	3	1	5	1	4	4	4	4	4	3	5
5	3	5	6	5	5	4	4	3	3	7	3	5	0	5	4	6	4	6	5
4	5	5	3	5	2	1	4	7	4	3	3	3	2	6	4	6	4	5	3
4	4	4	5	2	5	3	3	3	5	6	4	3	4	2	2	3	5	4	6
2	4	6	2	4	7	2	4	5	4	0	3	5	4	4	2	2	3	5	6

2.12) The following data shows the number of misprints in each of book containing 200 pages. Fit the Poisson distribution to the frequency distribution and calculate the expected frequencies by using **spread sheet**.

1	3	1	7	0	0	1	4	4	2	1	4	5	2	2	3	4	1	0	3
5	2	1	1	1	4	0	1	2	2	1	0	1	1	1	2	1	3	1	1
3	1	3	2	2	3	3	3	3	3	2	7	9	4	0	3	3	3	0	0
2	6	1	4	2	1	3	0	1	1	2	0	1	0	1	0	1	3	2	1
2	4	3	4	2	1	4	2	5	2	1	3	0	2	0	3	3	1	2	3
2	3	2	0	1	5	1	3	1	3	2	0	3	3	0	2	2	1	3	2
5	1	0	1	3	1	0	4	3	4	2	3	1	0	1	0	0	0	2	3
3	1	4	2	0	1	2	0	1	3	4	0	3	1	1	1	0	1	0	3
8	0	1	0	2	1	1	1	2	4	5	2	1	1	1	1	2	5	0	0
2	1	0	1	2	3	2	1	1	1	6	2	1	3	0	1	2	2	5	1