

## Assignment -2

**Note: Solve the below problems in jupyter notebook and save as html format. And name the file as your reg no. and name and upload in the LMS within the stipulated time.**

1. After demonetisation customers stand in the queue at ATM's to get new currencies. It was found that the probability of getting a new currency of Rs.2000 by a customer is 0.67. In a randomly selected 5 customers what is the probability that

- (a) None got new Rs.2000 currency
- (b) Between 2 to 4 got new Rs.2000 currency
- (c) More than 4 got new Rs.2000 currency

2. The sick-leave time of employees in a firm in a month is normally distributed with mean of 100 hours and a variance of 400 hours.

- (a) What is the probability that all the sick-leave time for next time will lie between 50 and 80 hours?
- (b) What is the probability that all the sick-leave time for next time will be 100 hours?

3. Twenty sheets of aluminium alloy were examined for surface flaws. The frequency of the number of sheets with a given number of flaws per sheet was as follows:

No. of flaws	0	1	2	3	4	5	6
Frequency	4	3	5	2	4	1	1

What is the probability of finding a sheet chosen at random which contains 3 or more surface flaws?

4. A life insurance salesman sells on the average 3 life insurance policies per week. Use Poisson's law to calculate the probability that in a given week he will sell

- (a) Some policies
- (b) 2 or more policies but less 5 policies.
- (c) Assuming that there are 5 working days per week, what is the probability that in a given day he will sell one policy?

5. Police records show that number of accident victims died in road traffic accidents is 75%. What is the probability that among 6 randomly selected accident victims 4 will survivor?

6. A nationalized bank sanctions personal loan for its customers. If the probability of sanctioning loan by the bank is 0.67. If 6 persons are selected at random what is the probability that

- (a) None were sanctioned loan?

- (b) Between 1 to 4 were sanctioned the loan?
- (c) More than 4 were sanctioned the loan?

7. Create population data (100000 observations ) with any distribution, and draw randomly 100 samples with different sample sizes ( 30, 50,100, 500). Find the means of those samples and visualise its distribution and find its mean and standard deviation. What are your inferences from the above tasks?

8. Compact Innovation Avenues Private Limited is the leading manufacturer of stationary items , established in 2018 in Bangalore. Pencils manufactured by this company is expected to have a mean length of 172 mm and the standard deviation of the length is 0.02 mm. To ensure the quality, a sample is selected at periodic intervals to determine whether the length is still 172 mm to meet the quality standards set by the company. You select a random sample of 100 pencils follows a normal distribution and the mean is 170 mm.\*\*

- a) Construct a 99% confidence interval for the pencil length.
- b) Construct a 95% confidence interval for the pencil length.
- c) state your inferences on the above results of a and b.