

Assignment -1

1. A random variable X has the following probability function;

X	0	1	2	3	4	5	6	7
P(X)	0	k	2k	2k	3k	k ²	2k ²	7k ² +k

- (a) Find k
 (b) Evaluate $P(X < 6)$, $P(X \geq 6)$, $P(3 < X \leq 6)$
 (c) Find the minimum value of X so that $P(X \leq x) > 1/2$. (CO1)

2. Fit a Binomial distribution to the following data. (CO1)

X	0	1	2	3	4	5	6	7
f	7	6	19	35	30	23	7	1

3. In a given city 6% of all drivers get at least one parking ticket per year. Use the Poisson approximation to the Binomial distribution to determine the probabilities that among 80 drivers (randomly chosen in this city):

- (a) 4 will get at least one parking ticket in any given year
 (b) At least 3 will get at least one parking ticket in any given year (CO1)

4. Find the mean and standard deviation of a normal distribution in which 7% of items are under 35 and 89% are under 63. (CO1)

5. Certain pesticide is packed into bags by a machine. A random sample of 10 bags is drawn and their contents are found to weight (in kg.) as follows: 50, 49, 52, 44, 45, 48, 46, 45, 49, 45 test if the average packing can be taken to be 50 kg. at 5% level of significance. (CO2)

6. The following are the number of sales which a sample of 9 sales people of industrial chemicals in California and 6 sales people of industrial chemicals in Oregon made over a certain fixed period of time.

California: 59 68 44 71 63 46 69 54 48

Oregon: 50 36 62 52 70 41

test the null hypothesis $\mu_1 - \mu_2 = 0$ against the alternative hypothesis $\mu_1 - \mu_2 \neq 0$ at the 0.01 level of significance. (CO2)