SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF MATHEMATICS
21MAB301TT- PROBABILITY AND STATISTICS
CLAT1 - REMEDIAL ASSIGNMENT
(AY 2022-23, EVEN)

1. Three companies A, B and C supply 25%, 35% and 40% of the notebooks to a school. Past experience shows that 5%, 4% and 2% of the notebooks produced by these companies are defective. If a notebook was found to be defective
   (i) What is the probability that the notebook was supplied by A?
   (ii) What is the probability that the notebook was supplied by B?
   (iii) What is the probability that the notebook was supplied by C?

2. A RV X has a p.d.f $f(x) = k\,x^2e^{-x}$, $x \geq 0$.
   Find
   (i) The value of k
   (ii) The mean and variance of X

3. A discrete R.V X has the following probability distribution

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

   (i) Find the value of 'k' (ii) Evaluate p(x<6), $p(x \geq 6)$, and p(0<x<5)
   (iii) Find p(1.5<x<4.5/x>2) (iv) Find the smallest value λ for which $p(x \leq \lambda) > \frac{1}{2}$.

4. Fit a Binomial distribution for the following data and also calculate the theoretical frequencies:

x:	0	1	2	3	4	5	6
f:	5	18	28	12	7	6	4

5. Busses arrive at a specified bus stop at 15 minutes intervals starting at 7 am. i.e. The buses arrive at 7.00, 7.15, and 7.30 so on. If a passenger arrives to the stop at a random time that is uniformly distributed between 7.00 and 7.30 am, find the probability that he waits, (a) less than 5 min. for a bus (b) at least 12 min for a bus.

6. In a test on 2000 electric bulbs, it was found that the life of a particular make was normally distributed with an average life of 2040 hours and standard deviation of 60 hours. Estimate the number of bulbs likely to burn for (a) more than 2100 hours (b) less than 1950 hours (c) more than 1920 hours but less than 2160 hours.

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