SRM Institute of Science and Technology
Department of Mathematics
18MAB204T-Probability and Queueing Theory
Module – II
Tutorial Sheet - 5

S.No.	Questions
	Part – A
1	A wireless set is manufactured with 25 soldered joints each. On an average one joint in 600 is defective. How many sets can be expected to be free from defective joints in a consignment of 10,000 sets?
2	A die is tossed until 6 appears. What is the probability that it must be tossed more than 5 times?
3	The probability that a certain measuring device will show excessive drift, is 0.10. What is the probability that the fifth of these measuring devices tested will be the first to show excessive drift? Find its expected value also.
4	If X is uniformly distributed with mean 1 and variance 4/3 find $P(Y < 0)$.
	Part – B
5	In a company producing optical lenses there is a small chance of 1/500 for any lenses to be defective. The lenses are supplied in a packet of 10. Use Poisson distribution to calculate the appropriate number of packets containing (1) no defective (ii) one defective (iii) two defective lenses in a consignment of 20,000 packets.
6	The following table gives the number of days in a 50 day period during which automobile accidents occurred in a certain part of a city. Fit a Poisson distribution to the data and find the expected frequencies.

No. of accidents	0	1	2	3	4
No. of days	19	18	8	4	1

7	A trainee soldier shoots a target in an independent fashion. If the probability that the target is shot on any one shot is 0.8, (i) What is the probability that the target would be first hit at the sixth attempt? (ii) What is the probability that it takes less than 5 shots?
8	Suppose that X is uniformly distributed over $(-a, a)$ where $a > 0$. Determine a so that (i) $P(X > 1) = 1/3$. (ii) $P(\|X\| < 1) = P(\|X\| > 1)$.