SRM INSTITUTE OF SCIENCE & TECHNOLOGY	**SRM Institute of Science and Technology** **Department of Mathematics** **18MAB204T-Probability and Queueing Theory** **Module – II** **Tutorial Sheet - 6**

S. No.	**Questions**
	Part – A
1	Trains arrive at a station at 15 minutes intervals starting at 4 a.m. If a passenger arrives at the station at a time that is uniformly distributed between 9 a.m and 9.30, find the probability that he has to wait for the train for (a) less than 6 minutes (b) more than 10 minutes.
2	The number of kilometers that a car can run before its battery has to be replaced is exponentially distributed with an average of 10,000 kms. If the owner desires to take a tour consisting of 8000 kms, what is the probability that he will be able to complete his tour without replacing the battery?
3	Suppose that the life of an industrial, in hundreds of hours, is exponentially distributed with mean life of 300 hours. Find the probability (i) that the lamp will last more than mean life. (ii) the lamp will last another 100 hours, given that it has already lasted for 250 hours?
4	If the heights of 1000 soldiers in a regiment are distributed normally with a mean 172 cm and a S.D of 5 cm how many soldiers have heights greater than 180 cm?
	Part – B
5	If X is normally distributed with mean 8 and S.D 4 find (i) $P(5 \leq X \leq 10)$ (ii) $P(X \geq 15)$ and (iii) $P(X \leq 5)$.
6	In a certain examination, the percentage of passes and distinction were 46 and 9 respectively. Estimate the average marks and S.D of marks obtained by the candidates, the minimum pass mark and the distinction marks being 40 and 75 respectively. (Assuming the distribution to be normal).
7	Find the mean and S.D of marks in an exam where 44% of the candidates obtained marks below 55 and 6% got above 80 marks
8	In a distribution exactly normal 10.03% of the items are under 25 Kilogram weight and 97% of the items are under 70 Kilogram weight. What are the mean and S.D of the distribution?