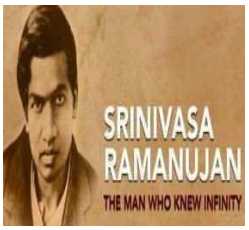

**SRM INSTITUTE OF SCIENCE AND TECHNOLOGY**
**DEPARTMENT OF MATHEMATICS**

**21MAB301T - PROBABILITY AND STATISTICS**




# UNIT2 – TUTORIAL SHEET 2

| s.no | Problems | Answers |
|---|---|---|
| 1 | A die is tossed until 6 appears. What is the probability that it must be tossed more than 5 times? | 0.4019 |
| 2 | If the probability of success on each trial is $\frac{1}{3}$, what is the expected number of trials required for the first success? | E(X)=3 |
| 3 | A candidate applying for driving licence has the probability of 0.8 in passing the road test in a given trial. What is the probability that he will pass the test<br>(i) On the fourth trial<br>(ii) In less than four trials | (i) 0.0064<br>(ii) 0.992 |
| 4 | If the probability is 0.05 that an item is defective, then what is the probability that the $6^{th}$ item tossed is the first defective | 0.039 |
| 5 | Let X be a uniformly distributed random variable with mean 1 and variance 4/3 find P(X<0) | 1/4 |
| 6 | A random variable X has uniform distribution over (-3, 3). Compute (i) P(X<2) (ii) P(\|X\|<2)) (iii) P(\|X-2\|<2 | (i) 5/6<br>(ii) 2/3<br>(iii) 1/2 |
| 7 | Suppose that during a rainy season in a tropical island, the length of the shower has an exponential distribution with average 2 minutes. Find the probability that the shower will be there for more than three minutes | 0.2231 |
| 8 | The mileage which car owners get with a certain type of radial tyre is a random variable having an exponential distribution with more than 40,000 km. find the probabilities that one of these tyres will last at least 20,000 km | 0.6065 |
| 9 | Suppose that the amount of waiting time a customer spends at a restaurant has an exponential distribution with a mean vale of 6 minutes. Find the probability that a customer will spend more than 12 minutes in the restaurant. | 0.1353 |
| 10 | Find the moment generating function of the exponential distribution $f(x) = \frac{1}{c}e^{\frac{-x}{c}}, x \geq 0 \; and \; c > 0$ | $\frac{1}{1-ct}$ |