

# Question Bank for Probability and Statistics

AI-DS 3rd Sem  
CSVТУ Bhilai  
**Unit II**

December 2, 2022

1. What are the conditions under which a random experiment is called a Bernoulli Trial. Explain with an example.
2. What is Binomial Distribution. What is the probability density function of getting  $r$  success in random experiment of  $n$  trials. What is its mean and variance.
3. If a fair coin is tossed 10 times, find the probability of getting:
  - exactly six heads
  - at least six heads
  - at most six heads
4. Ten eggs are drawn successively with replacement from a lot containing 10% defective eggs. Find the probability that there is at least one defective egg.
5. Five cards are drawn successively with replacement from a well-shuffled deck of 52 cards. What is the probability that
  - all the five cards are spades?
  - only 3 cards are spades?
  - none is a spade?
6. Write the conditions under which a random variable is said to be Poisson Distributed. Write the probability density function, its mean and variance.
7. Find the Probability that at most 5 defective fuses will be found in a box of 200 fuses, if experience shows that 2% of such fuses are defective.
8. If the probability that an individual suffer a bad reaction from a certain injection is 0.001, determine the probability that out of 2000 individuals-
  - Exactly 3
  - more than 2
  - none
  - more than 1individuals will suffer a bad reaction.
9. What is Geometric Distribution. Write its probability density function, mean and standard deviation.

10. If the probability is 0.05 that a certain kind of measuring device will show excessive drift, what is the probability that the sixth measuring device tested will be the first to show excessive drift?
11. Find the probability that in successive tosses of a fair die, a 3 will come up for the first time on the fifth toss.
12. Suppose that a trainee soldier shoots a target in an independent fashion. If the probability that the target is hit in any shot is 0.7, what is the
  - probability that first success comes in 3rd shot.
  - average number of shots needed to hit the target.
13. What is Standard Normal Distribution. Write its Probability density function and give an example.
14. The mean height of 500 students is 151 cm and the standard deviation is 15 cm. Assuming that the heights are normally distributed, find how many students have height between 120 and 155 cm.
15. Explain Exponential Distribution with an example. Write its mean and variance.
16. Suppose the life of a mobile battery is exponentially distributed with parameter  $\lambda = 0.001$  day. What is the probability that a battery will last more than 1200 days.