

ASUTOSH COLLEGE
INTERNAL ASSESSMENT EXAMINATION
SEMESTER - IV
STATISTICS – HONOURS
Paper: SEC – B1

Full Marks: 10

Time: 30 minutes

Answer *any ten* questions:

1 × 10

1. Give an example of a manual technique for generating randomness.
2. Give an example of a physical device used for generating randomness.
3. Write down one disadvantage of using mechanical devices for generating random numbers.
4. Write down one advantage of using computer-simulation for generating random numbers.
5. What do you mean by “8 mod 5”?
6. What do you mean by seed in a process of generating pseudorandom numbers?
7. Suggest a method of choosing the seed in a pseudorandom number generator.
8. What do you mean by the period of a pseudorandom number generator?
9. What is a multiplicative congruential generator?
10. Write down the algorithm of the inverse transform method.
11. Suppose F is the distribution function of an exponential distribution with mean $1/\lambda$. Find the inverse function F^{-1} .
12. Write down the algorithm for generating a Bernoulli random variable.
13. Suppose we want to compute $\theta = \int_0^1 g(x) dx$. Suggest an estimate of θ based on a random sample from $Uniform(0,1)$ distribution.
14. Why does the utility of using random numbers to approximate integrals becomes more apparent in the case of multidimensional integrals?
15. How can you generate a random variable X having distribution function
$$F(x) = x^n, 0 < x < 1$$
with the help of a random number U from $U(0,1)$?