

Subject Title: Probability Distributions

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Year: I

Semester: II

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Unit - I:

1. Define discrete uniform distribution. Find its mean and variance.
2. Define Binomial distribution calculate non central and central moments.
3. Define Poisson distribution. Calculate the moments of Poisson distribution.
4. Give the properties of Binomial distribution
5. Give the properties of Poisson and Uniform distributions.
6. Show that Poisson distribution is limiting case of binomial distribution.
7. Definitions of all discrete distribution.
8. State any two applications of discrete distribution.
9. The mean of Poisson distribution is 1. Find $P(0)$.

Unit-II

10. Show that binomial distribution as a limiting case of hyper geometric distribution.
11. State and prove lack of memory property of geometric distribution.
12. Define Geometric distribution calculate non central and central moments.
13. Define Hyper geometric distribution. Calculate the moments of the distribution.
14. Define negative Binomial distribution calculate non central and central moments.
15. Give the properties of Negative Binomial, geometric and hyper geometric distributions.
16. Show that for a negative binomial distribution mean < variance for $r=5$, $p=q=1/2$.
17. Show that geometric distribution is a particular case of negative binomial distribution for $r=1$.
18. Show that Poisson distribution is limiting case of negative binomial distribution.
19. Physical conditions of Hyper geometric distributions.

Unit - III:

20. What are the chief characteristics of normal distribution?
21. Show that normal distribution is a symmetrical distribution. or Area Property
22. Define Rectangular distribution calculate non central and central moments.
23. Properties of Rectangular or Uniform distribution.
24. Properties and moments of Normal distributions
25. If $X \sim N(12, 16)$ find (i) $P(X \geq 20)$ (ii) $P(X \leq 20)$ (iii) $P(0 \leq X \leq 12)$.
26. Under what conditions binomial distribution tends to normal distribution.

27. Define standard normal distribution.

Unit - IV:

28. Define gamma distribution. Find Skewness and kurtosis. And also moments.
29. Define beta distribution of first kind. Find its mean and variance.
30. Define exponential distribution. Find skewness and kurtosis. And also moments
31. Define beta distribution of second kind. Find its mean and variance.
32. Define Cauchy distribution. State and prove its additive property.
33. Definitions of all continuous distribution with Pdf.
34. State and prove lack of memory property of exponential distribution.
35. Properties of Gamma Exponential Uniform distributions.
36. Define convergence in law, also WLLN and SLLN.
37. Define central limit theorem for i.i.d variables
38. Define standard Cauchy distribution.

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