B.Sc. DEGREE EXAMINATION,NOVEMBER 2018
II Year III Semester
Core Major - Paper V
DISTRIBUTION THEORY - II

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. Define two- parameter gamma distribution.
2. Define Cauchy distribution.
3. Give the p.d.f of Weibull distirbution.
4. Define two- parameter Laplace distribution.
5. What do you mean by a χ^2 variate?
6. Give the mode of χ^2 distribution.
7. Write down the p.d.f. of t-distribution.
8. Define F-distribution.
9. Define order statistics.
10. Give the pdf of r^{th} order statistic.
11. Write the mean and variance of Exponential distribution.
12. Write down the m.g.f. of one- parameter gamma distribution.

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. Derive the m.g.f. of Exponential distribution.
14. Derive the characteristic function of two- parameter Laplace distribution.
15. Derive the m.g.f. of χ^2 distribution.
16. Give the application of t-distribution.
17. Let $X_1, X_2, ..., X_n$ be a random sample from a population with continuous density. Show that $Y_1 = min(X_1, X_2, ..., X_n)$ is exponential with parameter $n\lambda$ if and only of each is exponential with parameter λ.
18. State and prove the additive property of gamma distribution.
19. Derive the mean and variance of the χ^2 distribution.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Derive the mean and variance of Beta distribution of first kind.
21. Derive the m.g.f of logistic distribution and hence find its mean and variance.
22. Obtain the p.d.f. of χ^2 distribution using the method of m.g.f.
23. Establish the relationship between t, F and χ^2 distribution.
24. Derive the cumulative distribution function of a single order statistic.

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