**B.Sc. DEGREE EXAMINATION, NOVEMBER 2015.**

**II YEAR — III SEMESTER**

**Major Paper V — DISTRIBUTION THEORY - II**

**Time : 3 hours Max. Marks : 60**

**SECTION A — (10 × 1 = 10 marks)**

**Answer any *TEN* questions.**

1. What is the variance of Gamma Variate?
2. Give the MGF of Exponential distribution.
3. Define mean of Log-Normal distribution.
4. Write the probability density function of Weibull distribution.
5. Give the characteristic function of Chi-square distribution.
6. What do you understand by sampling distribution?
7. Give the variance of t-distribution.
8. Write a note on F-distribution curve.
9. Define 1st order statistics.
10. Give the definition of Sth order statistics.
11. Write the p.d.f of Beta distribution of 1st kind.
12. Give the c.d.f of Logistic distribution.

**SECTION B — (5 × 4 = 20 marks)**

**Answer any *FIVE* questions.**

1. Explain Cauchy distribution.
2. Obtain the M.G.F of Logistic distribution.
3. Prove that if $X\~x\_{(n)}^{2}$, then $\frac{1}{2}X\~γ(1/2 n)$.
4. Find the variance of the t-distribution with n degrees of freedom.
5. Let X1,X2,…,Xn be i.i.d non-negative random variables of the continuous type with p.d.f f(.) and distribution function F(.). If E|X| < ∞, show that E|X(r)|< ∞.
6. If X is a Gamma variate with parameter λ, obtain its M.G.F.
7. Obtain the characteristic function of Cauchy distribution.

**SECTION C — (3 × 10 = 30 marks)**

**Answer any *THREE* questions.**

1. What are the properties of Gamma distribution?
2. If X~N(0, σ2), obtain the distribution of ex. Find out the mean of the distribution.
3. Prove that ns2/ σ2 is distributed like χ2 with (n-1) degrees of freedom, where s2 and σ2 are the variance of sample (of size n) and the population respectively.
4. If X1,X2,…,Xm, Xm+1,…,Xm+n are independent normal variates with zero mean and standard deviation σ, obtain the distribution of $\sum\_{i=1}^{m}X\_{i}^{2}/\sum\_{i=m+1}^{m+n}X\_{i}^{2}$.
5. Show that for a random sample of size 2 from N(0, σ2) population.

 E[X(1)] = $-σ/\sqrt{π}$.

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