LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **STATISTICS**

SECOND SEMESTER – **APRIL 2019**

16/17/18UST2MC01– CONTINUOUS DISTRIBUTIONS

Date: 02-04-2019 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

PART-A

Answer ALL the questions: **[10 x 2 =20]**

1. Define marginal p.d.f. from joint p.d.f.
2. Obtain mean of uniform distribution over [a,b].
3. State the probability density function of Normal distribution.
4. X is a Normal variate with mean 30 and standard deviation 5. Find P[X≥ 45].
5. Write short notes on the normal curve.
6. State the additive property of Gamma distribution.
7. Define t – distribution from Normal and chi- square distributions.
8. Define Beta distribution of I find.
9. Define r^{th} order statistic
10. State central limit theorem.

PART –B

Answer any Five questions **[5 x 8 = 40]**

11. Let $f(x,y) = 21\, x^2y^3$, $0<x<y<1$; 0 elsewhere be the joint p.d.f. of (X, Y). Find $E(X \mid Y = y)$
12. Obtain MGF of Normal distribution.
13. Obtain mean of Beta distribution of first kind.
14. Obtain the median of Cauchy distribution.
15. If $X \sim U(U, 1)$ find the distribution of $Y = -2\, log_e X$.
16. For normal distribution $N(\mu, \sigma^2)$ show that all odd order central moments are zero.
17. Give the probability density function of exponential distribution and obtain its MGF.
18. Obtain the relationship between t and F distributions.

PART-C

Answer any TWO questions **(2 x 20 = 40]**

19. If $X \sim Gamma(\lambda)$ and $Y \sim Gamma(\mu)$, find the joint p.d.f of $U = X + Y$ and $V = \frac{X}{X+Y}$ and show that U and V are independent.
20. Show that one parameter gamma distribution tend to normal distribution.
21. Obtain the density function of F distribution.
22. State and prove Lindberg-Levy central limit theorem for i.i.d random variable

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