

B.N. Bandodkar College of Science, Thane
S.Y. B.Sc. Second Term end Examination 2012

Statistics Paper I

Duration 2 hrs

Max Marks-60

N.B. 1) All Questions are compulsory.
 2) Figures to right indicate marks.

- Q.1) a) Obtain an expression for c.d.f. of exponential distribution. Hence evaluate its median. 3
- b) Attempt any **THREE**
- 1) Obtain the variance of a rectangular distribution over the range (a, b). 4
- 2) Write down expression for p.d.f. of t variate with n degree s of freedom Also obtain the distribution of t^2 . 4
- 3) State and prove additive property of gamma variates. 4
- 4) Define the terms confidence interval and confidence coefficient. 4
- 5) Explain Chi square test for goodness of fit. 4
- Q2) a) If r. v. X. follows β distribution of second kind. Obtain an expression for its arithmetic and harmonic mean. 7
- b) Attempt any **ONE**
- 1) Define generalized Cauchy variate. Obtain its median and mode. 8
- 2) Define Gamma variate. Obtain expression for its moment generating function hence evaluate its first four moments. 8
- Q 3) a) State and prove central limit theorem. 7
- b) Attempt any **ONE**
- 1) Obtain an expression for (with usual notation) μ_{2r} for normal distribution, hence find μ_2 and μ_4 . 8
- 2) Define lognormal variate. State its properties and prove any one. 8
- Q.4) a) Obtain 100 (1 - α) % confidence interval for population mean μ and population variance σ^2 when sample size is small. 7
- b) Attempt any **ONE**
- 1) Show that F curve is positively skewed curve after deriving necessary results. 8
- 2) Define Chi-square variate with n.d.f. Obtain an expression for its m.g.f. Hence evaluate its mean and variance. 8

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