SSR Degree and PG College (Autonomous)
Department of Statistics
Sem-III Important Questions

UNIT - 1

SHORT QUESTIONS

1. Define exponential family of distribution?

2. Define consistent estimator? with an example?

3. Define unbiased estimator with an example?

4. Define median and modal unbiased estimator?

5. Show that Cauchy distribution doesn't possess exponential family distribution.

6. Show that Bernoulli distribution belongs to exponential family distribution.

ESSAY TYPE QUESTIONS

1. Show that binomial distribution belongs to exponential family distribution?

2. Show that Normal distribution belongs to exponential family distribution?

3. Show that Gamma distribution belongs to exponential family distribution?

4. Show that sample mean is a consistent estimator of population mean in normal population?

5. Show that sample variance is a consistent estimator of population variance?

6. Show that sample mean is an unbiased estimator of population mean in normal population?

7. Explain the criteria of good estimator?

UNIT - 2

SHORT QUESTIONS

1. Define sufficiency?

2. Define likelihood function and Neyman-Fisher criterion?

3. Find sufficient statistic for Poisson distribution?

4. Define Method of Moments?

5. Define interval estimation?

6. Define principle of least squares?

7. Find the estimator of p in binomial distribution?

ESSAY TYPE QUESTIONS

1. Derive the sufficient statistic for p in binomial distribution?

2. Derive the sufficient statistic for (μ,σ^2) in Normal distribution?

3. Define Maximum Likelihood Estimator, write its conditions and properties?

4. Obtain MLE for (a) μ when σ^2 is known (b) σ^2 when μ is known (c) simultaneous estimation of μ and σ^2.

5. Obtain MLE for λ in Poisson distribution?

6. Obtain MLE for p in Binomial distribution?

7. Define one parameter exponential family distribution.

UNIT - 3

SHORT QUESTIONS

1. Define Hypothesis with examples.
2. Define Null and Alternate hypothesis with examples.
3. Define Type-I & Type-II errors?
4. Write the procedure of Testing Hypothesis?
5. Define One-tailed and Two-tailed tests?
6. Explain the Role of Normal distribution in Large Sample Tests?
7. Explain the procedure of test for single mean?
8. Problems based on Large Sample Test procedures.

ESSAY TYPE QUESTIONS

1. State and prove Neyman-Pearson theorem.
2. Explain the procedure for test for single proportion?
3. Explain the procedure for single and two standard deviations?
4. Obtain best critical region for H0:P=P0 against H1:P=P1 in binomial population.
5. Obtain best critical region for H0: $\lambda=\lambda 0$ against H1: $\lambda=\lambda 1$ in Poisson distribution.
6. Obtain best critical region for Normal distribution.
7. Various problems based on single and two (mean, proportion and standard deviation).

UNIT - 4

SHORT QUESTIONS

1. Explain the test procedure for paired t-test?
2. Explain the test procedure for single mean in t-test?
3. Define Non-parametric Tests? And its advantages?
4. Distinguish between parametric and Non-parametric Tests?
5. Explain the Sign Test for Single Sample?
6. Define Run. Explain the procedure for one sample Run Test?
7. Problems based on Small Sample Tests.

ESSAY TYPE QUESTIONS

1. Explain t-test for two independent samples?
2. Explain Test for equality of Variances?
3. Explain Chi-square test for independence of Attributes?
4. Explain the Chi-square Test for goodness of fit?
5. Explain Wilcoxon Sign Rank Test for 2 samples?
6. Explain Median test for two samples?
7. Explain Mann-Whitney U Test?
8. All problems.