SRI VENKATESWARA UNIVERSITY : TIRUPATI
STATISTICS SYLLABUS (II YEAR)
Semester – IV (CBCS With Maths Combination Common to BA/BSc)
Paper – IV : Statistical Inference
W.E.F. 2016 - 17

UNIT - I

Estimation : Estimate and Estimator, Point Estimation and Interval Estimation, Criteria of good estimators: Unbiasedness, Consistency, Efficiency and Sufficiency, with examples, Statement of Neymann Factorization theorem. Estimation methods: Method of Maximum likelihood estimation, Method of moments and its properties with examples. Interval Estimation: Confidence limits for mean μ and variance σ^2.

UNIT - II

Testing of Hypothesis: Hypothesis, Null hypothesis and Alternative Hypothesis, Simple and composite hypothesis, Critical region, One tailed and Two tailed tests, Two Types of Errors, Level of significance, Power of the test and simple problems, Neyman Pearson's Lemma, problems in case of Binomial Distribution, Poisson Distribution and Normal Distribution.

UNIT - III

Large Sample Tests: Single Mean and Difference between Two means test, Single proportion and Difference between Two proportions test, Difference between Two Standard Deviations test, Fisher's Z- Transformation: Single correlation coefficient and Difference between Two correlation coefficients and problems.

UNIT - IV

Small Sample Tests: Single mean test and Difference between Two means test, Paired t- test. F - test. χ^2 – test: Single variance test, Goodness of fit of B.D and P.D, 2X2 contingency test , Independence of attributes test and problems.

UNIT – V

Non-Parametric Test: Definition, Assumptions, Advantages, disadvantages, Uses, Sign test for one and two samples one and two samples, Run test for, Wilcoxon's signed rank test , Median test for two samples only, Mann Whitney U – test and problems.

Reference Books:

1. Fundamentals of mathematical statistics: S.C.Guptha and V.K. Kapoor

2. Outlines of statistics, Vol II: Goon Guptha, M.K.Guptha and Das Guptha B

3. Introduction to mathematical Statistics : Hoel P.G

4. Statistical methods and inference B.A.,/B.Sc., II year statistics - Telugu Academy

5. Statistics Made Simple Do it yourself on PC By K.V.S. Sarma

6. Applied Statistics with Microsoft Excel By Gerald Keller

Practical Paper – IV : Statistical Inference

1. Single mean test for Large samples.

2. Difference between two means test for Large samples

3. Difference between two standard deviations test for Large samples

4. Single Proportion test for Large samples

5. Difference between two Proportions test for large samples

6. Single Correlation coefficient test for large samples

7. Difference between two Correlation coefficients test for large samples

8. Single mean test for Small samples

9. Difference between two means test for small samples

10. Paired t- test

11. F-Test or Difference between two variances test for small samples

12. $\chi^2 -$ Test for single sample variance

13. $\chi^2 -$ Test for goodness of fit of B.D

14. $\chi^2 -$ Test for goodness of fit of P.D

15. $\chi^2 -$ Test for independence of attributes

16. Sign test

17. Run test

18. Median test

Note : The above practical are to be done using M S Excel and SPSS Package where ever it is possible

THREE YEAR B.A. / B.Sc., DEGREE EXAMINATION

CBCS – Fourth Semester

Part - II - STATISTICS (WM) Paper IV: Statistical Inference

New syllabus w.e.f. 2015 – 16

MODEL PAPER

Max. Marks: 75   **Times: 3 Hours**

PART - A

Answer any **FIVE** questions. **Each** question carries equal marks   5x5=25 marks

1. Show that Sample mean is always an U.B.E of Population mean.
2. Explain the concept of M.L.E.
3. Explain briefly i) Simple Hypothesis ii) Composite Hypothesis with suitable examples.
4. Explain briefly i) Null and Alternative Hypothesis and ii) Critical Region.
5. A coin is tossed at random 400 times and head turns up 240 times. Can the coin be regarded as unbiased?
6. Explain the test procedure for paired t-test.
7. χ^2 - test for 2x2 contingency table.
8. Advantages and Disadvantages of Non-Parametric Tests.

PART - B

Answer ALL questions, each question carries equal marks   5x10=50 marks

UNIT - I

9. Explain the criteria's of good estimator with examples.

OR

10. Find $100(1-\propto)\%$ Confidence intervals for the parameters i) μ and ii) σ^2, of the normal distribution.

UNIT - II

11. State and Prove NP-Lemma.

OR

12. Discuss the terms with suitable examples i) Type-I error   ii) Type- II error   iii)power of the test.

UNIT - III

13. Describe the test procedure for single and two sample proportions.

OR

14. Describe the test procedure for single and two sample Means.

UNIT - IV

15. χ^2 - test for Independence of attributes.

OR

16. The heights of six randomly chosen sailors are in inches: 63, 65, 68, 69, 71, 72. Those of 10 randomly chosen soldiers are 61, 62, 65, 66, 69, 69, 70, 71, 72, 73. Discuss in the light that these data throw on the suggestion that sailors are on the average taller than soldiers.

UNIT - V

17. Describe Run test for two samples also for large case.

OR

18. Elucidate two samples median test.