

THE OPENUNIVERSITY OF SRI LANKA
B.Sc./B.Ed. Degree Programme, Continuing Education Programme
APPLIED MATHEMATICS – LEVEL 05
APU 3147/ APE 5157 Statistical Inference
No Book Test - 2015/2016



Duration: One Hour.

Date: 30-10-2016

Time: 9.00 a.m. to 10.00 a.m.

Non programmable calculators are permitted. Statistical tables are provided.

Answer all questions.

(1)

Past experience has indicated that the time required for a beginner to become proficient with a particular function of new software product has an approximately normal distribution. Time taken to become proficient with this particular function of new software product for 15 randomly selected beginners are given below.

67.33	66.26	61.51	54.25	62.96
56.32	59.04	62.74	51.24	55.02
63.86	57.51	65.48	52.39	66.65

- (i) Construct a 95% confidence interval for the variance of time required for a beginner to become proficient with the particular function of new software product. Interpret your results.
- (ii) Construct a 95% confidence interval for mean time required for a beginner to become proficient with the particular function of new software product. Interpret your results.
- (iii) Test the validity of the claim that “the mean time required for a beginner to become proficient with the particular function of new software product is one hour”. Use a 5% significance level.

(2)

An experiment is conducted to determine whether the intensive tutoring that covers a great deal of material in a fixed amount of time is more effective than paced tutoring that covers less material in the same amount of time. Two randomly chosen groups are tutored separately and then proficiency tests are administered. Marks out of 100 for the proficiency tests are given below. Assume that marks of both methods follow normal distributions with equal variance.

Intensive tutoring	47	52	49	49	48	52	47	53	47	44		
Paced tutoring	55	54	50	54	50	54	52	53	55	56	50	54

- (i) Conduct a suitable statistical test to comment on the statement that "Both tutoring methods are equally effective". Use a 5% significance level.
- (ii) Clearly state the conclusions of the statistical test conducted in part (i) and comment on the given statement.

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