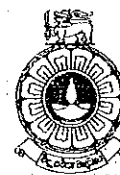


THE OPEN UNIVERSITY OF SRI LANKA
 B.Sc./B.Ed. Degree Programme, Continuing Education Programme
 APPLIED MATHEMATICS – LEVEL 05
 ADU5305/ ADE5305 Statistical Inference
 No Book Test - 2017/2018



Duration: One Hour.

Date: 02-02-2019

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

Non programmable calculators are permitted. Statistical tables are provided.

Answer all questions.

1.

Mathematics marks and Science marks of the year end examination in grade 10-B students in ABC school are given below. According to past experience Mathematics marks and Science marks follow normal distribution. The sectional head of the grade 10 classes claims that “performance of Mathematics is higher than the performance of Science in grade 10-B students”. Using a suitable statistical test justify the claim given by sectional head of the grade 10 classes.

Student No	Mathematics marks	Science marks
111A	100	100
112A	65	72
113A	51	56
114A	29	34
115A	45	31
116A	62	79
117A	65	60
118A	53	61
119A	17	7
120A	35	23

Student No	Mathematics marks	Science marks
121A	31	35
122A	0	5
123A	9	14
124A	100	96
125A	32	33
126A	0	3
127A	65	69
128A	83	71
129A	34	69
130A	14	23

(50 marks)

2.

According to past experience a company that produces a certain electrical product claims that the life time X (in years) has a normal distribution with unknown mean and variance. A sample drawn from the above distribution is given below.

8.16 11.50 7.28 10.07 12.90 11.01 11.11 8.27 11.65 9.68 11.46 6.26 10.39
8.05 10.48 14.62

- (i) Find 95% confidence interval for mean lifetime of a randomly selected electrical product.
- (ii) Find 90% confidence interval for variance lifetime of a randomly selected electrical product.
- (iii) Using a suitable statistical test comment on the claim that “mean lifetime of a randomly selected electrical product exceeds 10.5 years”.

(50 marks)