

Eastern University, Sri Lanka

Second Year First Semester Examination in Agriculture 2005/2006

CSC 2103: Introductory Statistics

Allowed time: Two hours

Answer all Questions

1. An experiment was conducted to study the effect of three chemicals on dwarf plants. This experiment was laid out in a complete random arrangement. The measured variable was leaf length (cm) and was recorded as follows.

Chemicals	Leaf length (cm)				
	R1	R2	R3	R4	R5
A	8.5	7.4	7.5	8.5	9.5
B	4.0	5.8	5.1	5.8	5.7
C	10.0	7.7	8.1	9.8	11.0
D (control)	9.9	9.6	10.5	9.9	8.0

$$\Sigma x = 162.3$$

$$\Sigma x^2 = 1391.91$$

- a) State the null and alternative hypothesis for the above experiment.
b) Construct the ANOVA table for this experiment.
c) Interpret your results at $p=0.05$.
2. The profits made by farmers growing vegetables in two locations are given below.

Profits (1000 Rs/ac)							
Locality A	3.0	2.5	2.7	3.2	2.1	1.9	2.8
Locality B	2.7	3.4	3.8	2.9	4.0	4.5	2.6

- a) Mention the three types of t - test problem based on significance of the mean.

- b) Is there significant difference in profit between the two localities?
 c) Determine the 95% confidence limits for the mean difference in profit between the two localities

3. The following frequency table for the girth (cm) of a random sample of 40 trees of a particular age.

Girth (cm)	Frequency
47-49	5
50-52	8
53-55	8
56-58	8
59-61	3
62-64	7
65-67	1

- a) Construct a histogram.
 b) Find the mean girth standard deviation and variance of the girth of 40 trees.
 c) Determine the percentage of the girth, which falls within the range 50-55 cm.
4. a) Define Contingency table.
 b) The following table shows in random sample of house classified by region and type. Does this type of housing vary between regions?

Contingency table for housing and regions

	Detached	Semi detached
West	17	41
South	70	99

- i) Find the expected frequencies.
 ii) Does the type of housing vary between regions?