



Eastern University, Sri Lanka

Second Year First Semester Examination in Agriculture 2005/2006

External Degree

CSC 2103: Introductory Statistics

Allowed time: Two hours

Answer all Questions

1. In an experiment, each of 100g soil samples A, B, C and D were dried to determine the water holding capability of four soils. The following readings were recorded in a complete random manner.

Soil	Water Holding Capacity					
	R1	R2	R3	R4	R5	R6
A	13	13	11	12	09	10
B	08	10	04	08	06	07
C	10	11	09	04	11	06
D	16	08	15	10	08	10

- a) Determine the sample mean for each sample soil.
b) Construct the ANOVA table for this experiment.
c) Interpret your results at $p=0.05$.
2. a) Define the term Contingency table.
b) Oral tests are conducted by two examiners separately. The numbers of candidates in the categories pass and fail shown in the following contingency table.

Contingency table

	<u>Examiner A</u>	<u>Examiner B</u>
Pass	31	38
Fail	29	20

- i) Find the expected frequencies for the above data.
- ii) State the null hypothesis and alternate hypothesis for the above experiment.
- iii) Interpret your result at $P=0.05$.

3. The following Table is a frequency table for the number of words in a sentence for a paragraph in a book.

Number of words	Number of sentences
05-09	09
10-14	10
15-19	08
20-24	11
25-29	08
30-34	04
35-39	04
40-44	01
45-49	01

- a) Construct a histogram to demonstrate the distribution of number of words.
 - b) Find the mean, standard deviation and variance of the distribution.
 - c) Determine the percentage of the words, which falls within the range 15-29 words.
4. In an investigation of the environmental factors controlling the performance of grass a number of vegetative and reproductive attributes were measured for a random sample of ten flowering shoots from a population. Among these attributes were length of the upper most leaf (including sheath) and length of the inflorescence spike. The results were as follows.



Leaf (cm)	Spike (cm)
23.4	09.8
22.0	09.5
25.0	12.2
18.1	08.3
18.9	09.5
20.5	09.2
19.1	08.5
27.5	12.1
21.6	10.4
14.3	05.5

- Draw a scattered diagram of the above data.
- Find the equation of the regression line of y on x .
- Fit the regression line.
- Test the significance of the regression coefficient at $P=0.05$.