Uva Wellassa University

End Semester Examination – August/September 2011

SCT 103-2 Applied Statistics

One (01) hour

Uva Wellassa University

Answer all questions

Part C: Essay Questions

1. The BNS supermarket offers an internet shopping service to its customers. They recently conducted a survey amongst their customers to find out if *full-time employed* customers are more likely to use the internet shopping facility than *at- home* customers. Their survey findings are summarized in the table 01.

Table 01: Use of internet shopping facility

Employment Status	Use Internet shopping facility	
	Yes	No
Full-time	35	105
At-home	40	175

At the 5% significance level, is employment status and the use of internet shopping facility statistically dependent? What conclusion can be drawn?

[20 marks]

2. An Orange grower has several hundred orchards that were replanted this year. He suspects that many of the new trees have a root disease. The nursery has agreed to reimburse the growers for the trees that are diseased. The disease only can be detected by digging up the tree, which will kill the tree. The highest known proportion of trees to have this disease is 5% and 90% confidence interval of the proportion of trees have this disease is (0.039, 0.061).
How many trees must be dug up?

[15 marks]

3. A car is made in three versions: 2-door, 4-door and hatchback. The proportion of the three types versions are 25%, 40% and 35% respectively. Each version of the car has either a 1400 cc engine or a 1600 cc engine. Of the 2-door version, 70% have 1400 cc engines. The proportions for the 4-door and hatchback versions are 40% and 35% respectively. The association of car makers decides to choose an owner at random to receive a prize of free car servicing for the lifetime of the car.

   i. Determine the probability that the owner's car has a 1400 cc engine.

   ii. If randomly selected owner has a 1600 cc car, find the probability that the car is a 2-door car.

   iii. The association has selected 5 owners, find the probability that at least 2 of their cars have 1400 cc engine.

[15 mark

(31)