Uva Wellassa University, Sri Lanka
Faculty of Science and Technology
Science and Technology Degree Program
2nd Semester Examination – September / October 2013

SCT 372-1 Mini Project

Number of questions: One (01)
Answer all parts
Time allocation: One (01) hour
Total marks allocated: 100

1. You are required to design a land mine detector robotic vehicle.

Problem Statement

The robot should possess following requirements.

The robot should be able to;

- detect objects on the field
- detect the depth to the mine.
- send information about the identified mines to a computer within 10 m distance.

a. What are the sensors/devices that can be used to detect mines and its depth? Give reasons for your selection.

(15 marks)

b. What are the sensors/devices that can be used to detect objects on the field? Give reasons for your selection.

(15 marks)

c. Suggest a method for data transmission between the robot and the computer located in 10 m distance.

(20 marks)

d. Suggest a method to navigate the robot on the mine field. Justify your answer.

(10 marks)

e. Suggest a design considering following parts of the robot. You may include the shape and the material. Give reasons for your selection

i. wheels
ii. robot chassis

(20 marks)

f. Draw a flow chart to describe the control procedure of the mine detector.

(20 marks)