Uva Wellassa University, Sri Lanka

End Semester Examination – February/March 2012

SCT 445-2 Semiconductors and Nanomaterials

Duration: Two (02) hours

Uva Wellassa University

Total five (05) questions
Answer **all** questions
Please write answers for **Part A** in the space provided
Use a booklet to answer **Part B**

Part B

4.i). Define the term semiconductors. Discuss the importance of semiconductors in the industrial applications and the essential physical properties of these materials.

ii). Write four semiconductors widely used in semiconductor devices.

iii). Categorize transistors, diodes, microprocessors, RAM, solar cell, MOSFET as two terminal, three terminal and multi terminal devices and explain the way they work. Use the required equations, diagrams and graphs for your answer.

(100 marks)

5.i). Describe Band theory of solids and use that to explain doped semiconductors. Give band diagrams of intrinsic semiconductors, n-type semiconductors and p-type semiconductors.

ii). Explain the following.

a. Carrier mobility
b. Drift velocity
c. Conductivity
d. Hall effect

iii). Give six main factors that affect on carrier mobility and explain them.

(100 marks)