



The Open University of Sri Lanka
Department of Electrical and Computer Engineering

ECX3163 – Introduction to computing

Final Examination 2011/2012

Closed Book Test

Date: 26th November 2011

Time: 09.30-12.30

Answer question 1 and two other questions. Write your answers clearly.

Part A – 50 marks

- Q1. *Aascharya International University is to open a new branch at Hambanthota. You are appointed as an advisor in setting up computer lab(s). The University expects to start with two faculties, Management and Information Technology. The expected annual intake is about 50 students per Faculty.*
- a) Describe briefly 5 purposes each that students of each faculty may use the computer lab.
 - b) How many computer labs do you propose? Justify your answer.
 - c) How many computers do you propose to purchase for each lab? Justify your answer.
 - d) What are the main hardware that you propose for a computer at each lab? Describe types/ specifications for six main items, and list another four.
 - e) What are the main software necessary for above purposes? Describe briefly.
 - f) Three additional machines should be acquired for the use of the Director and Staff. Describe any change of specifications (both hardware and software) for these machines compared to c) and d).
 - g) A general purpose computer needs to be upgraded after about 3 - 5 years. What are five main components most likely to be replaced within 5 years? Give the reasons for your choices.
 - h) You intend to install the new components in the lab(s), with the help of the students. Give three important practical precautions to take when upgrading a computer.
 - i) Describe briefly the steps to follow when installing an additional hard disk and making it ready for use.

Part B – 25 marks each – Answer any 2 questions

Q2. Solve the following. Write all relevant intermediate steps.

- a) Convert $34C_{16}$ to a decimal value.
- b) Convert 122.125_{10} to a binary value.
- c) Perform the following binary operations.
 - i) $1110101_2 \times 1111_2$
 - ii) $1010111_2 \div 1100_2$
- d) Find the value of m if $253_m = 300_{10}$
- e) Subtract 2 from -4, using two's complement representation. $[(-4) - (+2)]$

Q3. a) You are to write an algorithm to find the largest values out of four numbers. You may assume that these numbers are integers. State any other assumptions you may make.

Present your algorithm with a flowchart using standard shapes.

- b) In the course ITE3269 offered by the university the students take part in four activities. All activities are given marks out of 100, and the continuous assessment (CA) is calculated by averaging the marks of 3 best activities. (Average of 3 highest marks) Use your flowchart from above to calculate and present the CA marks for the 30 students who are enrolled to ITE3269 this year.

Q4.

- a)
 - i. What are the three main addressing modes used at processor level programming?
 - ii. Use three suitable examples to describe each of those modes.
- b)
 - i. What are the two main types of software?
 - ii. Describe two main tasks for each of the two types.
- c)
 - i. What are the three main levels of programming languages?
 - ii. Describe the differences of these levels.
- d)
 - i. Compare Bottom-up and Top-down programming methodologies.