



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

### ECX3163 – Introduction to computing

Final Examination 2010/2011

Closed Book Test

Date: 20<sup>th</sup> November 2010

Time: 09.30-12.30

Answer *question 1* and *two* other questions. Write your answers clearly. Write all relevant intermediate steps if answering question 2.

#### Part A – 50 marks

- Q1. **Chinthana International School** is to open a new branch at Hambanthota. You are appointed as an advisor in setting up the computer lab. The School expects to cater for about 125 students initially, studying in English medium, from grade 6 and leading up to GCE Ordinary Level.
- Describe briefly 5 purposes that students may use the computer lab.
  - How many computers do you propose to purchase for the lab? Justify your answer.
  - What are the main hardware that you propose for a computer at the lab? Describe types/ specifications for six main items, and list another **four**.
  - What are the main software necessary for above purposes? Describe briefly.
  - Three additional machines should be acquired for the use of the Principal and Staff. Describe any change of specifications (both hardware and software) for these machines compared to c) and d).
  - 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.
  - Give **three** important precautions to take when upgrading a computer.

#### Part B – 25 marks each

- Q2.
- Convert  $25B_{16}$  to a decimal value.
  - Convert  $112.125_{10}$  to a binary value.
  - Perform the following **binary** operations.
    - $1101101_2 \times 1111_2$
    - $1010111_2 \div 1100_2$
  - Find the value of  $m$  if  $253_m = 136_{10}$
  - Subtract 2 from -4, using two's complement representation.  $\{(-4) - (+2)\}$

- Q3. a) You are to write an algorithm to find the largest and smallest 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) What are the three main addressing modes used at processor level programming?
- b) Use three suitable examples to describe each of those modes.
- c) What are the two main types of software?
- d) Describe two main tasks for each of the two types.
- e) What are the three main levels of programming languages?
- f) Describe the differences of these levels.