



ECX3163 – Introduction to computing

Final Examination 2013/2014

Closed Book Test

Date: 06th April 2014

Time: 09.30-12.30

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

Part A – 50 marks

- Q1. The Open University is to open a Provincial Campus at Hambanthota. You are appointed as an advisor in setting up computer lab(s).
The Campus expects to cater with three programs: English, Law, and Information Technology. The expected annual intake is about 50 students per program.
- Describe briefly 5 purposes each that students of each program may use the computer lab.
 - How many computer labs do you propose? Justify your answer.
 - How many computers do you propose to purchase for each lab? Justify your answer.
 - 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**.
 - What are the main software necessary for above purposes? Describe briefly.
 - 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).
 - 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.
 - 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.
 - 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 $25B_{16}$ to a decimal value.
- b) Convert 125.625_{10} to a binary value.
- c) Convert 1100111100101_2 to a hexadecimal value.
- d) Perform the following **binary** operations.
 - i) $1010101_2 \times 1111_2$
 - ii) $1010111_2 \div 1100_2$
- e) Find the value of m if $254_m = 410_{10}$
- f) 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 **ITE3169** 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 a) to calculate and present the CA marks for the 50 students who are enrolled to **ITE3169** 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.
 - ii. Describe and compare the two main methods of disk space allocation.