

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



ECX3163 – Introduction to computing

Final Examination 2014/2015

Closed Book Test

Date: 04th April 2015

Time: 09.30-12.30

Answer questions 1 and 2 (Part A) and two other questions (from Part B). Write your answers clearly.

Part A – 60 marks

- Q1. The Open University is to open a Regional Centre at Polonnaruwa. You are appointed as an advisor in setting up computer lab(s) at this new regional centre. The Campus expects to cater with three programs: English, Law, and Information Technology. The expected annual intake is about 50 students each for Law and IT programs, and 100 for the English programme.
- 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.
 - What are the main software necessary for each lab? Describe each item briefly.
 - A general purpose computer needs to be upgraded after about 3 - 5 years. Name **four** main hardware components most likely to be replaced within 5 years. Give the reasons for your choices.
 - You intend to install the new components to the computers in the lab(s), with the help of the students. Give **three** important practical precautions to take when upgrading a computer.
 - What about software upgrades? What are the main concerns regarding software?
 - Describe briefly the steps to follow when installing an **additional** hard disk and making it ready for use.

(40 marks)

- Q2. You are to write an algorithm to find any prime numbers out of **five** numbers that are fed into the system. Present your algorithm with the help of a flowchart. *You may assume that these numbers are integers between 1 and 25. One is not a prime. State any other assumptions you may make.*

(20 marks)

Part B – 20 marks each – Answer any 2 questions

- Q3. Solve the following. Write all relevant intermediate steps.
- Convert $24C_{16}$ to a decimal value.
 - Convert 125.375_{10} to a binary value.
 - Convert 1100111101001_2 to a hexadecimal value.
 - Perform the following **binary** operations.
 - $1010101_2 \times 1011_2$
 - $1100011_2 \div 1100_2$
 - Find the value of m if $249_m = 399_{10}$
 - Subtract 5 from 2, using two's complement representation. [2 – 5]
- Q4. a) You are to write an algorithm to sort **four** numbers according to their value. You may assume that these numbers are positive integers. State any other assumptions you may make.
- Present your algorithm with a flowchart using standard shapes.
- b) In the course **ITE3166** 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 **ITE3166** this year.
- Q5.
- What are the three main addressing modes used at processor level programming?
 - Use three suitable examples to describe each of those modes.
 - What are the two main types of software?
 - Describe two main tasks for each of the two types.
 - What are the three main levels of programming languages?
 - Describe the differences of these levels.
 - Name and describe briefly 2 insider threats and 2 outsider threats respectively to computer security.
 - Describe briefly 5 measures to ensure computer security.