(1)

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

070

EEX3363 – Introduction to computing
EEX3163
Final Examination 2017/2018 **Closed Book Test**

Date: 20th October 2018 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. A junior student who intends to follow this course next year comes to you seeking advice. She intends to put together a desktop computer for fulfilling requirements of 'Introduction to computing' course at home. As you have a thorough knowledge of this course, you start putting together a specification.

a) Describe briefly 5 main (educational) tasks of this course for which she can use this machine.

b) Write a specification for her computer so that it can handle all the above tasks. *Name the main hardware and/or Software only. You need not go into details here.*

c) Identify special software and any additional hardware that is needed for each of the above 5 tasks separately.

d) Describe types/versions and approximate cost for **six** main hardware items and for **four** main software from above specification. *(3-4 sentences for each)*

e) After about a year she returns, complaining that the machine is running short of storage space and needs to add another hard disk. Describe briefly the practical steps to follow when installing an ***additional*** hard disk and making it ready for use.

(40 marks)

Q2. In a card pack there are four suits – Spades, Hearts Clubs, and Diamonds. In a computer game, each player has to draw 5 cards from the pack. A Spade is worth 3 points, a Heart 2, a Diamond one point each, while a Club card brings no points. The system automatically detects suite of each card drawn, and the display screen provides updated information of the total points for each player after each draw. It displays the message "Your turn is finished" after 5 draws. It also displays the Winner final points tally for all payers once the game is over.

Draw a flowchart to describe an algorithm to facilitate the display using standard shapes.
You may start by considering a single player. State any assumptions you may make.

(20 marks)

Part B – Answer any two questions – 20 marks each

Q3. Solve the following. *Write all relevant intermediate steps*.

a) Convert $5A1B_{16}$ to the equivalent binary value.

b) Convert 113.375_{10} to the equivalent binary value.

c) Perform the following **binary** operations.

i) $1011101_2 \times 1111_2$ ii) $1010111_2 \div 1100_2$

d) Find the value of m given $234_m = 328_{10}$

e) Subtract 3 from 2, using two's complement representation. [2 – 3]

Q4. A system allows input of first 14 non-negative integers (0-13). The output for digits 0, 2, 5, 7, 8 and 13 is 'high' but is 'low' for all other digits.

a) Write the truth table for this system.

b) Simplify the resulting function using a Karnaugh Map.

c) Draw the circuit for the simplified function using standard gates.

Q5.

a) i. What is the function of a Compiler?

ii. Describe briefly in sequence, the 5 main phases of the compilation process.

iii. Describe the difference between a cross-compiler and a self-compiler.

b) i. What are the three main levels of programming languages?

ii. Describe the differences of these levels.

c) I What are the three main addressing modes?

Ii Describe briefly each of these modes, giving suitable examples.

d) i. Name and describe briefly 2 insider threats and 2 outsider threats respectively to computer security.

ii. Describe briefly 5 measures to ensure computer security.