THE OPEN UNIVERSITY OF SRI LANKA
B.Sc DEGREE PROGRAMME: LEVEL 04
CLOSED BOOK TEST: 2010/2011
CSU2178: DIGITAL COMPUTER FUNDAMENTALS

DURATION: ONE AND HALF HOURS (1 ½ HOURS)

Date: 25th April, 2011   Time: 4.00 pm – 5.30 pm

Answer ALL THREE Questions.

Q1.

   a. Briefly describe the following digital components.

         i. Multiplexer
        ii. De-multiplexer
       iii. Decoder

   b. Draw the logic circuit for the 4-to-1 Multiplexer used to implement the following function (F)

      The truth table for the function (F)

A	B	C	F
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

   c. Describe the differences between the *Sequential Logic* and *Combinational Logic*. (Use Block diagrams if necessary).

   d. Why do we use Clocks when cascading circuits? Describe the problem using *Clocked S-R flip flop* as an example.

Q2.

    a. What is *Computer Architecture*?

    b. Briefly describe about the *Von Neumann Model* using Block diagram and mention the uses of its five major components.

    c. What is understood by the *Upward Compatibility*?

    d. Describe four out of the seven levels of the Computer.

Q3.

    a. Describe about the *Memory Map* using an example Memory.

    b. What are the five steps in *Fetch Execute Cycle* (Steps that are carried out in executing a program by the Control Unit)?

    c. What are the differences among instruction sets used in different processors?

    d. By means of an example describe the *Assembly language statement* format.

          i. Describe the Four fields in an Assembly instruction.
          ii. Give five Assembly instructions used in RISC computer with their uses.