Exam.Code:0041
Sub. Code: 1003

2012

B.Sc. (Hons.) Bio-Informatics

Third Semester

BIN-3003: Computer Operational System and Organization

Time allowed: 3 Hours Max. Marks: 60

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

1. Attempt the following:-
   a) What is Register Transfer Language? What is its utility?
   b) Differentiate between combinational and sequential circuits.
   c) Differentiate between virtual memory and Cache memory.
   d) Differentiate between machine and assembly language.
   e) How many 128x8 RAM chips are needed to provide a memory capacity of 2048 bytes? How many lines of address bus must be used to access 2048 bytes of memory? How many of these lines will be common to all chips?
   f) Explain microinstruction format.
   g) What is PCI?
   h) What is meant by expansion slots?

(8x1.5)

UNIT-I

2. a) Describe the stored program concept.
   b) Design a 4-bit combinational circuit decrementer using four full-adder circuits.
   c) A digital computer has a common Bus system for 16 registers of 32 bits each. The Bus is constructed with multiplexers.
      i) How many selection inputs are there in each multiplexer?
      ii) What is the size of multiplexers are needed?
      iii) How many multiplexers are there in the Bus?

(04+05+03)

3. a) Explain with diagrammatic illustration the Von Neumann architecture.
   b) Explain the working of a RS flip-flop with a truth table and logic circuit.
   c) Construct 3x8 decoder with two 2x4 decoders.

(04+05+03)

4. a) Why RTL is preferred for describing internal organization of digital computers.
   b) Represent the following conditional control statement by two register transfer statements with control functions.

      If (p = 1) then (R1 ← R2) else if (Q = 1) then (R1 ← R3)

   c) What is pipelining? Explain instruction pipelining. Give its example also.

(04+04+04)

UNIT-II

5. a) What is subroutine? Write an assembly level program to demonstrate the use of subroutines.
   b) What is Associative Memory? Explain its working with the help of its block diagram and hardware organization. Also explain match logic in detail.

(05+07)

P.T.O.

6. a) Explain the process of DMA transfer in computer system.
   b) What do you mean by asynchronous data transfer? Differentiate between source and destination initiated transfer using handshaking.
   c) A computer uses RAM chips of 1024x1 capacity.
      i) How many chips are needed, and how should their address line be connected to provide a memory capacity of 1024 bytes?
      ii) How many chips are needed to provide a memory capacity of 16K bytes? Explain in words how the chips are connected to address bus.

(05+05+02)

7. a) What is virus? How we know that there is virus in PC? Discuss its detection and removal from PC.
   b) Name and describe most common display cards in PC.
   c) Give functional description of various internal cards of PC.

(04+04+04)

x-x-x