Printed Pages : 4

MCA215

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 214217

Roll No.

MCA

(SEM. II) THEORY EXAMINATION, 2014-15

COMPUTER ORGANIZATION

Time : **3** Hours] [Total Marks : **100**

Note: (1) Attempt all questions.

(2) All questions carry equal marks.

1 Attempt **any four** parts of the following: **5×4=20**

(a) Represent the following conditional control statement by two register transfer statements with control function:

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

then (R1 ← R3)

(b) What do you mean by high speed adder? Discuss design of high speed adders.

(c) Multiply (-13) and (-8) using Booth's multiplication.

(d) What do you mean by overflow? Describe the overflow detection.

(e) Discuss various shift micro-operations with examples.

(f) What do you mean by three-state bus buffer? Construct the bus using it.

2 Attempt **any four** parts of the following : **5×4 = 20**

(a) Explain Micro-programmed control unit.

(b) Discuss multiple bus organization.

(c) Explain the process of fetching a word from memory and storing a word in memory.

(d) What is the role of Instruction Register (IR)? Write the steps used to execute IR.

(e) Discuss the Pre-fetching of micro-instructions.

(f) Discuss Micro-instruction with Next address field.

3 Attempt **any two** part of the following : **10×2 = 20**

(a) What do you mean by processor organization? Discuss.

(i) Single accumulator based processor organization.

(ii) General-register based processor organization.

(iii) Stack based processor organization.

(b) What do you mean by addressing mode? Describe various addressing modes with suitable examples.

(c) A computer has 32 bit instructions and 12-bit addresses. If there are 250 two-address instruction, how many one-address instruction can be formulated?

4 Attempt **any two** parts of the following : **10×2 = 20**

(a) Why Input output interface is require? Describe various methods for I/o interface.

(b) Define interrupt. When a device interrupt occurs how does the processor determine which device has issued the interrupt?

(c) Write short notes on the following:

(i) Input-output processor

(ii) Serial Communication.

5 Attempt **any two** parts of the following : **10×2 = 20**

(a) Why a memory system of a computer organized as a hierarchy? Discuss the basic elements of a memory hierarchy.

(b) An address space is specified by 24 bits and corresponding memory space by 16-bits?

(i) How many words are there in the address space?

(ii) How many words are there in the memory space?

(iii) If a page consists of 2k words, how many pages and blocks are their in the system?

(c) Write short notes on the following:

(i) Associative memory

(ii) Main memory.