



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

PAPER ID : 214217

Roll No.

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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 : $5 \times 4 = 20$

- (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 : $10 \times 2 = 20$

- (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 : $10 \times 2 = 20$

- (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 2^k words, how many pages and blocks are their in the system?
- (c) Write short notes on the following:
 - (i) Associative memory
 - (ii) Main memory.
