Roll No. .....

BCA–303(N)

B. C. A. (Third Semester)
EXAMINATION, Dec., 2012

(New Course)

Paper Third

COMPUTER ARCHITECTURE AND
ASSEMBLY LANGUAGE

Time : Three Hours] [*Maximum Marks : 75*

Note : Section A is compulsory. Attempt any *seven* questions out of ten questions from Section B and *one* question from Section C.

Section – A

(Numerical/Analytical/Problematic Questions)

1. The content of PC in the basic computer is 3AF (all numbers in Hexadecimal).

   The content of AC is 7EC3. The content of memory address 3AF is 932E.

   (a) What is the instruction to be fetched and executed next ? 3

   (b) Show the binary operation that will be performed in AC when the instruction is executed. 4

   Note :

   Hex code

   O XXX AND memory word (direct) to AC

8 XXX AND memory word (indirect) to AC

9 XXX ADD memory word (indirect) to AC

Where, First Hex digit is for mode bit + op code

Remaining 3 Hex digit represent Address in instruction.

DATA is 4 Hex digit long.

2. Describe 8085 Microprocessor architecture : 8

(a) Using a neat diagram.

(b) Describe Flag registers is 8085 microprocess.

Section – B

6 each

(Short Answer Type Questions)

3. Describe instruction cycle.

4. Describe a CPU organization with 7 registers diagrammatically. Write the size of control word for this organisation.

5. Explain Booth's algorithm for multiplication of signed 2's complement numbers.

6. Differentiate RISC and CISC architectures.

7. Define Pipelining. Discuss instruction pipeline with proper diagram schematically.

8. Evaluate the arithmetic expression :

$$X = (A * B + C)/(C * D)$$

using zero address instruction.

9. What is Asynchronous Data Transfer ? Why is it needed ? Explain a method to perform data transfer asynchronously.

10. What is DMA ? Explain the operation of DMA controller.

11. What is interrupt ? Describe external and internal interrupts.

12. Explain shift operations (4 types) with respect to intel 8085 microprocessor. Write exact instructions in 8085.

Section – C

(Long Answer Type Questions)

13. (a) What do you mean by addressing mode ? Describe the following addressing mode (with *one* instruction in 8085) : 10

(i) Implied (ii) Immediate

(iii) Direct (iv) Indirect

(b) Write a program in 8085 Assembly language to add 8 numbers from consecutive memory location staring with location 2000H and store the result in location 2800H. 8

14. (a) Discuss instructions for 8085 : 12

(i) PUSH r_p
(ii) POP r_p
] r_p is register pair

(iii) Call 2000 H

(iv) Return

(v) IN

(vi) OUT

(b) (i) Define stack and stack pointer. 6

(ii) Describe CMP instruction.

(iii) What does the following instruction mean ? LXI SP, 2000H.