1509

MCA 2nd Semester Examination

Computer Architecture

MCA-204

Time : 3 Hours   **Max. Marks : 60**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note :   Candidate is required to attempt five questions in all selecting one question from each of the section A, B, C & D of the question paper and all the subparts of the questions in E section.

SECTION - A

1. (a)   Explain the design of Accumulator logic.

   (b)   Draw the logic diagram of a 2 to 4 line decoder with only NOR gate include an enable input.   **(12)**

2. (a)   Write short notes on:

      (i) Registers   (ii) Multiplexers   (iii) Memory unit

   (b)   Show a block diagram of the hardware that implements the following register transfer statement:

      $yT_2 : R2 \leftarrow Rl, Rl \leftarrow R2$ **(12)**

SECTION - B

3. Write a program loop, using a pointer and a counter that clears to 0 the contents of hexadecimal locations 500 through 5FF.
                                                          (12)

4. What is Assembly language? Explain with example. Also explain the rules of the language.   **(12)**

SECTION - C

5. What do you mean by pipeline? Explain pipeline for floating point addition and subtraction. **(12)**

6. Perform the arithmetic operation below with binary numbers and with negative numbers in signed 2's complement representation. Use seven bits to accommodate each number together with its sign. In each case, determine if there is an overflow by checking the carries into and out of the sign bit position.

    (a) (+35)+(+40)   (b) (-35)+(-40)   (c) (-35)+ (+40)   **(12)**

SECTION - D

7. (a) Why DMA has priority over CPU when both repeat a memory transfer?

    (b) What is asynchronous data transfer?   **(12)**

8. What is priority interrupts? Explain different types of priority interrupts.

    (12)

SECTION - E

9. Write short answers for the following. All questions are compulsory.

    (a) What do you mean by Assembler?

    (b) What do you mean by Instruction cycle?

    (c) What is vector processing?

    (d) What is a control memory?

    (e) What is serial communication?

    (f) Define multiprocessor.

    (g) What is DMA?

    (h) What is Cache memory?

    (i) What is RISC?

    (j) What is multiport?   **(12)**