Roll No. .....

Total Pages : 2

BT-5/D-21 **45172**

COMPUTER ORGANIZATION & ARCHITECTURE

Paper–PC-CS-307A

Time Allowed : 3 Hours] [Maximum Marks : 75

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. All questions carry equal marks.

UNIT-I

1. (a) Write down the algorithm and draw the flowchart for non-restoring division in which dividend (A)=101110 and divisor (B)=010111. 5

   (b) What is the impact of the cache on overall performance of the computer system? 5

   (c) Discuss about the virtual memory? Discuss about the mapping of virtual address to memory table. 5

2. (a) Discuss the logic of Von Neumann Architecture. Explain it with the help of suitable working diagram. List their merits and demerits. 5

   (b) Explain the basis for Booth's multiplication algorithm along with its constituent steps. What type of numbers it will work? What are the limitations of the same? 5

   (c) Differentiate between micro operation and macro operation with an example. 5

UNIT-II

3. (a) Explain the following with respect to logic micro operations: 8

   (i) selective set (ii) selective complement

   (iii) selective clear (iv) mask

   (b) What is the basic role of micro-program sequencer? Explain the working of micro-program sequencer. 7

4. (a) Mention the advantages and disadvantages of micro-programmed control unit and hardwired control unit. 8

(b) Explain the basic role of horizontal and vertical micro programming. List various steps that are involved in these programming styles. 7

UNIT-III

5. (a) Identify the basic purpose of using Flynn's taxonomy. Examine all the taxonomies and models for Flynn's classification theory with reference to the computer architectures. 8

(b) What do you mean by addressing mode? Why addressing modes are used? Explain the following addressing modes with examples:

(i) Direct addressing mode

(ii) Immediate addressing mode

(iii) Register indirect addressing mode

(iv) Relative addressing mode. 7

6. (a) Describe the working architecture of a shared memory multiprocessor? 8

(b) Explain the fundamental differences among pipeline and vector processing with the help of their suitable working diagram. 7

UNIT-IV

7. (a) Identify the role of interrupts in computer organization and architecture. How can you justify Daisy chain priority is useful in priority interrupt. 5

(b) Discuss any five key differences between subroutine and interrupt service routines. 5

(c) Differentiate serial arbitration logic and parallel arbitration logic with neat sketches. 5

8. (a) What are handshaking signals? Explain the handshake control of data transfer during input and output operation. 8

(b) What is a parallel priority interrupt processing? Explain any parallel processing mechanism. 7