Roll No. .....

34102

Printed Pages : 3

BT-4/M–19

COMPUTER ARCHITECTURE AND ORGANIZATION

Paper–ECE-210N

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt any five questions, selecting at least one question from each unit.*

Unit–1

1. (a) Draw and discuss the Von-Neumann Architecture of a computer system. 7.5

(b) What are arithmetic micro-operations ? Explain the circuit of a binary adder-subtractor and how it is different from a binary adder. 7.5

2. What are addressing modes ? Find the operand using (i) Register direct (ii) Register indirect (iii) Relative mode (iv) Auto increment (v) Auto decrement. Two word instruction is load to Accumulator and address field is 500. Initial Value of program counter (PC) is 200 and general register is 400.

Address	Memory
200	Load to Accumulator
201	Address=500
202	Next instruction
399	450
400	700
401	800
702	325

15

Unit–2

3. (a) Discuss and explain the Multiplier control unit. 7.5

(b) What is micro programmed control ? Discuss in brief. 7.5

4. (a) What is parallel processing ? Explain the SIMD and MIMD parallel processing structures. 7.5

(b) Discuss in brief BCD adder and its working with its circuit diagram and logical equation. 7.5

Unit–3

5. What is an address space and a memory space ? Explain the complete process of mapping from a virtual address to a main memory address by taking any example of your choice. 15

6. (a) Draw and explain the 1-D structure of a RAM unit. 7.5

(b) What are hypercube networks ? Explain the working. 7.5

Unit–4

7. (a) Explain the Delayed load and Delayed branch processes of a RISC pipeline. 7.5

(b) If the number of tasks in a pipeline are 6 and segments are 4. Determine the number of clock cycles needed to complete the task. Also draw the space-time diagram for the same. 7.5

8. What is a DMA controller ? Draw its complete diagram. How does a DMA transfer takes place ? 15