

**COMPUTER ORGANIZATION & ARCHITECTURE**

(Common to ECE and EIE)

Time: 3 hours

Max. Marks: 70

**PART – A**  
(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) Differentiate high level language, assembly language and machine language.
  - (b) What is the role of operating system?
  - (c) List the different addressing modes used in a basic computer.
  - (d) What is an overflow in arithmetic operation of signed magnitude data? How is it detected?
  - (e) What is register transfer language?
  - (f) Write the microinstruction format.
  - (g) Define hit ratio.
  - (h) What is a strobe signal?
  - (i) Define parallel processing and pipelining.
  - (j) Differentiate between Multiprocessors and Multicomputers.

**PART – B**  
(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 Explain about memory subsystem organization.

**OR**

- 3 Explain about I/O subsystem and interfacing.

**UNIT – II**

- 4 Discuss in detail about the memory reference instructions of a basic computer.

**OR**

- 5 Show the step-by-step multiplication process using Booth algorithm when (-9) and (-13) are multiplied. Assume 5 bit registers to hold signed numbers and (-9) to be the multiplicand.

**UNIT – III**

- 6 Design a digital circuit that performs the four logic operations of AND, OR, Exclusive –OR and NOT. Show the logic diagram of one typical stage.

**OR**

- 7 Explain in detail about the organization of microprogram sequencer and how it is used for address sequencing in a microprogrammed control unit.

**UNIT – IV**

- 8 What do you mean by virtual memory? Discuss how paging helps in implementing virtual memory.

**OR**

- 9 What is DMA? Explain the DMA transfer using neat diagram.

**UNIT – V**

- 10 Explain briefly about arithmetic pipeline with neat diagram.

**OR**

- 11 Discuss in detail about the multipoint memory interconnection structure used in multiprocessors.

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