

**Important Questions in**

**COMPUTER  
ARCHITECTURE  
OR**

**COMPUTER  
ORGANIZATION  
OR**

**COMPUTER  
ORGANIZATION  
&  
ARCHIETECTURE**

## **UNIT –I BASIC COMPUTER ORGANIZATION AND DESIGN**

### **IMPORTANT QUESTIONS**

1. Draw the block diagram of computer and explain its functional units.
2. Draw the block diagram of Von-Neumann Architecture and give its advantages.
3. Draw the block diagram of Von-Neumann Architecture and give its advantages and disadvantages.
4. Compare and Contrast the Von- Neumann architecture and Harvard architecture.
5. What is Register transfer language? Elaborate few RTL statement with their functioning.
6. Design a common bus using multiplexers and its function table.
7. Design a common bus using Tri- state buffers.
8. Design a 4-bit Binary Adder circuit with four full adders and explain.
9. Design a 4-bit Adder/Subtractor circuit which performs both addition and subtraction operations.
10. Design a 4-bit Arithmetic circuit which performs basic arithmetic micro operations.
11. Design one stage of Logic circuit which performs basic logic operations.
12. Design a Shift circuit which performs basic shift operations.
13. Design a digital circuit that performs four logic operations Exclusive NOR, Exclusive OR, NOR, NAND. Use two selection variables and show the logic diagram of one typical stage.
14. Draw the block diagram for a typical Arithmetic circuit and discuss various arithmetic micro operations that are performed.
15. Illustrate the phases of an instruction cycle with the help of flowchart.
16. How Computer instructions are recognized? List out the basic computer instruction and explain.

## **UNIT –II CPU AND ARITHMETIC UNIT**

### **IMPORTANT QUESTIONS**

1. Evaluate the arithmetic expression  $X = (A+B)*(C+D)$  using Three address , Two address, One address and Zero address instructions.
2. Outline various addressing modes with numerical example.
3. List out the Data transfer instructions with mnemonics and explain.
4. List out the Data manipulation instructions with mnemonics.
5. What is the purpose of Program Control Instructions? List the typical Program Control Instructions with mnemonics.
6. Paraphrase few lines about the following
  - a. Fixed Point Representation
  - b. Floating Point Representation.
7. Demonstrate Binary Addition and subtraction with signed magnitude data with a flowchart.
8. Demonstrate Binary Multiplication with signed magnitude data with a flowchart and example.
9. Design a Booth multiplication algorithm to perform multiplication between two signed 2's complement numbers.
10. Multiply -3 and -5 using Booth multiplication algorithm.
11. Draw the block diagram and flowchart to perform multiplication between two signed 2's complement numbers.
12. With a flow chart, Explain Floating point addition and subtraction can be done.

### **UNIT –III CONTROL UNIT**

#### **IMPORTANT QUESTIONS**

1. How controls signals are generated using Hardwired control unit and explain with a neat diagram?
2. How controls signals are generated using Micro programmed control unit and explain with a neat diagram?
3. Distinguish between Hardwired control unit and Micro-programmed control unit.
4. Describe about address sequencing capabilities in micro programmed control unit.
5. Give a format of microinstruction? How could an instruction code be mapped into micro-instruction address?
6. How microinstruction fields are decoded and explain with neat diagram,
7. Demonstrate concept of Micro-program Sequencer with neat diagram and its truth table.
8. Explain Control Memory with a neat diagram.

### **UNIT –IV MEMORY ORGANIZATION**

## **IMPORTANT QUESTIONS**

1. Illustrate memory hierarchy in computer system with a neat diagram.
2. Draw the block diagram for RAM and ROM Chips and describe the connectivity between processor and memory?
3. Compare and Contrast SRAM and DRAM.
4. Demonstrate the concept of Auxiliary Memory or Secondary Memory.
5. Write short notes on the following  
(i)Magnetic tapes (ii) Magnetic disks
6. Draw the block diagram of associative memory and discuss its Match Logic.
7. Demonstrate the concept of associative mapping in cache memory
8. Demonstrate the concept of direct mapping in cache memory.
9. Demonstrate the concept of 2-way set associative mapping in cache memory.
10. Demonstrate various mapping techniques used in cache memory and give their advantages and disadvantages.
11. Define Cache memory. Explain write through and write back techniques. Mention various page replacement techniques used in cache memory.
12. Give the functional, technical & organization aspects of the following memory devices & suggest suitable applications for each.
  - (a) ROM
  - (b) PROM
  - (c) EPROM
  - (d) EEPROM.

## **IMPORTANT QUESTIONS**

1. Illustrate about peripheral devices.
2. Explain Input Output Interface with suitable diagram.
3. Discuss about strobe control method of asynchronous data transfer with neat diagrams.
4. Discuss asynchronous data transfer and demonstrate the operation of handshaking with neat diagrams.
5. How the data can be transferred from I/O device to computer using asynchronous serial transfer? Explain in detail.
6. Discuss Programmed I/O and Interrupt initiated I/O with a neat diagram
7. Illustrate DMA controller with a neat diagram.
8. Explain DMA transfer can be done with a neat diagram.
9. Draw the block diagram of DMA and explain its functionality.
10. Describe about Input Output Interface with suitable diagram.
11. Illustrate about the Daisy chain hardware priority interrupt.
12. Illustrate about the Parallel hardware priority interrupt.
13. Briefly explain about the techniques to handle a hardware priority interrupt.
14. Briefly explain about serial communication.

## **Pipelining and Parallel Processing** **IMPORTANT QUESTIONS**

1. What is Parallel processing, how it can be achieved with a neat diagram.
2. Define Array Processor and explain the types of Array Processors with a neat diagram.
3. Write short notes on Flynn's Classification.
4. Explain about Vector Processing with suitable diagram.
5. What is Pipelining? Explain 4 stage Pipelining with a neat diagram.
6. Explain instruction pipelining with a neat diagram.
7. Illustrate RISC pipelining. Explain overlapped window pipelining with a neat diagram.
8. Explain about the following.
  - a. Array Processors
  - b. Vector Processing
  - c. RISC Pipelining
9. Compare and Contrast RISC and CISC processors/computers
10. Explain the hazards/conflicts occurred in instruction pipelining with suitable diagram.

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