**SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY :: PUTTUR**
**(AUTONOMOUS)**
**Siddharth Nagar, Narayanavanam Road – 517583**
**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code :** **(18CS0505)**Computer Organization and Architecture
**Course & Branch :** B.Tech –CSE
**Year &Sem :** II-B.Tech& I-Sem **Regulation : R18**

## UNIT – I

| | |
|---|---|
| 1. Write in detail about the Functional Units of Computer with neat diagram? | [10 M] |
| 2. Explain about the Structure of Bus and types of Bus with neat diagram? | [10 M] |
| 3. a) Explain about Instruction Execution Cycle with neat diagram? | [05 M] |
| b) Write in detail about the Basic Operational Concepts with neat diagram ? | [05 M] |
| 4. a) What is Computer Instructions and Explain about it. | [06 M] |
| b) What is Computer Registers and explain the types in it. | [04 M] |
| 5. Write in detail about Addressing Modes and its types? | [10 M] |
| 6. Write in detail about Data Manipulation Instructions and types in it. | [10 M] |
| 7. a) Write in detail about Data Transfer Instructions? | [05 M] |
| b) Write in detail about Program Control Instructions? | [05 M] |
| 8. Explain about Instruction set architecture of a CPU with neat diagram? | [10 M] |
| 9. Write about input-output subsystems with neat diagrams? | [10 M] |
| 10. Write the following. | [10 M] |

a) Registers          b) instruction set

### 2-MARKS QUESTIONS

1. Define Computer and List types of computer.
2. What is meant by control unit?
3. Discuss the usage of MAR and MDR in computer organization.
4. Explain the role of PC in addressing modes.
5. What are the phases of Instruction Cycle?
6. Draw the instruction format.
7. Explain the functional units of general computer.
8. List and define any two program control instructions.
9. Define Bus System.
10. Explain briefly the operation of 'load' in Pentium microprocessor.

## UNIT – II

1. Draw the H/W Flowchart and H/W Algorithm for Add/Sub of SMR with an example.     [10 M]
2. Explain the logic behind carry look-ahead adder with its circuit diagram?     [10 M]
3. Draw the H/W Flowchart and H/W Algorithm for Multiplication for positive numbers with an suitable example.     [10 M]
4. Explain the techniques in computer arithmetic with example
   a) Ripple carry adder                              .     [04 M]
   b) Carry look-ahead adder     [06 M]
5. Draw the H/W Flowchart and write H/W Algorithm for Booth Multiplication for signed numbers with a suitable example?     [10 M]
6. Draw the H/W Flowchart and write algorithm for Division restoring with an example.   [10 M]
7. Draw the H/W Flowchart and write algorithm for Division non-restoring with an example.[10 M]
8. Explain in detail about Floating point numbers, its operations and implementing it.     [10 M]
9. Explain the carry save multiplier with neat sketch.     [10 M]
10. Show the step by step signed-operand 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.     [10 M]

### 2-MARKS QUESTIONS

1. What is floating point representation?
2. Equivalent decimal number is $(1010)_2$.
3. Which is an octal number equal to decimal number $(896)_{10}$.
4. How many types of Number System?
5. Conversion of decimal number to its octal number equivalent is $(42)_{10}$
6. What is Ripple carry Adder?
7. Discuss about carry look-ahead adder?
8. What is Division Restoring method?
9. Shows the ASCII representation for the "123"?
10. Perform a multiplication for the fixed point binary numbers 23(multiplicand) and 19(multiplier) in signed magnitude representation.

## UNIT – III

1. a) Show that the block diagram of the hardware that implements the following register transfer statement        P: R2←R1.                                                                      [06 M]

   b) Explain about the way of constructing a 4 line common bus system using multiplexers with a neat diagram.                                                                           [04 M]

2. a) Explain about three- state bus buffers with neat sketch.                               [06 M]

   b) Write about binary increment with neat sketch.                                          [04 M]

3. Explain about the applications of Logic Micro Operations?                                [10 M]

4. Explain about Hardwired Control with the help of a neat diagram.                        [10 M]

5. Explain about Micro Programmed Control with Micro Program Example diagram      [10 M]

6. Explain about Address Sequencing with neat diagram?                                     [10 M]

7. a) Write about Bus transfer with neat diagram.                                            [05 M]

   b) Write out Register Representations and way it is used.                                 [05 M]

8. Explain in detail about Arithmetic Micro Operations?                                      [10 M]

9. Write in detail about Logic Micro Operations with neat representations?               [10 M]

10. Explain in details about all types of Shift Register Operations?                         [10 M]

### 2-MARKS QUESTIONS

1. Give any two examples of Register transfer operations.

2. List out the three types of Shift operations?

3. What is RTL? Define it.

4. What is a Control function?

5. Draw the three-state bus buffer.

6. What are the memory transfer operations? Give RTL statement for each.

7. Draw the 4-bit binary adder.

8. Difference between Hardwired and Microprogrammed control unit design.

9. What is selective clear operation? Give an example.

10. What is selective set operation? Give an example.

## UNIT – IV

1. a) Explain about Memory Hierarchy?                                          [06 M]

   b) Explain about Memory Management Requirements?                            [04 M]

2. What is Main Memory and what are the types in it, Explain in detail.        [10 M]

3. Explain about semiconductor RAM and its types in detail?                    [10 M]

4. Explain about ROM and its types?                                            [10 M]

5. Explain about Secondary Storage Devices in detail.                          [10 M]

6. Explain about Cache Memory mapping functions with Page Replacement Algorithms. [10 M]

7. What is Virtual Memory? Discuss how paging helps in implementing virtual memory. [10 M]

8. What is DMA? Draw the block diagram for DMA controller and explain about DMA
   transfer in a computer.                                                     [10 M]

9. List out few I/O Interfaces and explain about them.                         [10 M]

10. a) List out some differences between RAM & ROM?                            [05 M]

    b) List out some differences between SRAM & DRAM?                          [05 M]

### 2-MARKS QUESTIONS

1. Define Memory.

2. Define meant by cache Hit and cache Miss?

3. Explain briefly about page replacement?

4. Define is cache memory?

5. What are the mapping functions?

6. What is meant by virtual memory?

7. Define is DMA?

8. Difference between Interrupt driven I/O and DMA?

9. Discuss about control command?

10. Explain about I/O command?

## UNIT –V

1. a) Explain about Parallel Processing and its Types? [06 M]

   b) Explain the concept of Pipelining with clear example with neat sketch? [04 M]

2. a) Define parallel processing? How one can achieve parallel processing with single CPU. [06 M]

   b) Explain about characteristics of Multiprocessor? [04 M]

3. Explain about throughput and speed up of pipelining? [10 M]

4. Define hazards? Explain in detail about instruction hazards? [10 M]

5. Explain about Interconnection Structures in detail. [10 M]

6. a) Draw 8×8 omega switching network with explanation? [05 M]

   b) Explain crossbar switch with neat sketch? [05 M]

7. a) Write about multistage network with neat sketch? [05 M]

   b) Write about hyper cube network with neat sketch? [05 M]

8. a) List out the conflicts in pipelining and explain about it [05 M]

   b) Explain about 4-segment Instruction Pipeline with neat diagram [05 M]

9. Explain about Multiprocessor and its classification in detail [10 M]

10. Describe the cache coherency in detail. [10 M]

### 2-MARKS QUESTIONS

1. What is meant by Pipelining technique?

2. Explain the advantages of pipelining.

3. What is a throughput?

4. Explain Instruction hazards.

5. Define parallel processing.

6. Explain about multiprocessor.

7. Write about cache coherency.

8. List out different Interconnection structures?

9. Mention the three types of Conflicts in instruction pipeline?

10. Differentiate Tightly and Loosely coupled systems?