1 Define the register transfer language?
2 Define bus and memory transfer?
3 Describe the different arithmetic micro operations.
4 Explain the different logical micro operations.
5 State the different shift micro 6 operations
8 Differentiate Memory Reference and Register Reference Instructions.
9 Differentiate Register Reference and Input/output Instruction
10 Define Interrupt and classify types of Interrupts.
11 Describe addressing Modes.
12 Explain Index Register Addressing Mode

Part - B (Long Answer Questions)

1 State the use of buffers? Explain about tri-state buffers. Explain about high impedance state.
2 Explain commonly employed bit shift operators such as shift left, right, circular shift left/right and Arithmetic shift left/right.
3 Explain about Arithmetic logic shift unit with neat diagram.
4 Demonstrate increment, decrement, complement and clear 4 bit registers using register transfer language

6 Define the register transfer languages? Explain few RTL statements for branching with their actual Functioning.
7 Explain about stack organization used in processors. What do you understand by register stack and Memory stack?
8 Explain any eight addressing modes in detail

10 Write a brief note on sub routine call and return
11 Explain the micro programmed control organization.
12 Define an instruction format. Explain different types of instruction formats in detail

13 Explain shift micro operation in detail. Also draw and explain 4-bit combinational circuit

14 Explain the importance of different addressing modes in computer architecture with suitable example.

15 Define the following:
(i) Microcode
(ii) Microinstruction

Part - C (Problem Solving and Critical Thinking Questions)

2 Design the 4-bit arithmetic circuit for arithmetic micro operation
3 Describe the micro instruction format in detail.

6 Explain the mapping from micro-operation to a micro instruction address?

7 Write a program to evaluate the arithmetic statement
X = (A + B) *(C + D).
ii. Using a general register computer with two address instructions.
iii. Using stack organized computer with zero address operation instruction.

CPU AND COMPUTER ARITHMETIC
Part - A (Short Answer Questions)

1 Define instruction cycle.
2 Define data representation.
3 List memory reference instructions.
5 Explain interrupt addressing modes.

7 Explain Index Register Addressing Mode.
8 Explain Computer arithmetic.
9 List different addressing modes.

13 Define data transfer and manipulation.
15 Differentiate Memory Reference and Register Reference Instructions.
16 Explain Register Reference and Input / Output Instructions.

Part - B (Long Answer Questions)

2 Explain instruction cycle with example.
4 Explain Fetch-Execute cycle with diagram.

5. Describe the below addressing modes with examples
a. Implied Mode b. Immediate Mode
c. Auto increment and Auto decrement Mode
d. Direct and Indirect Address Modes

6 Explain the three categories of computer instructions such as data transfer instructions , data manipulation instructions and program control instructions.
8 Define input-output and interrupt.
10 Describe data Manipulation Instructions with example.
11 Explain decimal arithmetic unit in detail.
12 Define Addition and subtraction arithmetic operations with examples.

Part - C (Problem Solving and Critical Thinking Questions)

1 Discuss in detail about data transfer and data manipulation instructions.
2 Write a note on program control instructions.

8 Explain Microprogramming of control unit of CPU with example.
9 Explain the sequence of micro operations needed to execute the following instructions
a.STA b. BSA c. ISZ d. BUN

12 Explain the data transfer manipulation.
15 Write a program to evaluate the arithmetic statement: X=(A+B)*(C+D)
i. Using a general register computer with three address instruction.
ii. Using a general register computer with two address instruction
iii. Using an accumulator type computer with Zero address instruction.

18 Explain interrupts handled by a basic computer and interrupt cycle with a flowchart.
19 Explain the differences between direct and indirect addressing instructions with example for each with the required memory reference.
20 Explain the differences between direct and indirect addressing instructions with example for each with the required memory reference.

INPUT-OUTPUT ORGANIZATION AND MEMORY ORGANIZATION

Part - A (Short Answer Questions)

1 List the factors that determine the storage device performance?
3 Explain basic concept of virtual memory technique?
4 Define Memory Access Time? Define instruction Cycle.
5 Describe the virtual memory organization and explain briefly? R

7 Explain cache memory to reduce the execution time?
8 Define CPU registers, Main memory, Secondary memory and cache memory?
8 List the various types of semiconductor RAMs?
9 Define Random Access Memory and types of RAMs present?
10 Explain the necessary for memory hierarchy?

12 Differentiate SRAM and DRAM?
15 Define cache memory? Explain how it is used to reduce the execution time?
16 State the differences between static and dynamic memories?
19 Explain the mapping procedures adopted in the organization of a Cache Memory?
20 Discuss the function of a TLB? (Translation Look-aside Buffer)
21 Differentiate volatile and non volatile memory organization?
Part - B (Long Answer Questions)

1 Describe input-output-processor (IOP) Organization in detail?

5 Explain Asynchronous communication interface with diagram?

6 Explain 8089 Input-Output processor?
7 Discuss various techniques used for Modes of Transfer?
8 Discuss various techniques used for Modes of Transfer?
10 List the different methods used for handling the situation when multiple Interrupts occur? Remember

11 Define different factors considered while designing an I/O subsystem?
12 Explain DMA operation? State its advantage
13 Differentiate synchronous and asynchronous communication?
14 Discuss interrupt masks provided in any processor?
15 List out the major functions of I/O system?

MULTIPROCESSORS
Part - A (Short Answer Questions)

1 Define arithmetic pipelining
3 Define the RISC pipeline
4 Explain the four segments of pipelining.
5 Explain Vector processing?
6 Describe the memory interleaving
7 Define the cache coherence?
9 Describe the different kinds of Multi stage switching networks?
10 Define multi-port memory.
13 List the steps for importance for inter processor communication
14 Define pipeline control.
15 List the steps for instruction pipe lining

Part - B (Long Answer Questions)
1 Explain pipeline for floating point addition and subtraction.

2 Describe four segment pipelining.
3 Explain three segment instruction pipelines. Show the timing diagram and show the Timing diagram with data conflict.
4 Summarize the pipelining concept? Explain space-time diagram for Pipeline.
Write about the following concepts :
a. RISC pipeline
b. Vector processing
c. Array processors

4 Define the functioning of cross bar switch network? Explain. With a neat sketch.
5 List the different kinds of Multi stage switching networks? Explain with neat sketch. Compare their functioning.
7 Define the Multiprocessor? Explain its characteristics.
8 Write about the multi-port memory.