

Sub: Computer Organization and Architecture	
<u>Unit - 1</u>	
1	Explain the different functional units of a computer.
2	a. Perform the arithmetic operation in binary using 2's complement representation (i). $(+42) + (-13)$ (ii) $(-42) - (-13)$. b. Convert the following numbers with the indicated bases to decimal. (i) $(12121)_3$ (ii) $(4310)_5$ (iii) $(50)_7$
3	Define Pseudoinstruction. Write an assembly language program to subtract two numbers.
4	Draw and explain the connection between memory and processor with the respective registers.
5	What is bus explain it in detail?
6	Describe the operational concepts between the processor and memory
7	a.What are the various ways of representing negative numbers? Explain with example b. Distinguish between Fixed point and Floating point representation of a given number
8	Draw the connection between processor and memory and mention the functions of each component in the connection.
9	Explain in detail about the instruction cycle.

<u>Unit-2</u>	
1	a. Draw the flowchart and explain about booths algorithm b. Multiply 100111 with 11011 using booths algorithm
2	Explain logical shift and rotate instructions with examples.
3	Explain different types of instructions with examples. Compare their relative merits and demerits
4	Explain different rotate instructions.
5	Explain the memory reference instructions with examples.
6	Explain with an example how to multiply two unsigned binary numbers
7	Explain the memory reference instructions with examples.
8	Derive and explain an algorithm for adding and subtracting two floating point binary Numbers
9	With examples explain the Data transfer, Logic and Program Control Instructions?
10	Describe the algorithm for integer division with suitable examples.
11	Define an addressing mode. Explain the following addressing modes, with example for each i) Index addressing mode ii) Indirect addressing mode iii) Relative addressing mode

<u>Unit-3</u>	
1	Describe the addition and subtraction procedure of floating point numbers with flow chart diagram
2	Explain the characteristics of RISC and CISC Architecture.
3	Explain about shift micro operation
4	Describe the multiplication procedure of floating point numbers with flow chart diagram.

5	Explain the design of micro-programmed control unit in detail
6	What are logical micro operations? Explain about applications of logical micro operation.
7	Explain the design of ALU in detail
8	Explain how control signals are generated using micro-programmed control.
9	Explain different types of computer registers with common bus system with a neat sketch.
10	Explain the Hardwired Control Unit in detail.
11	Explain fixed Point Arithmetic with an example.

<u>Unit-4</u>	
1	Explain the Set-Associative mapping procedure of cache memory with an illustration.
2	Briefly explain any four non-volatile memory concepts.
3	Differentiate between the different kinds of ROMs
4	Explain the Associative mapping procedure of cache memory with an illustration.
5	Explain the mapping in segmented page memory management unit with a neat diagram.
6	Describe the virtual memory organization and explain briefly?
7	With a neat diagram, explain the translation of a virtual address to a physical address.
8	Discuss in detail any one feature of memory design that leads to improved performance of computer.
9	With figure analyse the memory hierarchy in terms of speed cost and size.
10	Describe the principles of magnetic disk
11	Explain the direct mapping procedure of cache memory with an illustration.
12	What are pages and blocks? Explain memory table in a paged system with a diagram.

<u>Unit-5</u>	
1	What is page fault? Explain the two important page replacement algorithms.
2	Describe the data and control path techniques in pipelining
3	List out the major functions of I/O system?
4	Explain about arithmetic pipelining.
5	Explain hazards to the instruction pipeline with their solution
6	What is instruction hazard? Explain in detail how to handle the instruction hazards in pipelining with relevant examples
7	What is instruction pipelining? What are the conflicts that occurred during instruction Pipelining?
8	Explain DMA operation? State its advantages?
9	Draw and explain the flowchart of four segment instruction pipelining.
10	Explain the following terms: i) Interrupt service routine ii) Interrupt latency iii) interrupt disabling.
11	Define different factors considered while designing an I/O subsystem?
12	Explain the following a) Memory mapped I/O b) I/O Registers c) Hardware Interrupts d) Vectored interrupt