Detailed Syllabus (Theory)

Unit	Topics with contents	Class (1 Period)	Final Marks
1	**Architecture of Simple As Possible computer (SAP-1)** 1.1 Define computer architecture 1.2 Describe architecture of Simple As Possible computer (SAP-1) 1.3 Describe function of control bits of SAP-1 Controller/Sequencer 1.4 Describe function of each instruction of SAP-1 computer 1.5 Write basic programs using SAP-1 instruction	5	10
2	**Basics of Computer Architecture** 2.1 Describe organization of Stored-program Computer system 2.2 Describe basic instruction types 2.3 Explain Expanding and Huffman op-code Encoding techniques 2.4 Compare between RISC and CISC 2.5 State different techniques of Parallel processing 2.6 Describe architecture of General register, accumulator-based and Stack based processor	4	12
3	**Basics of CPU design** 3.1 Interpret basic function of ALU and Control unit 3.2 Describe a typical CPU model 3.3 Explain the design of 4-bit General Register and 4-bit Parallel Adder 3.4 Discuss simple organization of a 4-bit Arithmetic unit 3.5 Discuss simple organization of a two function Logic unit 3.6 Explain the design structure of a 4-bit ALU 3.7 Describe the instruction interpretation and instruction sequencing of control unit 3.8 Illustrate Hardwired & Microprogramming approach for control unit design 3.9 Describe the techniques of coprocessor interfacing	5	12
4	**Memory organization and I/O system** 4.1 Illustrate Centralized and Distributed memory organization 4.2 Design a 4K x 4 RAM using four 1K x 4 RAM chips 4.3 Describe the working principle of four platters Electro-mechanical memory device 4.4 Explain the memory organization of Cache memory 4.5 State basic concept of Programmed I/O, Interrupt I/O and DMA system	4	8
5	**Architecture of 8086 Microprocessor** 5.1 State evaluation up to 64 bit of microprocessor 5.2 Distinguish between microprocessor and microcontroller 5.3 Mention the general features of 8086 microprocessor 5.4 Describe the architecture of 8086 microprocessor 5.5 Describe the pin diagram with function of each pin of 8086 microprocessor 5.6 Illustrate maximum and minimum mode of 8086 microprocessor 5.7 Describe the register structure of 8086 microprocessor 5.8 Mention the general features of 8088 microprocessor 5.9 Distinguish between 8086 and 8088 microprocessor	5	8

6	**Programming using assembly code of 8086 Microprocessor** 6.1 State Instruction Set and Addressing mode 6.2 Describe the types of Instruction with function of 8086 microprocessor 6.3 Describe the types of addressing mode of 8086 microprocessor 6.4 Explain the instruction format of 8086 microprocessor 6.5 Interpret assembler, assembler pseudo instructions and assembler directives 6.6 List the assembler directives 6.7 State the uses of SEGMENT, ENDS, ASSUME and DUP directive 6.8 Write assembly language program using 8086 instruction set	4	12
7	**Memory interfacing system of 8086 Microprocessor** 7.1 Interpret Memory Interfacing 7.2 State the necessity of Memory Interfacing 7.3 Sketch the 8086 system memory interfacing diagram 7.4 Describe even & odd address boundaries 7.5 Describe the hardware organization of the memory address space of 8086 microprocessor 7.6 Describe the memory read and write bus cycle of 8086 microprocessor	4	9
8	**I/O interfacing system of 8086 Microprocessor** 8.1 Interpret I/O Interfacing 8.2 State the necessity of I/O Interfacing 8.3 Mention features of some important interfacing chips of 8086 microprocessor 8.4 Describe the interfacing system of PPI with block diagram 8.5 Illustrate 8086 microprocessor I/O interfacing system	3	6
9	**Interrupt interface of 8086 Microprocessor** 9.1 Define interrupt 9.2 List different types of interrupts 9.3 Describe the common features of different types of interrupts 9.4 Sketch the map of interrupt vector table 9.5 Describe the external hardware interrupt interface of 8086 Microprocessor	3	4
10	**Features of advanced microprocessors** 10.1 List the names of 80x86 processors with features and brief specification 10.2 List the names of Pentium family processors with features and brief specification 10.3 Distinguished between 80X86 family and Pentium family 10.4 List the names of Multi-core processors with features and brief specification 10.5 Compare between latest multi-core processor and previous multi-core family	6	9
	TOTAL	**48**	**90**