



LESSON PLAN

JHARSUGUDA ENGINEERING SCHOOL, JHARSUGUDA

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| Name of the Faculty: - Yasobanti Nayak | Academic Year: - 2023-24 |
| Course No.: - TH-3 | Course Name: - Microprocessor & Microcontroller |
| Programme: - Diploma | Branch: - E&TC |
| Year/ Sem: - 2 nd /4 th | Section: |

| SI. No. | No. of session (min) | Unit | Topic to be Covered | Activity (lecture, tutorial, Demonstration, lab practice, field studies/workshop) | Suggested Reading (Book, Video, On line Sources etc.) |
|---------|----------------------|------|--|---|---|
| 1. | 55 min | 1.1 | Introduction to Microprocessor & Microcomputer | Lecture/PPT mode | Ajay V. Deshmukh R.S.Gaonkar |
| 2. | 55min | 1.2 | Concept of Address bus, Data bus, Control bus & system bus | Lecture/PPT mode | Ajay V. Deshmukh R.S.Gaonkar |
| 3. | 55min | 1.3 | General Bus structure block diagram | Lecture/PPT mode | Ajay V. Deshmukh R.S.Gaonkar |
| 4. | 55min | 1.4 | Basic architecture of 8085 (8-bit) Microprocessor | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 5. | 55min | | Revision & Class test | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 6. | 55min | 1.5 | Pin diagram of 8085 microprocessor | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 7. | 55min | 1.6 | Register organizations , Distinguish between SPR & GPR | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 8. | 55min | 1.6 | Register organizations , Distinguish between SPR & GPR | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 9. | 55min | 1.6 | Timing & control module | Lecture/chalkboard | Ajay V. Desmukh R.S.Gaonkar |
| 10 | 55min | | Class test | Lecture/chalkboard | Ajay V. Desmukh R.S.Gaonkar |
| 11 | 55 min | 1.8 | Stack, stack pointer & stack top | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |

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|----|--------|-------|--|---------------------|--------------------------------|
| 12 | 55 min | 1.8 | Stack, stack pointer & stack top | Lecture/chalkboard | Ajay V.Desmukh R.S.Gaonkar |
| 13 | 55min | 1.8 | Interrupts, Masking of interrupt(SIM,RIM) | Lecture/chalkboard | Ajay V. Desmukh R.S.Gaonkar |
| 14 | 55 min | | Revision & class test | Lecture/chalkboard | Ajay V. Desmukh R.S.Gaonkar |
| 15 | 55 min | 2.1 | Addressing data & Differentiate between 1-byte,2-byte,3- byte instruction with example | Lecture/chalkboard | Ajay V. Desmukh R.S.Gaonkar |
| 16 | 55min | 2.1 | Addressing data & Differentiate between 1-byte,2-byte,3- byte instruction with example | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 17 | 55min | 2.2 | Addressing modes in instructions with suitable examples | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 18 | 55 min | | Group Activity | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 19 | 55 min | 2.3 | Instruction set of 8085 | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 20 | 55 min | 2.4 | Simply Assembly Language Programming of 8085 | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 21 | 55 min | 2.4.1 | Simple addition & subtraction | Lecture/ chalkboard | Ajay V. Desmukh R.S.Gaonkar |
| 22 | 55min | | Simple multiplication and division programming | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 23 | 55min | 2.4.2 | Logic operations (AND,OR ,Complement 1's & 2's) & Masking of bits | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 24 | 55 min | 2.4.3 | Counters & Time delay (single Register, Register pair, More than two register) | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 25 | 55 min | 2.4.4 | Looping, counting & indexing (call/JMP etc) | chalkboard | Ajay V. Desmukh R.S.Gaonkar |
| 26 | 55 min | 2.4.5 | Stack & subroutine programs | chalkboard | Ajay V. Desmukh R.S.Gaonkar |
| 27 | 55 min | 2.4.6 | Code conversion, BCD Arithmetic & 16 bit data operation, block transfer | chalkboard | Ajay V. Desmukh R.S.Gaonkar |
| 28 | 55 min | 2.4.7 | Compare between two numbers and Array handling(Largest number & smallest number in the array) | Lecture | Ajay V. Desmukh R.S.Gaonkar |

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| 29 | 55 min | 2.5 | Memory & I/O Addressing | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 30 | 55 min | 2.5 | Memory & I/O Addressing | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 31 | 55 min | 3.1 | Define opcode, operand, T-State, Fetch cycle, Machine cycle, Instruction Cycle | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 32 | 55 min | 3.1 | Concept of timing diagram | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 33 | 55 min | 3.2 | Draw timing diagram for memory read, memory write | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 34 | 55 min | 3.2 | timing diagram for I/O read, I/O write machine cycle | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 35 | 55 min | 3.2 | timing diagram for I/O read, I/O write machine cycle | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 36 | 55 min | 3.3 | Draw a neat sketch for the timing diagram for 8085 instruction (MOV, MVI, LDA Instruction) | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 37 | 55 min | 3.3 | Draw a neat sketch for the timing diagram for 8085 instruction (MOV, MVI, LDA Instruction) | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 38 | 55 min | | Practicing previous year question | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 39 | 55 min | 4.1 | Concept of interfacing | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 40 | 55 min | 4.2 | Define Mapping & Data transfer mechanisms-memory mapping & I/O mapping | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 41 | 55 min | 4.3 | Concept of memory interfacing-interfacing EPROM & RAM Memories | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 42 | 55 min | 4.4 | Concept of Address decoding for I/O devices | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 43 | 55 min | 4.5 | Programmable Peripheral Interface: 8255,ADC & DAC Interfacing | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 44 | 55 min | 4.6 | Interfacing Seven segment displays,generate square wave on lines of 8255 | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 45 | 55 min | 4.7 | Design interface a traffic light control system using 8255,interface for stepper motor control using 8255 | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |

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| 46 | 55 min | 4.8 | Basic concept of other interfacing DMA controller, USART | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 47 | 55 min | 5.1 | Register Organization 8086 | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 48 | 55 min | 5.2 | Internal architecture of 8086 | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 49 | 55 min | 5.3 | Signal description of 8086 | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 50 | 55 min | 5.4 | General Bus operation & physical memory organization | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 51 | 55 min | 5.5 | Minimum mode & Timings | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 52 | 55 min | 5.6 | Maximum mode & Timings | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 53 | 55 min | 5.7 | Interrupt & interrupt service routines, Interrupt cycle | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 54 | 55 min | 5.8 | Non- Maskable interrupt, maskable interrupt, 8086 Instruction Set & programming | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 55 | 55 min | 5.9 | Simple assembly language programming using 8086 instruction | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 56 | 55 min | 5.10 | Simple assembly language programming using 8086 instruction | Lecture/PPT mode | Ajay V. Desmukh R.S.Gaonkar |
| 57 | 55 min | 5.11 | Practicing previous year question | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 58 | 55 min | 6.1 | Distinguish between microprocessor & microcontroller | Lecture | Ajay V. Desmukh R.S.Gaonkar |
| 59 | 55 min | 6.2 | 8 bit microcontroller | Lecture | Mazidi |
| 60 | 55 min | 6.2 | 16 bit microcontroller | Lecture | Mazidi |
| 61 | 55 min | 6.3 | CISC & RISC processor | | Mazidi |
| 62 | 55 min | 6.4 | Architecture of 8051 microcontroller | Lecture/PPT mode | Mazidi |
| 63 | 55 min | 6.5 | Signal description of 8051 microcontroller | Lecture/PPT mode | Mazidi |
| 64 | 55 min | 6.6 | Memory organization-RAM structure, SFR | Lecture/PPT mode | Mazidi |
| 65 | 55 min | 6.7 | Registers, timers, interrupts of 8051 | Lecture/PPT mode | Mazidi |
| 66 | 55 min | 6.8 | Addressing modes of 8051 | Lecture/PPT mode | Mazidi |
| 67 | 55 min | 6.9 | Simple 8051 assembly language programming, | Lecture/PPT mode | Mazidi |

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| | | | <i>arithmetic & logic instruction</i> | | |
| 68 | 55 min | 6.10 | <i>Simple 8051 assembly language programming, arithmetic & logic instruction</i> | <i>Lecture/PPT mode</i> | <i>Mazidi</i> |
| 69 | 55 min | 6.11 | <i>JUMP, CALL, I/O Port programming</i> | <i>Lecture/PPT mode</i> | <i>Mazidi</i> |
| 70 | 55 min | 6.12 | <i>Interupts ,Timer & counters</i> | <i>Lecture/PPT mode</i> | <i>Mazidi</i> |
| 71 | 55 min | 6.13 | <i>Serial communication</i> | <i>Lecture/PPT mode</i> | <i>Mazidi</i> |
| 72 | 55 min | 6.14 | <i>Microcontroller interrupts & interfacing to 8255</i> | <i>Lecture/PPT mode</i> | <i>Mazidi</i> |
| 73 | 55 min | 6.14 | <i>Microcontroller interrupts & interfacing to 8255</i> | <i>Lecture/PPT mode</i> | <i>Mazidi</i> |
| 74 | 55 min | | <i>Practicing previous year question</i> | <i>Lecture/PPT mode</i> | <i>Mazidi</i> |
| 75 | 55 min | | <i>Practicing previous year question</i> | <i>Lecture/PPT mode</i> | <i>Mazidi</i> |