**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**LESSON PLAN – COMPUTER ORGANIZATION**

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| **FACULTY NAME: Ms. G. RADHA DEVI** | **YEAR/SEM: II-II** | **ACADEMIC YEAR**: **2017-18** |

**w.e.f. 14.12.2017**

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| **S.No** | **Name of the Topic** | **Reference**  **Book** | **No .Of Lectures required** | **Delivery Method** | **Date** |
|  | **UNIT-I** |  |  |  |  |
| 1 | Introduction | T1 | 1 | Chalk & Talk | 14.12.2017 |
| 2 | Block diagram of Digital Computer | T1 | 1 | Chalk & Talk | 15.12.2017 |
| 3 | Definition of Computer Organization, Computer Design and Computer Architecture | T1 | 1 | Chalk & Talk | 16.12.2017 |
| 4 | Instruction codes | T1 | 1 | Chalk & Talk | 19.12.2017 |
| 5 | Computer Registers(T) | T1 | 1 | Chalk & Talk | 20.12.2017 |
| 6 | Computer instructions | T1 | 1 | Chalk & Talk | 21.12.2017 |
| 7 | Timing and Control | T1 | 1 | Chalk & Talk | 22.12.2017 |
| 8 | Instruction cycle | T1 | 1 | Chalk & Talk | 23.12.2017 |
| 9 | Memory Reference  Instructions | T1 | 1 | Chalk & Talk | 27.12.2017 |
| 10 | Input – Output and Interrupt | T1 | 1 | Chalk & Talk | 28.12.2017 |
| 11 | Complete Computer Description | T1 | 1 | Chalk & Talk | 29.12.2017 |
| 12 | Control memory | T1 | 1 | Chalk & Talk | 02.01.2018  03.01.2018 |
| 13 | Address sequencing(T) | T1 | 1 | Chalk & Talk | 04.01.2018 |
| 14 | Micro program  example | T1 | 1 | Chalk & Talk | 05.01.2018 |
| 15 | Design of control unit | T1 | 1 | Chalk & Talk | 06.01.2018 |
|  | **UNIT-II** |  |  |  |  |
| 16 | The 8086 Processor Architecture(T) | T2 | 2 | Chalk & Talk | 08.01.2018, 09.01.2018 |
| 17 | Register organization | T2 | 2 | Chalk & Talk | 10.01.2018, 11.01.2018 |
| 18 | Physical  memory organization | T2 | 2 | Chalk & Talk | 19.01.2018, 20.01.2018 |
| 19 | General Bus Operation | T2 | 1 | Chalk & Talk | 22.01.2018 |
| 20 | I/O Addressing Capability | T2 | 1 | Chalk & Talk | 23.01.2018 |
| 21 | Special Processor Activities | T2 | 1 | Chalk & Talk | 24.01.2018 |
| 22 | Minimum and Maximum mode system and timings(T) | T2 | 2 | Chalk & Talk | 25.01.2018  27.01.2018 |
| 23 | 8086 Instruction Set and Assembler Directives | T2 | 2 | Chalk & Talk | 29.01.2018, 30.01.2018 |
| 24 | Machine language instruction formats | T2 | 2 | Chalk & Talk | 31.01.2018, 01.02.2018 |
| 25 | Addressing modes(T) | T2 | 1 | Chalk & Talk | 02.02.2018 |
| 26 | Instruction set of 8086 | T2 | 2 | Chalk & Talk | 03.02.2018, 05.02.2018 |
| 27 | Assembler directives and operators | T2 | 2 | Chalk & Talk | 06.02.2018, 12.02.2018 |
|  | **UNIT-III** |  |  |  |  |
| 28 | Assembly Language Programming with 8086 | T2 | 1 | Chalk & Talk | 13.02.2018 |
| 29 | Machine level programs | T2 | 1 | Chalk & Talk | 15.02.2018 |
| 30 | Machine coding the  programs | T2 | 1 | Chalk & Talk | 19.02.2018 |
| 31 | Programming with an assembler | T2 | 1 | Chalk & Talk | 20.02.2018 |
| 32 | Assembly Language example programs(T) | T2 | 2 | Chalk & Talk | 21.02.2018  23.02.2018 |
| 33 | Stack structure of 8086, Interrupts and Interrupt service routines | T2 | 2 | Chalk & Talk | 24.02.2018  26.02.2018 |
| 34 | Interrupt cycle of 8086,  Interrupt programming | T2 | 1 | Chalk & Talk | 27.02.2018 |
| 35 | Passing parameters to procedures, Macros, Timings and Delays(T) | T2 | 1 | Chalk & Talk | 28.02.2018 |
|  | **UNIT-IV** |  |  |  |  |
| 36 | Introduction | T1 | 1 | Chalk & Talk | 01.03.2018 |
| 37 | Addition and Subtraction | T1 |  |  | 02.03.2018 |
| 38 | Multiplication Algorithms(T) | T1 | 1 | Chalk & Talk | 03.03.2018 |
| 39 | Division Algorithms | T1 | 1 | Chalk & Talk | 05.03.2018 |
| 40 | Floating - point Arithmetic operations | T1 | 1 | Chalk & Talk | 06.03.2018 |
| 41 | Peripheral Devices | T1 | 1 | Chalk & Talk | 07.03.2018 |
| 42 | Input-Output Interface | T1 | 1 | Chalk & Talk | 08.03.2018 |
| 43 | Asynchronous  data transfer | T1 | 1 | Chalk & Talk | 09.03.2018 |
| 44 | Modes of Transfer | T1 | 1 | Chalk & Talk | 12.03.2018 |
| 45 | Priority Interrupt | T1 | 1 | Chalk & Talk | 13.03.2018 |
| 46 | Direct memory Access(T) | T1 | 1 | Chalk & Talk | 14.03.2018 |
| 47 | Input –Output  Processor (IOP) | T1 | 1 | Chalk & Talk | 15.03.2018 |
| 48 | Intel 8089 IOP | T1 | 1 | Chalk & Talk | 17.03.2018 |
|  | **UNIT-V** |  |  |  |  |
| 49 | Memory Hierarchy, Main Memory | T1 | 1 | Chalk & Talk | 19.03.2018 |
| 50 | Auxiliary memory, Associate  Memory | T1 | 1 | Chalk & Talk | 20.03.2018 |
| 51 | Cache Memory(T) | T1 | 1 | Chalk & Talk | 21.03.2018 |
| 52 | Parallel Processing | T1 | 1 | Chalk & Talk | 22.03.2018 |
| 53 | Pipelining | T1 | 1 | Chalk & Talk | 23.03.2018 |
| 54 | Arithmetic Pipeline | T1 | 1 | Chalk & Talk | 24.03.2018 |
| 55 | |  | | --- | | Instruction Pipeline(T) | | T1 | 1 | Chalk & Talk | 26.03.2018 |
| 56 | RISC Pipeline | T1 | 1 | Chalk & Talk | 27.03.2018 |
| 57 | Vector Processing, Array Processors | T1 | 1 | Chalk & Talk | 28.03.2018 |
| 58 | Characteristics of Multiprocessors | T1 | 1 | Chalk & Talk | 29.03.2018 |
| 59 | Interconnection Structures(T) | T1 | 1 | Chalk & Talk | 30.03.2018 |
| 60 | Inter  processor arbitration | T1 | 1 | Chalk & Talk | 31.03.2018 |
| 61 | Inter processor communication, and synchronization | T1 | 1 | Chalk & Talk | 02.04.2018 |

**Important Questions**

**Unit-1**

1. Explain Von-Neumann Computer architecture with a neat block diagram.
2. Explain about various computer registers.
3. Explain about Instruction cycle phases.
4. Write briefly about address sequencing.
5. Explain design of control unit.

**Unit-2**

1. Explain the 8086 architecture with pin diagram.
2. Explain the register organization in 8086.
3. Elucidate machine language instruction formats.
4. What is an assembler? Briefly explain special processor activities.
5. Explain about Minimum and Maximum mode operation.

**Unit-3**

1. Explain the steps involved in writing a program using an assembler.
2. Write a program to find out the number of positive numbers and negative numbers from a given series of signed numbers.
3. Write a program for addition of two numbers.
4. Define Macros and interrupt service routines & Explain Assembler Directives with examples.

**Unit-4**

1. Explain Booth multiplication algorithm with example
2. Explain about Direct Memory Access (DMA).
3. Write short notes on :
4. Isolated versus Memory-mapped I/O
5. Handshaking
6. Daisy-Chaining Priority
7. Explain different types of modes of control.
8. Explain asynchronous communication interface in detail.

**Unit-5**

1. Explain briefly about four-segment Instruction pipeline
2. Explain the characteristics of multiprocessors
3. Explain about interconnection structures in multiprocessors
4. What is Locality of reference? Explain the mapping techniques in cache memory.
5. Explain arithmetic pipeline with example.

**Text books**

1. Computer System Architecture, M. Moris Mano, Third Edition, Pearson. **(UNITS-I**

**, IV , V)**

2. Advanced Microprocessors and Peripherals, K M Bhurchandi, A.K Ray ,3rd edition,

McGraw Hill India Education Private Ltd. **(UNITS - II, III).**

**References**

1. Microprocessors and Interfacing, D V Hall, SSSP Rao, 3rd edition, McGraw Hill

India Education Private Ltd.

2. Carl Hamacher, Zvonko Vranesic, Safwat Zaky: Computer Organization, 5th

Edition, Tata McGraw Hill, 2002

3. Computer Organization and Architecture, William Stallings, 9th Edition, Pearson.

4. David A. Patterson, John L. Hennessy: Computer Organization and Design – The

Hardware / Software Interface ARM Edition, 4th Edition, Elsevier, 2009.