

AMEI-15 COMPUTER ORGANISATION & ARCHITECTURE

Objective: The objective of the paper is to be introducing the student about the computer arithmetic and register transfer language, control design and internal architecture of 8085 microprocessor.

UNIT- I

Computer Arithmetic and Register transfer language:

Unsigned notation, signed notation, binary coded decimal, floating point numbers, IEEE 754 floating point standard, Micro-operation, Bus and Memory Transfers, Bus Architecture, Bus Arbitration, Arithmetic Logic, Shift Micro operation, Arithmetic Logic Shift Unit.

UNIT- II

Instruction set architecture & computer organization:

Levels of programming languages, assembly language instructions, 8085 instruction set architecture, Instruction Codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycle, Memory Reference Instructions, Input-Output and Interrupts

UNIT- III

Control Design:

Instruction sequencing & interpretation, Hardwired & Micro Programmed (Control Unit), Micromprogrammed computers, Microcoded CPU: Pentium processor. Specifying a CPU, Design & implementation of simple CPU. General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Internal architecture of 8085 microprocessor.

UNIT- IV

Memory & Input/Output organization: Memory Technology, Main Memory (RAM and ROM Chips), Virtual memory, High-speed memories.

Asynchronous Data Transfers, Programmed I/O, interrupts, Direct memory Access, Serial communication, UARTs, **RS-232-C & RS-422** standard.

Text Books:

[T1] J. D. Carpinelli, "Computer Systems Organization and Architecture", Pearson Education, 2006.

[T2] J. P. Hayes, "Computer Architecture and Organization", McGraw Hill, 1988.

Reference Books:

[R1] J. L. Hennessy and D. A. Patterson, "Computer Architecture: A quantitative approach", Morgan Kaufman, 1992.

[R2] W. Stallings, "Computer organization and Architecture", PHI, 7th ed, 2005.

[R3] B. Parhami, "Computer Architecture: From Microprocessors to Supercomputers", Oxford University press, 2006.