

2.17 30329 COMPUTER ORGANIZATION

UNIT-1 INTRODUCTION:

Function and structure of computer Functional components of a Function and structure of a computer, Functional components of a computer, Interconnection of components, Performance of a computer.

UNIT-2 REPRESENTATION OF INSTRUCTIONS OF INSTRUCTIONS:

Machine instructions, Operands, Addressing Machine instructions, Operands, Addressing modes, Instruction formats, Instruction sets, Instruction set architectures - CISC and RISC architectures.

UNIT-3 PROCESSING UNIT:

Organization of a processor - Registers, ALU and Control unit, Data path in a CPU, Instruction cycle, Organization of a control unit - Operations of a control unit, Hardwired control unit, Micro programmed control unit.

UNIT-4 MEMORY SUBSYSTEM:

Semiconductor memories, Memory cells - SRAM and DRAM cells, Internal Organization of a memory chip, Organization of a memory unit, Error correction memories, Interleaved memories, Cache memory unit - Concept of cache memory, Mapping methods, Organization of a cache memory unit, Fetch and write mechanisms, Memory management unit - Concept of virtual memory, Address translation, Hardware support for memory management.

UNIT-5 INPUT/OUTPUT SUBSYSTEM:

Access of I/O devices, I/O ports, I/O control mechanisms - Program controlled I/O Interrupt controlled I/O and DMA controlled I/O I/O interfaces controlled I/O, Interrupt controlled I/O, and DMA controlled I/O, I/O interfaces - Serial port, Parallel port, PCI bus, SCSI bus, USB bus, Firewall and Infiniband, I/O peripherals - Input devices, Output devices, Secondary storage devices.

Reference Books:

1. C. Hamacher, Z. Vranesic and S. Zaky, "Computer Organization", McGrawHill, 2002.
2. W. Stallings, "Computer Organization and Architecture - Designing for Performance", Prentice Hall of India, 2002.
3. D. A. Patterson and J. L. Hennessy, "Computer Organization and Design - The Hardware/Software Interface", Morgan Kaufmann, 1998.
4. J.P. Hayes, "Computer Architecture and Organization", McGraw-Hill, 1998