Sub Code
:
06CS46
IA Marks
:
25
Hrs / Week
:
04

Exam Hours

:

03

Total Hrs

:

52

Exam Marks

:

100

PART – A

UNIT 1:

1. Basic Structure of Computers: Computer Types, Functional Units, Basic Operational Concepts, Bus Structures, Performance – Processor Clock, Basic Performance Equation, Clock Rate, Performance Measurement, Historical Perspective
2. Machine Instructions and Programs: Numbers, Arithmetic Operations and Characters, Memory Location and Addresses, Memory Operations, Instructions and Instruction Sequencing,

6 Hours

UNIT 2:

1. Machine Instructions and Programs *contd*.: Addressing Modes, Assembly Language, Basic Input and Output Operations, Stacks and Queues, Subroutines, Additional Instructions, Encoding of Machine Instructions

7 Hours

UNIT 3:

1. Input/Output Organization: Accessing I/O Devices, Interrupts – Interrupt Hardware, Enabling and Disabling Interrupts, Handling Multiple Devices, Controlling Device Requests, Exceptions, Direct Memory Access, Buses

6 Hours

UNIT 4:

1. Input/Output Organization *contd*.: Interface Circuits, Standard I/O Interfaces – PCI Bus, SCSI Bus, USB

7 Hours

PART – B

UNIT 5:

1. Memory System: Basic Concepts, Semiconductor RAM Memories, Read Only Memories, Speed, Size, and Cost, Cache Memories – Mapping Functions, Replacement Algorithms, Performance Considerations

6 Hours

UNIT 6:

1. Memory System *contd*.: Virtual Memories, Secondary Storage
2. Arithmetic: Addition and Subtraction of Signed Numbers, Design of Fast Adders

7 Hours

UNIT 7:

1. Arithmetic *contd*.: Multiplication of Positive Numbers, Signed Operand Multiplication, Fast Multiplication, Integer Division, Floating-point Numbers and Operations

7 Hours

UNIT 8:

1. Basic Processing Unit: Some Fundamental Concepts, Execution of a Complete Instruction, Multiple Bus Organization, Hard-wired Control, Microprogrammed Control

6 Hours

Text Book

1. **Computer Organization**, Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 5th Edition, TMH, 2002.

(Chapter 1.1 to 1.4, 1.6.1, 1.6.2, 1.6.4, 1.6.7, 1.8, Chapter 2.1 to 2.10, 2.12, Chapter 4.1, 4.2.1 to 4.2.5, 4.4 to 4.7, Chapter 5.1 to 5.4, 5.5.1, 5.5.2, 5.6, 5.7, 5.9, Chapter 6, 7).

Reference Books

1. **Computer Organization & Architecture**, William Stallings, 7th Edition, PHI, 2006.

1. **Computer Systems Design and Architecture**, Vincent P. Heuring & Harry F. Jordan, 2nd Edition, Pearson Education, 2004.