SARDAR PATEL UNIVERSITY
B.Sc. Information Technology
IV Semester
Syllabus with Effect from: June-2012
Course : US04CINT01
(Computer Organization and Digital Computer Electronic)

Credits : 3
Lectures per week : 3
University Exam Duration : 3 Hours

All units carry equal weightage.

Unit 1: Number Systems

- Introduction to Number System :
  Binary, Octal, Decimal, Hexadecimal.
- Conversions:
  Binary, Octal, Decimal, Hexadecimal.
- Arithmetic of Binary System
  Addition, Subtraction.
- Block diagram of Computer.
- Significance of different functional units.
- Generation of Computers(*Generation up to 5th*).
- Classification of Computers :
  (Notebooks Computers, Personal Computers, Work Stations, Mainframe Systems, Super Computers, Clients and Services).
- Definitions of Hardware.
- Definition of Software.
- Application of Computer(*List Only*).

Unit 2: Character Code & Processor and its Functions

- Error Detection and Correction Code (Hemming Code).
- Instruction execution cycle.
- CPU Organization.
- Parallel instruction execution.
- Array Processors.
- Multiple functional units.
- Multiprocessors.
- Pipelining.

Unit 3: Gates and Boolean Algebra

- Gates: NOT Gate, OR Gate, AND Gate, NOR Gate, NAND Gate, XOR Gate, XNOR Gate.
- Boolean algebra.
- Truth tables *(Up to 3 Input Signals).*
- Circuit equivalence.
- De Morgan's theorems.
- Half adder.
- Full adder.

- Binary adder-subtractor.

Unit 4 : Basic Digital Logic Circuit-I

- Encoders *(8 X 3 line).*
- Decoders *(3 X 8 line).*
- Multiplexer *(4 X 1, 8 X 1 line).*
- Flip – Flops (RS, D latches).
- Comparators.
- Usage of Karnaugh maps *(Up to 4 Variables).*

Books :-

1. Tanenbaum A.S: Structured Computer Organization, Prentice-Hall of India Pvt Ltd 5th Edition.
2. Computer Fundamentals 4th Edition by P.K. Sinha, Priti Sinha.
3. Malvino A. P. : Digital Computer Electronics, 3rd Edition, Tata McGraw - Hill Pub. Co. Ltd. , New Delhi, 1990.