Subject Code : RNR12

Digital Electronics and Applications.

UNIT – I : Combinational Logic:

Review of number systems and codes – simplification of Boolean expression by Karnaugh map – SOP and POS forms – Circuit implementation – Adders and Subtractors (half and full) – Four bit binary adder and / or subtractor – digital comparator – BCD adder. Design and implementation of binary address (half and full) subtractors.

UNIT – II : Sequential Logic:

Review of flip-flops - Encoders and Decoders – multiplexers and Demultiplexers. Counters Asynchronous and Synchronous counter design – down counter – general BCD counter, counter ICs, ring counter, digital clock.

Shift Registers: Serial in/out - Parallel in/out; Right/left serial shift registers. Shift counters, Universal shift registers, applications of shift register in keyboard entry of decimal data.

UNIT – III : Interface Circuits:

A/D convertor –Variable register network, Binary adder – Simultaneous Conversion – Counter method resolution – Continuous Convertor – Dual slope convertor - accuracy and resolution D/A convertor - accuracy and resolution - Switch interface – debranching – auto coupler – digital data transmission – modems.

UNIT – IV : Memories:

Basics – types and terminators – Organization – reading and writing – RAM, ROM, PROM, EPROM, EEPROM – ROM cell and circuits – address decoding and access – Bipolar RAM– MOSFET RAM – ICCRAM – ERAM –Memory expanding – PLA – Practical PLA circuit – Magnetic Disk memories – Bubble memory – Change coupled device.

UNIT – V : Digital Application:

Multiplexing displays – frequency counters – time measurements – Microprocessor compatible ADC – Digital clocks.

Books for Reference:

1. Digital Principles and Applications by A.P. Malvino, D.P. IV Edition.
2. The Art of Electronics, by Paul Horowltz win Field Hill II Edition, Cambridge University Press – Foundation Book.
3. Introduction to Digital circuit by Theodore R.Bogart Jr. - McGraw Hill.
4. Digital Computer Organization and Architecture by Moris Mano
5. Digital Computer Fundamentals by Thomas Bartee.