Name of Subject : Digital Electronics **Semester : 3rd**

Name of faculty : Anita Rani **Branch : Computer**

week	Lecture	Name of Topic	Experiment
1st	1st	Introduction to Digital Electronics, Distinction between analog and digital signal.	Introduction with digital Lab equipments
	2nd	Applications and advantages of digital signals	
	3rd	Binary, octal and hexadecimal number system: conversion from decimal and hexadecimal to binary and vice-versa.	
2nd	4th	Binary addition and subtraction including binary points. 1's and 2's complement method of addition/subtraction.	Verification and interpretation of truth tables for AND, OR, NOT NAND, NOR and Exclusive OR (EXOR) and Exclusive NOR(EXNOR) gates
	5th	Concept of code, weighted and non-weighted codes, examples of 8421, BCD, excess-3 and Gray code.	
	6th	Concept of parity, single and double parity and error detection.	
3rd	7th	Concept of negative and positive logic	Realization of logic functions with the help of NAND or NOR gates
	8th	Definition, symbols and truth tables of NOT, AND, OR, NAND, NOR, EXOR Gates,	
	9th	NAND and NOR as universal gates.	
4th	10th	Introduction to TTL and CMOS logic families	Revision and viva-voce
	11th	Revision	
	12th	Postulates of Boolean algebra, De Morgan's Theorems.	
5th	13th	Implementation of Boolean (logic) equation with gates	To design a half adder using XOR and NAND gates and verification of its operation
	14th	Karnaugh map (upto 4 variables) and simple application in developing combinational logic circuits.	
	15th	K-Map Practice and revision	
6th	16th	Sessional Test	Construction of a full adder circuit using XOR and NAND gates and verify its operation
	17th	Half adder, design and implementation.	
	18th	Full adder circuit , design and implementation and 4 bit adder circuit	

7th	19th	Basic functions and block diagram of MUX and DEMUX with different ICs.	Verification of truth table for encoder and decoder ICs, Mux and De-Mux
	20th	Four bit decoder circuits for 7 segment display and decoder/driver ICs.	
	21st	Basic functions and block diagram of Encoder	
8th	22nd	Revision	Revision and viva-voce
	23rd	Concept and types of latch with their working and applications	
	24th	Difference between a latch and a flip flop	
9th	25th	Operation using waveforms and truth tables of RS, T, D,	Verification of truth table for positive edge triggered, negative edge triggered, level triggered IC flip-flops (At least one IC each of D latch , D flip-flop, JK flip-flops).
	26th	Master/Slave JK flip flops.	
	27th	Introduction to Asynchronous and Synchronous counters .	
10th	28th	Binary counters and divide by N ripple counter	Use of Asynchronous Counter ICs (7490 or 7493)
	29th	Decade counter and ring counter	
	30th	Revision	
11th	31st	Revision	
	32nd	Sessional Test	
	33rd	Introduction and basic concepts including shift left and shift right. Serial in parallel out, serial in serial out,	
12th	34th	parallel in serial out, parallel in parallel out.	To design a 4 bit ring counter and verify its operation.
	35th	Universal shift register	
	36th	Revision	
13th	37th	Working principle of A/D and D/A converters and Applications of A/D and D/A converter.	To design a 4 bit SISO, SIPO, PISO, PIPO shift registers using JK/D flip flops and verification of their operation
	38th	Binary Weighted D/A converter and R/2R ladder D/A converter	
	39th	Stair step Ramp A/D converter, Dual Slope A/D converter	
14th	40th	Successive Approximation A/D Converter	Revision and Viva
	41st	Memory organization,.	
	42nd	classification of semiconductor memories (RAM, ROM, PROM, EPROM, EEPROM), static and dynamic RAM,	
15th	43rd	Introduction to 74181 ALU IC	Revision and viva
	44th	Revision	
	45th	Sessional Test	
16th	46th	Revision	Revision and viva
	47th	Revision	
	48th	Revision	