

Name of Subject : Digital Electronics

Semester : 3rd

Name of faculty : Anita Rani

Branch : Computer Engg

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

7 th	19 th	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
	20 th	Four bit decoder circuits for 7 segment display and decoder/driver ICs.	
	21 st	Basic functions and block diagram of Encoder	
8 th	22 nd	Revision	Revision and viva-voce
	23 rd	Concept and types of latch with their working and applications	
	24 th	Difference between a latch and a flip flop	
9 th	25 th	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).
	26 th	Master/Slave JK flip flops.	
	27 th	Introduction to Asynchronous and Synchronous counters.	
10 th	28 th	Binary counters and divide by N ripple counter	Use of Asynchronous Counter ICs (7490 or 7493)
	29 th	Decade counter and ring counter	
	30 th	Revision	
11 th	31 st	Revision	
	32 nd	Sessional Test	
	33 rd	Introduction and basic concepts including shift left and shift right. Serial in parallel out, serial in serial out,	
12 th	34 th	parallel in serial out, parallel in parallel out.	To design a 4 bit ring counter and verify its operation.
	35 th	Universal shift register	
	36 th	Revision	
13 th	37 th	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
	38 th	Binary Weighted D/A converter and R/2R ladder D/A converter	
	39 th	Stair step Ramp A/D converter, Dual Slope A/D converter	
14 th	40 th	Successive Approximation A/D Converter	Revision and Viva
	41 st	Memory organization,.	
	42 nd	classification of semiconductor memories (RAM, ROM, PROM, EPROM, EEPROM), static and dynamic RAM,	
15 th	43 rd	Introduction to 74181 ALU IC	Revision and viva
	44 th	Revision	
	45 th	Sessional Test	