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

Name of faculty : Mohit Kumar **Branch : ECE**

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	Realisation 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	Practical checking and viva-voce
	11th	Revision	
	12th	Logic simplification	
5th	13th	Postulates of Boolean algebra, De Morgan's Theorems.	To design a half adder using XOR and NAND gates and verification of its operation
	14th	Implementation of Boolean (logic) equation with gates	
	15th	Karnaugh map (upto 4 variables) and simple application in developing combinational logic circuits.	
6th	16th	Test and assignment	Construction of a full adder circuit using XOR and NAND gates and verify its operation
	17th	K-Map Practice	
	18th	Half adder, design and implementation.	
7th	19th	and Full adder circuit , design and implementation and 4 bit adder circuit	Verification of truth table for encoder and decoder ICs, Mux and De-Mux
	20th	Basic functions and block diagram of MUX and DEMUX with different ICs.	
	21st	Four bit decoder circuits for 7 segment display and decoder/driver ICs.	

8th	22nd	Basic functions and block diagram of Encoder	Practical checking 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	Use of Asynchronous Counter ICs (7490 or 7493)
	29th	Divide by N ripple counters.	
	30th	Decade counter.	
11th	31st	Ring counter	
	32nd	Revision	
	33rd	Test and assignment	
12th	34th	Introduction and basic concepts including shift left and shift right. Serial in parallel out, serial in serial out,	To design a 4 bit ring counter and verify its operation.
	35th	parallel in serial out, parallel in parallel out.	
	36th	Universal shift register	
13th	37th	Working principle of A/D and D/A converters Brief idea about different techniques of A/D conversion	To design a 4 bit SISO, SIPO, PISO, PIPO shift registers using JK/D flip flops and verification of their operation
	38th	Detail study of Binary Weighted D/A converter.	
	39th	R/2R ladder D/A converter	
14th	40th	Stair step Ramp A/D converter, Dual Slope A/D converter	Viva
	41st	Successive Approximation A/D Converter Applications of A/D and D/A converter.	
	42nd	Memory organization,.	
15th	43rd	classification of semiconductor emories (RAM, ROM, PROM, EPROM, EEPROM), static and dynamic RAM,	Viva
	44th	Introduction to 74181 ALU IC	
	45th	Test and assignment	