Name of the Faculty : Smt. Anita Kumari
Discipline : Electronics and Communication Engg.
Semester : IIIrd
Subject : DIGITAL ELECTRONICS
Lesson Plan Duration : Sep.-2022
Work Load (Lecture/ Practical) per week (in hours): 03 HOURS (Lecture)

Week	Theory		Practical
	Lecture day	Topic (including assignment/ test)	Topic
1st	1	Introduction about subject.	Introduction about instruments to be used in practical work.
	2	Distinction between analog and digital signal. Applications and advantages of digital signals.	
	3	Binary, octal and hexadecimal number system.	
2nd	4	Conversion from decimal and hexadecimal to binary and vice-versa.	Verification and interpretation of truth tables for AND, OR, NOT NAND, NOR and Exclusive OR (EXOR) and Exclusive NOR(EXNOR) gates
	5	Binary addition and subtraction including binary points. 1's and 2's complement method of addition/subtraction.	
	6	Concept of code, weighted and non-weighted codes, examples of 8421, BCD, excess-3 and Gray code.	
3rd	7	Concept of parity, single and double parity and error detection	Realisation of logic functions with the help of NAND or NOR gates
	8	Concept of negative and positive logic	
	9	Definition, symbols and truth tables of NOT, AND, OR, NAND, NOR, EXOR Gates	
4th	10	NAND and NOR as universal gates.	To design a half adder and full adder using XOR and NAND gates and verification of its operation.
	11	Introduction to TTL and CMOS logic families	
	12	Postulates of Boolean algebra, De Morgan's Theorems.	
5th	13	Implementation of Boolean (logic) equation with gates	Verification of truth table for positive edge triggered,
	14	Karnaugh map (upto 4 variables) and simple application in developing combinational logic circuits	

	15	Half adder and Full adder circuit, design and implementation.	negative edge triggered, level triggered IC flip-flops (At least one IC each of D latch , D flip-flop, JK flip-flops).
6th	**16**	4 bit adder circuit	Verification of truth table for encoder and decoder ICs.
	17	Four bit decoder circuits for 7 segment display and decoder/driver ICs.	
	18	Basic functions and block diagram of MUX and DEMUX with different ICs	
7th	**19**	Basic functions and block diagram of Encoder	Verification of truth table for Mux and DeMux
	20	Concept and types of latch with their working and applications	
	21	Operation using waveforms and truth tables of RS, T, D F/F.	
8th	**22**	Master/Slave JK flip flops. Race around condition.	To design a 4 bit SISO, SIPO, PISO, PIPO shift registers using JK/D flip flops and verification of their operation.
	23	Difference between a latch and a flip flop	
	24	Introduction to Asynchronous counters.	
9th	**25**	Introduction to synchronous counters.	To design a 4 bit ring counter and verify its operation.
	26	Binary counters	
	27	Divide by N ripple counters	
10th	**28**	Decade counter, Ring counter	Use of Asynchronous Counter ICs (7490 or 7493)
	29	Introduction and basic concepts including shift left and shift right.	
	30	Serial in parallel out, serial in serial out shift register.	
11th	**31**	Parallel in serial out, parallel in parallel out shift register.	Viva of Performed Practical.
	32	Universal shift register	
	33	Working principle of A/D converters	
12th	**34**	Brief idea about different techniques of A/D conversion and study of : Stair step Ramp A/D converter	

	35	Dual Slope A/D converter	Viva of Performed Practical.
	36	Successive Approximation A/D Converter	
13th	**37**	Working principle of D/A converters	Viva of Performed Practical.
	38	Binary Weighted D/A converter	
	39	R/2R ladder D/A converter	
14th	**40**	Applications of A/D and D/A converter.	Viva of Performed Practical.
	41	Memory organization, classification of semiconductor memories	
	42	RAM, ROM, PROM, EPROM, EEPROM, static and dynamic RAM	
15th	**43**	introduction to 74181 ALU IC	Final Internal Viva of all Practical.
	44	Revision	
	45	Revision	