NAME OF THE FACULTY : Vikramaditya

DISCIPLINE : ECE

SEMESTER : 3rd

SUBJECT : DIGITAL ELECTRONICS

LESSON PLAN DURATION : - 15 weeks (from July- 2018 to Dec- 2018)

WORK LOAD (LECTURE/PRACTICAL) PER WEEK (IN HOURS):- LECTURE-**03**, PRACTIACL-**03** PER GROUP

WEEK	THEORY		PRACTICAL		
	Lecture / Hrs	TOPIC (Including Assignment/Test)	Practical / Hrs		Experiment
1st	1	Introduction to Digital Electronics: Distinction between analog and digital signal.		1	Verification and interpretation of truth tables for AND, OR, NOT NAND, NOR and Exclusive OR (EXOR) and Exclusive NOR(EXNOR) gates
				2	
	2	Applications and advantages of digital signals.		3	
	3	Number System: Binary, octal and hexadecimal number system			
2nd	4	Conversion from decimal and hexadecimal to binary and vice-versa.		1	C Realisation of logic functions with the help of NAND or NOR gates
				2	
	5	Binary addition and subtraction including binary points. 1's and 2's complement method of addition/ subtraction		3	
				1	Revision Experiment Performed
	6	Codes and Parity: Concept of code, weighted and non-weighted codes		2	
				3	
3rd	7	Examples of 8421, BCD, excess-3 and Gray code		1	construction of a full adder circuit using XOR and NAND gates and verify its operation
				2	
	8	Concept of parity, single and double parity and error detection		3	
				1	
	9	Logic Gates and Families: Concept of negative and positive logic.		2	
				3	
4th	10	Definition, symbols and truth tables of NOT, AND, OR Gates		1	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 Mux and DeMux
				2	
	11	Definition, symbols and truth tables of NAND, NOR, EXOR Gates		3	
				1	
	12	Definition, symbols and truth tables of NAND and NOR as universal gates.		2	
				3	

5th	13	Introduction to TTL and CMOS logic families		1 2 3	Verification of truth table for encoder and decoder ICs
	14	Assignment-1		1 2 3	
	15	Sessional Test-1			
6th	16	Logic Simplification: Postulates of Boolean algebra, De Morgan's Theorems		1 2 3	, To design a 4 bit SISO, SIPO, PISO, PIPO shift registers using JK/D flip flops and Asynchronous Counter ICs (7490 or 7493
	17	Implementation of Boolean (logic) equation with gates		1 2 3	Revision Experiment Performed
	18	Karnaugh map (upto 4 variables)			
7th	19	Simple application in developing combinational logic circuits		1 2 3	To design a 4 bit ring counter and verify its operation
	20	Arithmetic circuits: Half adder and Full adder circuit		1 2 3	
	21	Half adder and Full adder circuit, design and implementation			
8th	22	Decoders, Multiplexeres, Multiplexeres and Encoder: Introduction		1 2 3	Revision Experiment Performed
	23	Four bit decoder circuits for 7 segment display and decoder/driver ICs		1 2 3	Revision Experiment Performed
	24	Basic functions and block diagram of MUX and DEMUX with different ICs			
9th	25	Basic functions and block diagram of Encoder		1 2 3	Revision Experiment Performed
	26	Latches and flip flops: Concept and types of latch with their working and applications		1 2 3	Revision Experiment Performed
	27	Operation using waveforms and truth tables of RS, T, D, Master/Slave JK flip flops.			
10th	28	Difference between a latch and a flip flop.		1 2 3	Revision Experiment Performed
	29	Assignment-2		1 2 3	Revision Experiment Performed
	30	Sessional Test-2			

11th	31	Counters: Introduction		1 2 3	To design a 4 bit ring counter and verify its operation
	32	Introduction to Asynchronous counters		1	To design a 4 bit ring counter and verify its operation
	33	Introduction to Synchronous counters		2 3	
12th	34	Binary counters		1 2 3	Use of Asynchronous Counter ICs (7490 or 7493)
	35	Divide by N ripple counters		1	Use of Asynchronous Counter ICs (7490 or 7493)
	36	Decade counter, Ring counter		2 3	
13th	37	Shift Register: Introduction and basic concepts including shift left and shift right. Serial in parallel out, serial in serial out		1 2	Revision Experiment Performed
	38	Parallel in serial out, parallel in parallel out. Universal shift register.		3	
	39	A/D and D/A Converters: Working principle of A/D and D/A converters, Stair step Ramp A/D converter, Dual Slope A/D converter.		1 2 3	Revision Experiment Performed
14th	40	Successive Approximation A/D Converter, detail study of : Binary Weighted D/A converter, R/2R ladder D/A converter. Applications of A/D and D/A converter		1 2	Revision Experiment Performed
	41	Semiconductor Memories: Memory organization, classification of Semiconductor memories		3	
	42	(RAM, ROM, PROM, EPROM, EEPROM), static and dynamic RAM		1 2 3	Revision Experiment Performed
15th	43	Introduction to 74181 ALU IC		1 2	Revision Experiment Performed
	44	Assignment- 3		3	
	45	**Sessional Test- 3**		1 2 3	Revision Experiment Performed