3RD SEM-ETC – DIGITAL ELECTRONICS(THEORY 3) 4P/Week - 15 Weeks, Total - 60P

Name of the Faculty: Deepika Panda (Academic Year 2020-21)

WEEKS	No. of Days/per week Class allotted: **4**		Syllabus To be Covered
			Unit - 1 : Basics of Digital Electronics [12 Period]
1ST WEEK	1st	1	Number System-Binary, Octal, Decimal, Hexadecimal
	2nd	2	Conversion from one system to another number system.
	3rd	3	Arithmetic Operation-Addition, Subtraction, Multiplication, Division
	4th	4	1's & 2's complement of Binary numbers& Subtraction using complements method
2ND WEEK	1st	5	Digital Code & its application & distinguish between weighted & non-weight Code, Binary codes, excess-3 and Gray codes.
	2nd	6	Logic gates: AND,OR,NOT,NAND,NOR, Exclusive-OR, Exclusive-NOR--Symbol, Function, expression, truth table & timing diagram
	3rd	7	Universal Gates & its Realisation
	4th	8	Universal Gates & its Realisation
3RD WEEK	1st	9	Boolean algebra, Boolean expressions, Demorgan's Theorems.
	2nd	10	Represent Logic Expression: SOP & POS forms
	3rd	11	Karnaugh map (3 & 4 Variables) & Minimization of logical expressions
	4th	12	Karnaugh map (3 & 4 Variables) don't care conditions
			Unit - 2: Combinational Logic Circuits [12 Period]
4TH WEEK	1st	13	Half adder
	2nd	14	Full adder
	3rd	15	Half Subtractor
	4th	16	Full Subtractor
5TH WEEK	1st	17	Parallel Binary 4 bit adder.
	2nd	18	Serial adder

	3rd	19	Multiplexer (4:1)
	4th	20	De- multiplexer (1:4)
6TH WEEK	1st	21	Decoder, Encoder
	2nd	22	Digital comparator (3 Bit)
	3rd	23	Seven segment Decoder
	4th	24	Seven segment Decoder

Unit-3: Sequential logic Circuits [12 Period]

7TH WEEK	1st	25	Principle of flip-flops operation, its Types,
	2nd	26	Principle of flip-flops operation, its Types,
	3rd	27	SR Flip Flop using NAND Latch (un clocked)
	4th	28	SR Flip Flop using NOR Latch (un clocked)
8TH WEEK	1st	29	Clocked SR flip-flops-Symbol, logic Circuit, truth table and applications
	2nd	30	Clocked D flip-flops-Symbol, logic Circuit, truth table and applications
	3rd	31	Clocked JK flip-flops-Symbol, logic Circuit, truth table and applications
	4th	32	Clocked T flip-flops-Symbol, logic Circuit, truth table and applications
9TH WEEK	1st	33	Clocked JK Master Slave flip-flops-Symbol, logic Circuit, truth table and applications
	2nd	34	Clocked JK Master Slave flip-flops-Symbol, logic Circuit, truth table and applications
	3rd	35	Concept of Racing and how it can be avoided.
	4th	36	Concept of Racing and how it can be avoided.

Unit-4: Registers, Memories & PLD [08 Period]

10TH WEEK	1st	37	Shift Registers-Serial in Serial -out, Serial- in Parallel-out
	2nd	38	Shift Registers-Parallel in serial out and Parallel in parallel out
	3rd	39	Universal shift registers-Applications. Types of Counter & applications
	4th	40	Binary counter, Asynchronous ripple counter (UP & DOWN)

11TH WEEK	1st	41	Binary counter : Decade counter. Synchronous counter, Ring Counter.
	2nd	42	Binary counter : Ring Counter.
	3rd	43	Concept of memories-RAM, ROM, static RAM, dynamic RAM,PS RAM
	4th	44	Basic concept of PLD & applications

Unit-5: A/D and D/A Converters   [07 Period]

12TH WEEK	1st	45	Necessity of A/D and D/A converters.
	2nd	46	D/A conversion using weighted resistors methods.
	3rd	47	D/A conversion using weighted resistors methods.
	4th	48	D/A conversion using R-2R ladder (Weighted resistors) network.
13TH WEEK	1st	49	D/A conversion using R-2R ladder (Weighted resistors) network.
	2nd	50	A/D conversion using counter method.
	3rd	51	A/D conversion using Successive approximate method

Unit-6: LOGIC FAMILIES   [09 Period]

	4th	52	Various logic families & categories according to the IC fabrication process
14TH WEEK	1st	53	Various logic families & categories according to the IC fabrication process
	2nd	54	Characteristics of Digital ICs- Propagation Delay, fan-out, fan-in with Reference to logic families.
	3rd	55	Characteristics of Digital ICs- Power Dissipation, Noise Margin with Reference to logic families.
	4th	56	Characteristics of Digital ICs- Power Supply requirement with Reference to logic families.
15TH WEEK	1st	57	Characteristics of Digital ICs- Speed with Reference to logic families.
	2nd	58	Features, circuit operation & various applications of TTL (NAND)
	3rd	59	Features, circuit operation & various applications of CMOS (NAND)
	4th	**60**	Features, circuit operation & various applications of CMOS (NOR)