

GOVERNMENT POLYTECHNIC, SAMBALPUR, RENGALI

DEPARTMENT OF E&TC ENGINEERING

LESSON PLAN(WINTER-22)

SUBJECT- DIGITAL ELECTRONICS (TH-3)

SEMESTER-3RD

NAME OF THE FACULTY- Mr. RAJAT KUMAR DUTTA

TOTAL NO. OF PERIODS-60(4/W)

UNIT	DATE	PERIOD	TOPICS TO BE COVERED AS PER SYALLABUS
1	1 st week of August,2022		Basics of Digital Electronics
		1	Number System-Binary, Octal, Decimal, Hexadecimal - Conversion from one system to another number system
		2	Arithmetic Operation-Addition, Subtraction, Multiplication, Division, 1's & 2's complement of Binary numbers& Subtraction using complements method
		3	Digital Code & its application & distinguish between weighted & non-weight Code, Binary codes, excess-3 and Gray codes
		4	Logic gates: AND,OR,NOT,NAND,NOR, Exclusive-OR, Exclusive-NOR--Symbol, Function, expression, truth table & timing diagram
		5	Universal Gates& its Realisation
		6	Boolean algebra, Boolean expressions, Demorgan's Theorems.
		7	Represent Logic Expression: SOP & POS forms
		8	Karnaugh map (3 & 4 Variables)&Minimization of logical expressions ,don't care condition
		9	Previous year questions discussion
		10	Previous year questions discussion & assignments.
2	4 th Week of August,2022		Combinational logic circuits.
		1	Half adder, Full adder, Half Subtractor, Full Subtractor, Serial and Parallel Binary 4 bit adder
		2	Multiplexer (4:1), De- multiplexer (1:4), Decoder, Encoder, Digital comparator (3 Bit)
		3	Seven segment Decoder
		4	Previous year questions discussion & assignments.
3	3 rd week of September,2022		Sequential logic Circuits
		1	Principle of flip-flops operation, its Types,
		2	SR Flip Flop using NAND,NOR Latch (un clocked)
		3	C l o c k e d SR,D,JK,T,JK Master Slave flip-flops-Symbol, logic Circuit, truth table and applications
		4	Concept of Racing and how it can be avoided.
		5	Previous year questions discussion & assignments.
4			Registers, Memories & PLD

	1 st week of October,2022	1	Shift Registers-Serial in Serial -out, Serial- in Parallel-out, Parallel in serial out and Parallel in parallel out
		2	Universal shift registers-Applications.
		3	Types of Counter & applications
		4	Binary counter, Asynchronous ripple counter (UP & DOWN), Decade counter. Synchronous counter, Ring Counter.
		5	Concept of memories-RAM, ROM, static RAM, dynamic RAM,PS RAM
		6	Basic concept of PLD & applications
		7	Previous year questions discussion & assignments.
5	3 rd week of October,2022		A/D and D/A Converters
		1	Necessity of A/D and D/A converters.
		2	D/A conversion using weighted resistors methods.
		3	D/A conversion using R-2R ladder (Weighted resistors) network.
		4	A/D conversion using counter method.
		5	A/D conversion using Successive approximate method
		6	Previous year questions discussion & assignments.
6	3 rd week of November,2022		LOGIC FAMILIES
		1	Various logic families &categories according to the IC fabrication process
		2	Characteristics of Digital ICs- Propagation Delay, fan-out, fan-in, Power Dissipation ,Noise Margin ,Power Supply requirement &Speed with Reference to logic families
		3	Features, circuit operation &various applications of TTL(NAND), CMOS (NAND & NOR)
		4	Previous year questions discussion & assignments.