LESSON PLAN (Winter-2024)		
Discipline: ETC	**Semester: 3rd**	**Name of the Teaching Faculty: RAJAT KUMAR DUTTA**
Subject: DIGITAL ELECTRONICS	**No of Days /per week class allotted:4**	**Semester From date: 01.07.2024 To 08.11.2024** **No of Weeks:19**
Week	**Class Day**	**Theory Topics**
1st	1st	**Unit-1: Basics of Digital Electronics (12**) 1.1 Number System-Binary, Octal, Conversion from one system to another number system.
	2nd	Decimal, Hexadecimal - Conversion from one system to another number system.
	3rd	1.2 Arithmetic Operation-Addition, Subtraction, Multiplication, Division,
	4th	1's & 2's complement of Binary numbers& Subtraction using complements method
2nd	1st	1.3 Digital Code & its application & distinguish between weighted & non-weight Code, Binary codes, excess-3 and Gray codes.
	2nd	1.4 Logic gates: AND,OR,NOT,NAND,-Symbol, Function, expression, truth table & timing diagram
	3rd	NOR, Exclusive-OR, Exclusive-NOR--Symbol, Function, expression, truth table & timing diagram
	4th	1.5 Universal Gates& its Realisation
3rd	1st	1.6 Boolean algebra, Boolean expressions, Demorgan's Theorems.
	2nd	1.7 Represent Logic Expression: SOP & POS forms
	3rd	1.8 Karnaugh map (3 & 4 Variables)&
	4th	Minimization of logical expressions ,don't care conditions
4th	1st	**Unit-2: Combinational logic circuits (12)** 2.1 Half adder, Full adder
	2nd	Half Subtractor, Full Subtractor,
	3rd	Serial Binary 4 bit adder.
	4th	Parallel Binary 4 bit adder.
5th	1st	2.2 Multiplexer (4:1),
	2nd	De- multiplexer (1:4)
	3rd	Decoder,
	4th	Encoder
6th	1st	Digital comparator (3 Bit)
	2nd	Continue…
	3rd	2.3 Seven segment Decoder (Definition, relevance, gate level of circuit Logic circuit of above)
	4th	Seven segment Decoder (truth table, Applications of above)
7th	1st	**Unit-3: Sequential logic Circuits (12)** 3.1 Principle of flip-flops operation, its Types,
	2nd	3.2 SR Flip Flop using NAND Latch (un clocked)
	3rd	SR Flip Flop using NOR Latch (un clocked)

	4th	3.3 Clocked SR Flip Flop-Symbol, logic Circuit, truth table and applications
8th	1st	D Flip Flop-Symbol, logic Circuit, truth table and applications
	2nd	JK FLIP FLOP-Symbol, logic Circuit, truth table and applications
	3rd	T Flip Flop-Symbol, logic Circuit, truth table and applications
	4th	JK Master Slave flip-flops-Symbol, logic Circuit, truth table and applications
9th	1st	Continue…
	2nd	3.4 Concept of Racing and how it can be avoided.
	3rd	4.5 Concept of memories-RAM, ROM, static RAM, dynamic RAM,PS RAM
	4th	4.6 Basic concept of PLD & applications
10th	1st	**Unit-4: Registers, Memories & PLD (8)** 4.1 Shift Registers-Serial in Serial -out, Serial- in Parallel-out, Parallel in serial out and Parallel in parallel out
	2nd	4.2 Universal shift registers-Applications. 4.3 Types of Counter & applications
	3rd	4.4 Binary counter,
	4th	Asynchronous ripple counter (UP & DOWN),
11th	1st	Decade counter.
	2nd	Synchronous counter,
	3rd	Ring Counter
	4th	**Unit-5: A/D and D/A Converters (7)** 5.1 Necessity of A/D converters
12th	1st	Necessity D/A converters.
	2nd	5.2 D/A conversion using weighted resistors methods.
	3rd	Continue…..
	4th	5.2 D/A conversion using weighted resistors methods.
13th	1st	5.3 D/A conversion using R-2R ladder (Weighted resistors)network.
	2nd	Continue…..
	3rd	5.4 A/D conversion using counter method.
	4th	Continue…..
14th	1st	5.5 A/D conversion using Successive approximate method
	2nd	Continue…..
	3rd	**Unit-6: LOGIC FAMILIES (9)**
	4th	6.2 Characteristics of Digital ICs- Propagation Delay, fan-out, fan-in, Power Dissipation
15th		**PUJA HOLIDAY**
16th	1st	**Unit-6: LOGIC FAMILIES (9)** 6.1 Varios logic families
	2nd	categories according to the IC fabrication process
	3rd	6.2 Characteristics of Digital ICs- Propagation Delay,
	4th	fan-out, fan-in, Power Dissipation
17th	1st	Power Dissipation , Noise Margin ,
	2nd	Power Supply requirement
	3rd	&Speed with Reference to logic families.
	4th	6.3 Features, circuit operation &various applications of TTL(NAND)
18th	1st	Features, circuit operation &various applications of CMOS (NAND)
	2nd	Continue ..
	3rd	Features, circuit operation &various applications of CMOS (NOR)
	4th	Continue ..

01.08.2023

Signature of the Faculty