

BLACK DIAMOND SCHOOL OF ENGINEERING, JHARSUGUDA

LESSON PLAN  
Session (2023-2024)

Discipline: Computer Science and Engineering	Semester: 3 <sup>rd</sup> , Winter/2023	Name of the Faculty: Suryakanta Rout <b>Lecturer</b>
Subject: Digital Electronics, Theory- TH.3	No. of Days/week: 04	Start Date: 01/08/2023 End Date: 30/11/2023

Week	Class Day	Theory Topic
1st	1st	Unit-1: Basics of Digital Electronics Number System-Binary, Octal, Decimal, Hexadecimal
	2nd	Conversion from one system to another number system
	3rd	Arithmetic Operation-Addition, Subtraction, Multiplication, Division
	4th	1's & 2's complement of Binary numbers & Subtraction using complements method
2nd	1st	Digital Code & its application & distinguish between weighted & non-weight Code
	2nd	Binary codes, excess-3 and Graycodes
	3rd	Logic gates: AND,OR,NOT,NAND,NOR, Exclusive-OR, Exclusive-NOR--Symbol, Function, expression, truth table & timing diagram
	4th	Universal Gates& its Realisation
3rd	1st	Boolean algebra, Boolean expressions, Demorgan's Theorems
	2nd	Boolean algebra, Boolean expressions, Demorgan's Theorems
	3rd	Represent Logic Expression: SOP & POS forms

	4th	Karnaugh map (3 & 4 Variables)&Minimization of logical expressions
4th	1st	Karnaugh map (3 & 4 Variables)&Minimization of logical expressions, don't care conditions
	2nd	Revision
	3rd	Quiz test
	4th	Unit-2: Combinational logic circuits Half adder, Half Subtractor
5th	1st	Full adder
	2nd	Serial and Parallel Binary 4 bit adder
	3rd	Full Subtractor
	4th	Multiplexer (4:1)
6th	1st	De-multiplexer (1:4)
	2nd	Decoder, Encoder
	3rd	Digital comparator
	4th	Seven segment Decoder
7th	1st	Revision
	2nd	Quiz test
	3rd	Unit-3: Sequential logic Circuits Principle of flip-flops operation, its Types
	4th	SR Flip Flop using NAND,NOR Latch (un clocked)
8th	1st	Clocked SR, D FF
	2nd	JK,T FF
	3rd	JK Master Slave flip-flops-Symbol, logic Circuit, truth table and applications
	4th	Concept of Racing and how it can be avoided
9th	1st	Revision
	2nd	Quiz
	3rd	Unit-4: Registers, Memories & PLD Shift Registers-Serial in Serial -out
	4th	Serial- in Parallel-out
10th	1st	Parallel in serial out and Parallel in parallel out
	2nd	Universal shift registers-Applications
	3rd	Types of Counter & applications

	4th	Binary counter, Asynchronous ripple counter
11th	1st	Decade counter
	2nd	Synchronous counter
	3rd	Synchronous counter
	4th	Ring Counter
12th	1st	Concept of memories-RAM, ROM, static RAM, dynamic RAM,PS RAM
	2nd	Basic concept of PLD & applications
	3rd	Revision
	4th	Quiz
13th	1st	Unit-5: A/D and D/A Converters Necessity of A/D and D/A converters
	2nd	D/A conversion using weighted resistors methods
	3rd	D/A conversion using R-2R ladder (Weighted resistors) network
	4th	A/D conversion using counter method
14th	1st	A/D conversion using Successive approximate method
	2nd	Revision
	3rd	Unit-6: LOGIC FAMILIES Various logic families & categories according to the IC fabrication process 6.2. 6.3),
	4th	Characteristics of Digital ICs- Propagation Delay, fan-out, fan-in, Power Dissipation ,Noise Margin ,Power Supply requirement & Speed with Reference to logic families
15th	1st	Features, circuit operation & various applications of TTL(NAND)
	2nd	Features, circuit operation & various applications of CMOS (NAND & NOR)
	3rd	Revision ( Q/A Discussion)
	4th	Revision( Q/A Discussion)/Practice Test