

SUNDARGARH ENGINEERING SCHOOL, KIREI
LESSON PLAN

Subject : DIGITAL ELECTRONICS AND MICROPROCESSOR

Discipline : ELECTRICAL ENGINEERING

Faculty : SHAMBU SINGH

Semester : 5TH

Week	Weekly classes	Theory Topics
1 st	1 st	Introduction to DIGITAL ELECTRONICS
	2 nd	NUMBER SYSTEMS AND CODES
	3 rd	List different number system & their relevance: binary, octal, decimal, Hexadecimal, Study the Conversion from one number system to another
	4 th	Perform Arithmetic operations of binary number systems.
2 nd	1 st	1's & 2's complement of Binary numbers., Perform Subtraction of binary numbers using complementary numbers. Perform multiplication and division of binary numbers.
	2 nd	Define concept of Digital Code & its application. Distinguish between weighted & non-weight Code
	3 rd	Study Codes: definition, relevance
	4 th	Types of code (8-4-2-1, Gray, Excess-3 and importance of parity bit.
3 rd	1 st	LOGIC GATES
	2 nd	Discuss the Basic Logic & representation using electric signals
	3 rd	Learn the Basic Logic gates (NOT, OR, AND, NOR, NAND, EX-OR & EXNOR) – Symbol, function, expression, truth table & example IC nos.
	4 th	Define Universal Gates with examples & realization of other gate
4 th	1 st	BOOLEAN ALGEBRA
	2 nd	Understand Boolean : constants, variables & functions. Comprehend the Laws of Boolean algebra
	3 rd	State and prove Demorgan's Theorems. Represent Logic Expression : SOP & POS forms & conversion
	4 th	Simplify the Logic Expression/Functions (Maximum of 4 variables) : using Boolean algebra and Karnaugh's map methods
5 th	1 st	What is don't care conditions ? Realisation of simplified logic expression using K-Map
	2 nd	Realisation of simplified logic expression using gates. Illustrate with examples the above.
	3 rd	COMBINATIONAL CIRCUITS
	4 th	Define a Combinational Circuit and explain with examples. Arithmetic Circuits (Binary)

6 th	1 st	Realise function, functional expression, logic circuit, gate level circuit, truth table & applications of Half-adders,
	2 nd	Full-adder & full-Subtractor. Explain Serial & Parallel address: concept comparison & application
	3 rd	Discuss Multiplexers: definition, relevance, gate level circuit of simple. De-multiplexers (1:4) logic circuit with truth Table
	4 th	Explain the working of Binary-Decimal Encoder & Decoder.
7 th	1 st	Working of 2-bit Magnitude Comparator: logic expression, truth table
	2 nd	SEQUENTIAL CIRCUITS
	3 rd	Define Sequential Circuit : Explain with examples.
	4 th	Know the Clock-definition characteristics, types of triggering & waveform.
8 th	1 st	Define Flip-Flop, Study RS, Clocked RS, D, T, JK, MS-JK flip-flop with logic Circuit and truth tables.
	2 nd	Concept of Racing and how it can be avoided.
	3 rd	Applications of flip-flops & its conversion.
	4 th	COUNTERS
9 th	1 st	List the different types of counters-Synchronous and Asynchronous.
	2 nd	Explain the modulus of a counter
	3 rd	COUNTERS
	4 th	List the different types of counters-Synchronous and Asynchronous. Explain the modulus of a counter 4-bit asynchronous counter with timing diagram
10 th	1 st	Asynchronous decade counter
	2 nd	4-bit synchronous counter
	3 rd	Compare Synchronous and Asynchronous counters and know their ICs nos.
	4 th	REGISTERS
11 th	1 st	Explain the working of various types of shift registers – SISO
	2 nd	SIPO
	3 rd	PISO
	4 th	PIPO, with truth table using flip flop.
12 th	1 st	8085 MICRO PROCESSOR
	2 nd	Introduction to microprocessor, Micro computers

	3 rd	Architecture of intel 8085A Microprocessor
	4 th	Functional Block diagram and Description of each block.
13 th	1 st	Pin diagram and description.
	2 nd 3 rd	Stack, Stack Pointer, Stack Top
	4 th	Interrupts , Op-code & Operands
14 th	1 st	Grouping and Explanation of different group instructions with examples
	2 nd	Instruction sets & Addressing modes , Timing diagram of different machine cycle, 8085A timing states.
	3 rd	Instruction fetching and execution, Timing diagram of different machine cycle. Basic Interfacing Concept , Memory Mapping & I/O Mapping
	4 th	Programmable peripheral interface Intel -8255, Functional block diagram and Operation of 8255, Programming of 8255 , Application Using 8255: Seven Segment LED display

HOD, Electrical Department

Principal