

**GOVERNMENT POLYTECHNIC, BALASORE**

Government of Odisha

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ଵର

Subject Number: TH.3
 Theory/Week: 5 P/W
 Total Periods: 75 P/ SEM
 Examination: 3 Hours
 Sem. & Branch: 5TH & Elect. Engg.

Internal Assessment : 20 Marks
 End Semester Exams : 80Marks
 Total Marks : 100 Marks
 Class Starts : 09/09/2025

LESSON PLAN (WINTER-2025)

Discipline :- ELECTRICAL ENGG.	Semester:- 5 th	Name of the Teaching Faculty DEBASISH MOHAPATRA (GF)
Subject:- DIGITAL ELECTRONICS & MICROPROCESSOR (TH-3)	No of Days/per Week Class Allotted : 05	Semester From:- 14 TH JULY, 2025 To:- 15 TH NOVEMBER, 2025
Week	Class Day	Theory
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.
	5 th	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	1 st	Define concept of Digital Code & its application. Distinguish between weighted & non-weight Code
	2 nd	Study Codes: definition, relevance
	3 rd	Types of code (8-4-2-1, Gray, Excess-3 and importance of parity bit.
	4 th	LOGIC GATES Discuss the Basic Logic & representation using electric signals
	5 th	Learn the Basic Logic gates (NOT, OR, AND, NOR, NAND, EX-OR & EXNOR) – Symbol, function, expression, truth table & example IC nos.
3 rd	1 st	Define Universal Gates with examples & realization of other gates
	2 nd	Universal Gates with examples & realization of other gates
	3 rd	BOOLEAN ALGEBRA Understand Boolean : constants, variables & functions. Comprehend the Laws of Boolean algebra
	4 th	Understand Boolean : constants, variables & functions. Comprehend the Laws of Boolean algebra
	5 th	State and prove Demorgan's Theorems. Represent Logic Expression : SOP & POS forms & conversion
4 th	1 st	Simplify the Logic Expression/Functions (Maximum of 4 variables) : using Boolean algebra and Karnaugh's map methods.
	2 nd	What is don't care conditions ? Realisation of simplified logic expression using K-Map
	3 rd	Realisation of simplified logic expression using gates.

	4 th	COMBINATIONAL CIRCUITS Define a Combinational Circuit and explain with examples. Arithmetic Circuits (Binary)
	5 th	Realise function, functional expression, logic circuit, gate level circuit, truth table & applications of Half-adders,
5 th	1 st	Full-adder & full-Subtractor.
	2 nd	Explain Serial & Parallel address: concept comparison & application
	3 rd	Full-adder & full-Subtractor. Explain Serial & Parallel address: concept comparison & application
	4 th	Discuss Multiplexers: definition, relevance, gate level circuit of simple. De-multiplexers (1:4) logic circuit with truth Table
	5 th	Explain the working of Binary-Decimal Encoder & Decoder.
6 th	1 st	Discuss Multiplexers: definition, relevance, gate level circuit of simple. De-multiplexers (1:4) logic circuit with truth Table
	2 nd	Explain the working of Binary-Decimal Encoder & Decoder.
	3 rd	Working of 2-bit Magnitude Comparator: logic expression, truth table
	4 th	Working of 2-bit Magnitude Comparator: logic expression, truth table
	5 th	Working of 2-bit Magnitude Comparator: logic expression, truth table
7 th	1 st	Define Sequential Circuit : Explain with examples.
	2 nd	Know the Clock-definition characteristics, types of triggering & waveform.
	3 rd	Know the Clock-definition characteristics, types of triggering & waveform.
	4 th	Define Flip-Flop, Study RS, Clocked RS, D, T, JK, MS-JK flip-flop with logic Circuit and truth tables.
	5 th	Define Flip-Flop, Study RS, Clocked RS, D, T, JK, MS-JK flip-flop with logic Circuit and truth tables.
8 th	1 st	Concept of Racing and how it can be avoided.
	2 nd	Applications of flip-flops & its conversion.
	3 rd	List the different types of counters-Synchronous and Asynchronous.
	4 th	Explain the modulus of a counter
	5 th	List the different types of counters-Synchronous and Asynchronous.
9 th	1 st	Explain the modulus of a counter
	2 nd	List the different types of counters-Synchronous and Asynchronous. Explain the modulus of a counter 4-bit asynchronous counter with timing diagram
	3 rd	Asynchronous decade counter
	4 th	List the different types of counters-Synchronous and Asynchronous. Explain the modulus of a counter 4-bit asynchronous counter with timing diagram
	5 th	Asynchronous decade counter
10 th	1 st	List the different types of counters-Synchronous and Asynchronous.

TECHNICAL		4-bit asynchronous counter with timing diagram
	2 nd	Asynchronous decade counter
	3 rd	4-bit synchronous counter
	4 th	Compare Synchronous and Asynchronous counters and know their ICs nos.
	5 th	Compare Synchronous and Asynchronous counters and know their ICs nos.
	11 th	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.
	5 th	8085 MICRO PROCESSOR
	12 th	Introduction to microprocessor, Micro computers
	2 nd	Architecture of intel 8085A Microprocessor
	3 rd	, Functional Block diagram and Description of each block.
	4 th	Pin diagram and description.
	5 th	Stack, Stack Pointer, Stack Top
	13 th	Interrupts , Op-code & Operands
	2 nd	Grouping and Explanation of different group instructions with examples
	3 rd	Instruction sets & Addressing modes
	4 th	Instruction sets & Addressing modes
	5 th	Instruction fetching and execution, Timing diagram of different machine cycle.
	14 th	Instruction fetching and execution, Timing diagram of different machine cycle.
	2 nd	Instruction fetching and execution, Timing diagram of different machine cycle.
	3 rd	Timing diagram of different machine cycle, 8085A timing states.
	4 th	Timing diagram of different machine cycle, 8085A timing states.
	5 th	Basic Interfacing Concept , Memory Mapping & I/O Mapping
	15 th	Programmable peripheral interface Intel -8255, Functional block diagram and Operation of 8255,
	2 nd	Programming of 8255
	3 rd	Application Using 8255: Seven Segment LED display
	4 th	Square Wave Generator
	5 th	Traffic light controller

Debasish Mahapatra
Teaching Faculty

[Signature]
07/09/25
HOD, ETC

Principal
G. P. Balasore