Discipline :- **ELECTRICAL**	Semester:- **5th**	Name of the Teaching Faculty: -
Subject:- **DIGITAL ELECTRONICS & MICROPROCESSOR (TH-3)**	No of Days/per Week Class Allotted :- **05**	Semester From:-
Week	**Class Day**	**Theory**
1st	1st	Introduction to **DIGITAL ELECTRONICS**
	2nd	**NUMBER SYSTEMS AND CODES**
	3rd	List different number system & their relevance: binary, octal, decimal, Hexadecimal, Study the Conversion from one number system to another
	4th	Perform Arithmetic operations of binary number systems.
	5th	1's & 2's complement of Binary numbers., Perform Subtraction of binary numbers using complementary numbers. Perform multiplication and division of binary numbers.
2nd	1st	Define concept of Digital Code & its application. Distinguish between weighted & non-weight Code
	2nd	Study Codes: definition, relevance
	3rd	Types of code (8-4-2-1, Gray, Excess-3 and importance of parity bit.
	4th	**LOGIC GATES**
	5th	Discuss the Basic Logic & representation using electric signals
3rd	1st	Learn the Basic Logic gates (NOT, OR, AND, NOR, NAND, EX-OR & EXNOR) – Symbol, function, expression, truth table & example IC nos.
	2nd	Define Universal Gates with examples & realization of other gates
	3rd	**BOOLEAN ALGEBRA**
	4th	Understand Boolean : constants, variables & functions. Comprehend the Laws of Boolean algebra
	5th	State and prove Demorgan's Theorems. Represent Logic Expression : SOP & POS forms & conversion
4th	1st	Simplify the Logic Expression/Functions (Maximum of 4 variables) : using Boolean algebra and Karnaugh's map methods
	2nd	What is don't care conditions ? Realisation of simplified logic expression using K-Map
	3rd	Realisation of simplified logic expression using gates. Illustrate with examples the above.
	4th	**COMBINATIONAL CIRCUITS**
	5th	Define a Combinational Circuit and explain with examples. Arithmetic Circuits (Binary)

5th	1st	Realise function, functional expression, logic circuit, gate level circuit, truth table & applications of Half-adders,
	2nd	Full-adder & full-Subtractor. Explain Serial & Parallel address: concept comparison & application
	3rd	Discuss Multiplexers: definition, relevance, gate level circuit of simple. De-multiplexers (1:4) logic circuit with truth Table
	4th	Explain the working of Binary-Decimal Encoder & Decoder.
	5th	Working of 2-bit Magnitude Comparator: logic expression, truth table
6th	1st	**SEQUENTIAL CIRCUITS**
	2nd	Define Sequential Circuit : Explain with examples.
	3rd	Know the Clock-definition characteristics, types of triggering & waveform.
	4th	Define Flip-Flop, Study RS, Clocked RS, D, T, JK, MS-JK flip-flop with logic Circuit and truth tables.
	5th	Concept of Racing and how it can be avoided.
7th	1st	Applications of flip-flops & its conversion.
	2nd	**COUNTERS**
	3rd	List the different types of counters-Synchronous and Asynchronous.
	4th	Explain the modulus of a counter
	5th	**COUNTERS**
8th	1st	List the different types of counters-Synchronous and Asynchronous. Explain the modulus of a counter 4-bit asynchronous counter with timing diagram
	2nd	Asynchronous decade counter
	3rd	4-bit synchronous counter
	4th	Compare Synchronous and Asynchronous counters and know their ICs nos.
	5th	**REGISTERS**
9th	1st	Explain the working of various types of shift registers – SISO
	2nd	SIPO
	3rd	PISO
	4th	PIPO, with truth table using flip flop.
	5th	**8085 MICRO PROCESSOR**
10th	1st	Introduction to microprocessor, Micro computers
	2nd	Architecture of intel 8085A Microprocessor
	3rd	, Functional Block diagram and Description of each block.
	4th	Pin diagram and description.
	5th	Stack, Stack Pointer, Stack Top
11th	1st	Interrupts , Op-code & Operands
	2nd	Grouping and Explanation of different group instructions with examples
	3rd	Instruction sets & Addressing modes

	4th	Instruction fetching and execution, Timing diagram of different machine cycle.
	5th	Timing diagram of different machine cycle, 8085A timing states.
12th	1st	Basic Interfacing Concept , Memory Mapping & I/O Mapping
	2nd	Programmable peripheral interface Intel -8255, Functional block diagram and Operation of 8255, Programming of 8255
	3rd	Application Using 8255: Seven Segment LED display
	4th	Square Wave Generator
	5th	Traffic light controller
13th	1st	Doubt Clearing Classes and Revision of Syllabus
	2nd	
	3rd	
	4th	
	5th	
14th	1st	Previous Five (05) Years Semester Question Answer Discussion
	2nd	
	3rd	
	4th	
	5th	

Teaching Faculty **HOD, E.E** **Academic Co-ordinator**

Discipline :-	Semester:-	Name of the Teaching Faculty: -
ELECTRICAL	**5th**	**LINCOLN MOHANTY**
Subject:-	No of Days/per Week Class Allotted	Semester From:- **01st September, 2020** To:- **20th February, 2021**

DIGITAL ELECTRONICS & MICROPROCESSOR LAB	:- 01	
Week	**Class Day**	**LABORATORY**
1st	1st	Verify truth tables of AND, OR, NOT, NOR, NAND, XOR, XNOR gates. Implement various gates by using universal properties of NAND & NOR gates and verify truth table.
2nd	2nd	Implement half adder and Full adder using logic gates. Implement half subtractor and Full subtractor using logic gates.
3rd	3rd	Implement a 4-bit Binary to Gray code converter. Implement a Single bit digital comparator.
4th	4th	Study Multiplexer and de-multiplexer
5th	5th	Study of flip-flops. i) S-R flip flop ii) J-K flip flop iii) flip flop iv) T flip flop
6th	6th	Realize a 4-bit asynchronous UP/Down counter with a control for up/down counting..
7th	7th	Realize a 4-bit synchronous UP/Down counter with a control for up/down counting.
8th	8th	Implement Mode-10 asynchronous counters
9th	9th	Study shift registers.
10th	10th	**General Programming using 8085A development board** 1'S Complement, 2'S Complement
11th	11th	Addition of 8-bit number Subtraction of 8-bit number
12th	12th	Decimal Addition 8-bit number Decimal Subtraction 8-bit number.
13th	13th	Compare between two numbers Find the largest in an Array, Block Transfer
14th	14th	Traffic light control using 8255, Generation of square wave using 8255

Teaching Faculty **HOD , ELE** **Academic Co-ordinator**

Principal

Government Polytechnic, Puri