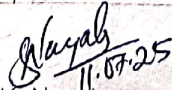
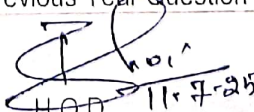



ACADEMIC SESSION : 2025-26

Discipline : Electrical Engineering	Semester : 5 TH	Name and Designation of the Teaching Faculty : Sri Shailesh Kumar Nayak, Lecturer Stage-II (ETC)
Subject : Digital Electronics & Microprocessor	Nos. of days / week class allotted: 05	Semester wef : 14.07.2025 to 15.11.2025 Nos. of Weeks per Semester : 15
Week	Class Day	Theory/ Practical Topics
1 ST	1 st	Basics of Digital Electronics
	2 nd	Binary, Octal, Hexadecimal number systems and compare with Decimal system.
	3 rd	Binary addition, subtraction, Multiplication and Division.
	4 th	Binary addition, subtraction, Multiplication and Division.
	5 th	1's complement and 2's complement numbers for a binary number
2 ND	1 st	Subtraction of binary numbers in 2's complement method.
	2 nd	Use of weighted and Un-weighted codes & write Binary equivalent number for a number in 8421, Excess-3 and Gray Code and vice-versa.
	3 rd	Use of weighted and Un-weighted codes & write Binary equivalent number for a number in 8421, Excess-3 and Gray Code and vice-versa.
	4 th	Importance of parity Bit.
	5 th	Logic Gates: AND, OR, NOT, NAND, NOR and EX-OR gates with truth table.
3 RD	1 st	Realize AND, OR, NOT operations using NAND, NOR gates.
	2 nd	Different postulates and De-Morgan's theorems in Boolean algebra.
	3 rd	Use of Boolean Algebra for Simplification of Logic Expression
	4 th	Karnaugh Map For 2,3,4 Variable, Simplification of SOP And POS Logic Expression Using K-Map
	5 th	Karnaugh Map For 2,3,4 Variable, Simplification of SOP And POS Logic Expression Using K-Map
4 TH	1 st	Give the concept of combinational logic circuits.
	2 nd	Half adder circuit and verify its functionality using truth table.
	3 rd	Realize a Half-adder using NAND gates only and NOR gates only.
	4 th	Realize a Half-adder using NAND gates only and NOR gates only.
	5 th	Full adder circuit and explain its operation with truth table.
5 TH	1 st	Realize full-adder using two Half-adders and an OR – gate and write truth table
	2 nd	Realize full-adder using two Half-adders and an OR – gate and write truth table
	3 rd	Full subtractor circuit and explain its operation with truth table.
	4 th	Full subtractor circuit and explain its operation with truth table.
	5 th	Operation of 4 X 1 Multiplexers and 1 X 4 demultiplexer
6 TH	1 st	Operation of 4 X 1 Multiplexers and 1 X 4 demultiplexer
	2 nd	Working of Binary-Decimal Encoder & 3 X 8 Decoder.
	3 rd	Working of Binary-Decimal Encoder & 3 X 8 Decoder.
	4 th	Working of Two bit magnitude comparator
	5 th	Working of Two bit magnitude comparator
7 TH	1 st	Give the idea of Sequential logic circuits.
	2 nd	State the necessity of clock and give the concept of level clocking and edge triggering.
	3 rd	Clocked SR flip flop with preset and clear inputs.
	4 th	Construct level clocked JK flip flop using S-R flip-flop and explain with truth table
	5 th	Concept of race around condition and study of master slave JK flip flop.

8 TH	1 st	Give the truth tables of edge triggered D and T flip flops and draw their symbols.
	2 nd	Applications of flip flops.
	3 rd	Define modulus of a counter
	4 th	4-bit asynchronous counter and its timing diagram.
	5 th	Asynchronous decade counter.
9 TH	1 st	4-bit synchronous counter.
	2 nd	Distinguish between synchronous and asynchronous counters.
	3 rd	State the need for a Register and list the four types of registers.
	4 th	Working of SISO, SIPO, PISO, PIPO Register with truth table using flip flop.
	5 th	Working of SISO, SIPO, PISO, PIPO Register with truth table using flip flop.
10 TH	1 st	Introduction to Microprocessors, Microcomputers
	2 nd	Architecture of Intel 8085A Microprocessor and description of each block.
	3 rd	Architecture of Intel 8085A Microprocessor and description of each block
	4 th	Pin diagram and description.
	5 th	Pin diagram and description.
11 TH	1 st	Stack, Stack pointer & stack top,
	2 nd	Interrupts
	3 rd	Opcode & Operand,
	4 th	Differentiate between one byte, two byte & three byte instruction with example.
	5 th	Instruction set of 8085 example
12 TH	1 st	Instruction set of 8085 example
	2 nd	Addressing mode
	3 rd	Fetch Cycle, Machine Cycle, Instruction Cycle, T-State
	4 th	Timing Diagram for memory read, memory write, I/O read, I/O write
	5 th	Timing Diagram for 8085 instruction
13 TH	1 st	Timing Diagram for 8085 instruction
	2 nd	Counter and time delay.
	3 rd	Simple assembly language programming of 8085
	4 th	Simple assembly language programming of 8085
	5 th	Simple assembly language programming of 8085
14 TH	1 st	Basic Interfacing Concepts
	2 nd	Memory mapping & I/O mapping
	3 rd	Memory mapping & I/O mapping
	4 th	Functional block diagram and description of each block of Programmable peripheral interface Intel 8255,
	5 th	Functional block diagram and description of each block of Programmable peripheral interface Intel 8255,
15 TH	1 st	Functional block diagram and description of each block of Programmable peripheral interface Intel 8255,
	2 nd	Application using 8255: Seven segment LED display, Square wave generator, Traffic light Controller
	3 rd	Application using 8255: Seven segment LED display, Square wave generator, Traffic light Controller
	4 th	Application using 8255: Seven segment LED display, Square wave generator, Traffic light Controller
	5 th	Review and Previous Year Question Discussion


 S. K. Nayak
 Lecturer Stage-II (ETC)
 GP Sonapur


 H.O.D.
 Electrical Engineering
 GP Sonapur


 (Academic
 Co-ordinator)

