



R. K. Institute of Engineering and Technology
Approved by AICTE, New Delhi and Affiliated to SCITE&VI, Odisha

ELECTRICAL ENGINEERING

SEMESTER : 5th (SEC-B)

FROM :01/07/2026 TO :05/11/2026

NAME OF THE FACULTY : Er. PRAVANJAN SAHOO

SUBJECT : DIGITAL ELECTRONICS AND MICROPROCESSOR

TOTAL CLASS AVAILABLE IN SEMESTER: 45 nos

NO. OF PERIODS : 03/ WEEK

Class No.	Unit	Topic / Sub-topic	Teaching Method	Learning Outcome
1	I	Course Introduction, Number Systems (Decimal & Binary)	Lecture + Numerical	Convert between decimal and binary numbers
2	I	Octal & Hexadecimal Number Systems	Lecture + Practice	Perform base conversions
3	I	1's & 2's Complements, Binary Arithmetic	Lecture + Numerical	Solve complement and arithmetic problems
4	I	Binary Codes: BCD, Excess-3, Gray & Alphanumeric Codes	Lecture	Explain different coding techniques
5	I	Boolean Algebra & Boolean Theorems	Lecture + Examples	Apply Boolean laws in simplification
6	I	Logic Gates, Universal Gates & Truth Tables	Demonstration	Analyze logic gate operations
7	I	SOP, POS, Minterms & Maxterms	Lecture + Numerical	Express Boolean functions in standard forms
8	I	Karnaugh Map & Quine-McCluskey Minimization	Problem Solving	Minimize Boolean expressions
9	I	Unit-I Revision & Test	Tutorial + Test	Assess Unit-I learning
10	II	Half Adder & Full Adder	Lecture + Design	Design adder circuits
11	II	Half Subtractor & Full Subtractor	Lecture + Design	Design subtractor circuits
12	II	Binary Parallel Adder	Lecture	Explain parallel addition
13	II	Multiplexer & Demultiplexer	Lecture + Demonstration	Explain data selection and distribution
14	II	Decoder & Priority Encoder	Lecture	Design decoder and encoder circuits
15	II	Flip-Flops: SR & JK	Lecture + Timing Diagram	Explain bistable circuits



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16	II	Flip-Flops: T & D	Lecture	Compare flip-flop types
17	II	Counters: Design & Applications	Lecture + Numerical	Design synchronous counters
18	II	Shift Registers & Universal Shift Register	Lecture + Demonstration	Explain data shifting operations
19	II	Unit-II Revision & Test	Tutorial + Test	Assess Unit-II learning
20	III	Asynchronous Sequential Circuits: Stable & Unstable States	Lecture	Explain asynchronous systems
21	III	State Reduction & Race-Free Assignment	Lecture + Examples	Simplify state diagrams
22	III	Hazards & Hazard-Free Circuits	Lecture	Identify and eliminate hazards
23	III	Pulse Mode Sequential Circuits	Lecture	Explain pulse-mode operation
24	III	ROM, PROM, EPROM, EEPROM & EAPROM	Lecture + Charts	Compare ROM family memories
25	III	RAM: Static & Dynamic RAM	Lecture	Explain RAM organization
26	III	PLA & PAL	Lecture	Explain programmable logic devices
27	III	FPGA & Modern Digital Systems	Lecture + Case Study	Describe FPGA applications
28	III	Unit-III Revision & Test	Tutorial + Test	Assess Unit-III learning
29	IV	Introduction to 8085 Microprocessor & Architecture	Lecture + Diagram	Explain 8085 architecture
30	IV	Pin Diagram & Functional Blocks	Lecture	Identify processor pins and functions
31	IV	Memory Organization & I/O Ports	Lecture	Explain memory interfacing
32	IV	Data Transfer Concepts & Timing Diagram	Lecture + Timing Analysis	Interpret timing diagrams
33	IV	Interrupts in 8085	Lecture	Explain interrupt structure
34	IV	Unit-IV Revision & Test	Tutorial + Test	Assess Unit-IV learning
35	V	Instruction Format & Addressing Modes	Lecture	Explain instruction formats
36	V	Data Transfer Instructions	Lecture + Programming	Write data transfer programs



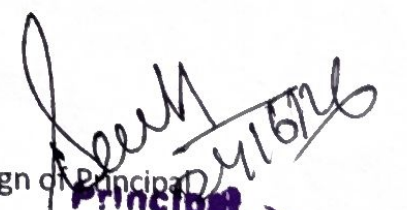
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37	V	Data Manipulation Instructions	Lecture + Programming	Develop arithmetic and logical programs
38	V	Control Instructions	Lecture + Programming	Apply branching and control instructions
39	V	Loop Programming with Counting & Indexing	Programming Practice	Develop loop-based programs
40	V	Look-Up Table Programming	Programming Practice	Use lookup tables effectively
41	V	Subroutines & Stack Operations	Lecture + Programming	Explain stack and subroutine concepts
42	V	8255 PPI Architecture & Operating Modes	Lecture + Diagram	Explain programmable peripheral interface
43	V	Programming Practice & Numerical Problems	Tutorial	Reinforce programming skills
44	All Units	Overall Revision & Model Test	Test	Evaluate complete syllabus
45	All Units	Model Test Discussion & Doubt Clearing	Interactive Session	Strengthen concepts for examinations


Sign of Faculty


HOD, Engg.
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