

The Maharaja Sayajirao University of Baroda Polytechnic Higher Payment Program Diploma in Computer Engineering		ACADEMIC YEAR 2021-2022		
Year - I	DIGITAL ELECTRONICS (ELE3207)	Lecture Hrs per week	4	
Semester - II		Max marks	100	
Pre-Requisite: Basic Mathematics, Basic Electronics				
CO1	Learn number system and conversion between each number system.			
CO2	Classify various minimization techniques and choose the best for designing logic circuit.			
CO3	Identify logical operations using combinational circuits.			
CO4	Describe working of sequential circuits and design of counters.			
CO5	Explain concept of memories, analog to digital and digital to analog convertor and its applications.			
BT	1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation			
COURSE CONTENT/SYLLABUS				
Unit	Unit Name	Hrs	Weightage	CO
1	Number Systems And Codes , Types, Binary number system, Octal number system, Decimal number system, Hexadecimal number system, Conversions of numbers from one number system to another. Basic mathematical operations: One's, Two's, Arithmetic operations using complements methods. Binary Addition, Subtraction, Multiplication and Division.	10	19	CO1
2	Logic Gates And Logic Families:Positive and Negative logic systems, Logic Gates: AND , OR, NOT, NAND, NOR, Ex-OR and Ex-NOR, Logic symbols, truth tables and Realization of logic gates using diode logic and transistor logic, Realization of gates using universal gates. Logic Families: TTL, IIL, MOS, CMOS logic	10	19	CO2, CO3
3	Boolean Algebra : AXIOMS and laws of Boolean algebra, De Morgan's Theorem, Reduction of Boolean equations. Karnaugh Map: Expansion of Boolean expression to SOP and POS form, 2-variable, 3-variable, 4-variable K-map, mapping and minimization of SOP and POS expressions, Booth's Algorithms, IEEE floating Point Representation.	10	19	CO2, CO3
4	Combinational Circuits: Half-adder, Full adder, Half-subtractor, Full-subtractor, Serial adder, parallel binary adder, BCD adder, Comparators, Decoders, Encoders, Multiplexers, Demultiplexers, Implementation of combinational circuits examples.	8	16	CO2, CO3
5	Sequential Logic Circuitis: Flip flops: Operating characteristics, Types of triggering, Latches, Gated Latches, Edge-triggered flip-flops – SR, D, JK, T, master-slave. Shift Registers: Buffer register, data transmission in shift register, Types - Serial In Serial Out, Serial In Parallel Out, Parallel In Serial Out, Parallel In Parallel Out, Asynchronous counters, Synchronous counters, Hybrid counter, Ring counter, Johnson counter, Design of counters.	10	19	CO4, CO5
6	Memories: Memory classification, RAM, ROM, Static and Dynamic Memories, EEPROM, EPROM, FLASH memories.	6	8	CO5
		54	100	
REFERENCE BOOKS:				
1.	DIGITAL ELECTRONICS & PRINCIPLES By Malvino Leach			
2.	DIGITAL ELECTRONICS & PRINCIPLES By Anand Kumar			
3.	PULSE DIGITAL CIRCUITS BY H. Taub			

4.	
5.	
6.	