

**End Semester/Reappear (Semester IV) Examination May 2025**

**Programme: B. Tech (CSE)**

**Course: Digital Electronics**

**Course Code:3ESC202**

**Enrolment no. \_\_\_\_\_**

**Full Marks: 70**

**Time: 3 Hrs.**

Q.N o.	Questions	CO	Bloom Taxonomy Category	Marks
<b>Section I</b>				
1	<b>Short Answer type questions.</b>			
a	Explain the concept of digital circuits and their fundamental principles. or	CO1	Understand	<b>4 x 5 = 20</b>
	Differentiate between analog and digital signals by highlighting their key characteristics and distinctions.	CO1	Understand	
b	Provide a brief explanation of the K-Map method, including its purpose and applications in Boolean simplification. or	CO2	Understand	
	Describe the key properties and functions of an Arithmetic Logic Unit (ALU).	CO2	Understand	
c	What do you mean by Half Adder? or	CO1	Remember	
	Find I's complement of binary number 10101110.	CO1	Understand	
d	Describe the different types of the shift register. or	CO1	Remember	
	Write down the applications of the shift register.	CO1	Remember	
<b>Section II</b>				
	<b>Long Answer type questions.</b>			
2	What do you understand by CMOS? What are the different types of CMOS? Explain each in detail. or	CO2	Apply	<b>3 x 10 = 30</b>
	What do you understand by TTL? What are the different types of TTL? Explain each in detail.	CO2	Apply	
3	Describe the working of Arithmetic Logic Unit (ALU) with suitable diagram. or	CO3	Apply	
	Explain the working of Full-order adder in detail.	CO3	Apply	
4	Discuss in detail about Programmable logic array. or	CO4	Understand	
	Describe Field Programmable Gate Array (FPGA).	CO4	Understand	
<b>Section III</b>				
	<b>Application based questions</b>			
5	a. Explain the working of SR Flip Flop with suitable diagram and truth table. b. Explain the working of JK Flip Flop with suitable diagram and truth table. or	CO1	Remember	<b>1 x 20 = 20</b>
	a. What do you understand by Universal Gates? What are the different types of the Universal Gates? Explain them in details.	CO1	Understand	
	b. Describe Exclusive NOR Gate with the help of truth table and symbol in detail.	CO1	Apply	

**COURSE OUTCOME**

CO1 Understand working of logic families and logic gates.

CO2 Design and implement Combinational and Sequential logic circuits.

CO3 Understand the process of Analog to Digital conversion and Digital to Analog conversion.

CO4 Be able to use PLDs to implement the given logical problem.