Total No. of Questions: 4

Enrollment No. EN21CS303029

Faculty of Engineering

Mid Sem I Examination September -2022

EC3CO07/CS3ES29/IT3CO09 - Digital Electronics

Programme: B.Tech. Branch/Specialisation: EC/CS/IT

Duration: 2 Hrs. **Maximum Marks: 40**

Q.1	i.	The logical expression Y= A+A'B is equivalent to ---------- a) Y = AB b)Y = A'B c) Y = A + B' d) Y = A + B	1
	ii	Which of the following is a parallel to serial converter a)Decoder b)Digital Counter c) Demultiplexer d) Multiplexer	1
	iii	A K-map of four variables contains ----- cells. a) 4 b) 8 c) 2 d) none of these	1
	iv	The binary equivalent of the decimal number 57 is ------- a)111001 b)110101 c)101111 d) none of these	1
	v	For a four bit binary to gray code converter, if the binary input is 1011, the gray code output will be---------- a)1110 b)0100 c)1101 d) none of these	1
	vi	In combinational circuit, the output at any time depends on -------- a)Past & present input b)present input c)past output & present input d)past input & present output.	1
	vii	2's complement of binary number 1100110 is ---------- a)0011010 b)0011001 c)1101001 d)none of these	1
	viii	The following gate is an universal gate a)AND b)OR c)EX-OR d)NAND	1
	ix	In 8-4-2-1 BCD code, the decimal number 25 is written as ---------- a)11001 b)31 c)00100101 d)none of these	1
	x	The hexadecimal equivalent of the octal number 360 is ------- a)E0 b)F0 c)7A d)none of these	1
Q.2	i	Perform the following arithmetic operation on the given decimal numbers using 2's complement method. a)46 + (- 23) b) (- 25) + (-15)	4
	ii	Implement the the Boolen Expression for EX-OR gate using NAND	6

		gates only.	
OR	iii	Explain the operation of half adder & full adder using truth table & logic circuit.	6
Q.3	i.	Express the following logical expression in standard (canonical) SOP form. Y (A,B,C) = AB + B'C	2
	ii.	Simplify the given logical expression using K-map & realise it using basic gates. The expression is Y (A,B,C,D) = ABC' + BCD + BCD'	8
OR	iii.	Simplify the logical expression Y = ∑m (0, 2, 3, 6, 7, 8.10, 12, 13) using Quine-McCluskey method.	8
Q.4		Attempt any two	
	i.	Realize the following expression using 8:1 Multiplexer Y (A,B,C) = ∑m (0,1,2,6,7)	5
	ii.	Using Boolen algebra show that BC + AC' + AB + BCD = BC + AC'	5
	iii.	Write the truth table for the logical expression Y = AB + AC'& realize it using NOR gates only.	5

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