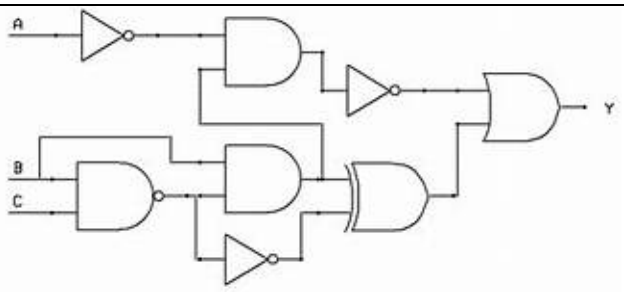
Roll No. _____

END SEMESTER EXAMINATION
SEMESTER –IV(BACKLOG)

COURSE CODE : EEE-502/EE505 | **DURATION : 3 (THREE)HRS**
COURSE TITLE : DIGITAL ELECTRONIC | **MAXIMUM MARKS : 75**
SESSION : JUL-DEC' 2021 | **PASS MARKS : 35 %**

NOTE: 1.Attempt any 5 (five) full questions
3. Mark for each question is shown against it.
4. Assume suitable logical data wherever necessary.

1.	**(a)**	Explain the three Boolean laws in detail.	**(6)**
	(b)	Convert the following SOP in standard SOP. i) y= A'B+B'CD'+AC+A'CD ii)y=AC'+AB'D+ AC+ABC'	(3+3)
	(c)	Distinguish between combinational circuit and sequential circuits.	**(3)**
2.	**(a)**	 Write the logic equation of the above logic diagram.	(3)
	(b)	Write any five Boolean rules.	**(5)**
	(c)	Solve using 1's complement method: i) 11001-10101ii) 12-17	**(2.5*2)**
	(d)	Perform binary multiplication: 110111-1011	**(2)**
3.	**(a)**	Explain in detail the working of a Full Adder with the help of suitable diagram and logic table.	**(8)**
	(b)	Convert the following i) 24_{10}= $(\ )_2$ ii) 213_8= $(\ )_{16}$ iii) $1EB_{16}$= $(\ )_{10}$	(3*2=6)
	(c)	Distinguish between minterm and maxterm.	**(2)**
4.	**(a)**	Explain the operation of an NOR based S-R flip flop.	**(6)**
	(b)	Reduce the following expressions using k-map i) Y=$\sum_m$(2,3,4,6,7,9,11,14,15)	**(6)**
	(c)	Draw the logic diagram, truth table and Boolean expression of a NAND gate.	(3)
5.	**(a)**	State and explain the de Morgan's theorems.	(6)
	(b)	Explain in detail a half subtractor logic circuit with the help of suitable logic diagram and logic table.	(5)
	(c)	Represent the binary number 1011011 in i) decimal number ii) gray code	(2*2=4)
6.	**(a)**	Obtain the function of AND,OR and NOT gate from a universal NOR gate.	**(6)**
	(b)	Explain the working of an 8 to 1 multiplexer in detail.	**(8)**

	(c)	Write a short note on ASCII code.	**(2)**
7.	**(a)**	Explain the working of SISO registers.	(5)
	(b)	Differentiate between Synchronous and Asynchronous counters.	(3)
	(c)	Design the circuit of a seven segment display.	(7)
8.	**(a)**	Draw the logic diagram for the logic equation ,Y= (AB+C)+C'(A+D)+B'C'	(3)
	(b)	Explain the working of a Ring counter.	(6)
	(c)	Write a short note on hexadecimal number system.	(4)
	(d)	Differentiate between analog and digital signals.	**(2)**