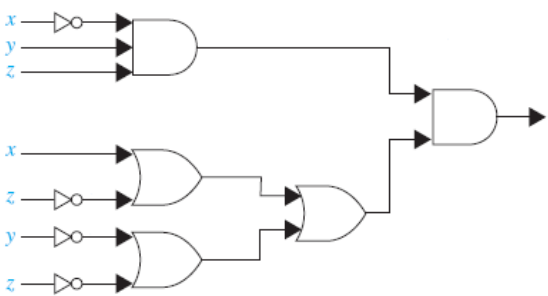


Continuous Assessment Test

Programme	: M.Tech., (SDM)	Semester	: III & IV
Course	: Mathematical Foundation for Computer Science	Code	: MAT5
Faculty	: Dr. S. Hariharan	Slot(s)	:
Time	: 1½ Hours	Max. Marks	: 50

Answer all FIVE (10 x 5 = 50 marks)

1.	(a)	Build a digital circuit that produces the output $(p \vee \neg r) \wedge (\neg p \vee (q \vee \neg r))$ with given input statements p, q and r .	[3]
	(b)	Explain the difference between Consistent Vs InConsistent Premises with simple example	[3]
	(c)	Determine whether these system specifications are consistent: “The diagnostic message is stored in the buffer or it is retransmitted.” “The diagnostic message is not stored in the buffer.” “If the diagnostic message is stored in the buffer, then it is retransmitted.”	[4]
2.		Find the Principal Conjunctive Normal Form and Principal Disjunctive Normal Form of the input $(p \vee \neg s) \wedge (\neg p \vee (q \vee \neg r))$ with given input statements p, q, r and s without using the truth table.	
3.		Find the sum-of-product canonical form of $wx + w\bar{x}z + \bar{w}xyz + yz + \bar{w}\bar{x}y\bar{z}$ and use a K-map to simplify the expansion.	
4.		Find the output of the following circuit using Boolean expression. Simplify the expression using Quine-McCluskey method. 	
5.	(a)	In this question, assume the following predicates and constant symbols: $W(x,y)$: x wrote y $L(x,y)$: x is longer than y $N(x)$: x is a novel h : Hardy a : Austen j : Jude the Obscure p : Pride and Prejudice Given these specifications, express the symbolic expression of the following sentences 'Hardy wrote a novel which is longer than any of Austen's' 'Jude the Obscure' is not longer than 'Pride and Prejudice' Austen wrote Jude the Obscure	[5]
	(b)	Explain the difference between the following using simple example: (i) Proposition Vs Predicate (ii) Conditional Proof Vs Indirect Method	[5]