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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute)

Affiliated to Dr. A.P. J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow

Course: B.Tech. Branch: CSE

Semester 3 Sessional Examination III Year- (2021- 2022)

Subject Name: DISCRETE STRUCTURES

Time: 1.15Hours

[SET-B]

Max.

Marks:30

General Instructions:

This Question paper consists of 3 pages & 5 questions. It comprises of three Sections, A, B, and C

Section A Question No-1 is objective type questions carrying 1 mark each, Question No-2 is very short answer type carrying 2 mark each. You are expected to answer them as directed.

➤ <u>Section B - Question No-3</u> is Short answer type questions carrying 5 marks each. Attempt any two out of three questions given.

Section C - Question No. 4 & 5 are Long answer type (within unit choice) questions carrying 6 marks each. Attempt any one part <u>a orb.</u>

NO		<u>SECTION – A</u>	[08Marks]	
1.)	All	questions are compulsory	(4×1=4)	
	a.	The following is the Hasse diagram of the poset [{a, b, c, d, e}, ≤]	(1)	CO3
		The poset is a) not alattice		
		 b) a lattice but not a distributive lattice c) a distributive lattice but not a Booleanalgebra d) Booleanalgebra 		
	b.	For the tree below, write the level-order traversal	(1)	C05

a) 2, 7, 2, 6, 5, 11, 5, 9,4 b) 2, 7, 5, 2, 11, 9, 6, 5,4 c) 2, 5, 11, 6, 7, 4, 9, 5,2 d) 2, 7, 5, 6, 11, 2, 5, 4,9 e. DeMorgan's theorem statesthat a) (AB) = A' + B b) (A + B) = A' * B c) (A' B) = A' * B d) (A(B)' = A' + B d. An n-vertexerbeals a) n/2 b) n-1 c) n''n d) n''(n+1)/2 All questions are compulsory a. Define Boloach Algebra. Prove that the Boolean identity: a,b?a,b°=a. b. Define Boloach Algebra. Prove that the Boolean identity: a,b?a,b°=a. c) (COS) maximum number of nodes in a binary tree is the maximum number of edges in any root to leaf path. If the height of tree is 4, Find the maximum number of nodes in a binary tree of height h SECTION - B 3. Answer any twoof the following: a. Use Karnaugh map to find the simplified expression of the function: F = x'yz + xy + xy'z'. b. For the given partial order set ({3,5,9,15,24,45},/) find the following: 1. maximal element 2. minimal element 3. Greatest element 4. Least element 5. Upper bound and lover bound for {3,5} 6. Upper bound and lover bound for {15,45} c. Consider the following P: you take a course in discrete math. Q: you understand logic R: you get an A on final exam Write in simple sentences the meaning of the following: 1. Q - R 2. (P \times Q) - R 3. (P \times \times Q) \times R	A()			
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6. Upper bound and lower bound for {15,45} c. Consider the following P: you take a course in discrete math. Q: you understand logic R: you get an A on final exam Write in simple sentences the meaning of the following: 1. Q → R 2. (P ∧ Q) → R				
c. Consider the following P: you take a course in discrete math. Q: you understand logic R: you get an A on final exam Write in simple sentences the meaning of the following: 1. Q → R 2. (P ∧ Q) → R	5. Upper bound and lower bound for {3,5}			
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math. Q: you understand logic R: you get an A on final exam Write in simple sentences the meaning of the following: 1. Q → R 2. (P ∧ Q) → R		William !	(5)	CO4
R: you get an A on final exam Write in simple sentences the meaning of the following: 1. Q → R 2. (P ∧ Q) → R				
Write in simple sentences the meaning of the following: 1. $Q \rightarrow R$ 2. $(P \land Q) \rightarrow R$				
$ \begin{array}{c} 1, Q \to R \\ 2, (P \land Q) \to R \end{array} $				
$(2. (P \land Q) \rightarrow R)$	$1.Q \rightarrow R$			
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