

SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution) Coimbatore-641035.



UNIT 5- LATTICES AND BOOLEAN ALGEBRA Lattices as posets Lattice : A lattere & a partfally ordered set (1, <) PD which evy. pase of ellments a, bet bas a have both LUB and GIB. Note: Della Sel. LUB $\overline{f}a, b\overline{g} = avb$ (ON) atb (ON) a $\overline{D}b$ (a form b) GILB $\overline{f}a, b\overline{g} = avb$ (ON) a b (ON) a * b a meet b A lattice is denoted by topplet $(L, *, \oplus)$ (0>) (L, M, V) (0>) $(L, \cdot, +)$ Example: J. Let A be any genet Bet Then (P(A), C) is a Lattice A -> ungon V -> 90tonsect lon Ploblems: J. Determine whether the posets D. ({1, a, 3, 4, 53, 1) ii). ({1, a, 4, 8, 163, 1) Lattaces. Soln. i). $R = \frac{3}{(1, 2)}, (1, 3), (1, 4), (1, 5), (2, 4)$ Hasse pragnam: UB(2,3) = 4000 not 2exterior 2F. Stork LUBIA, 33 = does not exist UBE1,23= 52,44 1UB { 1, 23 = 2 Here LUB 22,33 does not : It is not a Latter



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 $17). \quad R = \int (1, 2), (1, 4), (1, 8), (1, 16), (2, 4), (2, 8), (2, 16)$ (4,8), (4,16), (8,16) 3 16 Every pass of este have 8 both GILB and LUB. It is a latisce 4 2 J. (Z, 1) & a lattice Let a, be zt Soln. 20BEQ, 63 = LCM Eq, 63 $GILB \{a, b\} = GICD \{a, b\}$ For eq., a= 4, b= 20 $LUB_{\frac{1}{2}4}, 20^{\frac{1}{2}} = LCM_{\frac{1}{2}4}, 20^{\frac{1}{2}} = 20$ GILB = 4, 203 = GCD = 4, 203 = 4 la-HPCe 3. Deans Hagse dragsam of all with apto the elt. Soln.