

# A.P. SHAH INSTITUTE OF TECHNOLOGY

	Semester:
*	Least Upper Bound and Greatest Lower
	Bound:
	Let say we have a poset (5, R) such that S is an arbitrary set and R is a partial order defined on sets.  Also, let say T C s.
Join)_	Least Upper Bound - (LUB) - denoted by V
	Let U is the set of all upper bounds of set T. Then, an element $x \in U$ is called the least upper bound if $\forall y \in V(x,y) \in R$ .  LUB(T) = minimum { UB(T) }
The Park	Greatest Lower Bound (GLB) -denoted by 1
_ _s	Let L is the set of all lower bounds of et T. Then, an element x EL is called the reatest lower bound if $\forall y \in L(y,x) \in R$ .
	GLB(T) = maximum & LB(T)}



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	Semester :	Subject: DSGT Academic Year: 2022-2023
ex	· (1) Find	GLB and IUB of &b,d,93 it
	they exi	St in the poset with the Hasse shown below.
	h	LUB =
	9	Upper bounds of $\frac{1}{5}b, d, g^2 = g, h$
-	d	Louist Upper Bound of
-	b \	c 2b, d, g3 = g
	\ \	because g and h atl
	O'C	upper bounds of &b,d,gg
_		upper bounds of &b,d,g3 where bRg,dRg,gRg bRh,dRh,gRh.
		ne can say gRh but hRg.
-		mences ig is LVD.
G	五GLB=	a and b.
	Crreate	st lower bound of 2b,d,g3 b.



# A.P. SHAH INSTITUTE OF TECHNOLOGY Department of Computer Science and Engineering

Data Science

Semester :	
11	Subject: Academic Year: 20 - 20
- More	examples
Maximal	elements on minimal element
7	examples on minimal element elements.
A = 9	2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
minin	nal element = \$\phi \[ \tau' \cdot \alpha \]
1	
129	20
	Minimal = 2 Maximal = 12,20
45	6 Maximal = 12,20
2	
7	
) ad	e
_	C Minimal - # a
	1-1111111111111111111111111111111111111
	b raximal = d, e.
•	a
1	16
) ,	Marimal = 2 16
4	Minimal = 3,2
1	18/10/10/01 - 3,2
2-	a in material and a large
	3 is not comparable.



Subject Incharge:

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# A.P. SHAH INSTITUTE OF TECHNOLOGY

Department of Computer Science and Engineering
Data Science

Academic Year: 2022-2023 Semester: | | | Subject: DSGT Maximal = d, 9 Minimal = a, b. b Examples Greatest & Least element e E Greatest = \$ Greatest = f Greatest = e least = a least = \$ lower bound & upper bound Examples lower bound = \$ bound = c, d, e, f, g, h.

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Semester: Subject: DSG-T	Academic Year: 20 72-20 2-3
lower bound = a,b,	
lower bound = a,b,	
epper bound = figit	)
2 9 h	
- A = { C, d	,e3
- I lower box	end = a, b
de lower bou	ind = gih.
a	
3) Find greatest lower bound &	least upper
bound of the sets {3,9,12}	and
\$1,2,4,5,103 if they exist	in the
poset (Z, 1) where 1 is a	relation of
divisibility.	
	12112
R = S(3,3)(3,9)(3,12)(9,9)	12.12) 7
$R = \frac{3}{3} $	
MR = 3 1 1 1 7 39	(1) (1)
9010	
12 0 0 1	
	3) digrapho
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#### A.P. SHAH INSTITUTE OF TECHNOLOGY

Semester:	Subject :	DSGT		Academic Year: 2022 - 20 2 3
Hasse d	iggram	- 9	1	2
lower b GLB = 1 upper 1			3	
11 2112	,4,5,10	3	1. = ) ( .	10.2
	12) (2,4)	(2/10)	(4,4)(	5,5) (10,10)
$\frac{1}{M_R = 2}$	1 2	٩ - ا	5 10	
4	0		0 0	
			0 1	
-0 0	06 R		Hasse	dia.
2 10	(5)	7,5)66 <u>61</u> 1	2	15
		FLB=	. 9	
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Department of Computer Science and Engineering **Data Science** 

Semester :	Subject : DSGT	Academic Year: 2022-2023
- C	d b	Find GLB, LUB  ib B = & c, d?  UB = & e?  LB = a  LUB = e  GLB = a
11) A = 20 UB = d LUB = 0 GLB = 0	8	$iii \neq c = \{e, f\}$ $UB = \emptyset$ $UB = \emptyset$ $UB = a, d, b$ $GUB = d.$

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