

# Problem # 5

a - Equivalence of Tree

$$(1) \rightarrow (7) + (4) \rightarrow (8) \rightarrow (5) \rightarrow (3) \text{ f27}$$

$$\rightarrow (1)$$

\*  $(1) \rightarrow (7)$ : connected = path exists between every pair.

\*  $(7) \rightarrow (4)$ : unique path

\*  $(4) \rightarrow (8)$ : minimally connected  
 $\Rightarrow$  adding one edge

\*  $(6) \rightarrow (5)$ : maximally acyclic

\*  $(5) \rightarrow (3)$ : Acyclic with  $\geq V-1$  edges  $\Rightarrow$  exactly  $V-1$  edges

\*  $(3) \rightarrow (2)$ : connected with  $\leq V-1$

\*  $(2) \rightarrow (1)$ : one component of a forest

Subject

Month

Year

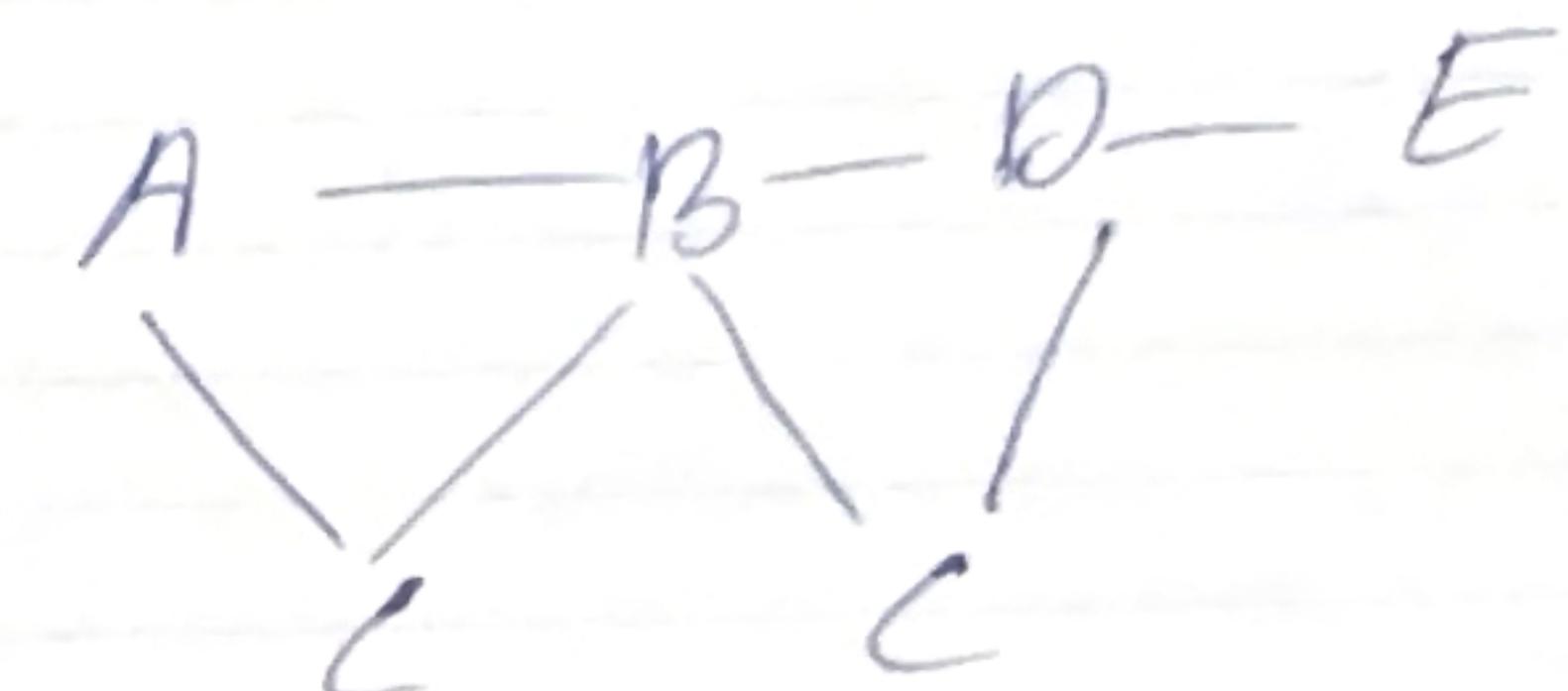
Date

b. CSC Graph Reconstruction  
Graph  $\pm$  (Undirected)

Col	Rows (neighbors)
A(0)	rows 1,2 $\rightarrow$ B,C
A(1)	rows 0,2,3 $\rightarrow$ A,C,D
C(3)	rows 0,1,3 $\rightarrow$ A,B,D
B(2)	rows 1,2,4 $\rightarrow$ B,C,E
E(4)	rows 3 $\rightarrow$ D

	A	B	C	D	E
A	0	1	1	0	0
B	1	0	1	1	0
C	1	1	0	1	0
D	0	1	0	1	0
E	0	0	0	1	0

b) Diagram



(A-C, B-C, B-D, C-D, DE)

Graph 2

	A	B	C	D	E
A	0	1	0	0	0
B	0	0	1	0	1
C	0	0	0	1	0
D	0	1	0	0	1
E	0	0	0	0	0

Diagram 2

$A \rightarrow B \rightarrow C \rightarrow D \rightarrow B$   
 $B \rightarrow C$        $D \rightarrow E$   
 $B \rightarrow E$       **AN**