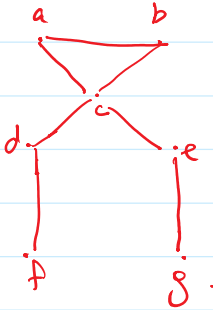


lecture 23:

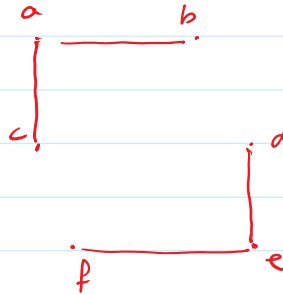
Connectivity.

Connected Graph:- if \exists a path btw \forall ^{Distinct.} pair of vertices.

Ex 6
PS 63

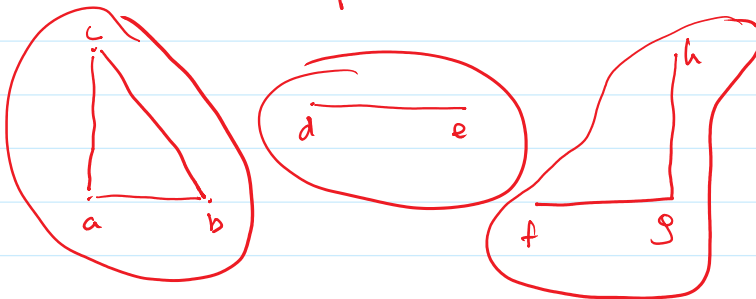


connected

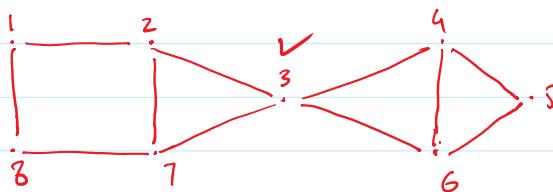


Not Connected.

Connected Component.

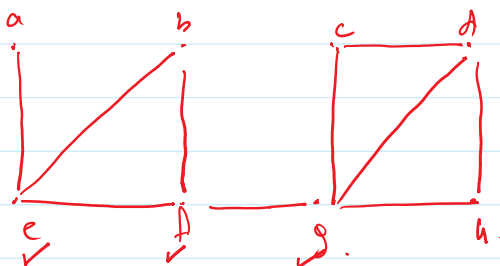


Cut Vertex.

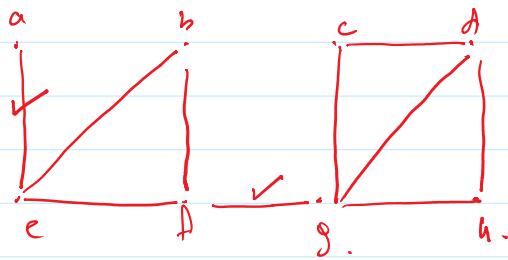


$(2,3) \cup (3,7)$.

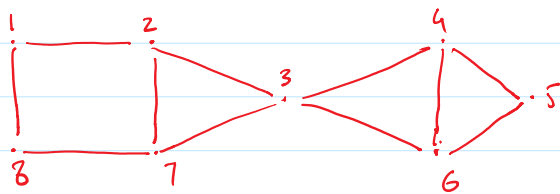
Ex 4
PS 64.



Cut Edge:-



Cut Set:-



(2,3) (3,7)

Directed Graphs -

1- Strongly Connected:-

$\forall a, b \in V$

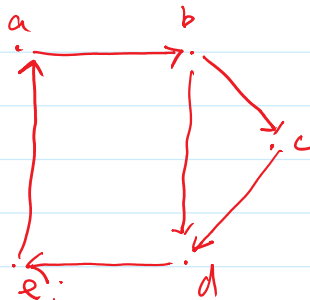
1) \exists a path from a to b
2) b to a.

2- Weakly Connected:-

$\forall a, b \in V$

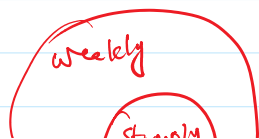
1) \exists a path from a to b
2) b to a.

Ex 12:-
PS 65

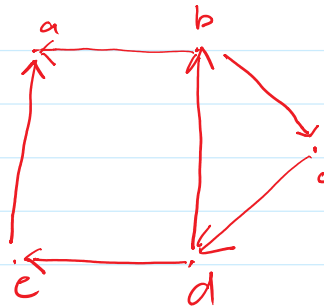


Strongly Connected.

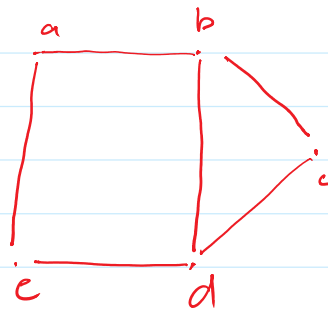
a to b.	b to a.
a to c	c to a
a to d	d to a
a to e	e to a.
b to c	c to b.
b to d	d to b.
b to e	e to b
:	:



weakly
strongly



alternate way to check weakly Connected.

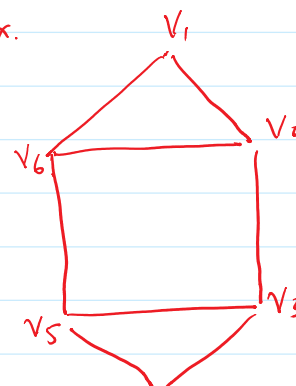
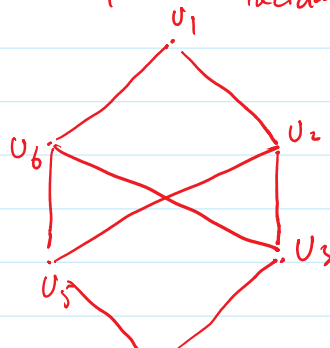


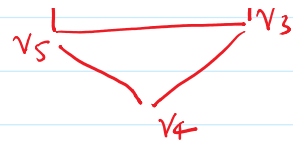
The underlying Undirected Graph is Connected.

Isomorphism :-

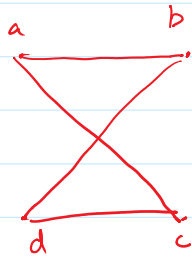
- 1- Vertices.
- 2- Edges.
- 3- Degrees.
- 4- Adjacent.
- 5- Circuits.
- 6- Cut Edges.
- 7- Cut Vertices.
- 8- Assignment.
- 9- Incident matrix.

Ex 15
S66.





Ex 6.
P 567:-



$$A_2 = \begin{matrix} & \begin{matrix} a & b & c & d \end{matrix} \\ \begin{matrix} a \\ b \\ c \\ d \end{matrix} & \begin{bmatrix} 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \\ 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix} \end{matrix}$$

ababa
acaca
abdba.
abdca
abaca
acdca
acdba
acaba.

$$A^4_2 = \begin{matrix} & \begin{matrix} a & b & c & d \end{matrix} \\ \begin{matrix} a \\ b \\ c \\ d \end{matrix} & \begin{bmatrix} 8 & 0 & 0 & 8 \\ 0 & 8 & 8 & 0 \\ 0 & 8 & 8 & 0 \\ 8 & 0 & 0 & 8 \end{bmatrix} \end{matrix}$$