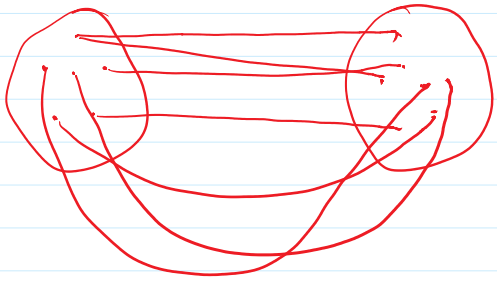
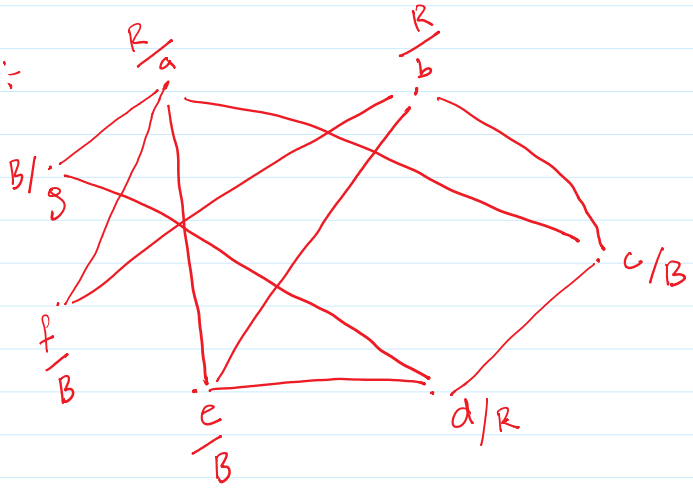
Lecture 22 :-

	Vertices	Edges
K_1	1	0
K_2	2	1
K_3	3	3
K_4	4	6
⋮	⋮	10
⋮	⋮	15
K_n	n.	⋮
	n.	$\frac{n(n-1)}{2}$

Bi-partite Graph.

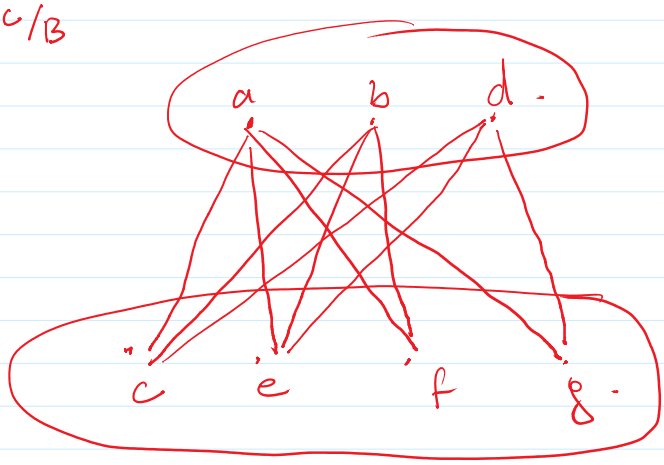


Ex 22 :-
Sol



Red = {a, b, d}

Blue = {c, e, f, g}.



Complete bi-partite Graph.

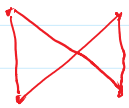
$K_{m,n}$.

$K_{1,9}$

$K_{m,n}$.

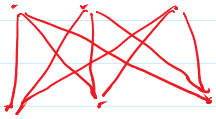
$K_{1,2}$

$K_{2,2}$



$K_{2,3}$

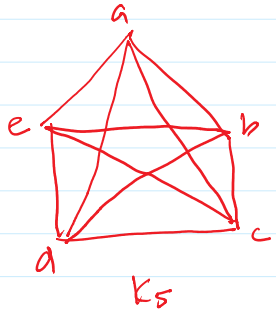
$K_{3,3}$



$K_{m,n}$.	Vertices	Edges.
	$m+n$.	$m \times n$.

Sub Graph:- $G = (V, E)$ $H = (W, F)$.

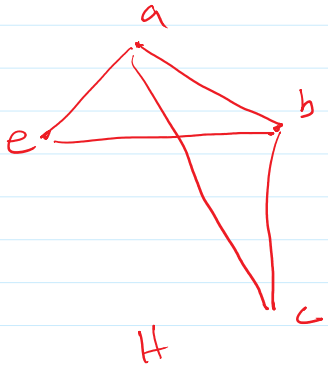
H is a Subgraph of G if $W \subseteq V \wedge F \subseteq E$.



K_5

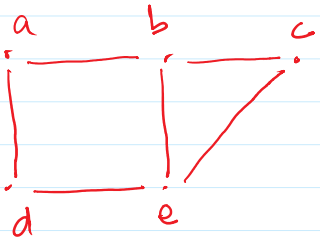
G

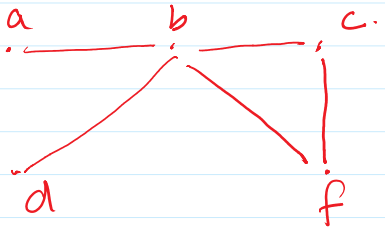
$V = \{a, b, c, d, e\}$.



H

Ex 17 :- 546



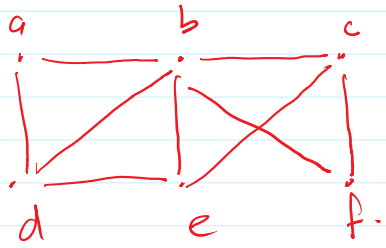


d e

G

d f

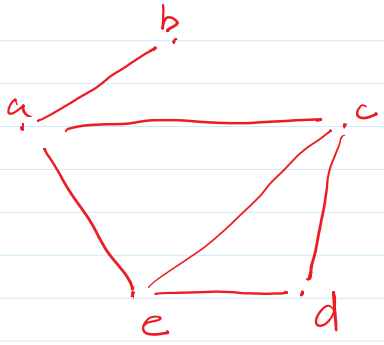
H



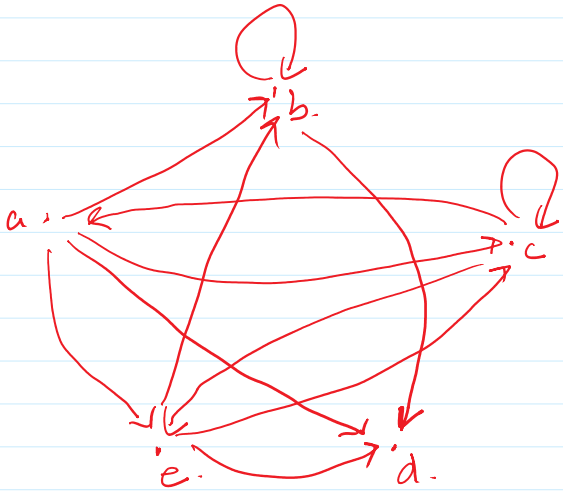
GUH.

550 Graph Representation.

1- Adjacency list.

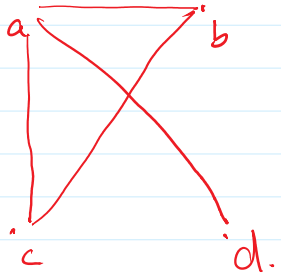


Vertex	Adjacent Vertices.
a	b, c, e
b	a
c	a, e, d
d	c, e
e	d, c, a.



Initial Vertex	Terminal Vertices.
a	b, c, e, d.
b	b, d
c	a, c, e
d	
e.	b, c, d.

2- Adjacency Matrix



	a	b	c	d
a	0	1	1	1
b	1	0	1	0
c	1	1	0	0
d	1	0	0	0

1 No loop - All 0's on diagonal.

2 Degree of Vertex = Row wise / Col wise Sum corresponding to a Vertex.

3- if the matrix is a 1-0 Matrix.

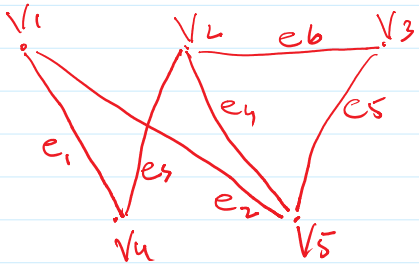
4- No Non-zero on main diagonal & No Value > 1.

5- if any entry > 1 → Multi edges

Ex 5 HW.
5.12

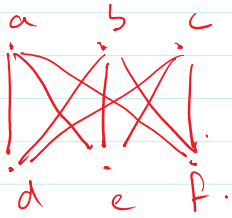
3- Incident Matrix

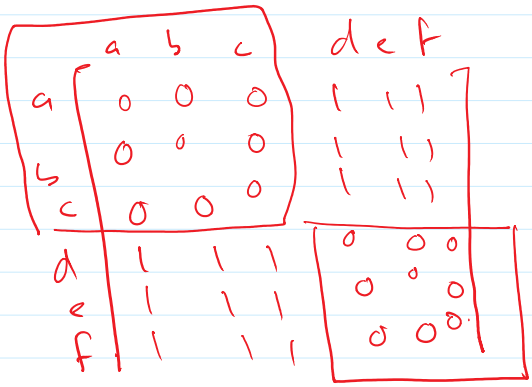
Ex 6 :-
5.2



	e_1	e_2	e_3	e_4	e_5	e_6
v_1	1	1	0	0	0	0
v_2	0	0	1	1	0	1
v_3	0	0	0	0	1	1
v_4	1	0	1	0	0	0
v_5	0	1	0	1	1	0

$K_{3,3}$





$C_4, K_5,$