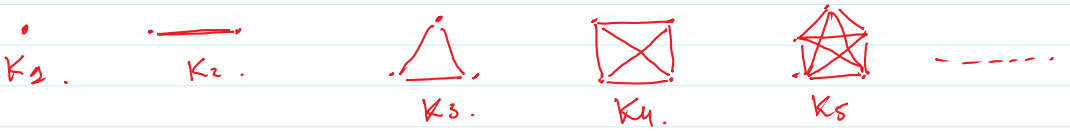
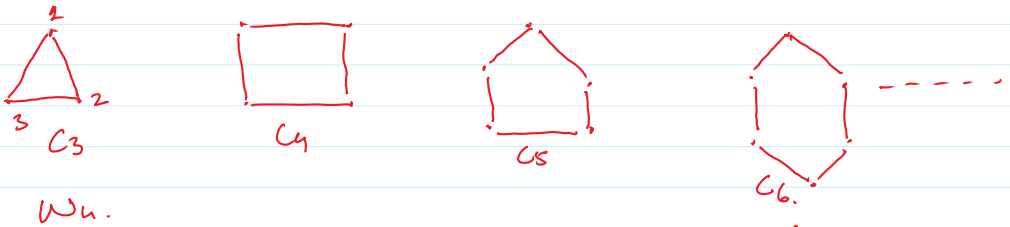
Lecture 22:- Graphs.

Special types of Simple Graphs.

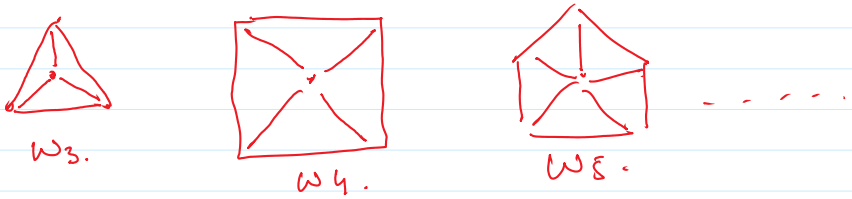
1- Complete Graphs:- Exactly one edge btw every pair of Vertices. $K_1, K_2, K_3, \dots K_n$.



2- Cycles:- C_n. $n \geq 3$. $1, 2, 3, \dots n$.
such that $\{1,2\}, \{2,3\}, \{3,4\}, \{n-1, n\}, \{n, 1\}$.

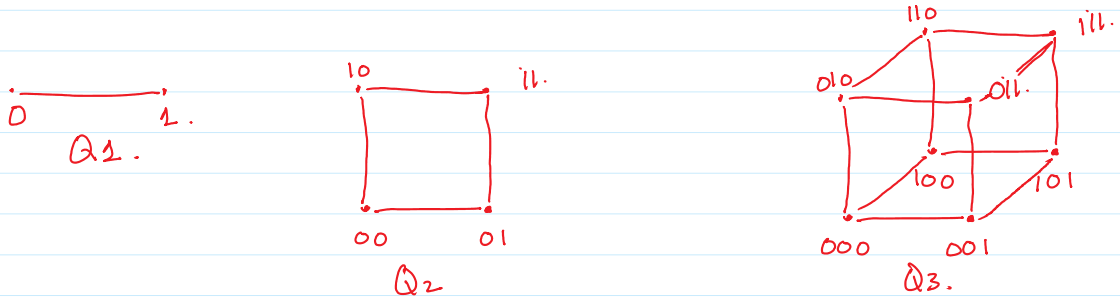


3- Wheels:- W_n. A Vertex in the center of a C_n. which is connected to all.



4. Cuboid:- Q_1. Q_2 Q_3

Vertices.
$2^1 = 2$.
$2^2 = 4$.
$2^3 = 8$.



Vertices. → K_1. 1 → K_2 2 → K_3 3 → K_4 4 → K_5 5 → K_6 6 ---- K_n n.

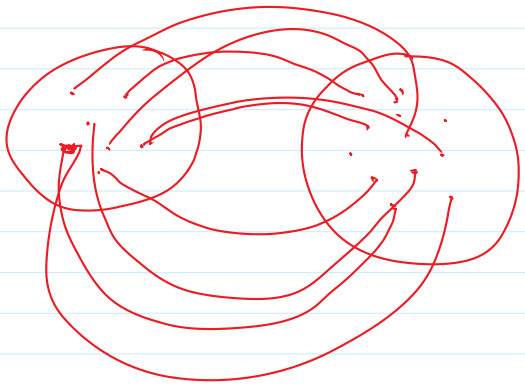
Edges. 0 1 3 6 10. 15. $\frac{n(n-1)}{2}$.

	C_3	C_4	C_5	C_6	----	C_n.
Vertices.	3	4	5	6	---	n
Edges.	3	4	5	6	---.	n.

	W_3	W_4	W_5	W_6	-----	W_n
Vertices.	4.	5	6	7.	----	n+1.
Edges.	6	8	10	12	---	2n

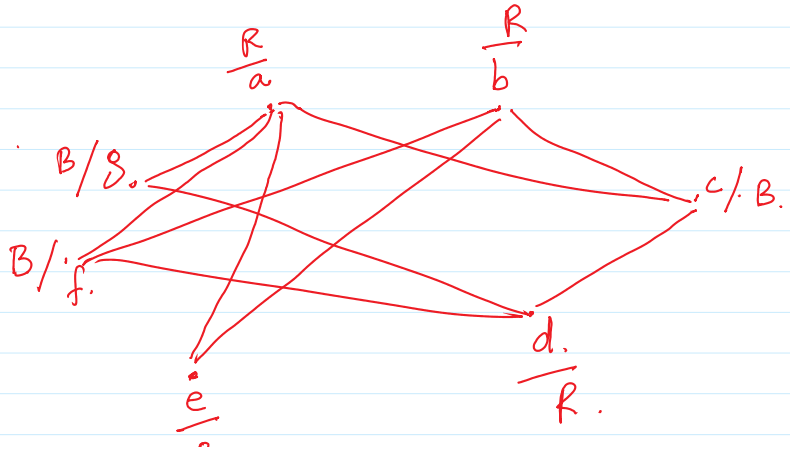
	Q_1	Q_2	Q_3	---.	Q_n.
Vertices.	2	4	8		2^n.
Edges.	1	4	12.		#W?

Bipartite Graph:- $V = \{v_1, \dots, v_n\}$.
$E = \{e_1, e_2, \dots, e_m\}$.



← No internal Edge. within a Group.

Exll P541.



$R = \{a, b, d\}$.

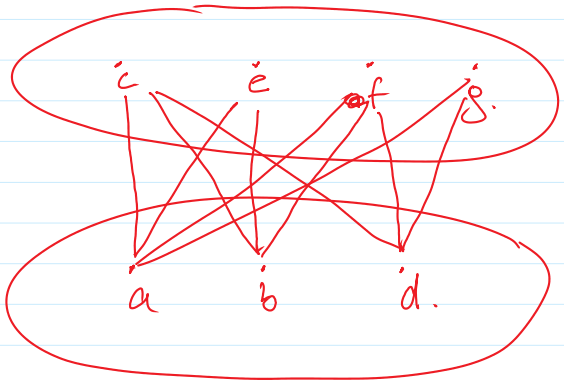
$B = \{c, e, f, g\}$.

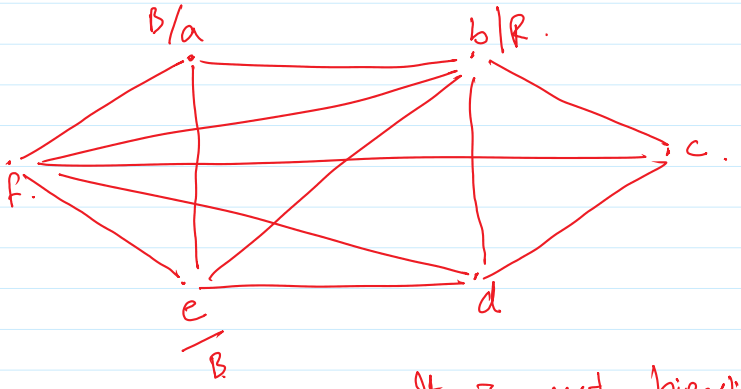
e

B.

R.

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





R = {a

B = {b, f, e.

R = {b

B = {a, e.

It is not bipartite.

Complete Bipartite Graphs.

K min.

from white Board pictures.