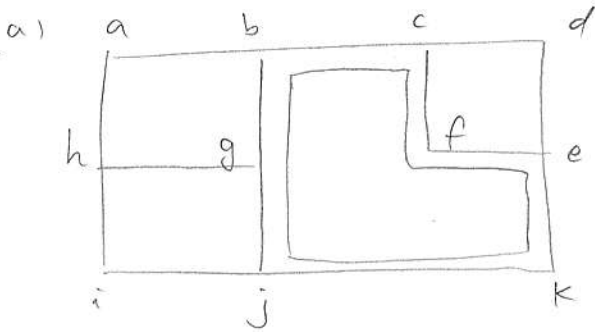


ch 1.3

#15

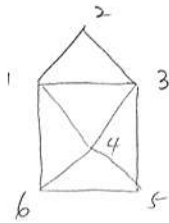
$$V = V_1 \cup V_2, \quad V_1 \cap V_2 = \emptyset \quad \& \quad E \subset V_1 \times V_2$$

G is bipartite iff G has no odd cycle.



$b-c-f-e-k-j-g-b$
7

b)



#17

Graph G is conn. if \exists a path between any 2 vertices of the graph.

#9 If each vertex has degree p (odd) then the total number of edges is a multiple of p .

If each vertex has degree a multiple of p (odd) then the total number of edges is a multiple of p .

#8

G be an n -vertex graph s.t. $\bar{G} \sim G$

1) What is the number of edges in such a graph?

$$\frac{n(n-1)}{2} - |E| = E(\bar{G}) = |E| \Rightarrow |E| = \frac{n(n-1)}{4}$$

2) Can $n=2406$?

No $4 \nmid 2406$ $4 \nmid 2405$

Extra Questions

#1

$$\frac{n(n-1)}{2} \geq 162 \Rightarrow n(n-1) \geq 324$$

$$n = 19$$

#2

$$m, n \Rightarrow mn \geq 169$$

$$\left(\frac{m+n}{2}\right)^2 \geq mn \geq 169 \Rightarrow \frac{m+n}{2} \geq 13$$

$$(m+n)^2 = (m-n)^2 + 4mn$$

$$\Rightarrow m+n \geq 26$$

$$(m+n)^2 \geq 4mn$$