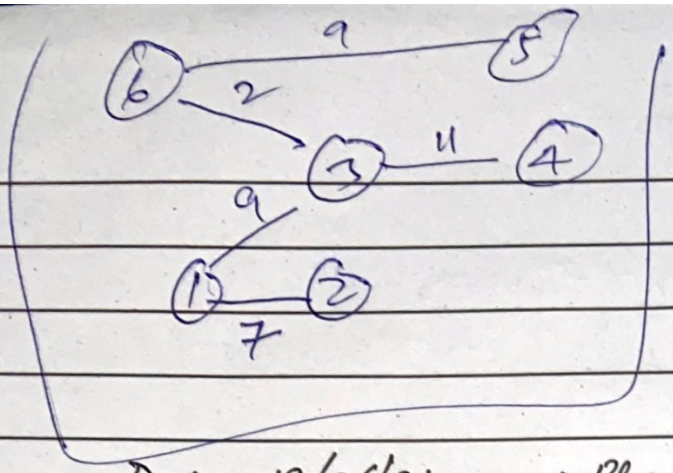
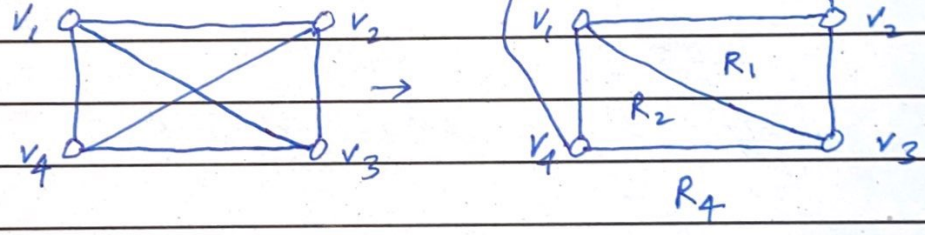


Date: 19/06/21. → Planner Graph: Day: Saturday.

→ Planner graph is a graph which don't have any edge which is crossing. AND the graph which consists of edges that are crossing each other is said to be as non-planner graph.

Example:

(i)

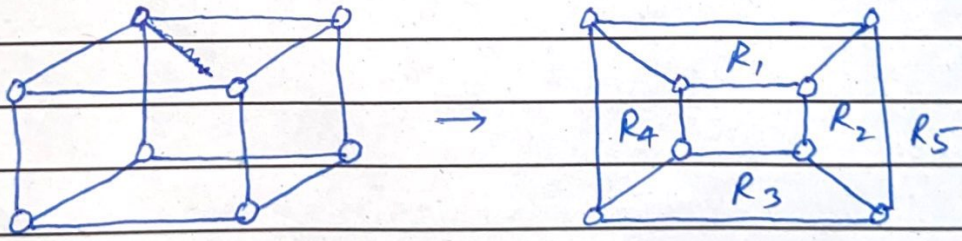


$\chi(G) = 4$.

Non-Planner Graph

Planner Graph.

(ii)

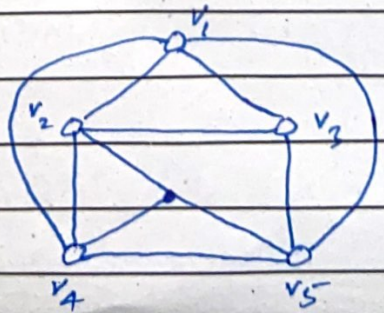


$\chi(G) = 5$.

Non-Planner Graph.

Planner Graph.

Theorem: A complete graph of five vertices is non-planner.

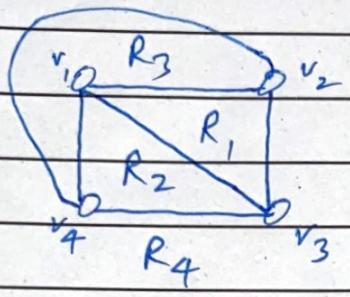


Non-Planner Graph.

→ Euler's Formula:

$r = e - v + 2$.

(r → regions, e → edges, v → vertices)



$e = 6$

$v = 4$

$r = e - v + 2$

$r = 6 - 4 + 2$

$r = 2 + 2$

$r = 4$

Graph Coloring:

→ Graph coloring is technique to colour the vertices of a graph. But color in such a way that there may be not same colour of the adjacent vertices.

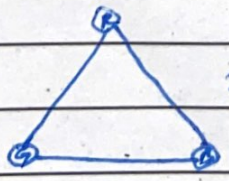
→ Also we have to use minimum no. of colours.

Chromatic Number:

Minimum number of colours needed for colouring the graph.

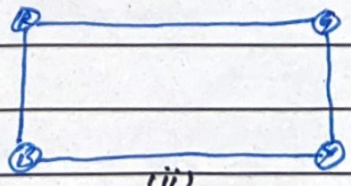
* Denoted by $\chi(G)$ or K - chromatic graph

Examples:



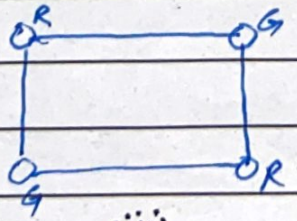
$\chi(G) = 3$

(i)



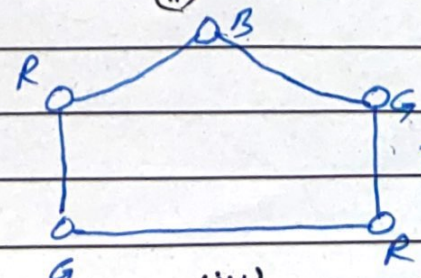
$\chi(G) = 4$

(ii)



$\chi(G) = 2$

(iii)



$\chi(G) = 3$

(iv)