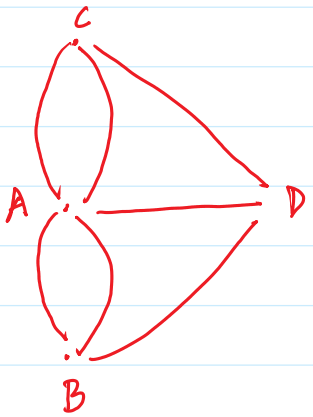
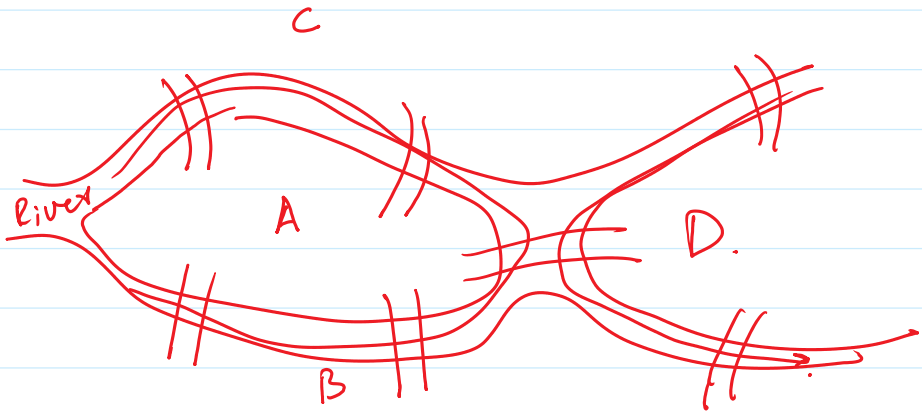
Lecture 27:-

PS7.1. EULER PATH & CIRCUITS.

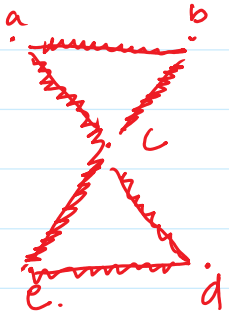
EULER PATH:- A simple path in which all edges are traversed.



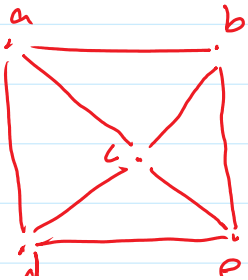
Konnigsburg. "300 years ago."



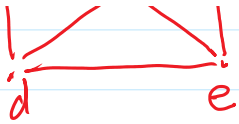
EX2 :-
PS7.2



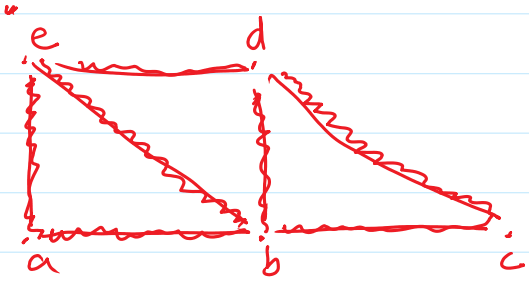
Euler Circuit ✓.
Path ✓.



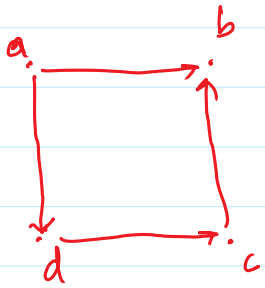
EC K
EP. K.



EP ✓



EC ✗
EP ✓.

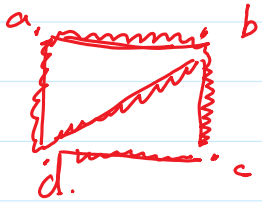


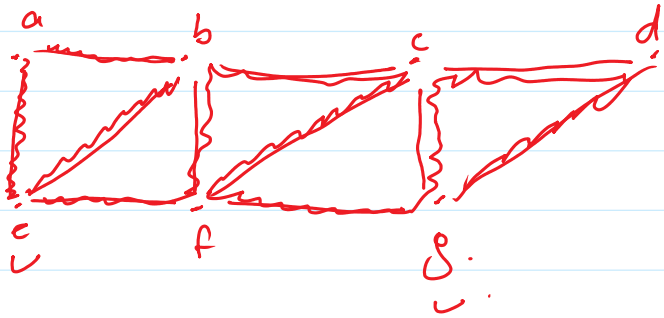
EC = ✗
EP = ✓.

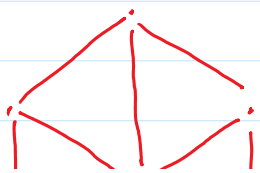
Theorem :- A Connected multigraph Contains a EP but not a EC iff it has exactly two Vertices of odd degree.

S75

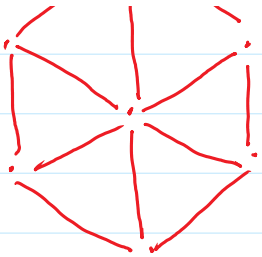
Ex 4:- P575







EC = ✗
EP = ✓.



EC = ✗

EP = ✓.

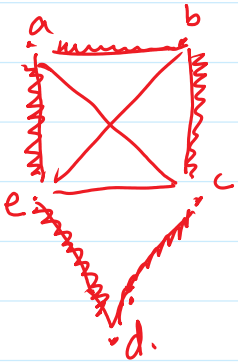
$K_{3,3}$. Q3.

HAMILTON PATHS / CIRCUITS.

Circuit :- if we start from a Vertex & reach it back such that we cover all the Vertices.

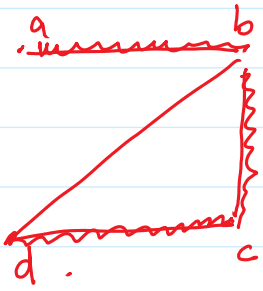
EX5

P577.



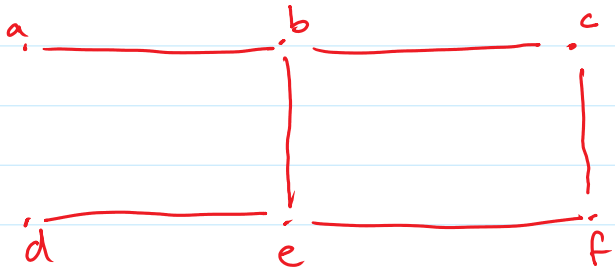
HC = ✓.

HP = ✓.



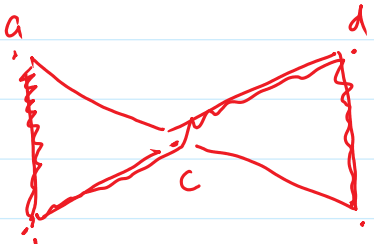
HC = ✗.

HP = ✓

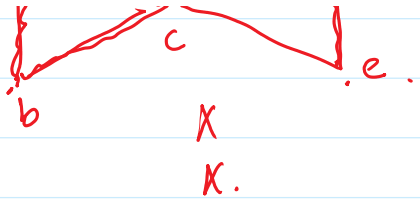


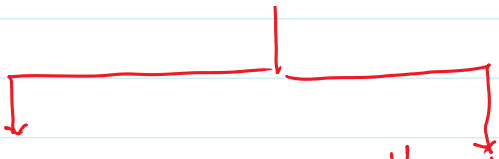
HP = ✗

HC = ✗.



Simple path. (No Repeated Edges)





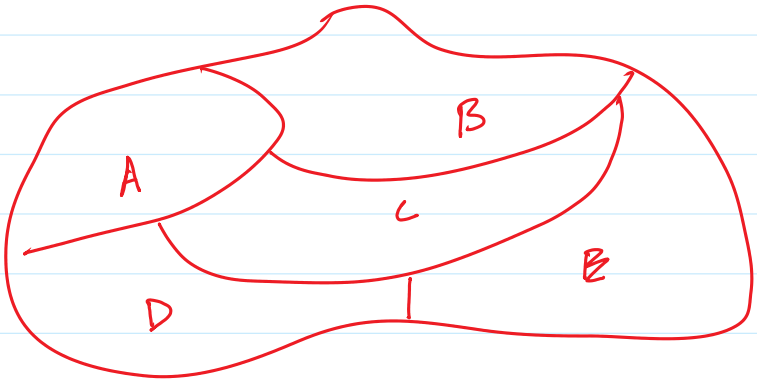
Euler
- All edges Cover.

Hamilton.
- All Vertices Cover.
- No Repeated Vertices.

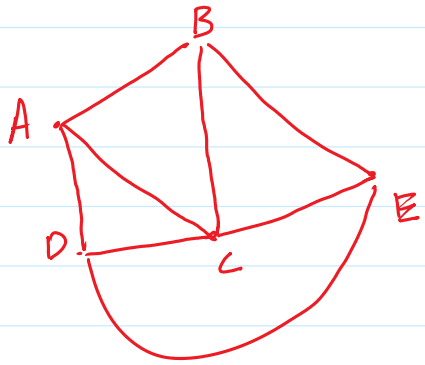
Ex 581 - 585

Ex 1 - 50.

Graph Colouring :-

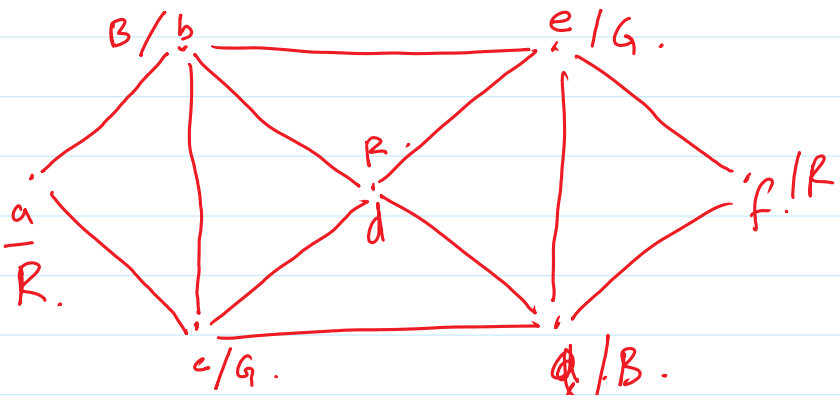


Map.



Chromatic Number :- The minimum # of Colours Required to Colour the graph Such that no two adjacent Regions / Vertices have the same Colour.

Ex
G68



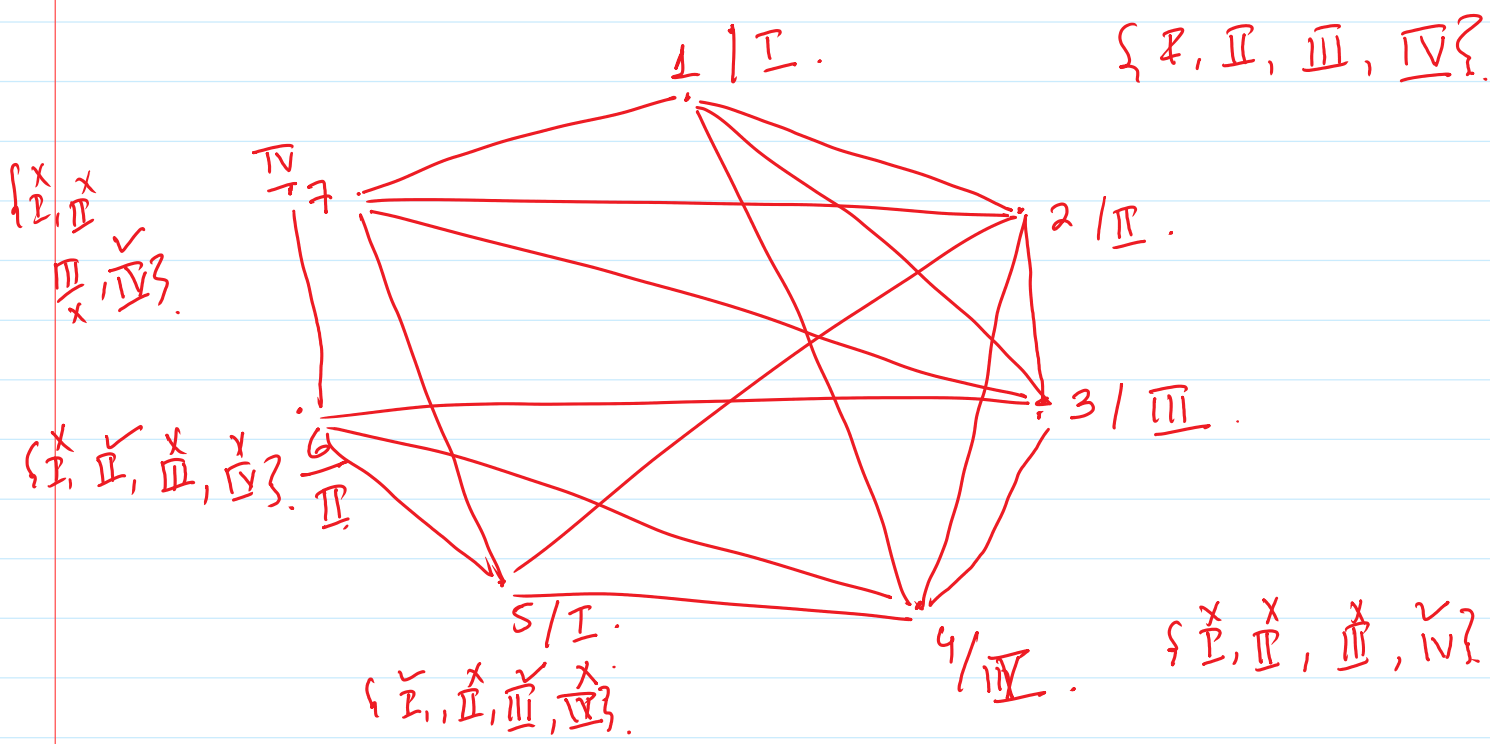
{R, B, G}.

c/G.

B.

Scheduling of Exams.

Exs :-					
6	1 & 2	2 & 3	3 & 4	4 & 5	5 & 6
11	1 & 3	2 & 4	3 & 6	4 & 6	5 & 7
	1 & 4	2 & 5	3 & 7		
	1 & 7	2 & 7			6 & 7.



Day			
1	9-12	I	1,5
	12-3	II	2,6
2	9-12	III	3
	12-3	IV	4,7.

Ex :- 1-30.
612-615.

Sohaib Shah.