IQRA National University

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Subject :- Discrete structur

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program :- BS(CS)

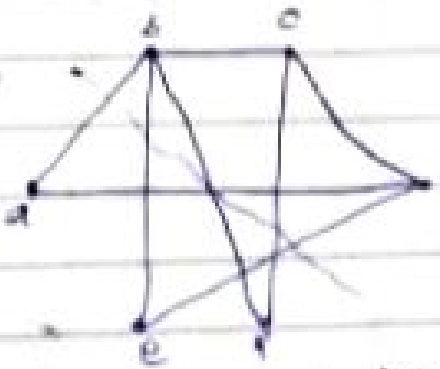
Question No 1

Ans:

Part a:

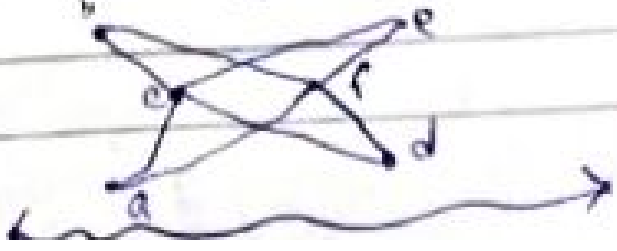
For the graphs given above, they are bipartite showing that they are 2-colorable.

The easy ones are the ones that are 2-colorable. You just find a 2-coloring i.e a coloring of the vertices of the same color are never adjacent along an edge.

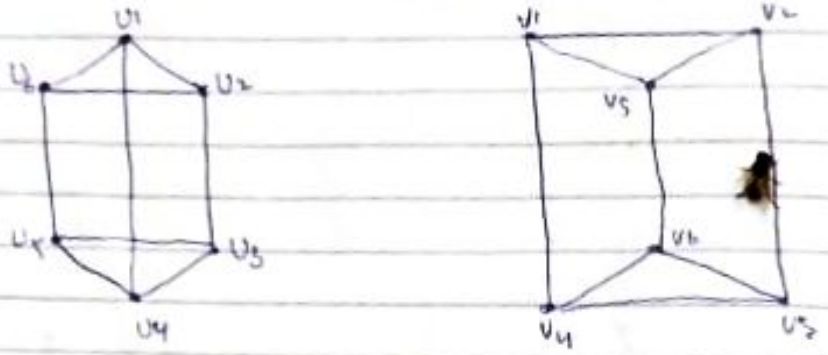


Part b: For the given graph above, they are bipartite showing they are 2-colorable

The easy ones are the ones that they are 2 colorable you just find a 2 coloring i-e a coloring of the vertices of the same color are never adjacent along an edge

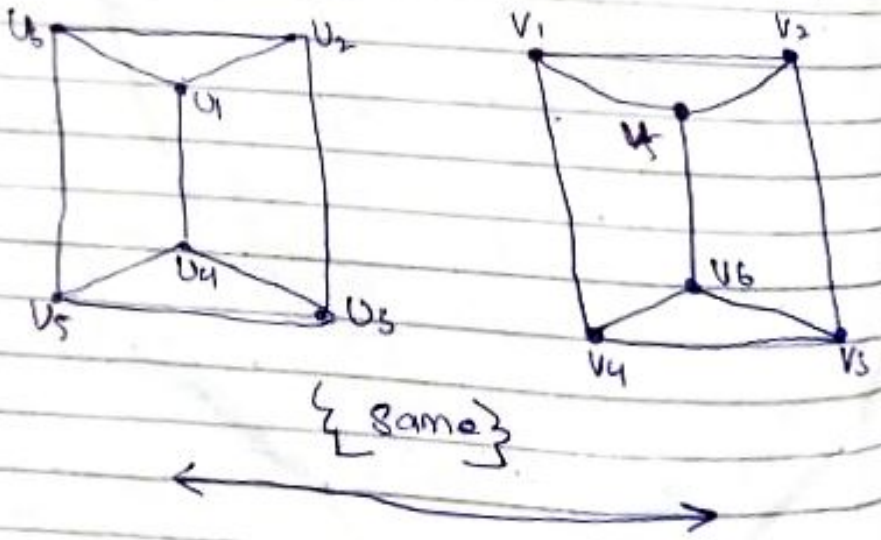


Question No. 2



Answer: first we see the given graphs, they are Isomorphic because when we keep vertic U_1 and U_4 under the squre, U_1 and V_5 are same, U_4 and V_6 are same, therefore they are isomorphic

Example:

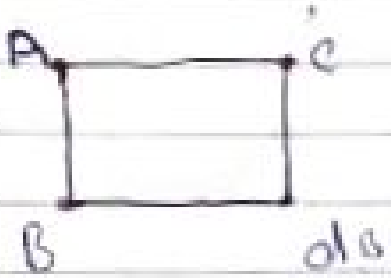


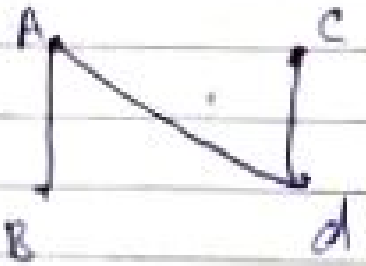
Part. 2

	A	B	C	d
A	0	1	1	0
B	1	0	0	1
C	1	0	0	1
d	0	1	1	0

	A	B	C	d
A	0	1	0	1
B	1	0	0	0
C	0	0	0	1
d	1	0	1	0

Solution :





Adjacency lists:

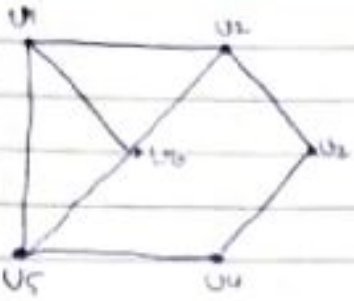
A : C, B
B : A, d
C : A, d
d : B, C

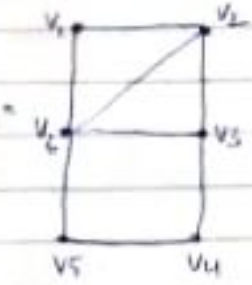
A : B, d
B : A
C : d
d : A C

Not Isomorphic :-

Question No2

Part2:





Answer:

First we see the give graphs; they are Non Isomorphic because when we compare vertics U and V they are not same, therefore they are Not Isomorphic.

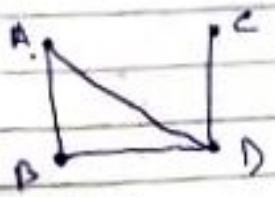
Question No 3

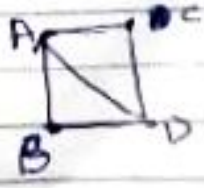
Part1:

	A	B	C	D
A	0	1	0	1
B	1	0	0	1
C	0	0	0	1
D	1	1	1	0

	A	B	C	D
A	0	1	1	1
B	1	0	0	1
C	1	0	0	1
D	1	1	1	0

Solution





Adjacency lists:-

a = B, d
b = A, d
c = d
d = A, B, C

a = c, B, d
b = A, d
c = A, d
d = A, B, C

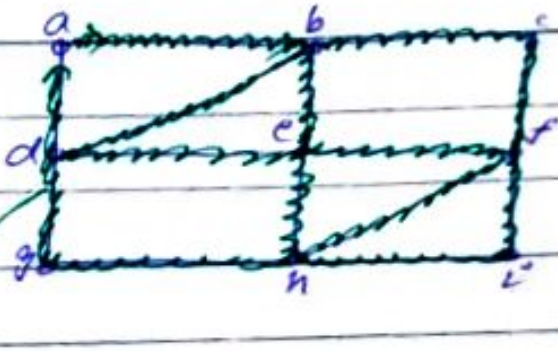
⇒ Not Isomorphic

Q 4

Eular circuit means.

A graph where we allow loops and parallel edges and the path has the same initial and terminal vertices, we call it an Eular circuit.

(i)

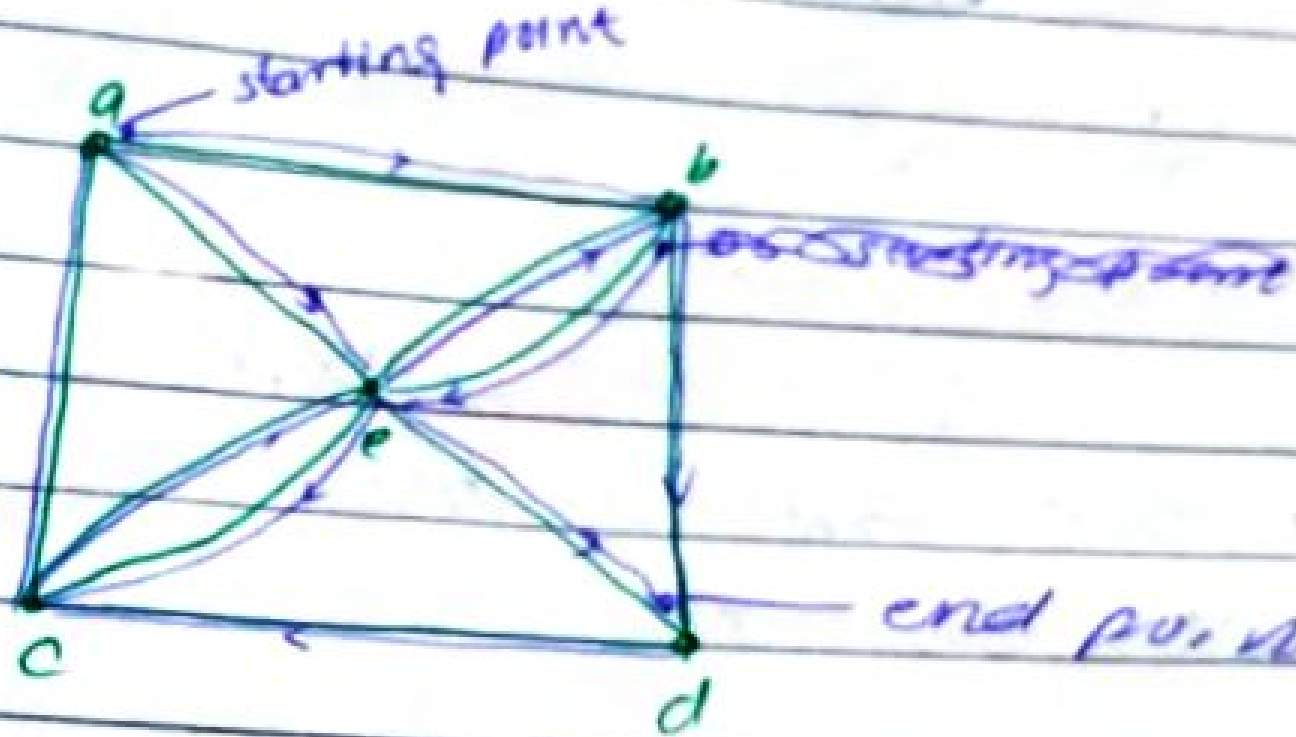


Eular path

initial and terminal point is once.

start form 'a' and end to 'a'

it is a Eular circuit.



Eular path a-b-e-c-e-b-d-c-a-e-d

this ~~is~~ not Eular circuit

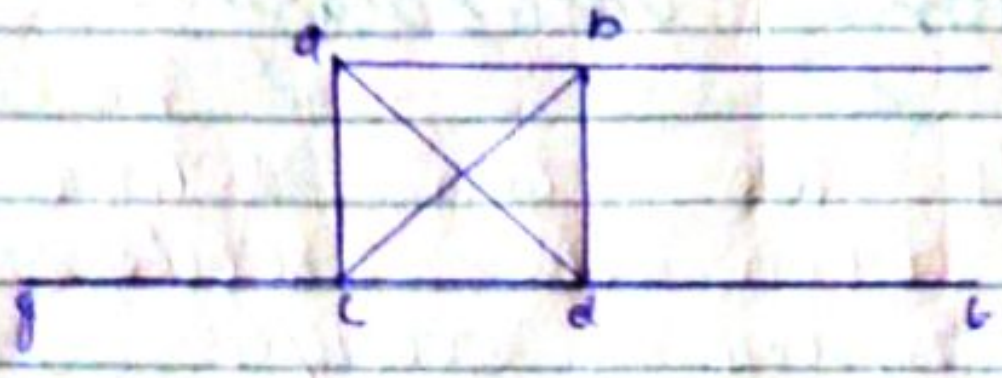
because starting point and

ending point is not once.

Questions- 5

Determine whether the given graph has a Hamilton circuit. . . . . exists.

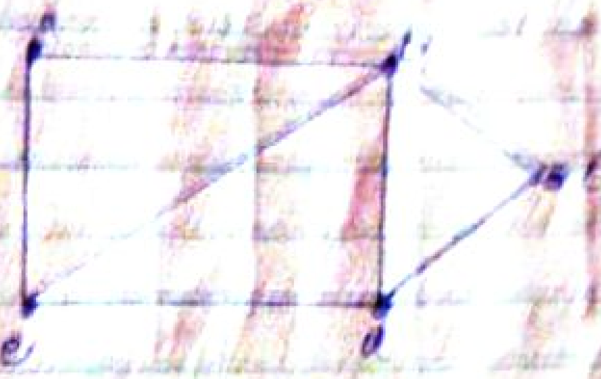
Answer:



⇒ The graph doesn't have a Hamilton path since

there are three vertices of degree 1 (e,f,g)
Theorem: If there are a Hamilton path then there are at most 2 vertices of degree 1

B :-



⇒ The graph have Hamilton path :
(a,b,c), (d), (e)
So the graph shows that (a,b,c), (d), (e) and the graph have Hamilton path