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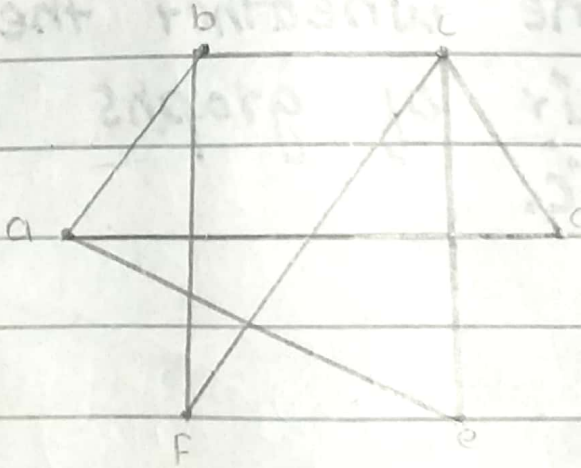
ID No:- 16041
Subject:- Discrete Structure
Program:- BSCS
Final assignment
Semester 2

Question:- 1

Determine whether the graph are bipartile?

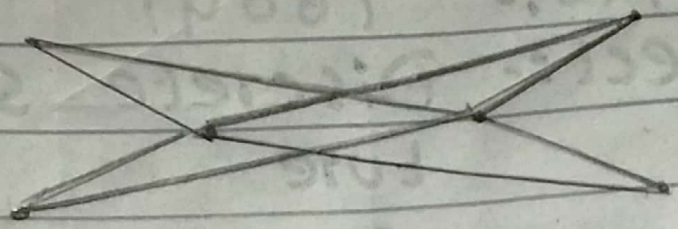
a)



Answer:- Not bipartile.

Reason:- These sets are not making.

b)

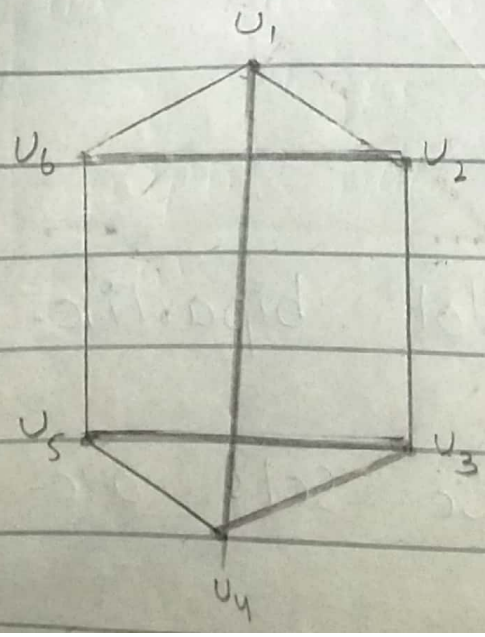


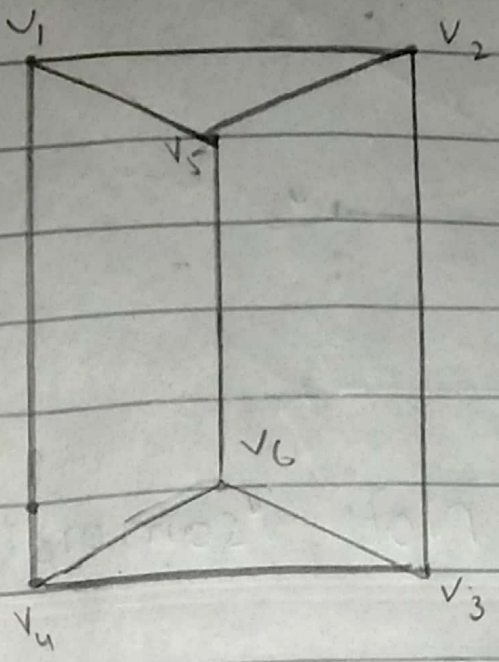
Answer:- bipartile

Reason:- It is complete bipa rtile graph because sets have ending and starting point.

Question:- 2

Determine wheather the given pair of graphs is isomorpic.

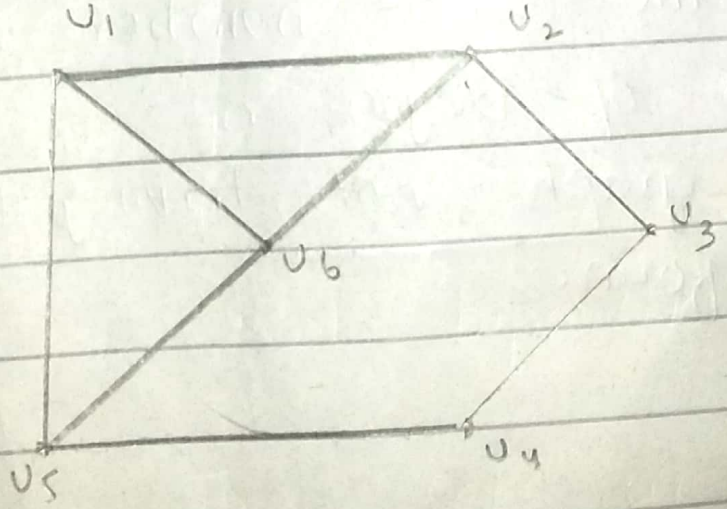


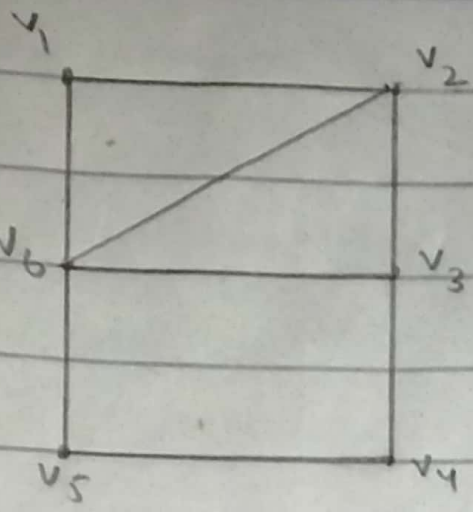


Answer:- Isomorphic

Reason:- Two graphs which contain the same number of graph vertices connected in the same way are said to be isomorphic.

b)





Answer:- Not isomorphic

Reason:- The not Isomorphic have three reason.

1. Two Isomorphic graphs must have the same number of vertices.
2. Two Isomorphic graphs must have the same number edges.
3. Two Isomorphic graph must have the same number of vertices of degree n.

These graph not having the same form.

Question :- 3

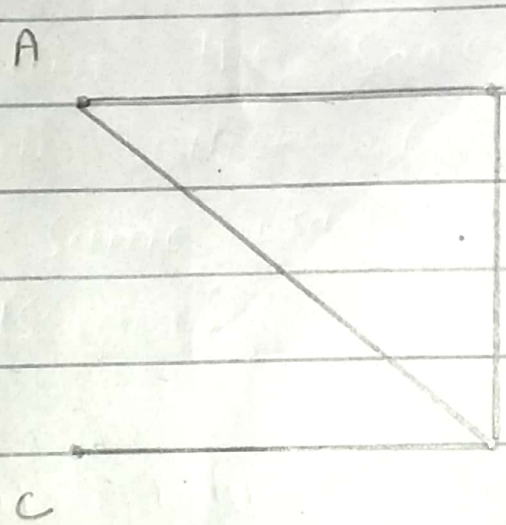
Are the Simple graph with the following adjaceny matrices Isomorphic.

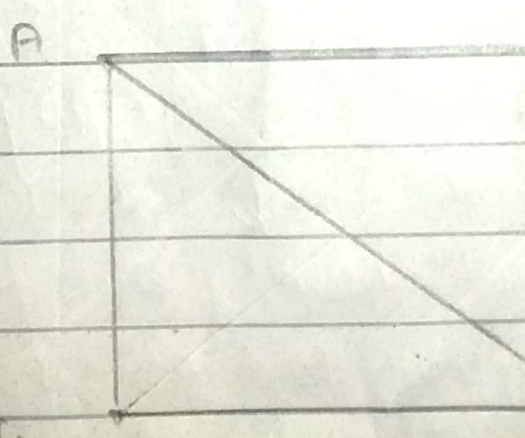
a)

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

,

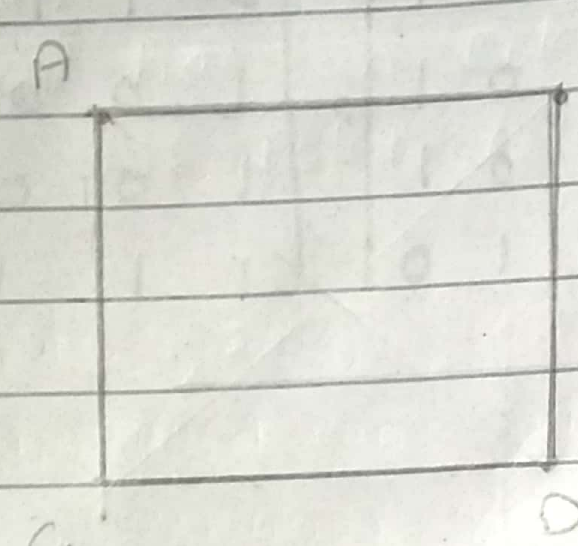
	A	B	C	D
A	0	1	1	1
B	1	0	0	1
C	1	0	0	1
D	1	1	1	0

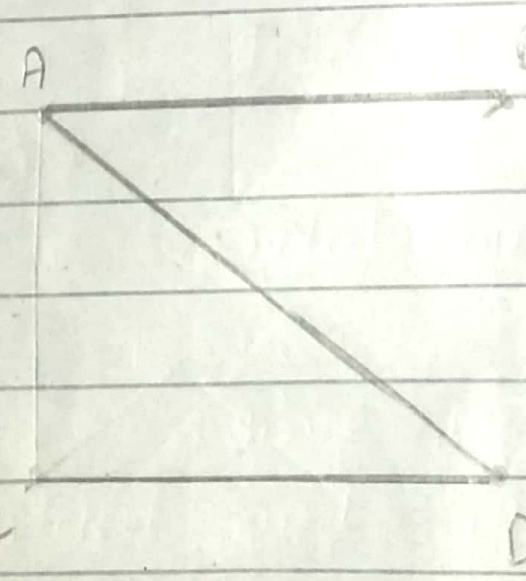




b)

$$\begin{array}{c} \\ A \\ B \\ C \\ D \end{array}\begin{array}{c} \begin{array}{cccc} A & B & C & D \end{array} \\ \begin{bmatrix} 0 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 \\ 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix} \end{array} , \begin{array}{c} \\ A \\ B \\ C \\ D \end{array}\begin{array}{c} \begin{array}{cccc} A & B & C & D \end{array} \\ \begin{bmatrix} 0 & 1 & 0 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 1 & 0 & 1 & 0 \end{bmatrix} \end{array}$$

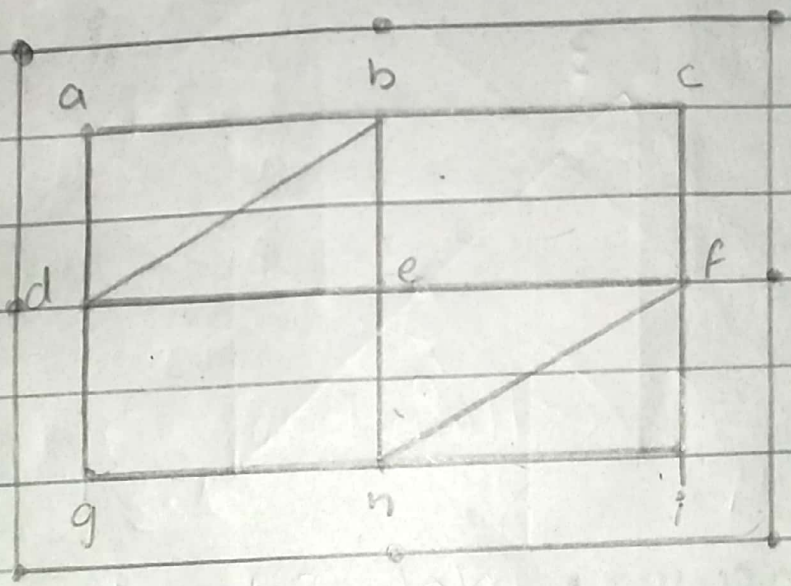




Question: 4

Determine wheather the given graph has an Euler circuit. Construct such a circuit when one exists. If no Euler circuit exists, determine wheather the graph has an Euler path and construct such a path if one exists.

a)



Answer: Euler circuit.

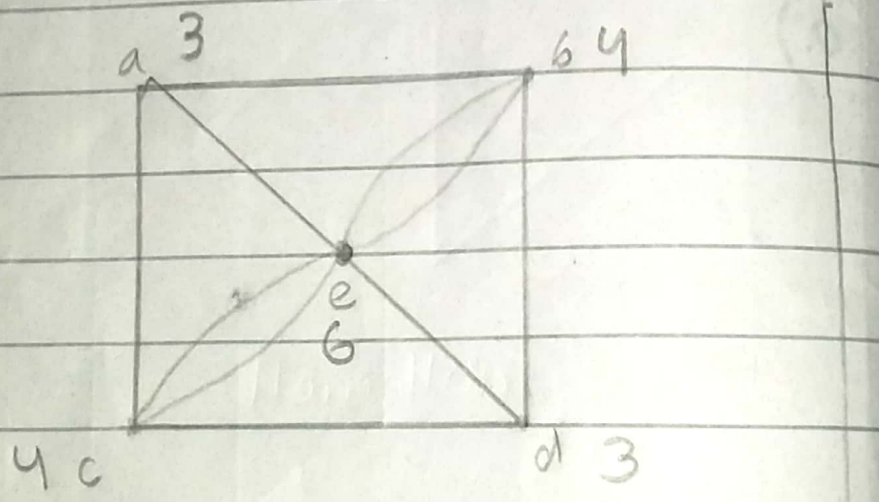
Reason:- An Euler circuit in a graph is a circuit that uses every edge of the graph exactly once.

Suppose we have a connected graph.

1. If the graph has Euler circuit, then each vertex of the graph has even degree.

2. If each vertex of the graph has even degree. then graph has an Euler circuite. So this Euler circuite.

b)



Answer:- Not Euler Circuit.

Reason:- Since the graphy is connected and all the vertice do not have even degree, the graph is not Eulerian. A circuit (that start

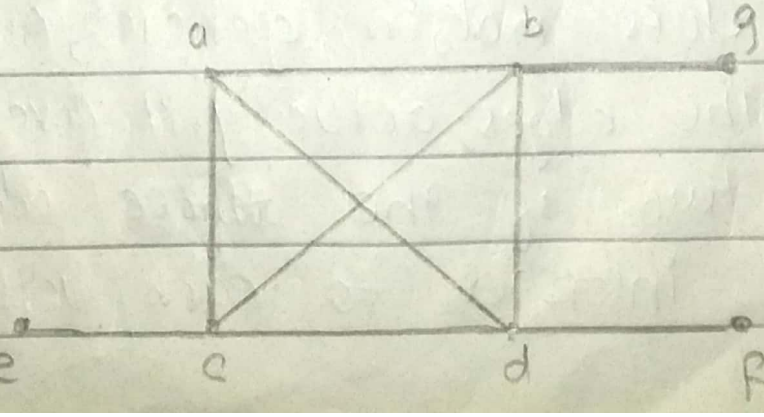
and ends at the same vertex) is said to be Euler circuit if it uses every edge, but only once Since the graph is not Eulerian, Euler circuit does not exist.

a, e, c, e, b, e, d, b, a, c, d
not Euler circuit

Question:-5

Determine wheather the given graph has a Hamilton circuit. If it does. find such a circuit. If it does not, give an argument to show why no such circ. uit exist.

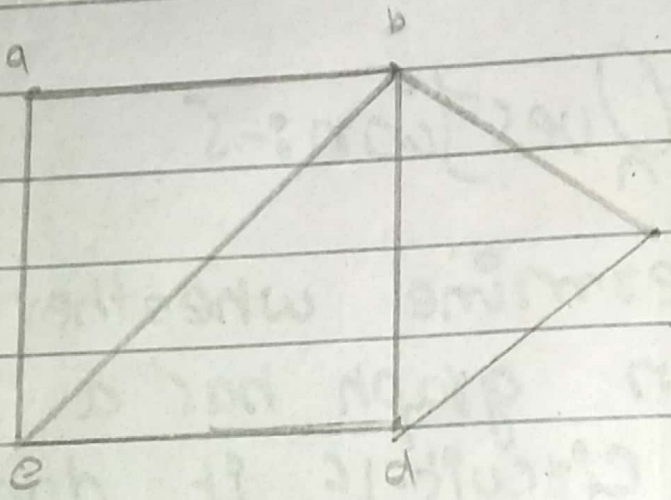
a)



Answer:- Not Hamilton circuit

Reason:- No Hamilton circuit exists, because once a ported circuit has reached e it would have nowhere to go.

b)



Answer:- Hamilton circuit

Reason:- A Hamilton circuit is one that passes through each point exactly once but does not, in general, cover all the edges; actually, it covers only two of the three edges that intersect to each vertex.

The route shown in heavy lines is one of the several possible.