

 KEMENTERIA PENDIDIKAN MALAYSIA		 POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME		DBM2033 DISCRETE MATHEMATICS	
				COURSEWORK ASSESSMENT		TUTORIAL 3	
				SESSION		DECEMBER 2018	
				DURATION	60 MINS	CLO1	
CLO2	20 MARKS						
CLO3							
NAME		MOHD DANIAL HAZEEQ		TOTAL MARKS		20 MARKS	
REGISTRATION NO.		05DDT17F1051					
PROGRAMME/ SECTION		DDT 2A // DDT 4B					

Instructions

ABIGAYLE ALYSHIA
05DDT18F1041
ivy chelsy 05DDT18F1001

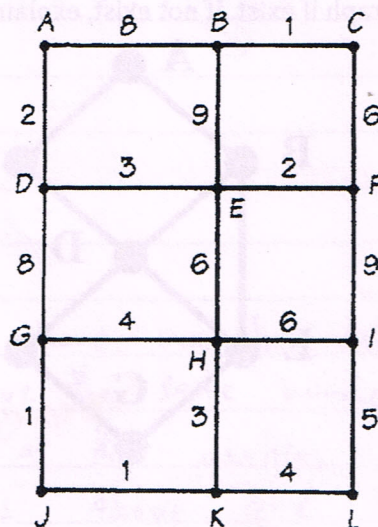
- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO1, C3

[6 marks]

Identify the shortest route with the minimum cost spanning tree on the following graph:

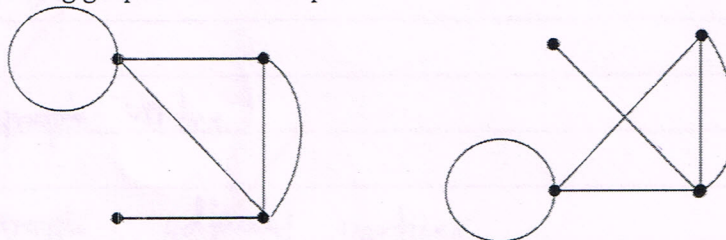


Question 2

CLO1, C2

[4 marks]

Show that the following graphs are isomorphic.



Question 3

CLO1, C2

[4 marks]

Write the correct answer for each of the following statements.

- A vertex of degree zero.
- Two vertices connected to each other with a line.

- (c) A graph on n vertices that contains exactly one edge between each pair of distinct vertices.
 (d) A graph with no loops and no multiple edges.

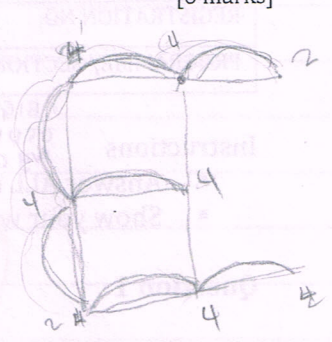
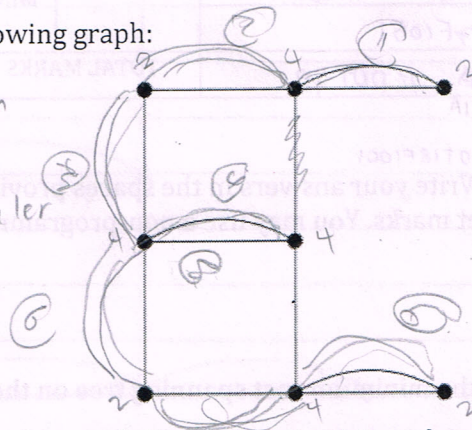
Question 4

CLO1, C2

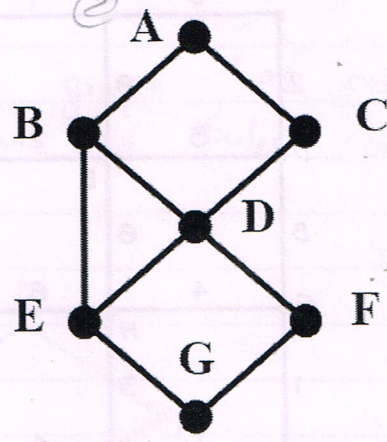
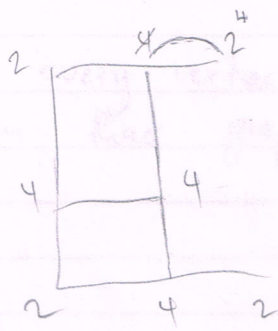
- (a) Eulerize the following graph:

[6 marks]

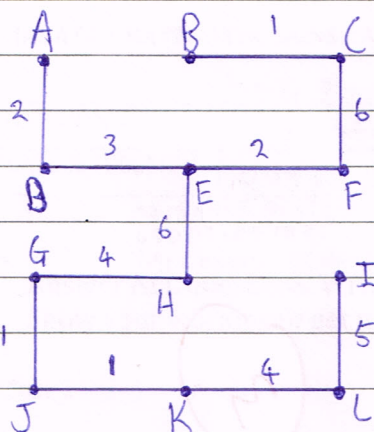
If every vertex in graph has even degree, then that graph has an Euler circuit.



- (b) Find the Hamiltonian graph if exist. If not exist, explain your answer.



Question 1



Minimum cost spanning tree =

$$1 + 6 + 2 + 3 + 2 + 6 + 4 + 1 + 1 + 4 + 5 = 35$$

Question 2

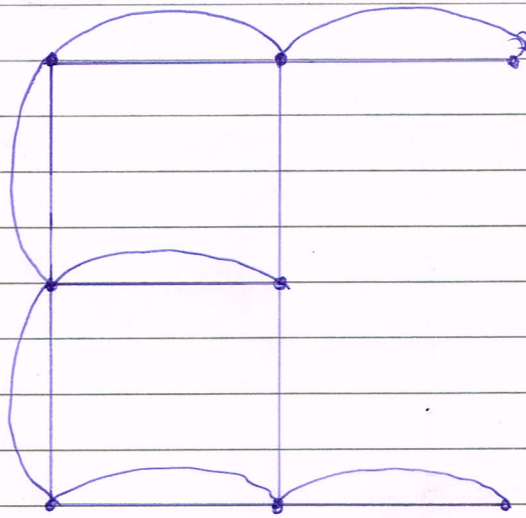
Although the graph above may be different from each other, but they have the same number of vertices, edges and the degrees of the vertices. Therefore, both of the following graphs above are isomorphic.

Question 3

- (a) isolated graph vertex
- (b) directed graph adjacent vertices.
- (c) undirected graph
- (d) directed graph

Question 4

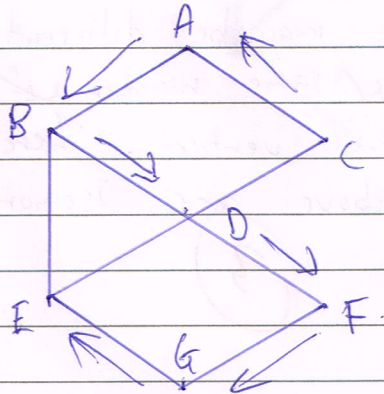
(a)



3

If every vertex in graph has even degree, then that graph has an Euler circuit.

(b)



2

It is Hamilton path (C, A, B, D, F, G, E) *

 KEMENTERIA PENDIDIKAN MALAYSIA		 POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME		DBM2033 DISCRETE MATHEMATICS			
				COURSEWORK ASSESSMENT		TUTORIAL 3			
		JABATAN MATEMATIK, SAINS DAN KOMPUTER		SESSION		DECEMBER 2018			
NAME				DIANA TRIN		DURATION	60 MINS	CLO1	
REGISTRATION NO.				050DT18F1060				CLO2	20 MARKS
PROGRAMME/ SECTION				DDT2A				CLO3	
						TOTAL MARKS		20 MARKS	

Instructions

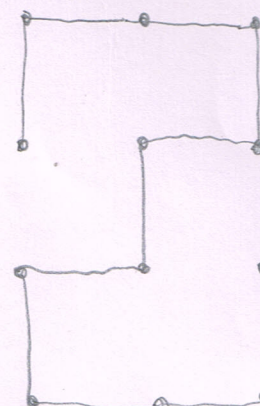
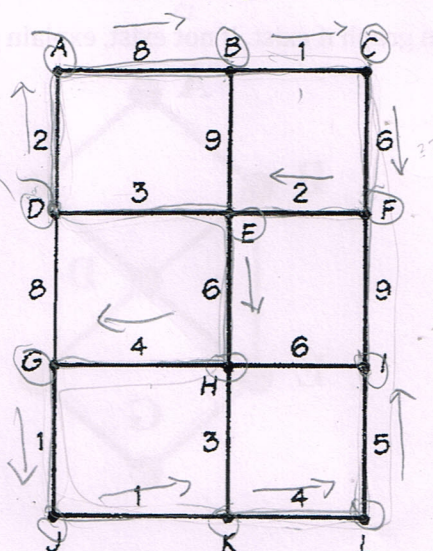
- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO1, C3

[6 marks]

Identify the shortest route with the minimum cost spanning tree on the following graph:

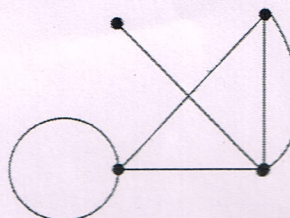
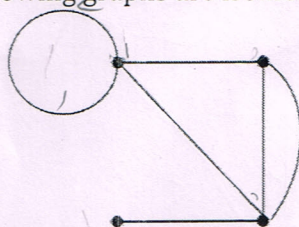


Question 2

CLO1, C2

[4 marks]

Show that the following graphs are isomorphic.



Question 3

CLO1, C2

[4 marks]

Write the correct answer for each of the following statements.

- A vertex of degree zero.
- Two vertices connected to each other with a line.

 KEMENTERIA PENDIDIKAN MALAYSIA		 POLITEKNIK MALAYSIA		COURSE CODE/ COURSE NAME		DBM2033 DISCRETE MATHEMATICS	
				COURSEWORK ASSESSMENT		TUTORIAL 3	
				SESSION		DECEMBER 2018	
				DURATION		CLO1	
CLO2							
CLO3							
NAME		Farrian slot 1		60 MINS		20 MARKS	
REGISTRATION NO.		05DDT18F105A					
PROGRAMME/ SECTION		DDT2A		TOTAL MARKS		20 MARKS	

Instructions

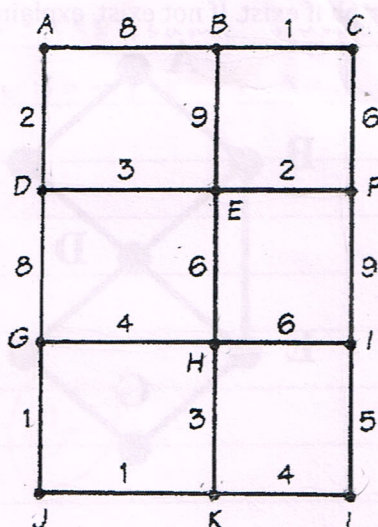
- Answer ALL questions. Write your answers in the spaces provided.
- Show your working to get marks. You may use a non-programmable scientific calculator.

Question 1

CLO1, C3

[6 marks]

Identify the shortest route with the minimum cost spanning tree on the following graph:

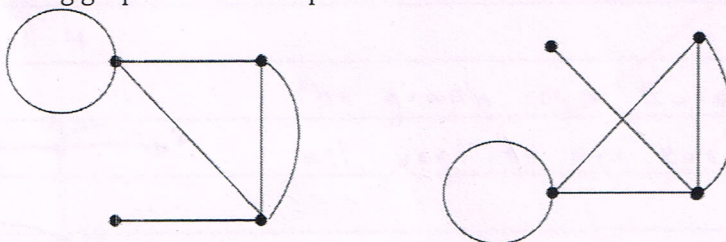


Question 2

CLO1, C2

[4 marks]

Show that the following graphs are isomorphic.



Question 3

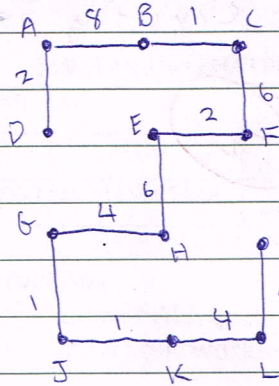
CLO1, C2

[4 marks]

Write the correct answer for each of the following statements.

- A vertex of degree zero.
- Two vertices connected to each other with a line.

Question 1



$$2 + 8 + 1 + 6 + 2 + 6 + 4 + 1 + 1 + 4 + 5 = 40$$

(1)

Question 2

The following graphs are ~~isomorphic~~ since they have the same number vertices, same number of edges and the degrees of vertices is the same ~~order~~.

(3)

Question 3

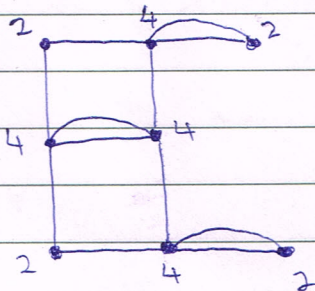
a) Isolated vertex ✓

b) ~~Directed graph~~c) ~~Complete graph~~d) ~~Simple graph~~

(3)

Question 4

a)



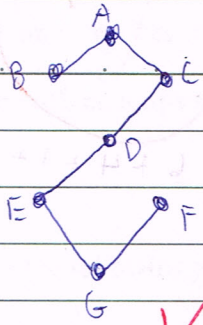
The graph is a ~~Euler circuit~~ since all vertices are even.

(3)

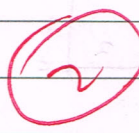
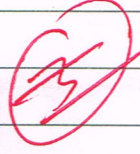
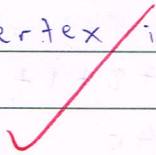
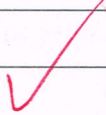
No:

Date:

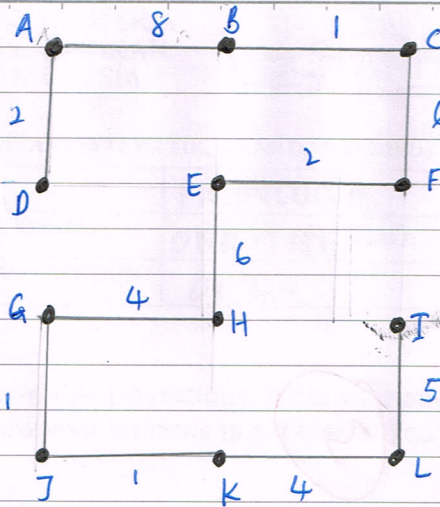
b)



It is a Hamilton path since each vertex is visited exactly once.



Question 1.



Edges = $2 + 8 + 1 + 6 + 2 + 6 + 4 + 1 + 1 + 4 + 5 = 40$

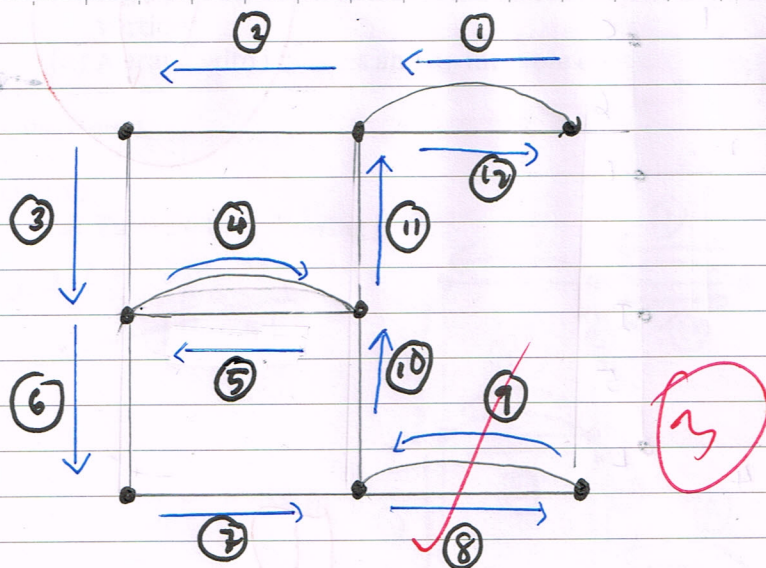
Question 2.

- The graphs are isomorphic, since the number of vertices is same which is 4.
 - The number of edges is same which is 6.
 - The degree of the vertices are the same which is 6.
- order.

Question 3

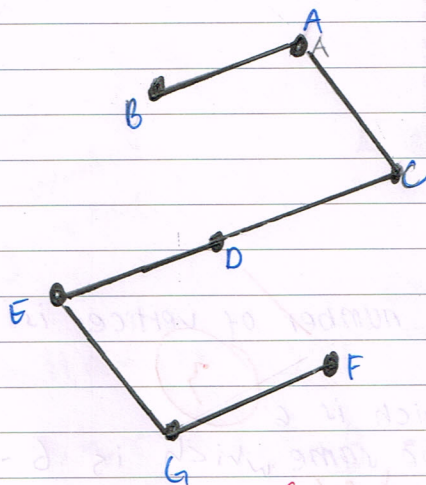
- (a) Isolated vertex
- (b) Adjacent vertex
- (c) complete graph
- (d) Diagraph.

(9)



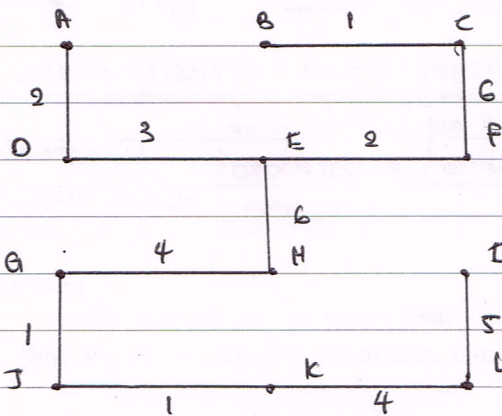
Euler ~~is~~ circuit

(b)



- Yes. It is Hamilton path.
- Hamilton graph exist because path a, b, c, d, e, g contain each vertex only once

Question 1



Total minimum cost spanning tree.

$$= 1 + 6 + 2 + 3 + 2 + 6 + 4 + 1 + 1 + 4 + 5$$

$$= 35$$

4

Question 2

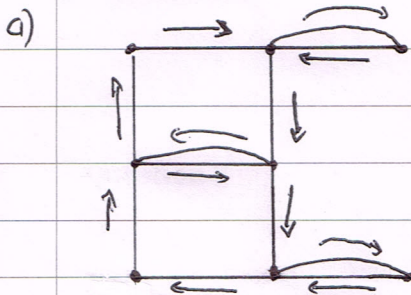
Although the graph given have the same amount of vertices and edges but the degrees of the vertices is not the so, it is not an isomorphic graphs.

Question 3

- Isolated vertex
- Adjacent vertices
- Undirected graph
- Directed graph

3

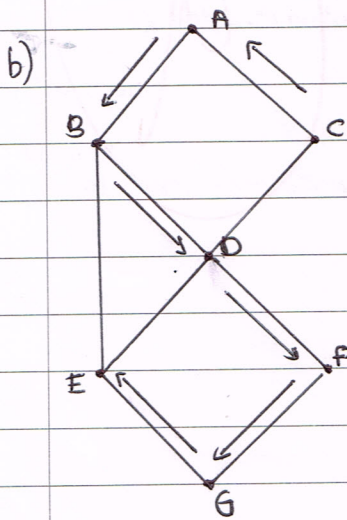
Question 4



Euler circuit

1

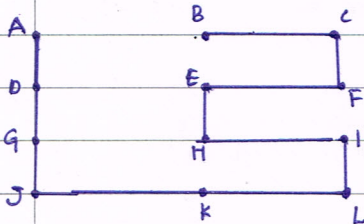
You didn't label it!
How do I know?



It is an hamiltonian graph because it contains hamilton paths (C, A, B, D, F, G, E)

Monday
No.:
Date: 25/2/2019

102



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This graph is isomorphic. Because:

_____ 50

— 50

— 507

$1/n$

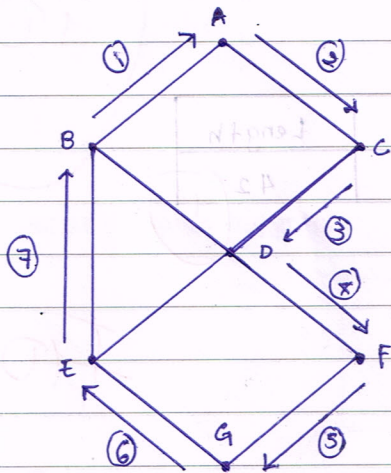
- (a) Isolated vertex
- (b) Adjacent vertices
- (c) Complete graphs
- (d) Discrete graphs

Question 4

- (a) It is Euler circuit because the graph is connected and every vertex has even degree.

It is not Euler path because the graph does not have two odd vertices and some even vertices.

- (b) This graph contains Hamilton circuit because ~~the each vertex~~ the path B, A, C, D, F, G, E, B (B, A, C, D, F, G, E, B). The first vertex is also the last vertex.



Question 3

Question 3

- (a) Isolated vertex
- (b) Degree of vertex
- (c) Degree of graph
- (d) Degree of graph

Question 4

(a) It is Euler circuit because the graph is connected and every vertex has even degree.

It is not Euler circuit because the graph does not have two odd vertices and some even vertices.

Question 5

(a) This graph contains Hamiltonian circuit because the graph is connected and every vertex has even degree. The circuit is A, B, C, D, E, F, G, A.

Subject: _____

No: _____

Date: _____

Q1

F, C, B, A, D, E, H, G, J, K, L, I = 41

Q2

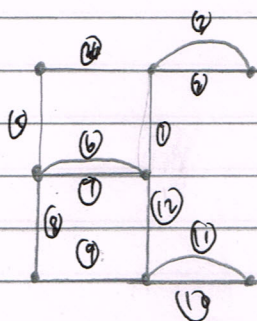
- The both graphs have ~~same~~ number of vertices **3**
- Same number of edges ✓
- The degrees of the vertices is the same **order**.

Q3

- a) isolated vertex ✓
- b) adjacent vertices ✓
- c) complete graph ✓
- d) digraph

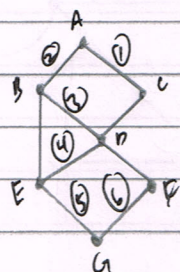
Q4

a)

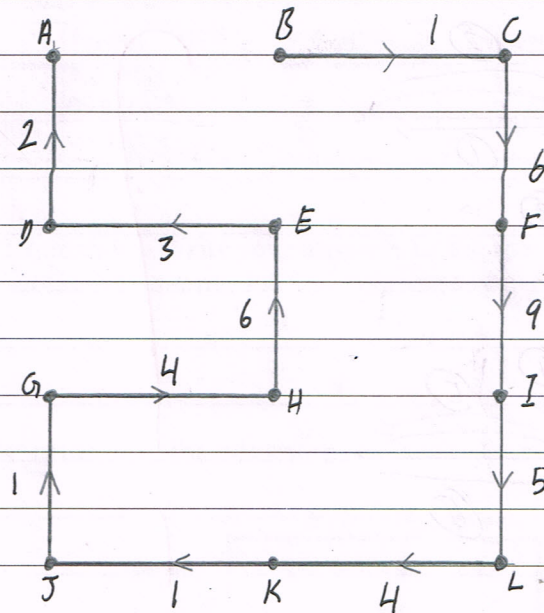


= euler path
even vertices

- b) Hamiltonian graph is exist because the path a,b,c,d,e,f,g contains each vertex exactly once.



Question 1



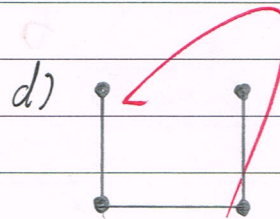
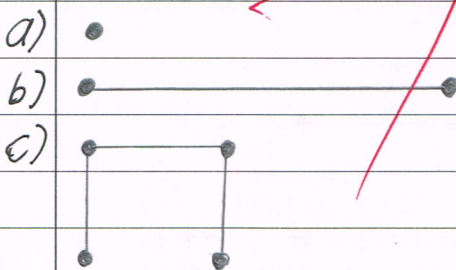
$$\text{Route} = BC + CF + FI + IL + LK + KJ + JG + GH + HE + ED + DA$$

$$= 42$$

Question 2

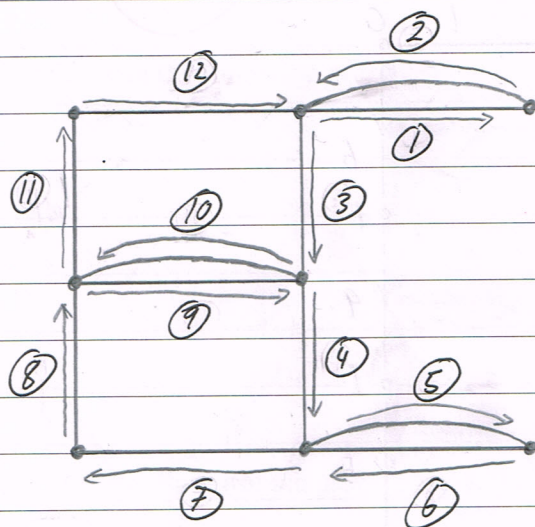
Both of the graphs are isomorphic because it have same number of edges which is 6 edges. It also have the same vertices which is 4. Since both of them have the same number of vertices and edges. The degrees of the vertices is also the same.

Question 3

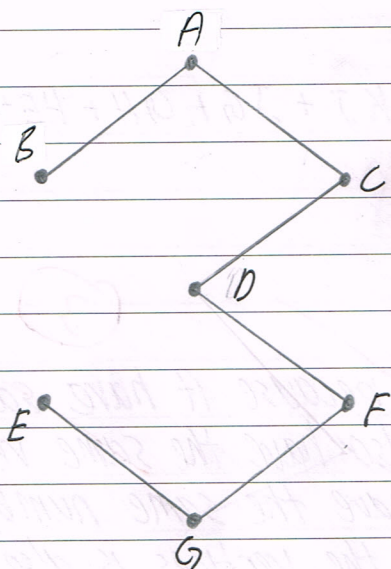


Question 4

a)



b)



F1031
F1996

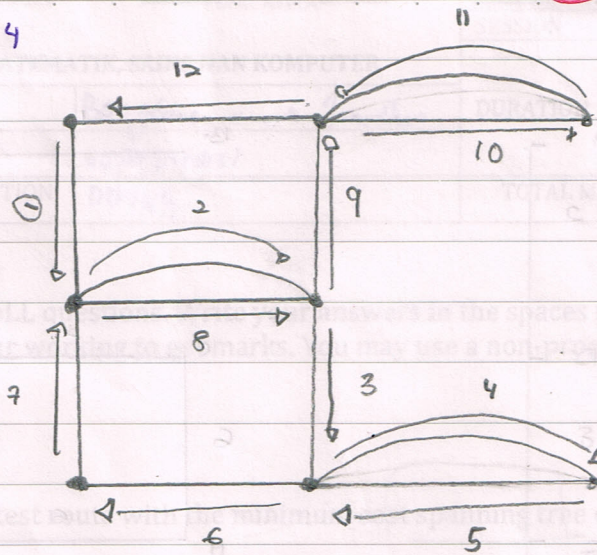
3

No.

Date

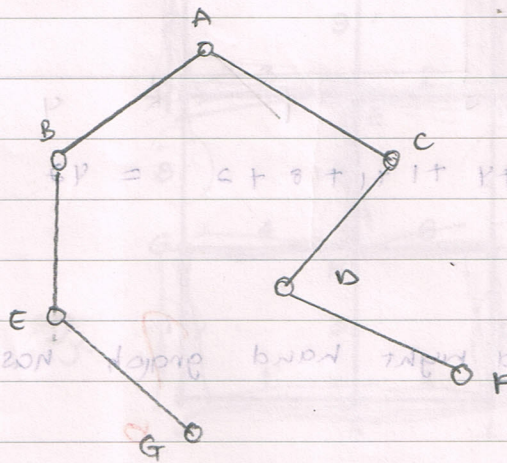
Question 4

a)



Label it
so that
I know
the
steps!

b)



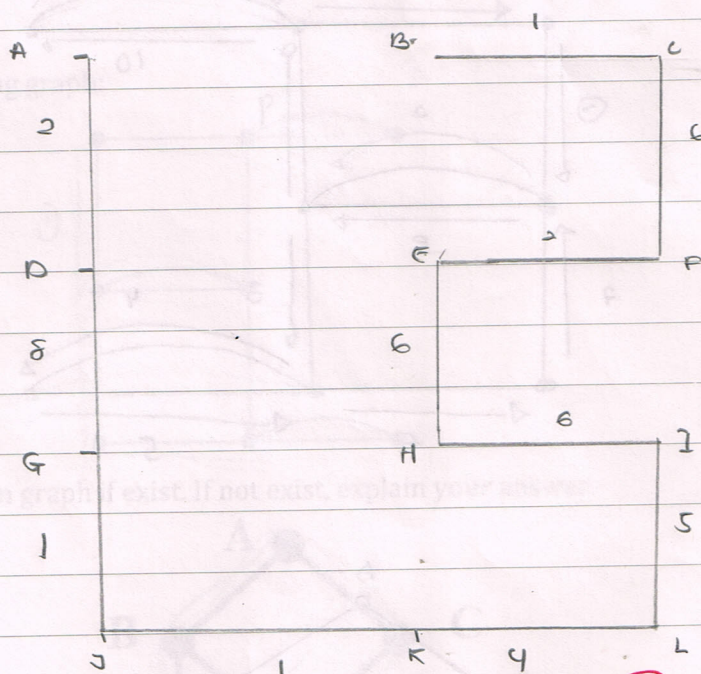
Hamilton Path = { G, E, B, A, C, D, F }

Hamiltonian Circuit = { A, B, E, G, F, D, C, A }

So,
exists!

2

01
 (a) Balance the following
 reaction
 I want to
 see
 2/2/2



$$1 + 6 + 2 + 6 + 6 + 5 + 4 + 1 + 1 + 8 + 2 = 42$$

1

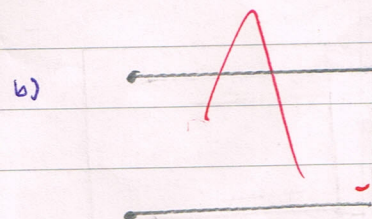
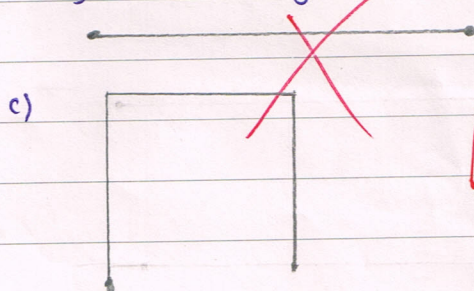
= Yes, The left and right hand graph has 6 edges.

d) A vertex of degree zero is called isolated.

(not adjacent to any vertex)

• A

b) Two vertices are adjacent if they are connected by an edge.



0500718F1139

A 4x4 grid with letters A, B, C in the top row and J, K, L in the bottom row. The grid contains various numbers and letters. A large red 'X' is drawn over the bottom-left quadrant, crossing out the intersection of row 3 and column 2 (position K).

A	8	B	1	C
2			2	G
b		E		F
8		G		G
G		H		5
J	1	K	4	L

the following graph is isomorphic because there is the same vertices, edges and same degree. *in*

A)	0
B)	0
C)	
D)	

Question 4

a) it is neither an Euler path or Euler circuit

b) Hamiltonian exist. It is Hamiltonian circuit because the graph start at the D vertex and also end at D vertex. It also Hamiltonian path since the path that contains / visits each vertex exactly once.

Hamiltonian path (D, C, A, B, E, G, E)

Hamiltonian circuit (D, C, A, B, E, G, E, D)

So exist?

(2)