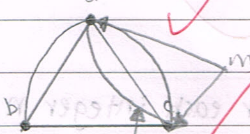
Subject: .... No: ..... Date: .....

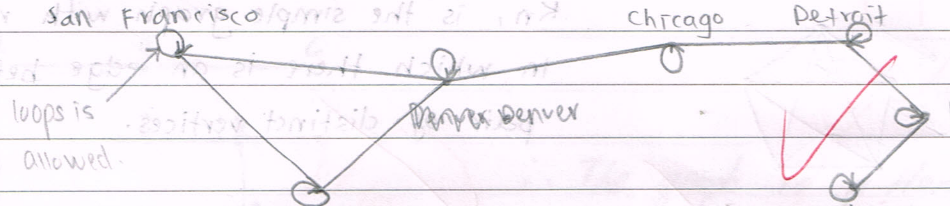
Question 1.

(i) A multigraph → Any graph which contains some multiple edges and no loops are allowed. (multiple edges ✓, no loops ~~are~~ allowed).

20/20

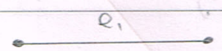


(ii) A pseudograph → A graph in which loops and multiple edges are allowed. (an edge connecting a vertex to itself).



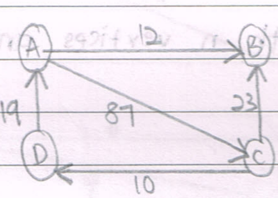
(iii) A directed graph → A directed graph (~~digp~~ digraph) has no loops and has no multiple edges

Ex :



(iv) A weight graph → A graph with numbers on the edges. Therefore, a weighed graph is a special type of labeled graph in which the labels are number.

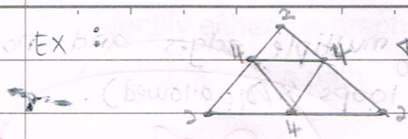
Ex :



(v) A connected graph → A path along a connected graph that connects all the vertices and that traverses every edge of the graph only once.

→ A connected graph has an Euler path which is a circuit (~~cald~~ an Euler circuit) if all of its vertices have even degree.

Ex :



← all the degree are even.

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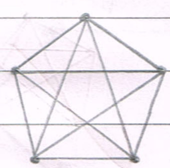
Question 2.

(i) A linear graph of L_7 → For each integer $n \geq 1$, we let L_n denote the graph with n vertices $\{v_1, v_2, \dots, v_n\}$ and with edges $\{e_i, e_{i+1}\}$ for $1 \leq i \leq n$.

L_7

(ii) A complete graph of K_5 → The complete graph on n vertices, denoted K_n, is the simple graph with n vertices in which there is an edge between every pair of distinct vertices.

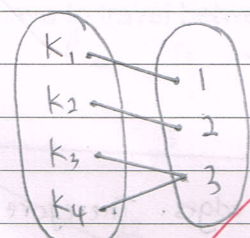
Ex :



K_5

(iii) A complete bipartite graph of $K_{4,3}$ → Every tree is a bipartite graph.
→ A graph G is bipartite if and only if it contains no odd cycle.

Ex :



(iv) A discrete graph of D_4 → For each integer $n \geq 1$, we let U_n denote the graph with n vertices and no edges.

Ex : ~~D_4~~

D_4

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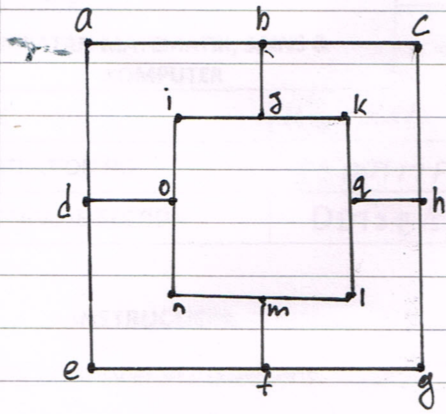
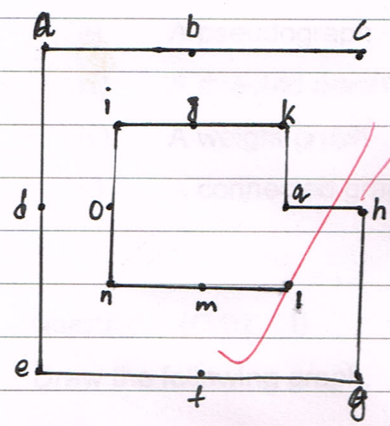
Subject: No: Date:

Question 3



∴

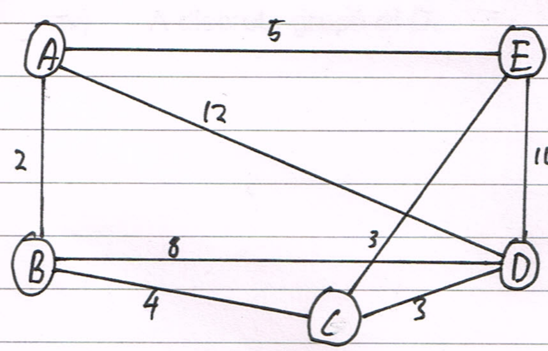


∴ The graph is a Hamilton path. because it contains each vertex exacty once.

3

1

Question 4.



Path	length
A,B,C,D,E,A	2+4+3 +10+5 = 24
A,E,D,C,B,A	5 +10+3 +4+2 = 24
A,D,E,C,B,A	12+10+3+4+2=31
A,E,C,D,B,A	5+3+3+8+2=21
A,B,C,E,D,A	2+4+3+10+12=31
A,D,B,C,E,A	12+8 +4+3+5=32
A,B,D,C,E,A	2+8+3+3+5= 21

∴ The minimum distance (KM) Syukree have to travel between all pairs of cities is 21 KM

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