GRAPH THEORY
MINOR CLASS TEST - 1

AIMAN SIDDIQUA - 2K18/MC/008

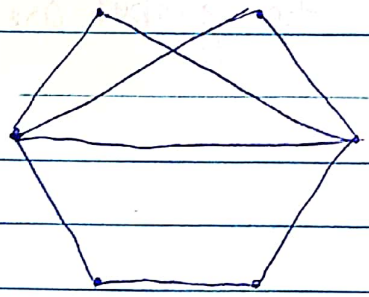
(1.) $\Sigma d(v_i) = 2 * e$ e = Number of edges

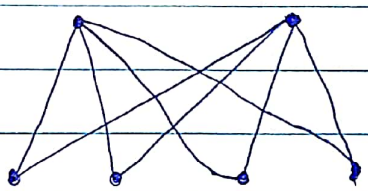
$4+4+2+2+2+2 = 2*e$

$16 = 2*e$

$e = 8$

No. of edges = 8





(2.) No simple graph exists with seven vertices having degrees 1, 3, 3, 4, 5, 6, 6

In a simple graph, there are no self loops or multiple edges. Hence if two vertices having degree 6, they will have an edge with all the other vertices. Therefore the degree of each vertex will be atleast 2. Since the degree of one vertex in given graph is 1, this is not possible.

∴ no such graph exists.

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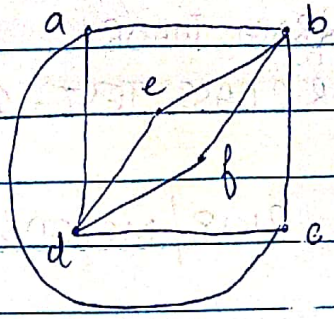
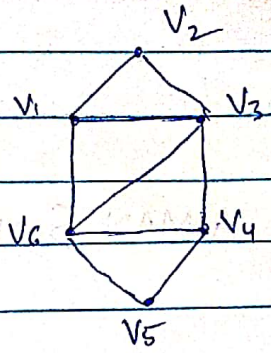
3.

G_1 :





In G_1 vertex a and vertex c have degree 3 and they have an edge between them.
In G_2 vertex V_1 and vertex V_4 have degree 3 but they do not have an edge between them.
For a graph to be isomorphic to another, there should be a bijection between the vertices and the correspondence should exist. This does not happen here. Hence the graphs are not isomorphic.