ass 4

Monika

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1 Introduction

1.1 Ans 1.

every vertices has 8 edge.

case 1:let there would be less then 3 red edge because if red edge > 3 it means red triangle will be formed and if red edges is less than 3 it means blue edges is greater than 5 means blue quadrilateral will be formed .

case 2: let there would be greater than 3 red edges means red triangle will form.

1.2 Ans 2.

It is similar to no. of closed polygon formed by joining these n points that is $(n-1)!$ since there is no. difference between clockwise and anticlockwise joining points so we have to divide answer by 2 as we count all polygon twice. so no. of hamiltonian cycle formed is $(n-1)!/2$

1.3 Ans 4.

1.3.1

no. of graph with different no of edges

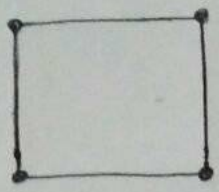
0 edge = 1
1 edge = 1
2 edge = 2
3 edge = 3
4 edge = 2
5 edge = 2

1.4 Ans 5.

If each vertex connected to even no. of edges then no issue and if vertex is connected to odd no. of edges then it will be count for both vertex from which it start and on which it ends so ultimately degree of a graph should be even. hence 22222111 can not be a degree of a graph

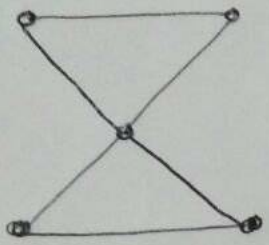
1.5 Ans 6.

1).



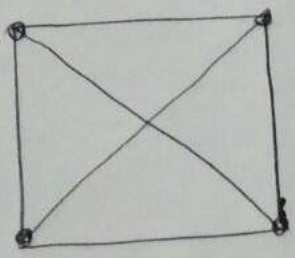
Euler & Hamiltonian.

2).



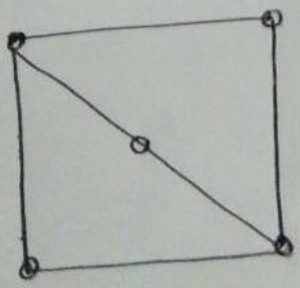
Eulerian & Non-Hamiltonian.

3)



Non Eulerian & Hamiltonian.

4)



Non Eulerian & Non Hamiltonian.

1.6 Ans 7.

let us assume graph to be disconnected it means that there exists atleast 2 vertex say (m,n) that are not interconnected.it means that $degree(m) + degree(n) <= (n-2)$ hence contradict the given statement