Birla Institute of Technology & Science, Pilani

Department of Mathematics

Second Semester 2018-2019

MATH F243 **Tutorial-2**

Q.1 Show that every simple graph of order n is isomorphic to a subgraph of the complete graph with n vertices?

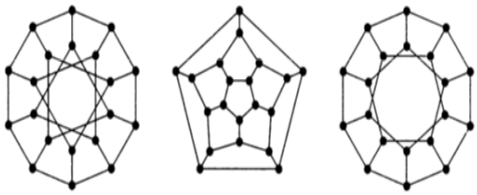
Q.2 How many (labelled) graphs on the vertex set $\{1, ..., n\}$ are isomorphic to P_n? How many are isomorphic to C_n?

Q.3 Prove that a simple graph with n vertices must be connected if it has more than $(n-1) \times (n-2)/2$ edges?

Q.4 If a graph(connected or disconnected)has exactly two vertices of odd degree, there must be a path joining these two vertices?

Q.5 Prove that any n-vertex graph with n edges contains a cycle?

Q.6 Determine which pairs of graphs below are isomorphic?



Q.7 Prove that a diagraph is strongly connected if and only if for each partition of the vertex set into nonempty sets S and T, there is an edge from S to T?

Q.8 Show that an edge of a connected graph is a bridge if and only if there exists vertices v and w such that every path between these two vertices contains this edge?
