1154-05-290 **Raihana Mokhlissi*** (mokhlissiraihana@gmail.com), Phd Student in Computer Sciences and Telecomm, Rabat IT Center, Faculty of Sciences, Mohammed V University, B.P 1014, Rabat, Morocco, and **Joyati Debnath** (jdebnath@winona.edu), Dept. of Mathematics and Statistics, Winona State University, Winona, MN 55987. *The analysis of complex networks and the evaluation of their complexity.*

Many real world networks are modeled as complex networks by applying theories and methods developed in Graph theory. Structural properties like the average path length, diameter, clustering coefficient, degree distribution, average degree, etc. are used to understand them. One of the crucial invariants to characterize their structures and understand dynamical processes is the spanning tree of a network, a powerful tool to model and analyze the structure of connected networks and defined as a connected and acyclic subgraph of a network having all its vertices and some or all its edges. The main objective is to find efficient methods to obtain exact expressions of the number of spanning trees for complex networks. The calculation of the number of spanning trees of a network also known as the complexity of a network, provides a measure to predict the reliability and the robustness of a network. The primary interest of this study is to create new models for each category of complex networks based on real-networks that grow by the gradual addition of vertices and edges. Then, analyze them by finding and highlighting their structural properties to predict their mechanisms and their functions. Furthermore, evaluate their complexity using combinatorial methods and geometric approaches. (Received August 29, 2019)