

Abstract

The notion of minimal vertex cover has its own significance in Combinatorial Commutative Algebra. These minimal vertex covers of a simplicial complex determine all the minimal prime ideal of its facet ideal. A cover complex is a simplicial complex which is generated by minimal vertex covers. In this thesis, we have introduced cover complexes of star, friendship and book graphs represented by $\Delta_c(S_n)$, $\Delta_c(F_n)$ and $\Delta_c(B_{n,m})$ respectively. These cover complexes are generate by minimal vertex covers of star, friendship and book graphs respectively. We have determined dimensions and minimal vertex covers of these cover complexes. Also we have discussed their connectedness and disconnectedness. As corresponding to any cover complex we can naturally associate two ideals namely facet ideal $I_F(\Delta_c)$ and non-face ideal $I_{(\Delta_c)}$. We have defined facet and non-face ideals of $\Delta_c(S_n)$, $\Delta_c(F_n)$ and $\Delta_c(B_{n,m})$. At the end, we have given the formulas of f-vector, hilbert function and hilbert series of $\Delta_c(S_n)$ and $\Delta_c(F_n)$.