

# ABSTRACT

In this thesis, we have constructed some new results on the study of edge neighbourhood complexes of some families of Graph. We have constructed the edge neighbourhood complexes of a star Graph  $S_n$  and its combinatorial properties. We concluded some results which shows that how can we compute the f-vectors of edge neighbourhood complex  $S_n$  and composition of m-disjoint copies of  $S_n$ . We introduced some results related to the facet ideal and minimal vertex covers of these edge neighbourhood complexes.

Which will help us to compute the primary decomposition of facet ideals of these complexes and to determine the Hilbert function and Hilbert series of the Stanley-Reisner ideals of these complexes. We have also constructed the results about the non-face ideals of these edge neighbourhood complexes.