Summary and Conclusion

The literature shows that there are numerous approaches to generalise the closed sets in topological spaces. In this thesis, the notion of η*-open sets has been created, which is more stronger than open sets but weaker than δ-open sets.

Using the concept of η*-open sets, the three types of g-closed sets namely J-closed sets, J*-closed sets and J**-closed sets are initiated. It is proved that

- J-closed sets are stronger than gδ-closed sets and weaker than g-closed sets.
- J*-closed sets are stronger than g-closed sets and weaker than δg-closed sets.
- J**-closed sets are stronger than J-closed sets and weaker than J*-closed sets.

Numerous significant ideas, for example, Closure of a subset, Interior of a subset, Neighborhood of a point, Neighborhood of a subset, Limit point of a subset, Derived set, Frontier of a subset, Border of a subset, Exterior of a subset, Separation axioms, Continuous functions, Irresolute functions, Quotient maps, Homeomorphisms utilizing J-closed sets are established.

The dependence and independence of J-closed sets, J*-closed sets and J**-closed sets with different existing generalised closed sets have been obtained for all the ideas expressed previously. All through the thesis, the converse implications which do not hold are validated by Counter Examples.

Significant properties of η*-open sets,J-closed sets,J*-closed sets and J**-closed sets are derived and some important characterizations of these notions are analysed in various spaces such as $T_{1/2}$-space,semi-regular space,partition space, T_δ -space, T_b -space, αT_b -space, $T_{3/4}$ -space and almost weakly hausdorff spaces and many interesting results are obtained.

Using J-closed sets, six new spaces are built and their interrelations with existing different spaces are investigated.

It is proved the J-continuity,J-closedness and J-Homeomorphism are not preserved by composition of functions. Some important modifications are made for preserving the facts.

The investigation of J-closed sets is enhanced to soft topological spaces and numerous outcomes are determined.

The assortment of different open sets and closed sets for the finite topological spaces of three and four elements which are utilized to build Counter Examples are collected in Appendix I and Appendix II.

The accompanying issues are suggested for further study:

- The concept of J*-closed sets and J**-closed sets can be studied for continuity, separation axioms, irresoluteness, Homeomorphisms in topological spaces.
- J-closed set ideas (resp. J*-closed sets, J**-closed sets) can be reached out to fuzzy topological spaces and bitopological spaces.
- The ideas of J-closed sets, J*-closed sets and J**-closed sets can be characterized for biminimal structures, ideal topological spaces, supra topological spaces, nano topological spaces and their applications might be acquired.
- The study of J-closed sets, J*-closed sets and J**-closed sets can be extended to digital plane, digital n-space.
- Soft J-closed sets, Soft J*-closed sets and Soft J**-closed sets can be studied for continuity, separation axioms, irresoluteness, Homeomorphisms in soft topological spaces.
- The operation approached can be studied via J, J* and J**-closed sets.