

## SUMMARY AND CONCLUSION

This thesis is dedicated exclusively to the study of  $\lambda_g^\alpha$ -closed sets in topological spaces.

The notion  $\lambda_g^\alpha$ -closed sets is framed in such a manner to emphasize the concepts of  $\lambda$ -closed sets and  $\alpha$ -open sets. The definition of  $\lambda_g^\alpha$ -closed sets and  $\lambda_g^\alpha$ -open sets were presented. We have procured that the proposed set lies exactly between  $\lambda$ -closed sets and  $g\Lambda$ -closed sets. The reverse implications and independencies were proved with the corresponding counter examples. Many of the characterization theorems were also studied sequentially.

The fundamental properties of the operators such as  $\lambda_g^\alpha$ -closure and  $\lambda_g^\alpha$ -interior for the defined  $\lambda_g^\alpha$ -closed and  $\lambda_g^\alpha$ -open sets were derived.

The concepts of  $\lambda_g^\alpha$ -continuous maps and  $\lambda_g^\alpha$ -irresolute maps were presented and their interrelations with previously existing maps were obtained. Characterization theorems were also derived in accordance with the defined maps. Special forms of  $\lambda_g^\alpha$ -continuous maps such as quasi  $\lambda_g^\alpha$ -continuous maps, perfectly  $\lambda_g^\alpha$ -continuous maps, totally  $\lambda_g^\alpha$ -continuous maps and strongly  $\lambda_g^\alpha$ -continuous maps were also defined and their properties were also analyzed.

Contra continuities with respect to the defined  $\lambda_g^\alpha$ -closed and  $\lambda_g^\alpha$ -open sets were given by contra  $\lambda_g^\alpha$ -continuous maps and contra  $\lambda_g^\alpha$ -irresolute maps in topological spaces. Their interdependencies, properties and characterizations were derived accordingly.

$\lambda_g^\alpha$ -closed maps and  $\lambda_g^\alpha$ -open maps were defined and their interrelations were derived. Characteristics of the defined maps by inducing various conditions were presented.

Two special forms of  $\lambda_g^\alpha$ -closed maps were defined namely quasi  $\lambda_g^\alpha$ -closed maps and strongly  $\lambda_g^\alpha$ -closed maps, their properties were also derived. Preservation of compositions were also analyzed and counter examples were given to prove the corresponding results.

Definition of  $\lambda_g^\alpha$ -homeomorphism and  $\lambda_g^\alpha r$ -homeomorphisms were also defined with the help of  $\lambda_g^\alpha$ -continuous maps and  $\lambda_g^\alpha$ -irresolute maps. We also found that the  $\lambda_g^\alpha r$ -homeomorphism forms a group under the relation - composition of mappings.

New form of mappings named  $\lambda_g^\alpha$ -quotient maps were presented. Also, their special forms like strongly  $\lambda_g^\alpha$ -quotient maps, completely  $\lambda_g^\alpha$ -quotient maps were also defined and their properties and interrelations were obtained.

The two-way contra effects called bi-contra continuities were studied. The definition and properties related to bi-contra  $\lambda_g^\alpha$ -continuous maps were presented. Various forms of bi-contra  $\lambda_g^\alpha$ -continuities namely strongly bi-contra  $\lambda_g^\alpha$ -continuous maps and completely bi-contra  $\lambda_g^\alpha$ -continuous maps were also defined and examined.

The following key points are suggested as extensions of the present work in the future

- ◆ Various other notions like border, exterior, frontier, locally closed in topological spaces can be analyzed via  $\lambda_g^\alpha$ -closed sets
- ◆ Fuzzy  $\lambda_g^\alpha$ -closed sets can be defined and analyzed
- ◆ The concepts can be extended to bitopological space, nano topological space, micro topological space and their behaviours can be examined
- ◆  $\lambda_g^\alpha$ -closed and  $\lambda_g^\alpha$ -open sets can be studied via topological groups
- ◆ Concepts like grill, menger, frechet can be introduced with respect to  $\lambda_g^\alpha$ -closed sets