ABSTRACT

Topology is the branch of mathematics which investigates the important fundamental notions of open and closed sets, interior, closure, continuity, homeomorphism and related concepts. Also the Topology describes the concepts of compactness, connectedness, regular, normal and separation axioms along with Hausdorff axiom. Kasahara introduced the concept of operations approaches in topological spaces after that Ogata, generated the γ -open sets and formed topology τ_{γ} and introduced the concepts of open operation, regular operation, γ -closure, τ_{γ} -closure, γ - separation axioms, (γ , β)-continuity, etc.

This thesis mainly focuses with α - γ - open sets that are generated through α -open sets and investigates some of their basic properties. Further, the concept of continuity such as α - (γ , β)- continuous, (α - γ , β)- continuous, α - (γ , β)- contra continuous, (α - γ , β)- contra continuous, γ - generalized α -continuous, α - γ generalized continuous, totally α - γ - continuous, strongly α - γ -continuous, contra α - γ -continuous, α - γ - totally continuous, α - (γ , β)- totally continuous and α - (γ , β)- strongly continuous mappings are introduced and some of their properties are studied. Moreover the α - γ -T_0 , α - γ -$T_{\frac{1}{2}}$, α - γ -T_1, α - γ -T_2 , α - γ -R_0, α - γ - R_1 spaces are generated and their relationship are studied.

Chapter 2 deals with a class of open sets, namely α - γ - open sets and some of its basic properties . Further a topology using α - γ - open sets is

generated. Moreover, a general operation approaches on T_i , R_i spaces are studied and some of their properties are investigated.

Chapter 3 deals with the concepts of α - (γ,β) - continuous mappings , α - (γ,β) - open(closed) mappings, α - (γ,β) - homeomorphism , (α - γ , β)-continuous mappings ,(α - γ , β)-open (closed) mappings, γ - generalized α -continuous mappings and α - γ - generalized continuous mappings in topological spaces.

Chapter 4 introduces α - γ - I -open sets in an ideal topological space and deals with the concepts of α - **(** γ **,** β **)** -(I , K)- continuous mappings, contra α - **(** γ **,** β **)** -(I , K)- continuous mappings, α - γ - I - continuous mappings, α - γ - I -open mappings, **(** α - γ **,** β **)**- I -continuous mappings , contra α - γ - I - continuous mappings and α - γ - I - Hausdroff spaces.

Chapter 5 focuses on the concepts of α - γ - connected, α - γ - compact, α - γ -regular and α - γ - normal spaces in topological spaces and analyze their properties.

Chapter 6 introduces the concepts totally α - γ -continuous mappings, strongly α - γ - continuous mappings, contra α - γ -continuous mappings, α - β -totally continuous mappings, α - γ -totally open mappings, α - (γ,β) -totally continuous mappings and α - (γ,β) - strongly continuous mappings in topological spaces.

Chapter 7 deals with the concept of α -**(** γ **,** γ' **)**- open sets in a topological space. Further the concept of α -**(** γ **,** γ' **)**- T_i spaces ,**(** γ **,** γ' **)**- g α - open sets are introduced and some of their basic properties are studied.