ABSTRACT

General Topology, which is also known as point set topology, deals with the basic set theoretic definitions and constructions. It is the foundation of other branches of topology, including differential topology, geometric topology and algebraic topology. In General Topology, the inherent properties of the topological spaces that are generated using the axioms of topology in a given set are investigated. The notions of continuity and compactness and connectedness are introduced to study and characterizes the different topological spaces that are generated in given set. Kasahara introduced operation approaches on topology and Ogata generated γ-open sets using the operations on topology and studied some of their properties.

This thesis is mainly focus with γ^*-pre-open sets that are generated through γ-open sets and investigates some of their basic properties. Further, the concepts of continuity such as (γ^*, β)-pre-continuous, (γ^*, β)-contra-pre-continuous, (γ^*, β)-generalized-pre-continuous, (γ^*, β)-almost-pre-continuous, (γ^*, β^*)-pre-continuous, (γ^*, β^*)-contra-pre-continuous, (γ^*, β^*)-generalized-pre-continuous, (γ^*, β^*)-almost-pre-continuous are introduced and some of their properties are studied. Moreover the γ^*-pre-T_0, γ^*-pre-$T_{\frac{1}{2}}$, γ^*-pre-T_1, γ^*-pre-T_2, γ^*-$\delta . T_0$, γ^*-$\delta . T_{\frac{1}{2}}$, γ^*-$\delta . T_1$, γ^*-$\delta . T_2$, γ^*-pre-D_0, γ^*-pre-D_1, γ^*-pre-D_2 spaces are generated and their relationships between them are investigated. Finally the concepts of γ^*-pre-R_0 and γ^*-pre-R_1 spaces are developed and some of their important properties are analyzed.

In Chapter 2, a new class of open sets, namely γ^*-pre-open sets are introduced and some of its basic properties are studied. Further a new type of topology $\tau_{\gamma p^*}$ is generated using γ^*-pre-open sets and the resultant topological space $(X, \tau_{\gamma p^*})$ is identified as a γ^*-pre-$T_{\frac{1}{2}}$ space .

In Chapter 3, the notions of (γ^*, β)-pre-continuous, (γ, β^*)-pre-open and (γ, β^*)-pre-closed mappings are introduced and their basic properties are investigated. Moreover, the concept of (γ^*, β^*)-pre-continuous, (γ^*, β^*)-pre-open, (γ^*, β^*)-pre-closed mappings are introduced and some of their basic properties are analyzed. Finally, the concepts of (γ^*, β)-contra-pre-continuous, (γ^*, β^*)-contra-pre-continuous and (γ, β^*)-contra-pre-continuous are defined and their relationships between them are investigated.

In Chapter 4, the concept of γ^*-p .space, γ^*-pre-T_b space and γ^*-pre-T_d spaces are introduced and their relationships between them are investigated using γ^*-generalized-pre-closed sets. In addition, the notions of (γ^*, β)-generalized-pre-continuous, (γ^*, β^*)-generalized-pre-continuous, (γ^*, β^*)-pre gp.continuous mappings are defined and the notion of γ^*-pre-compactness is introduced on a topological space and some of its properties are studied.

In Chapter 5, the concepts of (γ, β^*)-generalized-pre-open(closed) mappings and (γ^*, β^*)-generalized-pre-open(closed) mappings are introduced and some of their basic properties are studied. Moreover, the notion of γ^*-p .normal space is introduced and some of the characterizations of γ^*-p.normal space are obtained

In Chapter 6, the notion of γ^*-regular-open sets and γ^*-δ.open sets are introduced and some of their basic properties are analyzed and their relationships between them are established. In addition, γ^*-$\delta.T_i$ ($i =0, \frac{1}{2}$, 1, 2) spaces are introduced and some of their basic properties are investigated. Finally the concepts of (γ^*, β^*)-almost-pre-continuous mappings and (γ^*, β^*)-almost-pre-open (closed) mappings are obtained and their basic properties are discussed.

In Chapter 7, the concepts γ^*-generalized-pre-regular-closed (open) sets are introduced and their important characterizations are studied. Also the notions of γ^*-pre-regular-$T_{\frac{1}{2}}$ spaces are obtained and some of their basic properties are investigated. In addition, γ^*-pre-D sets and γ^*-pre-D_i spaces ($i = 0$, 1, 2) are defined using γ^*-pre-open sets and the separation axioms are analyzed.

In Chapter 8, the notions of γ^*-pre-R_0 and γ^*-pre-R_1 spaces are introduced and their relationships between γ^*-pre-T_0, γ^*-pre-T_1 and γ^*-pre-T_2 spaces are studied. Further, the concept of γ^*-pre-connected spaces is defined and their basic properties are investigated.