Abstract

The concepts of $indX$, $IndX$,$dimX$ for a topological spaces X have been well studied.

In this work, these concepts will be extended by using $S_\beta -$ open sets to define $S_\beta - indX$, $S_\beta{}^* - indX$, $S_\beta - IndX$, $S_\beta{}^* - IndX$, $S_\beta - dimX$ and $S_\beta{}^* - dimX$.

Then the relations among them and other concepts will be studied like $S_\beta - T_1$ space , $S_\beta - T_2$ space , S_β −regular space , $S_\beta{}^*$ −regular space S_β −normal space , $S_\beta{}^*$ −normal space , $S_\beta{}^{**} -$ normal space , S_β −paracompact space , S_β −compact . The behavior of these invariants will be studied under certain kinds of maps. The following are some of the main results :

1. Let X be a topological space, if $S_\beta - \mathrm{ind}X = 0$ then X is S_β- −regular.
2. Let X be a topological space, if $S_\beta - \mathrm{Ind}X = 0$, then X is $S_\beta{}^*$- −normal space.
3. Let X be a topological space, if X is regular, then $S_\beta - \mathrm{ind}X \leq S_\beta - \mathrm{Ind}X$.
4. Let X be a topological space , if X $S_\beta - T_1$ space ,then $S_\beta{}^* - \mathrm{ind}X \leq S_\beta{}^* - \mathrm{Ind}X$.
5. Let X be a topological space, if $S_\beta - \dim X = 0$, then X is S_β^{**} −normal space.
6. If X is an S_β −perfectly zero dimensional space ,then X is S_β −paracompact space and $S_\beta - \dim X = 0$.
7. Let $f: X \longrightarrow Y$ be S_β −perfect function .If X is Hausdorff ,then Y is $S_\beta -$ Hausdorff space.

8. Let $f: X \longrightarrow Y$ be S_{β}_perfect function .If X is regular space , then Y is S_{β}_regular space .

9. If $f: X \longrightarrow Y$ is a continuous S_{β}_closed surjection function and X is a normal space ,then Y is S_{β}^{**} $-$normal space .

10. Let X be a perfect zero-dimensional space and $f: X \longrightarrow Y$ be S_{β} $-$perfect function such that Y has a locally finite covering .Then Y is S_{β} $-$paracompact , S_{β}^{**} $-$normal space and S_{β} $-$regular space.

11. The following statements about a space X are equivalent :

(i) $S_{\beta} - dimX \leq n.$

(**ii**) The S_{β} $-$vague order of identity mapping I_x of X is at most n .

(**iii**) The S_{β} –vague order of every S_{β} $-$continuous surjection with range X is at most n.

12. If X is a topological space such that $S_{\beta} - dimX = 0$ and $f: X \longrightarrow Y$ is an S_{β} –continuous surjection mapping with order at most n then the S_{β} –vague order of f is at most n.