Chapter VI

-: Conclusion :-

In the proposed thesis we have introduced some new concepts in selection principles, studied some corresponding topological properties and applied them in the study of topological games. Some of the interesting outcomes in our research work are mentioned below:

1. Some topological spaces do not come under any previously existing selection principles, for example, we mention about star-Lindelöf space. But in our study we found that star-Lindelöf space comes under the new selection principle $SS^*_c,1({\mathcal X}, \mathcal O)$.

2. All the previously existing selection principles deal with two collections of subsets or family of subsets (except $SS^*_K(\mathcal A, \mathcal B)$). We have studied about some new selection principles which deal with three collections of subsets or family of subsets, viz: $SS^*_c,1(\mathcal A, \mathcal B)$ and $SS^*_c,fin(\mathcal A, \mathcal B)$.

3. Some topological properties associated with the new selection principles are also studied.

4. We have studied some topological games associated with the introduced selection principles, compared their structure with the existing games which have similar structure and found that these new games are neither equivalent nor duel to any of the previously existing games.

5. Some topological games of two players are studied in which no player may have an winning strategy.

During our investigation we found a lot of problems. Most of them are solved. Some of the unsolved open are listed below:
Open problem 1  Does there exists a space which has the property $\star \mathcal{U}_{\text{fin}}(\mathcal{O}, \mathcal{O})$ but does not have the property $\mathcal{U}_{\text{fin}}^*(\mathcal{O}, \mathcal{O})$.

Open problem 2  Does there exist spaces which have the property $\star \mathcal{U}_1(\mathcal{O}, \mathcal{O})$ but their product do not have this property.

Open problem 3  Does there exists a topological space which is not a star-Lindel"of space but has the property $\star \mathcal{U}_1(\mathcal{O}, \mathcal{O})$?

Open problem 4  If $X$ is a selectively star-Lindel"of space and $Y$ is a compact space, is $X \times Y$ a selectively star-Lindel"of space?

Open problem 5  If $X$ and $Y$ are a selectively star-Lindel"of spaces, is $X \times Y$ a selectively star-Lindel"of space? Is $X^2$ a selectively star-Lindel"of space?

Open problem 6  Does there exists a topological space which is selectively 2-star Lindel"of but not selectively star Lindel"of?

Open problem 7  If $A$ and $B$ are selectively star-Lindel"of subspaces of a topological space $X$ such that $X = A \cup B$, is $X$ a selectively 2-star-Lindel"of space?

Open problem 8  Does there exists a space which is $M$-star-Lindel"of but not $R$-star-Lindel"of?

Open problem 9  If $A$ and $B$ are $R$-star-Lindel"of subspaces of a topological space $X$ such that $X = A \cup B$, is $X$ a $R$-2-star-Lindel"of space?

Open problem 10  Does there exists a space which is selectively 2-star-c.c.c. but not a star-Lindel"of space.