Pairwise Almost Lindelöf Bitopological Spaces II

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ABSTRACT
In this paper we continue to study the pairwise almost Lindelöf subspaces and subsets, investigate some of their characterizations and obtain some new results.

1. INTRODUCTION
The study of bitopological spaces was first initiated by J. C. Kelly [5] in 1963 and thereafter a large number of papers have been done in order to generalize the topological concepts to bitopological setting. In literature there are several generalizations of the notion of Lindelöf spaces and these are studied separately for different reasons and purposes. In 1984, Willard and Dissanayake [10] introduced and studied the notion of almost Lindelöf spaces and then in 1996, Commaroto and Santoro [2] studied and gave further new results about these spaces.

In our earlier paper [7], we have introduced and defined the notion of almost Lindelöf spaces in bitopological spaces, which we call pairwise almost Lindelöf spaces and investigate some of their properties. Further we also studied the pairwise almost Lindelöf subspaces and subsets and also investigated some of their further properties. This purpose of the present paper is to continue the study of these spaces and give more results concerning pairwise almost Lindelöf spaces, its subspaces as well as subsets.

2. PRELIMINARIES
Throughout this paper, all spaces \((X, \tau_1)\) and \((X, \tau_i, \tau_j)\) (or simply \(X\)) are always meant as topological spaces and bitopological spaces, respectively unless explicitly stated. By \(i\)-open set, we shall mean the open set with respect to topology \(\tau_i\) in \(X\). We always use \((i, j)\)- to denote the certain properties with respect to topology \(\tau_i\) and \(\tau_j\) respectively, where \(i, j \in \{1, 2\}\) and \(i \neq j\). In this paper, every result in terms of \((i, j)\)- will have pairwise as a corollary.

By \(i\)-int \((A)\) and \(i\)-cl \((A)\) we shall mean the interior and the closure of a subset \(A\) of \(X\) with respect to topology \(\tau_i\), respectively. We denote by int \((A)\) and cl \((A)\) for the interior and closure of a subset \(A\) of \(X\) with respect to topology \(\tau_i\) for each \(i = 1, 2\), respectively. The \(i\)-open cover of \(X\), means that the cover of \(X\) by \(i\)-open sets in \(X\); similar for the \((i, j)\)-regular open cover of \(X\) etc.