

## COUPON COLORING OF IDEAL-BASED ZERO-DIVISOR GRAPHS

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**Abstract:** A  $k$ -coupon coloring of a graph  $G$  without isolated vertices is an assignment of colors from  $[k] = \{1, 2, \dots, k\}$  to the vertices of  $G$  such that the neighborhood of every vertex of  $G$  contains vertices of all colors from  $[k]$ . The maximum  $k$  for which a  $k$ -coupon coloring exists is called the coupon coloring number of  $G$ . In this paper, we have studied the coupon coloring number of ideal-based zero-divisor graphs of finite commutative rings.

**Keywords and Phrases:** Coupon coloring number, Total domatic number, Ideal-based zero-divisor graph.

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### 1. Introduction and Preliminaries

Vertex coloring is an extensively studied area in graph theory. Most of the vertex coloring problems that we have found in literature are proper vertex coloring, where adjacent vertices have distinct colors. Several interesting improper vertex coloring problems are also introduced by different authors and coupon coloring is one among them. In improper vertex coloring, adjacent vertices can be assigned same colors. Coupon coloring is interesting because it is theoretically significant