

## ABSTRAK

Misalkan  $G$  adalah graf terhubung tak trivial dan didefinisikan pewarnaan sisi pada graf  $G$ , yaitu  $p : E(G) \rightarrow \{1, 2, \dots, n\}; n \in \mathbb{N}$ , dimana sisi yang bertetangga boleh bewarna sama. Graf  $G$  dikatakan *rainbow connected* terhadap pewarnaan sisi  $p$ , jika  $G$  memuat lintasan- $(u, v)$  *rainbow* untuk setiap dua titik  $u$  dan  $v$  di  $G$ . Bilangan *rainbow connection* adalah minimal warna yang diperlukan sehingga graf  $G$  *rainbow connected*, dinotasikan  $rc(G)$ . Graf  $G$  dikatakan *strongly rainbow connected* jika  $G$  memuat suatu lintasan- $(u, v)$  *geodesic* untuk setiap lintasan pada dua titik  $u$  dan  $v$  di  $G$ . Bilangan *strongly rainbow connection* adalah minimal warna yang diperlukan sehingga graf  $G$  *strong rainbow connected*, dinotasikan  $src(G)$ . Graf Jahangir  $J_{n,m}$  dengan  $n, m \geq 2$  adalah suatu graf dengan  $nm + 1$  titik, yang terdiri dari lingkaran  $C_{nm}$  dengan menambahkan satu titik pusat  $c$  yang bertetangga ke  $m$  titik dari  $C_{nm}$  yaitu  $u_1, u_2, u_3, \dots, u_m$ , sedemikian sehingga  $d(u_i, u_{i+1}) = d(u_m, u_1) = n$ ,  $1 \leq i \leq m - 1$  di  $C_{nm}$ . Pada tugas akhir ini diperoleh  $rc(J_{2,m})$  dan  $src(J_{2,m})$  untuk  $m \geq 2$ .

**Kata Kunci:** Bilangan *rainbow connection*, bilangan *strong rainbow connection*, graf Jahangir.

## ABSTRACT

Let  $G$  be a nontrivial connected graph on which is defined an edge-coloring  $p : E(G) \rightarrow \{1, 2, \dots, n\}; n \in \mathbb{N}$ , where adjacent edges may be colored the same. Graph  $G$  is rainbow connected if  $G$  contains a rainbow- $(u, v)$  path for every two vertices  $u$  and  $v$  in  $G$ . Similarly, graph  $G$  is strongly rainbow connected if  $G$  contains a rainbow- $(u, v)$  geodesic for every two vertices  $u$  and  $v$  in  $G$ . The minimum  $n$  such that  $G$  is rainbow connected under the  $n$ -edge coloring of  $G$  is called the rainbow connection number of  $G$ , denoted by  $rc(G)$ . Similarly, the minimum  $n$  such that  $G$  is strongly rainbow connected under the  $n$ -edge coloring of  $G$  is called the strong rainbow connection number of  $G$ , denoted by  $src(G)$ . The Jahangir graph  $J_{n,m}$ ,  $n, m \geq 2$ , is a graph on  $nm + 1$  vertices consisting of a cycle  $C_{nm}$  with an additional central vertex, denoted by  $c$ , which is adjacent to cyclically labeled vertices  $u_1, u_2, \dots, u_m$  such that  $d(u_i, u_{i+1}) = d(u_m, u_1) = n$ ,  $1 \leq i \leq m - 1$  in  $C_{nm}$ . In this paper, we study  $rc(J_{2,m})$  and  $src(J_{2,m})$  for  $m \geq 2$ .

**Keywords:** Rainbow connection number, strong rainbow connection number, Jahangir graph.