Erratum. Dominator coloring of total graph of path and cycles

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The description of the correction

Authors have identified errors in the paper originally submitted and finally approved (after the acceptance) by the Authors.

On page 74, case 2 second line and third line highlighted part to be changed.

Case 2: $n \geq 3$

By Proposition 2.2, $\chi[T(P_n)] \geq 3$ as $T(P_n)$ includes an odd cycle. Assign the proper coloring to the vertices as $f(v_i) = 1,3,2,1,3,2, \ldots, n$, $f(u_i) = 2,1,3,2,1,3, \ldots, n-1$. Thus, a minimum of three colors are required for proper coloring. Therefore $\chi[T(P_n)] = 3$.

On page 74, an error in the symbol of statement of Theorem 3.3.

Theorem 3.3

$$\chi_d[T(P_n)] = \begin{cases} \chi[T(P_n)] + \gamma[T(P_n)] - 1, & n = 2,3,4,6, \\ \chi[T(P_n)] + \gamma[T(P_n)], & n \geq 5, n \neq 6. \end{cases} \quad (4)$$

On page 75, third paragraph second line of case when n = 6, 4 is to be written as 3.

In this case the set $\{v_1, v_6, u_4\}$ or $\{v_2, v_5, u_3\}$ are only γ-sets of graph $T(P_6)$. According to Lemma – 3.1, $\gamma[T(P_6)] = 3$ and by Lemma – 3.2, $\chi[T(P_6)] = 3$. Allocating several colors to the vertices of the γ-set that is equal to $\gamma[T(P_6)]$ in order to determine its optimal coloring. Now we use $\chi[T(P_6)] - 1$ number of colors to color the remaining vertices.

On page 75, Case 1 last line in place of 6, it should be 5.

The coloring pattern can be defined as $f(v_1) = f(v_4) = f(u_2) = f(u_5) = 3$, $f(v_3) = 1, f(v_6) = f(u_1) = f(u_4) = 4, f(v_2) = 1, f(u_4) = 2, f(v_5) = 2, f(u_3) = 5$. Here every vertex dominates the vertices of at least one color class. As a result, the proper coloring creates a dominator coloring for the relevant graph. Therefore, $\chi_d[T(P_6)] = 5 = \chi[T(P_6)] + \gamma[T(P_6)] - 1$.

On page 75, Case 2 title is mentioned incorrect.

Case 2: $n \geq 5$, $n \neq 6$

On page 75, In the line just above the Fig. 1, in place of six colors there must be five colors.

A dominator coloring of $T(P_6)$ using five colors is shown in Fig. 1.

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