Mapana – Journal of Sciences
2023, Vol. 22, Special Issue 1, *51-62*
ISSN 0975-3303 | https://doi.org/10.12723/mjs.sp1.5

Reserved Domination Number of Line Graph

Rajasekar G.*, G. Rajasekar†

Abstract

The reserved dominating set is special up gradation of dominating set, such that some of the vertices in the vertex set have the special privilege (reserved) to appear in the Dominating set irrespective of their adjacency due to the necessity of the user. The minimum --cardinality of a reserved dominating set of G is called the reserved domination number of G and is denoted by $R_{(k)} - \gamma(G)$ where k is the number of reserved vertices. In this paper reserved domination number of $L(P_n)$, $L(C_n)$, $L(S_n)$, $L(B_{m,n})$, $L(W_n)$ and $L(F_{1,n})$ are found

Keywords: Dominating set, reserved dominating set, reserved domination number, line graph.

1. Introduction

The Oystein Ore [1] defined that the dominating set of a graph. Rajasekar et al., [3,6] defined the reserved dominating set (RDS) of the graph G to be the subset S of V, whose vertices are reserved in such a way that they must appear in the dominating set. The dominating RDS with the minimum cardinality is called reserved domination number of G and is denoted by $R_{(k)} - \gamma(G)$ where k is the number of reserved vertices. In [4] authors found the location domination number of line graph. Rajasekar et al. [3,5,6,7] have found the reserved domination number, 2-reserved domination

* Department of Mathematics, C. Kandaswami Naidu College for Men, Chennai, Tamil Nadu, India; r.g.raja3007@gmail.com
† Department of Mathematics, Jawahar Science College, Neyveli, Tamil Nadu, India; grsmaths@gmail.com

number of graphs and reserved domination number of complement of a graphs.

Throughout this paper we use the indexing set [initial value; final value: step value] where initial value is the first value of indexing set, step value is the incremented value of initial value and the final value is the maximum value that can be achieved by initial value by incrementing. Therefore $k \in [1; n:1]$ implies $k = 1, 2, 3, \ldots, n$ and $\{v_1; v_n :1\}$ implies $\{v_1, v_2, v_3, \ldots, v_n\}$. Further throughout the paper Reserved vertex is referred to asR_V, Dominating Set as DS, Reserved Dominating Set as RDS and Reserved Domination Number asRDN.

2. Preliminaries

***Definition 2.1*:** [3] Reserved Domination.

Let $G = (V, E)$ be a graph. A subset S of V is called a Reserved Dominating Set (RDS)of G if

(i) μ be any nonempty proper subset of S.

(ii) Every vertex in $V - S$is adjacent to a vertex in$S$.

The dominating set $S$is called a minimal reserved dominating set if no proper subset of Scontaining $\mu$is a dominating set. The set μ is called Reserved set. The minimum cardinality of a reserved dominating set S of G is called the reserved domination number of$G$and is denoted by $R - \gamma(G)$.

Definition 2.2: [3,6] 2-Reserved Domination.

Let $G = (V, E)$ be a graph. A subset S of V is called a k -reserved dominating set (RDS)of G if

(i) μ is any nonempty proper subset of $S$with k vertices.

(ii) Every vertex in $V - S$is adjacent to a vertex in$S$.

The dominating set $S$is called a minimal k -reserved dominating set if no proper subset of S containing μ is a dominating set. The set μ is called k -reserved set.

The minimum cardinality of a k -reserved dominating set S of $G$is called the k -reserved domination number of$G$and is denoted by $R_{(k)} - \gamma(G)$ where k is the number of reserved vertices.

Definition **2.3:** Bistar Graph.

A Bistar graph is the graph obtained by joining the centre (apex) vertices of two copies of $K_{1,n}$ by an edge and it is denoted by $B_{m,n}$.

Theorem 2.4: [3] For P_n, theRDN,

$$R_{(1)}-\gamma(P_n,\mu)=1+\left\lceil\frac{k-2}{3}\right\rceil+\left\lceil\frac{n-(k+1)}{3}\right\rceil, \text{ if}\mu=v_k(k\in[1;n:1]).$$

Theorem 2.5: [3] For C_n, the RDN, $R_{(1)}-\gamma(C_n,\mu)=\gamma(C_n)=\left\lceil\frac{n}{3}\right\rceil$ if$\mu=v_k(k\in[1;n:1])$.

Remark 2.6: [3] For $K_n, n\geq 3$ the RDN, $R_{(1)}-\gamma(K_n)=1$.

3. Reserved Domination Number of Line Graph

Proposition 3.1: For P_n, $R_{(1)}-\gamma\big(L(P_n)\big)=R_{(1)}-\gamma(P_{n-1})$, asf$L(P_n)=P_{n-1}$.

Proposition 3.2: For C_n , $L(C_n)=C_n$ and hence $R_{(1)}-\gamma\big(L(C_n)\big)=R_{(1)}-\gamma(C_n)$.

Theorem 3.3: For $S_n=K_{1,n}$, $R_{(1)}-\gamma(L(S_n),\mu)=R_{(1)}-\gamma(K_n,\mu)=1$, if $\mu=e_k(k\in[1;n:1])$.

Proof: $S_1=K_2=P_2$ and so by Proposition 3.1, $R_{(1)}-\gamma\big(L(S_1)\big)=R_{(1)}-\gamma\big(L(P_2)\big)=R_{(1)}-\gamma(P_1)=1$.

For $n>1$,f$L(S_n)\cong K_n$ and so $R_{(1)}-\gamma(L(S_n),\mu)=R_{(1)}-\gamma(K_n,\mu)=1$.

Theorem 3.4: For $B_{m,n}$, the RDN,

$$R_{(1)}-\gamma\big(L(B_{m,n}),\mu\big)=\begin{cases}1, \text{ if } \mu=e\\ 2, \text{ if } \mu=\begin{cases}e_{u_k}, k\in[1;m:1] \text{ or}\\ e_{v_k}, k\in[1;n:1].\end{cases}\end{cases}$$

Proof:

Case (i): When $m=1=1$, $B_{1,1}\cong P_4$ and by Proposition 3.1, $R_{(1)}-\gamma\big(L(B_{1,1}),\mu\big)=\begin{cases}1, \text{ if } \mu=e\\ 2, \text{ if } \mu=e_{u_1} \text{ or } e_{v_1}\end{cases}$.

Case (ii): Either $m=1$for $n=1$.

Without loss of generality, assume that $m>1$ and $n=1$. $L\big(B_{m,1}\big)$is isomorphic to$L_{m+1,1}$.

Suppose $\mu = e$ is R_V. Then e must be in the DS and e dominates all other vertices. Hence the required RDS is $\{e\}$.

Thus $R_{(1)} - \gamma(L(B_{m,1}), \mu) = 1$ where $\mu = e$.

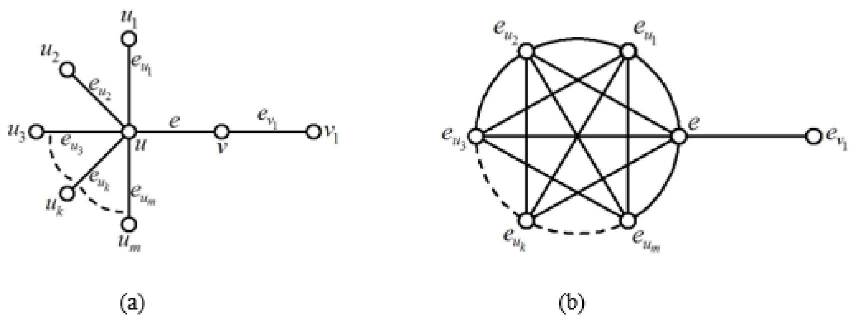

Fig. 1: (a) $B_{m,1}$ and (b) $L\left(B_{m,1}\right)$

Suppose $\mu = e_{u_k} (k \in [1; m: 1])$ is the R_V. Then e_{u_k} must be in the DS and e_{u_k} dominates the vertices $\{e_{u_1}, e_{u_2}, \dots, e_{u_{k-1}}, e_{u_{k+1}}, \dots, e_{u_m}\} \cup \{e\}$. The remaining vertex which is not dominated by e_{u_k} is e_{v_1}. So e_{v_1} must be in the DS.

Hence the required RDS is $\{e_{u_k}, e_{v_1}\}$.

Thus $R_{(1)} - \gamma(L(B_{m,1}), \mu) = 2$ where $\mu = e_{u_k} (k \in [1; m: 1])$.

Suppose $\mu = e_{v_1}$ is the R_V. Then e_{v_1} must be in the DS and e_{v_1} dominates only the vertex e. The remaining vertices which aren't dominated by e_{u_k} are $\{e_{u_1}; e_{u_m}: 1\}$. To dominate the remaining vertices, choose any one of the vertex say e_{u_1} from $\{e_{u_1}; e_{u_m}: 1\}$.

Hence the requiredRDS is $\{e_{v_1}, e_{u_1}\}$.

Thus $R_{(1)} - \gamma(L(B_{m,1}), \mu) = 2$ where $\mu = e_{v_1}$.

Case (iii): Line graph of $B_{m,n}$ when $m, n > 1$ is isomorphic to the graph obtained due to single vertex fusion ofK_{m+1} andK_{n+1}.

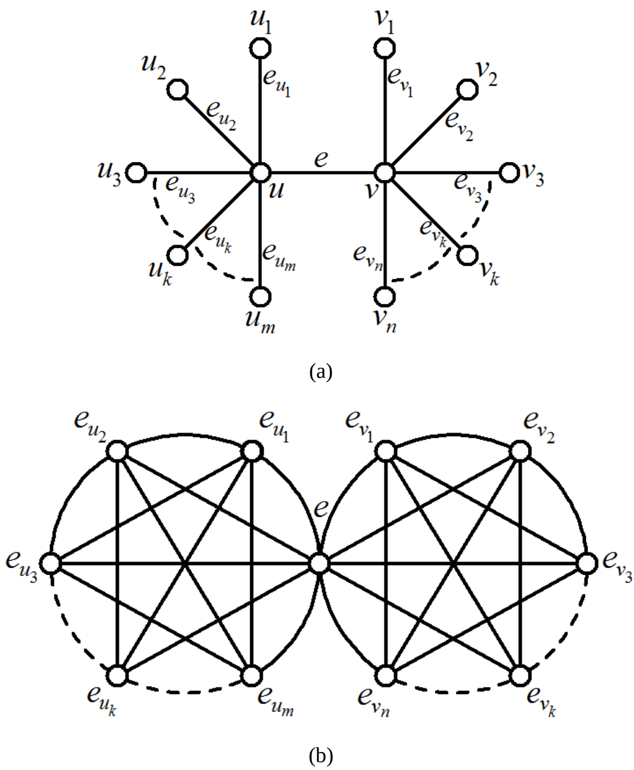

Fig. 2: (a) $B_{m,n}$ and (b) $L(B_{m,n})$

Suppose $\mu = e$ is R_V. Then e must be in the DS and e dominates all other vertices. Hence the required RDS set is $\{e\}$.

Thus $R_{(1)} - \gamma(L(B_{m,n}), \mu) = 1$ where $\mu = e$.

Suppose $\mu = e_{u_k} (k \in [1; m: 1])$ is the R_V. Then e_{u_k} must be in the DS and e_{u_k} dominates the vertices $\{e_{u_1}, e_{u_2}, \ldots, e_{u_{k-1}}, e_{u_{k+1}}, \ldots, e_{u_m}\} \cup \{e\}$. The remaining vertices which are not dominated by e_{u_k} are $\{e_{v_1}; e_{v_n}: 1\}$.

To dominate the remaining vertices, choose any one of the vertices say e_{v_1} from$\{e_{v_1}; e_{v_n}: 1\}$.

Hence the required RDS is $\{e_{u_k}, e_{v_1}\}$.

Thus $R_{(1)} - \gamma(L(B_{m,n}), \mu) = 2$ where $\mu = e_{u_k} (k \in [1; m: 1])$.

Similarly, one can prove for the $R_V \mu = e_{v_k}$ where $k \in [1; n: 1]$.

Theorem 3.5: For W_n, $R_{(1)} - \gamma(L(W_n), \mu) = \left\lceil \frac{n+1}{3} \right\rceil$ if $\mu = e_k$ or e_{v_k} $(k \in [1; n: 1])$.

Proof: Let $V(W_n) = \{v, \{v_1; v_n: 1\}\}$ where $deg\, v = n$ and $deg\, v_k = 3$ for all $k \in [1; n: 1]$. Label the edge vv_k as e_{v_k}, edge $v_k v_{k+1}$ as e_k for $k \in [1; n-1: 1]$ and $v_1 v_n$ as e_n as represented in the Fig. 3.

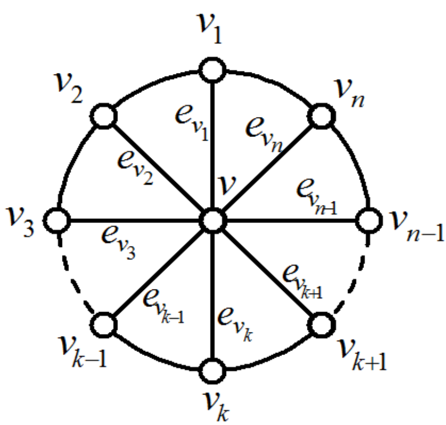

Figure 3: W_n

$L(W_n)$ is constructed as shown in Fig. 4.

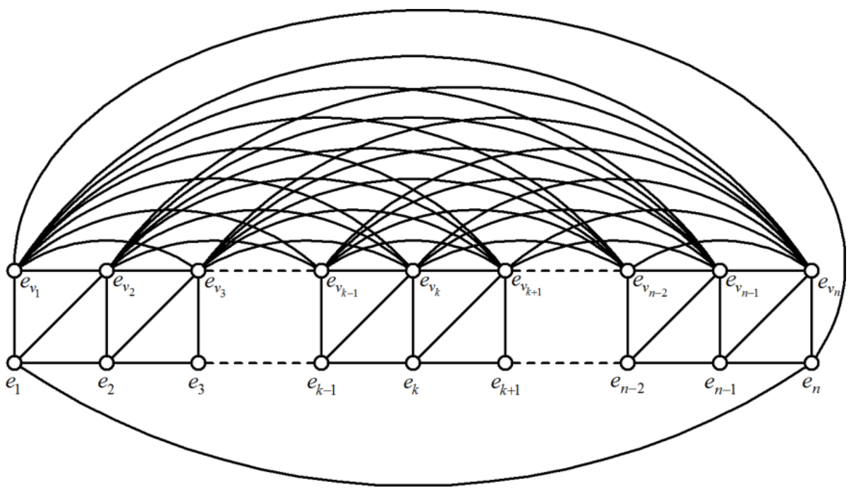

Figure 4: $L(W_n)$

The induced subgraph of the sets $\{e_{v_1}; e_{v_n}: 1\}$ and $\{e_1; e_n: 1\}$ is K_n and C_n respectively.

Case (i): Suppose $\mu = e_{v_k}(k \in [1; n: 1])$ is R_V. Then e_{v_k} must be in the DS and e_{v_k} dominates the vertices$\{e_{v_1}, e_{v_2}, \dots, e_{v_{k-1}}, e_{v_{k+1}}, \dots, e_{v_n}\} \cup \{e_{k-1}, e_k\}$. The remaining vertices which are not dominated by e_{v_k} are $\{e_1, e_2, \dots, e_{k-2}, e_{k+1}, \dots, e_n\}$.

Now it is enough to find the DS for the vertices $\{e_1, e_2, \dots, e_{k-2}, e_{k+1}, \dots, e_n\}$. The $L(W_n)[V_1]$ with $V_1 = \{e_1, e_2, \dots, e_{k-2}, e_{k+1}, \dots, e_n\}$ is P_{n-2}.

Hence $R_{(1)} - \gamma(L(W_n), \mu) = |\{e_{v_k}\}| + \gamma(P_{n-2}) \quad = 1 + \left\lceil \frac{n-2}{3} \right\rceil = \left\lceil \frac{n+1}{3} \right\rceil$ where$\mu = e_{v_k}(k \in [1; n: 1])$.

Case (ii): Suppose $\mu = e_k(k \in [1; n: 1])$ is R_V. Then e_k must be in the DS and e_k dominates the vertices $\{e_{k-1}, e_{k+1}\} \cup \{e_{v_k}, e_{v_{k+1}}\}$. The remaining vertices which are not dominated by e_k are $\{e_1, e_2, \dots, e_{k-2}, e_{k+2}, \dots, e_n\} \cup \{e_{v_1}, e_{v_2}, \dots, e_{v_{k-1}}, e_{v_{k+2}}, \dots, e_{v_n}\}$.

To dominate the remaining vertices from the set $\{e_{v_1}, e_{v_2}, \dots, e_{v_{k-1}}, e_{v_{k+2}}, \dots, e_{v_n}\}$, choose the vertex $e_{v_{k+3}}$ or $e_{v_{k-3}}$. Consider the vertex $e_{v_{k+3}}$ which dominates e_{k+2} and e_{k+3}.

Now it is enough to find the DS for the vertices $\{e_1, e_2, \dots, e_{k-2}, e_{k+4}, \dots, e_n\}$. The $L(W_n)[V_2]$ with $V_2 = \{e_1, e_2, \dots, e_{k-2}, e_{k+4}, \dots, e_n\}$ is P_{n-5}.

Hence $R_{(1)} - \gamma(L(W_n), \mu) = |\{e_k\}| + |\{e_{v_{k+3}}\}| + \gamma(P_{n-5}) = 1 + 1 + \left\lceil \frac{n-5}{3} \right\rceil = \left\lceil \frac{n+1}{3} \right\rceil$ where $\mu = e_k(k \in [1; n: 1])$.

Theorem 3.6: For the fan graph $F_{1,n}$, the reserved domination number for the different values of n is summarized as follows:

i. For $n \equiv 0(mod\ 3)$

$$R_{(1)} - \gamma\big(L(F_{1,n}), \mu\big) = \begin{cases} \left\lceil \dfrac{n+1}{3} \right\rceil, \text{ if } \mu = \begin{cases} e_{v_k}(k = 1,3,4,6, \dots, n-5, n-3, n-2, n) \text{ or} \\ e_k(k = 1,3,6,9, \dots, n-9, n-6, n-3, n-1) \end{cases} \\ \left\lceil \dfrac{n}{3} \right\rceil, \text{ if } \mu = \begin{cases} e_{v_k}(k = 2,5,8,11, \dots, n-10, n-7, n-4, n-1) \text{ or} \\ e_k(k = 2,4,5,7, \dots, n-7, n-5, n-4, n-2) \end{cases} \end{cases}$$

ii. For $n \equiv 1(mod\ 3)$

$$R_{(1)} - \gamma(L(F_{1,n}),\mu) = \left\lceil \frac{n}{3} \right\rceil, \text{ if } \mu = \begin{cases} e_{v_k}(k \in [1;n:1]) \text{ or} \\ e_k(k \in [1;n-1:1]) \end{cases}$$

iii. For $n \equiv 2(mod\ 3)$

$$R_{(1)} - \gamma(L(F_{1,n}),\mu) = \begin{cases} \left\lceil \frac{n+2}{3} \right\rceil, \text{ if } \mu = e_{v_k}(k = 3,6,9,12,\dots,n-11,n-8,n-5,n-2) \\ \left\lceil \frac{n}{3} \right\rceil, \text{ if } \mu = \begin{cases} e_{v_k}(k = 1,2,4,5,\dots,n-4,n-3,n-1,n) \text{ or} \\ e_k(k \in [1;n-1:1]) \end{cases} \end{cases}$$

Proof: $F_{1,1}$ and $F_{1,2}$ are isomorphic to P_2 and C_3 respectively.

Therefore $R_{(1)} - \gamma\left(L(F_{1,1})\right) = 1$ and $R_{(1)} - \gamma\left(L(F_{1,2})\right) = 1$.

For $n > 2$, let $V(F_{1,n}) = \{v, \{v_1; v_n: 1\}\}$ where $deg\, v = n$, $deg\, v_1 = deg\, v_n = 2$ and $deg\, v_k = 3$ for all $2 \le k \le n-1$. Label the edge $v_k v_{k+1}$ as e_k and vv_k as e_{v_k} as shown in Fig. 5.

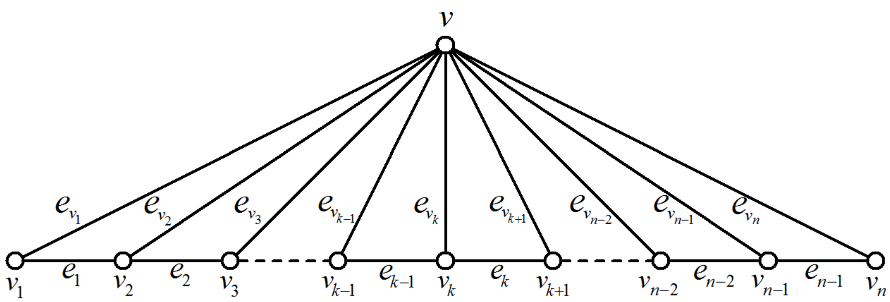

Figure 5: $F_{1,n}$

In the graph $F_{1,n}$, edge adjacency is given as follows:

i. e_1 is adjacent to e_{v_1}, e_{v_2} and e_2.

ii. e_{n-1} is adjacent to $e_{v_{n-1}}, e_{v_n}$ and e_{n-2}.

iii. For $1 < k < n-1$, e_k is adjacent to $e_{v_k}, e_{v_{k+1}}, e_{k-1}$ and e_{k+1}.

iv. e_{v_1} is adjacent to $e_{v_2}, e_{v_3}, \dots, e_{v_{n-1}}, e_{v_n}$ and e_1.

v. e_{v_n} is adjacent to $e_{v_1}, e_{v_2}, \dots, e_{v_{n-2}}, e_{v_{n-1}}$ and e_{n-1}.

vi. For $1 < k < n$, e_{v_k} is adjacent to $e_{v_1}, e_{v_2}, \dots, e_{v_{k-1}}, e_{v_{k+1}}, \dots, e_{v_{n-1}}, e_{v_n}, e_{k-1}$ and e_k.

Since adjacency matrix of line graph is nothing but the incidence matrix of the given graph, the graph $L(F_{1,n})$ is obtained from edge adjacency of $F_{1,n}$ as shown in Fig. 6.

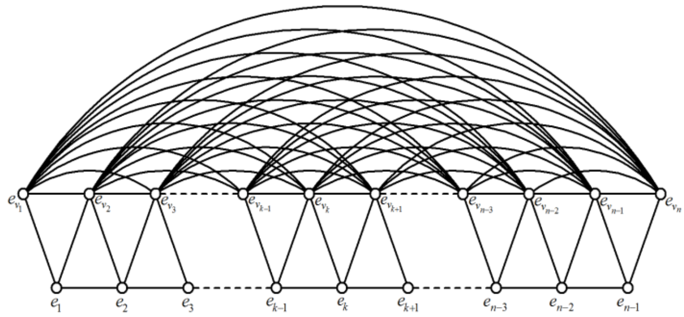

Figure 6: $L(F_{1,n})$

The induced subgraph of $\{e_{v_1}; e_{v_n}: 1\}$ is a complete graph with n vertices and the induced subgraph of $\{e_1; e_{n-1}: 1\}$ is a path of length $n-1$.

Case (i): For $n \equiv 0(mod\, 3)$.

Sub case (i): Suppose e_{v_1} is the R_V. Then e_{v_1} must be in the DS and e_{v_1} dominates the vertices $\{e_{v_2}; e_{v_n}: 1\} \cup \{e_1\}$. The remaining vertices which are not dominated by e_{v_1} are $\{e_2; e_{n-1}: 1\}$. Now it is enough to find the DS for the vertices $\{e_2; e_{n-1}: 1\}$.

The $L(F_{1,n})[V_1]$ with $V_1 = \{e_2; e_{n-1}: 1\}$ is $P_{(n-1)-1} = P_{n-2}$.

Hence $R_{(1)} - \gamma(L(F_{1,n}), e_{v_1}) = |\{e_{v_1}\}| + \gamma(P_{n-2}) = 1 + \left\lceil \frac{n-2}{3} \right\rceil = \left\lceil \frac{n+1}{3} \right\rceil$.

Similarly, the same result is obtained for the R_V e_{v_k} where $k = 3,4,6, \dots, n-5, n-3, n-2, n$.

Sub case (ii): Suppose e_{v_2} is theR_V. Then e_{v_2} must be in the DS and e_{v_2} dominates the vertices $\{e_{v_1}, e_{v_3}, \dots, e_{v_{n-1}}, e_{v_n}\} \cup \{e_1, e_2\}$. The remaining vertices which are not dominated by e_{v_2} are $\{e_3; e_{n-1}: 1\}$. Now it is enough to find the DS for the vertices $\{e_3; e_{n-1}: 1\}$.

The $L(F_{1,n})[V_2]$ with $V_2 = \{e_3; e_{n-1}: 1\}$ is $P_{(n-1)-2} = P_{n-3}$.

Hence $R_{(1)} - \gamma(L(F_{1,n}), e_{v_2}) = |\{e_{v_2}\}| + \gamma(P_{n-3}) = 1 + \left\lceil \frac{n-3}{3} \right\rceil = \left\lceil \frac{n}{3} \right\rceil$.

The same result holds for $R_V\, e_{v_k}$ where $k = 5,8,11,\ldots,n-10,n-7,n-4,n-1$.

Sub case (iii): Suppose e_1 is R_V. Then e_1 must be in the DS and e_1 dominates the vertices e_2, e_{v_1} and e_{v_2}. The remaining vertices which are not dominated by e_1 are $\{e_{v_3}; e_{v_n}: 1\} \cup \{e_3; e_{n-1}: 1\}$. To dominate the remaining vertices from the set $\{e_{v_3}; e_{v_n}: 1\}$, choose the vertex e_{v_4} which also dominated e_3 and e_4.

Now it is enough to find the DS for the vertices $\{e_5; e_{n-1}: 1\}$.

The $L(F_{1,n})[V_3]$ with $V_3 = \{e_5; e_{n-1}: 1\}$ is $P_{(n-1)-4} = P_{n-5}$.

Hence $R_{(1)} - \gamma(L(F_{1,n}), e_1) = |\{e_1\}| + |\{e_{v_4}\}| + \gamma(P_{n-5}) = 2 + \left\lceil\frac{n-5}{3}\right\rceil = \left\lceil\frac{n+1}{3}\right\rceil$.

Similarly, we get same result for the $R_V\, e_k$ where $k = 3,6,9,\ldots,n-9,n-6,n-3,n-1$.

Sub case (iv): Suppose e_2 is R_V. Then e_2 has to be in the DS and e_2 dominates the vertices e_1, e_3, e_{v_2} and e_{v_3}. The remaining vertices which are not dominated by e_2 are $\{e_{v_1}, e_{v_4}, \ldots, e_{v_{n-1}}, e_{v_n}\} \cup \{e_4; e_{n-1}: 1\}$. To dominate the remaining vertices from the set $\{e_{v_1}, e_{v_4}, \ldots, e_{v_{n-1}}, e_{v_n}\}$, choose the vertex e_{v_5} which also dominates e_4 and e_5.

Now it is enough to find the DS for the vertices $\{e_6; e_{n-1}: 1\}$.

The graph $L(F_{1,n})[V_4]$ with $V_4 = \{e_6; e_{n-1}: 1\}$ is $P_{(n-1)-5} = P_{n-6}$.

Hence $R_{(1)} - \gamma(L(F_{1,n}), e_2) = |\{e_2\}| + |\{e_{v_5}\}| + \gamma(P_{n-6}) = 2 + \left\lceil\frac{n-6}{3}\right\rceil = \left\lceil\frac{n}{3}\right\rceil$.

The same result holds for $R_V\, e_k$ where $k = 4,5,7,\ldots,n-7,n-5,n-4,n-2$.

Hence

$$R_{(1)} - \gamma\left(L\left(F_{1,n}\right), \mu\right) = \begin{cases} \left\lceil \frac{n+1}{3} \right\rceil \text{ where } \mu = \begin{cases} e_{v_k}(k = 1,3,4,6,\ldots,n-5,n-3,n-2,n) \text{ or} \\ e_k(k = 1,3,6,9,\ldots,n-9,n-6,n-3,n-1) \end{cases} \\ \left\lceil \frac{n}{3} \right\rceil \text{ where } \mu = \begin{cases} e_{v_k}(k = 2,5,8,11,\ldots,n-10,n-7,n-4,n-1) \text{ or} \\ e_k(k = 2,4,5,7,\ldots,n-7,n-5,n-4,n-2) \end{cases} \end{cases}$$

Case (ii): For $n \equiv 1(mod\, 3)$.

$$R_{(1)} - \gamma\left(L\left(F_{1,n}\right), \mu\right) = \left\lceil \frac{n}{3} \right\rceil \text{ where } \mu = \begin{cases} e_{v_k}(k \in [1; n: 1]) \text{ or} \\ e_k(k \in [1; n-1: 1]) \end{cases}$$

Case (iii): For $n \equiv 2(mod\, 3)$.

$$R_{(1)} - \gamma\left(L\left(F_{1,n}\right), \mu\right) = \begin{cases} \left\lceil \frac{n+2}{3} \right\rceil \text{ where } \mu = e_{v_k}(k = 3,6,9,12,\ldots,n-11,n-8,n-5,n-2) \\ \left\lceil \frac{n}{3} \right\rceil \text{ where } \mu = \begin{cases} e_{v_k}(k = 1,2,4,5,\ldots,n-4,n-3,n-1,n) \text{ or} \\ e_k(k \in [1; n-1: 1]) \end{cases} \end{cases}$$

References

[1]. [1] Ore, O., Theory of Graphs, Amer. Math. Soc. Colloq. Publ., 38 (Amer. Math. Soc., Providence, RI), 1962.

[2]. [2] Gross, J. T. and Yellen, J. Graph Theory and Its Applications, 2nd ed. Boca Raton, FL: CRC Press, pp. 20 and 265, 2006.

[3]. [3] G. Rajasekar and G. Rajasekar, Reserved Domination Number of Graphs, Turkish Online Journal of Qualitative Inquiry (TOJQI), Vol.12 (2021), Issue.6, pp. 9199-9209.

[4]. [4] G. Rajasekar and K. Nagarajan (2019) Location domination number of line graph, Journal of Discrete Mathematical Sciences and Cryptography, 22:5, 777-786, DOI:10.1080/09720529.2019.1681694.

[5]. [5] Dr.G. Rajasekar and G. Rajasekar, Reserved Domination Number of some Graphs, Turkish Journal of Computer and Mathematics Education, Vol.12 No.11 (2021), pp. 2166-2181.

[6]. [6] G. Rajasekar and Govindan Rajasekar, 2-reserved domination number of graphs, Advances and Applications

in Discrete Mathematics 27(2) (2021), 249-264. DOI:10.17654/DM027010249.

[7]. [7] G. Rajasekar and G. Rajasekar, Reserved Domination Number of Complement of a Graphs, South East Asian J. of Mathematics and Mathematical Sciences, vol. 18 (2022), pp. 173-180.