A Trilevel $r$-Interdiction Selective Multi-Depot Vehicle Routing Problem

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Supplementary Material

Results obtained on 3LRI-SMDVRP

The results of the two proposed reduction methods (REDUCTION 1 and 2) applied to 33 3LRI-SMDVRP instances with different value of $u = (1, ..., 5)$ and $r = (1, ..., 5)$ are given in following tables. For each instance, the solution value ($Obj \_Val$) and the solution time are reported. The $R_i$ column shows which reduction method is used ($R_1$: REDUCTION 1, $R_2$: REDUCTION 2). The ID columns indicate the IDs of the protected depots ($u$ _ID) and interdicted depots ($r$ _ID). The MNPP and VND+TSH Calls columns stand for the maximum number of possible patterns $\binom{m}{r}$ and the number of times VND+TSH is called by each reduction method, respectively. It must be note that no such instance exists for values of $u = 5$ and $r = 5$. These results can be found also in excel file which is available at ……….

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Table S1. Results of 3LRI-SMDVRP instances with $u = 1$, $r = 1$.

| Instance | $n$  | $m$  | $R_i$ | $u_{ID}$ | $r_{ID}$ | Obj_Value | MNPP | VND+TSH Calls | Time (s) |
|----------|-----|-----|------|--------|--------|-----------|------|----------------|---------|
| p01      | 50  | 4   | R1   | 2      | 4      | 578.82    | 4    | 4              | 285.28  |
| p02      | 50  | 4   | R1   | 2      | 1      | 461.69    | 4    | 4              | 308.65  |
| p03      | 75  | 5   | R1   | 3      | 2      | 667.18    | 5    | 4              | 365.07  |
| p04      | 100 | 2   | R2   | 1      | 2      | 1146.34   | 2    | 1              | 108.93  |
| p05      | 100 | 2   | R2   | 1      | 2      | 852.06    | 2    | 1              | 144.36  |
| p06      | 100 | 3   | R1   | 1      | 3      | 975.89    | 3    | 3              | 578.40  |
| p07      | 100 | 4   | R1   | 4      | 1      | 914.08    | 4    | 4              | 829.94  |
| p08      | 249 | 2   | R2   | 1      | 2      | 5521.92   | 2    | 2              | 725.61  |
| p09      | 249 | 3   | R1   | 1      | 2      | 4654.54   | 3    | 2              | 641.53  |
| p10      | 249 | 4   | R1   | 2      | 1      | 4078.68   | 4    | 2              | 558.33  |
| p11      | 249 | 5   | R1   | 2      | 4      | 3865.18   | 5    | 5              | 1627.87 |
| p12      | 80  | 2   | R2   | 2      | 1      | 1771.21   | 2    | 2              | 171.77  |
| p13      | 80  | 2   | R2   | 2      | 1      | 3813.42   | 2    | 2              | 135.37  |
| p14      | 80  | 2   | R2   | 1      | 2      | 4074.55   | 2    | 2              | 130.65  |
| p15      | 160 | 4   | R1   | 2      | 3      | 2959.85   | 4    | 4              | 438.18  |
| p16      | 160 | 4   | R1   | 3      | 2      | 4734.88   | 4    | 4              | 336.99  |
| p17      | 160 | 4   | R1   | 2      | 1      | 5174.04   | 4    | 2              | 168.58  |
| p18      | 240 | 6   | R1   | 5      | 6      | 3850.64   | 6    | 2              | 318.69  |
| p19      | 240 | 6   | R1   | 2      | 6      | 5924.58   | 6    | 4              | 846.72  |
| p20      | 240 | 6   | R1   | 6      | 2      | 6399.78   | 6    | 2              | 375.23  |
| p21      | 360 | 9   | R1   | 3      | 7      | 6144.41   | 9    | 5              | 5302.09 |
| p22      | 360 | 9   | R1   | 5      | 7      | 7847.96   | 9    | 4              | 2279.97 |
| p23      | 360 | 9   | R1   | 1      | 5      | 8357.61   | 9    | 4              | 2427.22 |
| pr01     | 48  | 4   | R1   | 3      | 4      | 701.02    | 4    | 4              | 145.43  |
| pr02     | 96  | 4   | R1   | 1      | 4      | 985.81    | 4    | 3              | 450.17  |
| pr03     | 144 | 4   | R1   | 2      | 3      | 1638.71   | 4    | 3              | 302.68  |
| pr04     | 192 | 4   | R1   | 4      | 3      | 1746.94   | 4    | 4              | 651.83  |
| pr05     | 240 | 4   | R1   | 1      | 4      | 2493.55   | 4    | 3              | 1921.06 |
| pr06     | 288 | 4   | R1   | 3      | 2      | 2720.58   | 4    | 3              | 2090.29 |
| pr07     | 72  | 6   | R1   | 4      | 2      | 1013.35   | 6    | 3              | 253.52  |
| pr08     | 144 | 6   | R1   | 5      | 1      | 1612.16   | 6    | 4              | 440.18  |
| pr09     | 216 | 6   | R1   | 3      | 4      | 1864.8    | 6    | 6              | 1055.36 |
| pr10     | 288 | 6   | R1   | 4      | 1      | 2867.17   | 6    | 5              | 3611.38 |

|          | R1 | R2 | Average | Overall |
|----------|----|----|---------|---------|
| Time (s) | 5.1 | 3.6 | 1059.65 | 909.92  |
Table S2. Results of 3LRI-SMDVRP instances with $u = 1$, $r = 2$.

| Instance | $n$ | $m$ | $R_i$ | $u_{ID}$ | $r_{ID}$ | Obj_Value | MNPP | VND+TSH Calls | Time (s) |
|----------|----|----|-------|---------|---------|-----------|------|---------------|----------|
| p01      | 50 | 4  | R1    | 2       | 3,4     | 621.18    | 6    | 5             | 232.55   |
| p02      | 50 | 4  | R1    | 2       | 3,4     | 484.77    | 6    | 6             | 325.95   |
| p03      | 75 | 5  | R1    | 3       | 1,2     | 700.09    | 10   | 9             | 807.22   |
| p06      | 100| 3  | R2    | 1       | 2,3     | 1173.07   | 3    | 2             | 215.10   |
| p07      | 100| 4  | R1    | 3       | 1,4     | 1034.45   | 6    | 3             | 357.50   |
| p09      | 249| 3  | R2    | 2       | 1,3     | 5231.99   | 3    | 2             | 536.33   |
| p10      | 249| 4  | R1    | 2       | 1,4     | 4549.57   | 6    | 5             | 1459.78  |
| p11      | 249| 5  | R1    | 4       | 1,2     | 4395.47   | 10   | 3             | 766.49   |
| p15      | 160| 4  | R1    | 4       | 2,3     | 3629.83   | 6    | 3             | 482.10   |
| p16      | 160| 4  | R1    | 1       | 2,3     | 7276.99   | 6    | 4             | 446.34   |
| p17      | 160| 4  | R1    | 3       | 1,2     | 7711.25   | 6    | 4             | 393.90   |
| p18      | 240| 6  | R1    | 2       | 3,4     | 4405.02   | 15   | 5             | 996.25   |
| p19      | 240| 6  | R1    | 2       | 5,6     | 8512.52   | 15   | 2             | 710.54   |
| p20      | 240| 6  | R1    | 5       | 2,3     | 9051.25   | 15   | 2             | 558.96   |
| p21      | 360| 9  | R1    | 8       | 2,3     | 6847.47   | 36   | 3             | 2195.12  |
| p22      | 360| 9  | R1    | 2       | 3,4     | 10346.69  | 36   | 5             | 4341.56  |
| p23      | 360| 9  | R1    | 4       | 2,3     | 10972.82  | 36   | 3             | 2142.80  |
| pr01     | 48 | 4  | R1    | 4       | 1,3     | 729.64    | 6    | 5             | 193.47   |
| pr02     | 96 | 4  | R1    | 1       | 2,3     | 1060.77   | 6    | 5             | 480.93   |
| pr03     | 144| 4  | R1    | 3       | 1,4     | 1763.9    | 6    | 6             | 618.05   |
| pr04     | 192| 4  | R1    | 4       | 2,3     | 1857.56   | 6    | 6             | 834.39   |
| pr05     | 240| 4  | R1    | 1       | 2,4     | 2623.29   | 6    | 5             | 3232.47  |
| pr06     | 288| 4  | R1    | 3       | 1,2     | 3100.89   | 6    | 4             | 2002.09  |
| pr07     | 72 | 6  | R1    | 2       | 3,4     | 1022.39   | 15   | 11            | 746.14   |
| pr08     | 144| 6  | R1    | 5       | 1,6     | 1659.93   | 15   | 12            | 1200.93  |
| pr09     | 216| 6  | R1    | 3       | 2,5     | 1940.46   | 15   | 11            | 1960.03  |
| pr10     | 288| 6  | R1    | 5       | 3,4     | 3025.84   | 15   | 6             | 3891.62  |

| R1       | 12.4 | 5.3       | 1255.09 |
| R2       | 3    | 2         | 375.72  |
| Overall  | 11.7 | 5.1       | 1189.95 |
Table S3. Results of 3LRI-SMDVRP instances with $u = 1$, $r = 3$.

| Instance | n  | m  | $R_l$ | $u\_ID$ | $r\_ID$ | Obj Value | MNPP | VND+TSH Calls | Time (s) |
|----------|----|----|-------|---------|---------|-----------|------|---------------|----------|
| p01      | 50 | 4  | R2    | 2       | 1,3,4   | 655.63    | 4    | 1             | 33.18    |
| p02      | 50 | 4  | R2    | 2       | 1,3,4   | 502.07    | 4    | 1             | 54.93    |
| p03      | 75 | 5  | R1    | 3       | 1,2,4   | 755.97    | 10   | 9             | 947.65   |
| p07      | 100| 4  | R2    | 3       | 1,2,4   | 1146.34   | 4    | 2             | 267.15   |
| p10      | 249| 4  | R2    | 2       | 1,3,4   | 5112.91   | 4    | 1             | 450.23   |
| p11      | 249| 5  | R1    | 2       | 3,4,5   | 4758.56   | 10   | 3             | 838.88   |
| p15      | 160| 4  | R2    | 2       | 1,3,4   | 4499.63   | 4    | 4             | 502.27   |
| p16      | 160| 4  | R2    | 3       | 1,2,4   | 9845.51   | 4    | 4             | 322.35   |
| p17      | 160| 4  | R2    | 4       | 1,2,3   | 10282.56  | 4    | 4             | 265.04   |
| p18      | 240| 6  | R1    | 5       | 1,2,3   | 5021.35   | 20   | 5             | 1082.90  |
| p19      | 240| 6  | R1    | 2       | 1,5,6   | 10969.28  | 20   | 6             | 2301.33  |
| p20      | 240| 6  | R1    | 4       | 1,2,6   | 11513.41  | 20   | 9             | 2980.80  |
| p21      | 360| 9  | R1    | 4       | 2,3,9   | 7513.16   | 84   | 4             | 3256.39  |
| p22      | 360| 9  | R1    | 2       | 5,6,7   | 12956.84  | 84   | 4             | 4543.43  |
| p23      | 360| 9  | R1    | 5       | 2,3,9   | 13574.76  | 84   | 4             | 3496.32  |
| pr01     | 48 | 4  | R2    | 1       | 2,3,4   | 753.59    | 4    | 2             | 72.38    |
| pr02     | 96 | 4  | R2    | 1       | 2,3,4   | 1088.19   | 4    | 1             | 130.98   |
| pr03     | 144| 4  | R2    | 4       | 1,2,3   | 1923.07   | 4    | 1             | 104.76   |
| pr04     | 192| 4  | R2    | 1       | 2,3,4   | 1987.31   | 4    | 1             | 215.87   |
| pr05     | 240| 4  | R2    | 2       | 1,3,4   | 2877.93   | 4    | 1             | 587.87   |
| pr06     | 288| 4  | R2    | 1       | 2,3,4   | 3508.28   | 4    | 1             | 618.27   |
| pr07     | 72 | 6  | R1    | 4       | 2,3,5   | 1049.11   | 20   | 13            | 950.50   |
| pr08     | 144| 6  | R1    | 3       | 1,2,6   | 1752.33   | 20   | 12            | 1050.96  |
| pr09     | 216| 6  | R1    | 2       | 1,3,4   | 2220.1    | 20   | 2             | 310.63   |
| pr10     | 288| 6  | R1    | 3       | 1,2,6   | 3345.2    | 20   | 3             | 2039.27  |

|        | R1  |     |     |       |         |           |      |              |          |
|--------|-----|-----|-----|-------|---------|-----------|------|---------------|----------|
| Average| R1  | 34.3| 6.2 |       |         |           |      | 1983.25       |          |
| Overall|     | 18.6| 3.9 |       |         |           |      | 1096.97       |          |

Table S4. Results of 3LRI-SMDVRP instances with $u = 1$, $r = 4$.

| Instance | n  | m  | $R_l$ | $u\_ID$ | $r\_ID$ | Obj Value | MNPP | VND+TSH Calls | Time (s) |
|----------|----|----|-------|---------|---------|-----------|------|---------------|----------|
| p03      | 75 | 5  | R2    | 1       | 2,3,4,5 | 798.93    | 5    | 1             | 128.97   |
| p11      | 249| 5  | R2    | 4       | 1,2,3,5 | 5138.5    | 5    | 2             | 415.13   |
| p18      | 240| 6  | R1    | 4       | 1,2,5,6 | 5759.7    | 15   | 4             | 698.20   |
| p19      | 240| 6  | R1    | 1       | 2,3,5,6 | 13491.13  | 15   | 6             | 2044.96  |
| p20      | 240| 6  | R1    | 1       | 2,3,5,6 | 14203.8   | 15   | 3             | 718.23   |
| p21      | 360| 9  | R1    | 1       | 3,4,5,6 | 8252.09   | 126  | 5             | 3734.87  |
| p22      | 360| 9  | R1    | 1       | 2,7,8,9 | 15311.09  | 126  | 8             | 10047.92 |
| p23      | 360| 9  | R1    | 1       | 3,4,5,9 | 16079.6   | 126  | 9             | 10451.41 |
| pr07     | 72 | 6  | R1    | 5       | 2,3,4,5 | 1095.95   | 15   | 10            | 503.65   |
| pr08     | 144| 6  | R1    | 6       | 1,2,4,5 | 1847.88   | 15   | 7             | 519.45   |
| pr09     | 216| 6  | R1    | 6       | 1,3,4,5 | 2280.6    | 15   | 6             | 761.34   |
| pr10     | 288| 6  | R1    | 3       | 1,2,4,6 | 3591.6    | 15   | 5             | 3666.81  |

|        | R1  |     |     |       |         |           |      |              |          |
|--------|-----|-----|-----|-------|---------|-----------|------|---------------|----------|
| Average| R2  | 48.3| 6.3 |       |         |           |      | 3314.69       |          |
| Overall|     | 41.1| 5.5 |       |         |           |      | 2807.58       |          |

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Table S5. Results of 3LRI-SMDVRP instances with \( u = 1, \ r = 5 \).

| Instance | \( n \) | \( m \) | \( R_i \) | \( u \_ID \) | \( r \_ID \) | \( Obj\_Value \) | \( MNPP \) | \( VND+TSH \) Calls | Time (s) |
|----------|--------|--------|----------|----------|----------|----------------|-------|----------------|--------|
| p18      | 240    | 6      | R2       | 4        | 1, 2, 3, 5, 6 | 6236.61       | 6     | 2              | 486.59 |
| p19      | 240    | 6      | R2       | 4        | 1, 2, 3, 5, 6 | 16219.87      | 6     | 6              | 1409.62|
| p20      | 240    | 6      | R2       | 4        | 1, 2, 3, 5, 6 | 16688.58      | 6     | 6              | 762.57 |
| p21      | 360    | 9      | R1       | 1        | 2, 3, 4, 8, 9 | 8953.72       | 126   | 5              | 4062.04|
| p22      | 360    | 9      | R1       | 1        | 2, 3, 4, 8, 9 | 17921.62      | 126   | 8              | 12008.72|
| p23      | 360    | 9      | R1       | 1        | 3, 4, 5, 6, 7 | 18670.84      | 126   | 9              | 11854.92|
| pr07     | 72     | 6      | R2       | 5        | 1, 2, 3, 4, 6 | 1115.05       | 6     | 2              | 89.00  |
| pr08     | 144    | 6      | R2       | 6        | 1, 2, 3, 4, 5 | 1908.85       | 6     | 1              | 62.29  |
| pr09     | 216    | 6      | R2       | 2        | 1, 3, 4, 5, 6 | 2346.07       | 6     | 5              | 638.52 |
| pr10     | 288    | 6      | R2       | 3        | 1, 2, 4, 5, 6 | 3846.27       | 6     | 1              | 555.16 |

Average R1: 126, 7.3, 9308.56
Average R2: 6, 3.3, 571.96
Overall: 42, 4.5, 3192.94

Table S6. Results of 3LRI-SMDVRP instances with \( u = 2, \ r = 1 \).

| Instance | \( n \) | \( m \) | \( R_i \) | \( u \_ID \) | \( r \_ID \) | \( Obj\_Value \) | \( MNPP \) | \( VND+TSH \) Calls | Time (s) |
|----------|--------|--------|----------|----------|----------|----------------|-------|----------------|--------|
| p01      | 50     | 4      | R1       | 2, 4     | 1        | 578.43        | 4     | 4              | 284.81 |
| p02      | 50     | 4      | R1       | 1, 2     | 3        | 460.73        | 4     | 4              | 310.33 |
| p03      | 75     | 5      | R1       | 2, 3     | 5        | 646.06        | 5     | 5              | 422.62 |
| p06      | 100    | 4      | R2       | 1, 2     | 3        | 975.89        | 3     | 1              | 133.04 |
| p07      | 100    | 4      | R1       | 1, 4     | 3        | 901.65        | 4     | 4              | 816.19 |
| p09      | 249    | 3      | R2       | 1, 2     | 3        | 4361.07       | 3     | 1              | 464.34 |
| p10      | 249    | 4      | R1       | 1, 2     | 3        | 4052.86       | 4     | 3              | 853.73 |
| p11      | 249    | 5      | R1       | 2, 4     | 3        | 3846.73       | 5     | 5              | 1646.93|
| p15      | 160    | 4      | R1       | 2, 3     | 1        | 2941.64       | 4     | 4              | 433.43 |
| p16      | 160    | 4      | R1       | 2, 3     | 1        | 4717.62       | 4     | 4              | 336.34 |
| p17      | 160    | 4      | R1       | 1, 4     | 2        | 5097.38       | 3     | 3              | 253.75 |
| p18      | 240    | 6      | R1       | 5, 6     | 3        | 3832.05       | 6     | 3              | 471.09 |
| p19      | 240    | 6      | R1       | 2, 6     | 5        | 5918.05       | 6     | 4              | 846.36 |
| p20      | 240    | 6      | R1       | 1, 6     | 2        | 6399.78       | 6     | 3              | 616.62 |
| p21      | 360    | 9      | R1       | 3, 7     | 9        | 6077.33       | 9     | 6              | 6590.10|
| p22      | 360    | 9      | R1       | 5, 7     | 3        | 7773.17       | 9     | 4              | 2277.42|
| p23      | 360    | 9      | R1       | 5, 7     | 9        | 8357.61       | 9     | 5              | 2973.60|
| pr01     | 48     | 4      | R1       | 1, 3     | 4        | 701.02        | 4     | 4              | 144.01 |
| pr02     | 96     | 4      | R1       | 1, 4     | 3        | 972.92        | 4     | 4              | 655.17 |
| pr03     | 144    | 4      | R1       | 2, 3     | 1        | 1631.92       | 4     | 3              | 300.50 |
| pr04     | 192    | 4      | R1       | 3, 4     | 1        | 1743.18       | 4     | 4              | 650.30 |
| pr05     | 240    | 4      | R1       | 1, 4     | 3        | 2406.68       | 4     | 3              | 1902.92|
| pr06     | 288    | 4      | R1       | 2, 3     | 1        | 2710.94       | 4     | 4              | 2392.40|
| pr07     | 72     | 6      | R1       | 2, 4     | 3        | 1000.2        | 6     | 3              | 254.01 |
| pr08     | 144    | 6      | R1       | 1, 5     | 2        | 1592.49       | 6     | 5              | 579.02 |
| pr09     | 216    | 6      | R1       | 3, 4     | 6        | 1856.08       | 6     | 6              | 1059.03|
| pr10     | 288    | 6      | R1       | 1, 4     | 3        | 2861.2        | 6     | 6              | 4735.28|

Average R1: 5.2, 4.1, 1272.24
Average R2: 3, 1, 298.69
Overall: 5.1, 3.9, 1200.12
Table S7. Results of 3LRI-SMDVRP instances with $u = 2, r = 2$.

| Instance | $n$  | $m$ | $R_i$ | $u_ID$ | $r_ID$ | Obj. Value | MNPP | VND+TSH Calls | Time (s) |
|----------|------|-----|-------|--------|--------|------------|------|----------------|----------|
| p01      | 50   | 4   | R2    | 1.3    | 2.4    | 611.76     | 6    | 3              | 152.43   |
| p02      | 50   | 4   | R2    | 2.4    | 1.3    | 480.24     | 6    | 1              | 43.54    |
| p03      | 75   | 5   | R1    | 2.3    | 4.5    | 682.23     | 10   | 10             | 881.39   |
| p07      | 100  | 4   | R2    | 1.2    | 3.4    | 967.69     | 6    | 1              | 106.24   |
| p10      | 249  | 4   | R2    | 2.4    | 1.3    | 4508.02    | 6    | 4              | 1293.30  |
| p11      | 249  | 5   | R1    | 1.4    | 2.3    | 4164.69    | 10   | 6              | 1548.61  |
| p15      | 160  | 4   | R2    | 1.3    | 2.4    | 3356.83    | 6    | 1              | 130.46   |
| p16      | 160  | 4   | R2    | 2.4    | 1.3    | 6871.84    | 6    | 2              | 203.55   |
| p17      | 160  | 4   | R2    | 2.4    | 1.3    | 7598.45    | 6    | 6              | 597.28   |
| p18      | 240  | 6   | R1    | 2.4    | 5.6    | 4365.6     | 15   | 9              | 1750.55  |
| p19      | 240  | 6   | R1    | 2.6    | 3.4    | 8289.7     | 15   | 5              | 1957.88  |
| p20      | 240  | 6   | R1    | 2.6    | 4.5    | 9003.52    | 15   | 5              | 1698.43  |
| p21      | 360  | 9   | R1    | 2.8    | 6.7    | 6818.49    | 36   | 7              | 5379.40  |
| p22      | 360  | 9   | R1    | 2.3    | 7.8    | 10286.51   | 36   | 8              | 7035.67  |
| p23      | 360  | 9   | R1    | 2.4    | 5.6    | 10927.52   | 36   | 6              | 4700.40  |
| pr01     | 48   | 4   | R2    | 1.3    | 2.4    | 701.02     | 6    | 1              | 39.50    |
| pr02     | 96   | 4   | R2    | 3.4    | 1.2    | 1019.8     | 6    | 1              | 99.67    |
| pr03     | 144  | 4   | R2    | 2.3    | 1.4    | 1763.9     | 6    | 1              | 79.09    |
| pr04     | 192  | 4   | R2    | 2.4    | 1.3    | 1804.44    | 6    | 1              | 214.12   |
| pr05     | 240  | 4   | R2    | 3.4    | 1.2    | 2551.41    | 6    | 2              | 913.76   |
| pr06     | 288  | 4   | R2    | 2.3    | 1.4    | 2874.94    | 6    | 1              | 583.28   |
| pr07     | 72   | 6   | R1    | 3.4    | 2.5    | 1002.25    | 15   | 12             | 797.68   |
| pr08     | 144  | 6   | R1    | 1.5    | 3.6    | 1623.7     | 15   | 15             | 1496.00  |
| pr09     | 216  | 6   | R1    | 2.6    | 1.4    | 1934.24    | 15   | 11             | 1962.55  |
| pr10     | 288  | 6   | R1    | 3.4    | 2.6    | 2956.41    | 15   | 8              | 4883.00  |
| Overall  |      |     |       |        |        |            |      |                | 2840.96  |

| Instance | $n$  | $m$ | $R_i$ | $u_ID$ | $r_ID$ | Obj. Value | MNPP | VND+TSH Calls | Time (s) |
|----------|------|-----|-------|--------|--------|------------|------|----------------|----------|
| R1       |      |     |       |        |        |            |      |                | 19.4     |
| Average  |      |     |       |        |        |            |      |                | 6        |
| Overall  |      |     |       |        |        |            |      |                | 12.4     |

Table S8. Results of 3LRI-SMDVRP instances with $u = 2, r = 3$.

| Instance | $n$  | $m$ | $R_i$ | $u_ID$ | $r_ID$ | Obj. Value | MNPP | VND+TSH Calls | Time (s) |
|----------|------|-----|-------|--------|--------|------------|------|----------------|----------|
| p03      | 75   | 5   | R2    | 2.4    | 1.3    | 731.41     | 10   | 1              | 87.10    |
| p11      | 249  | 4   | R2    | 1.4    | 2.3    | 4350.55    | 10   | 1              | 312.21   |
| p18      | 240  | 6   | R1    | 2.5    | 1.4    | 4873.09    | 20   | 14             | 2898.70  |
| p19      | 240  | 6   | R1    | 2.5    | 1.3    | 10836.91   | 20   | 10             | 3975.65  |
| p20      | 240  | 6   | R1    | 1.4    | 2.3    | 11462.95   | 20   | 13             | 4305.36  |
| p21      | 360  | 9   | R1    | 4.9    | 5.6    | 7464.44    | 84   | 8              | 5542.45  |
| p22      | 360  | 9   | R1    | 5.9    | 6.7    | 12644.15   | 84   | 6              | 6743.71  |
| p23      | 360  | 9   | R1    | 5.9    | 1.4    | 13530.81   | 84   | 7              | 6711.82  |
| pr07     | 72   | 6   | R1    | 2.3    | 1.5    | 1026.66    | 20   | 20             | 1446.07  |
| pr08     | 144  | 6   | R1    | 1.5    | 2.4    | 1702.87    | 20   | 17             | 1541.49  |
| pr09     | 216  | 6   | R1    | 2.4    | 3.5    | 1970.94    | 20   | 17             | 3147.14  |
| pr10     | 288  | 6   | R1    | 1.5    | 2.4    | 3114.95    | 20   | 12             | 7874.21  |
| Overall  |      |     |       |        |        |            |      |                | 39.2     |

| Instance | $n$  | $m$ | $R_i$ | $u_ID$ | $r_ID$ | Obj. Value | MNPP | VND+TSH Calls | Time (s) |
|----------|------|-----|-------|--------|--------|------------|------|----------------|----------|
| R1       |      |     |       |        |        |            |      |                | 12.4     |
| Average  |      |     |       |        |        |            |      |                | 10.5     |
| Overall  |      |     |       |        |        |            |      |                | 34.3     |
Table S9. Results of 3LRI-SMDVRP instances with $u = 2$, $r = 4$.

| Instance | $n$ | $m$ | $R_i$ | $u_{ID}$ | $r_{ID}$ | Obj_Value | MNPP | VND+TSH Calls | Time (s) |
|----------|-----|-----|-------|----------|----------|-----------|------|---------------|----------|
| p18      | 240 | 6   | R2    | 2.5      | 1,3,4,6  | 5406.59   | 15   | 7             | 1592.42  |
| p19      | 240 | 6   | R2    | 4.6      | 1,2,3,5  | 12901.61  | 15   | 8             | 3316.17  |
| p20      | 240 | 6   | R2    | 4.6      | 1,2,3,5  | 14004.47  | 15   | 15            | 5288.62  |
| p21      | 360 | 9   | R1    | 2.6      | 5,7,8,9  | 7944.48   | 126  | 11            | 8768.63  |
| p22      | 360 | 9   | R1    | 2.6      | 5,7,8,9  | 15125.52  | 126  | 19            | 24771.32 |
| p23      | 360 | 9   | R1    | 7.9      | 1,4,5,8  | 16064.52  | 126  | 17            | 19990.65 |
| pr07     | 72  | 6   | R2    | 3.5      | 1,2,4,6  | 1040.92   | 15   | 2             | 131.63   |
| pr08     | 144 | 6   | R2    | 1.5      | 2,3,4,6  | 1702.82   | 15   | 3             | 324.21   |
| pr09     | 216 | 6   | R2    | 2.4      | 1,3,5,6  | 2007.14   | 15   | 5             | 909.27   |
| pr10     | 288 | 6   | R2    | 2.5      | 1,3,4,6  | 3203.29   | 15   | 3             | 1736.86  |
| Average  |     |     | R1    |          |          |           |      |               |          |
| Overall  |     |     |       |          |          |           |      |               |          |

Table S10. Results of 3LRI-SMDVRP instances with $u = 2$, $r = 5$.

| Instance | $n$ | $m$ | $R_i$ | $u_{ID}$ | $r_{ID}$ | Obj_Value | MNPP | VND+TSH Calls | Time (s) |
|----------|-----|-----|-------|----------|----------|-----------|------|---------------|----------|
| p21      | 360 | 9   | R1    | 4.8      | 1,5,6,7,9| 8490.73   | 126  | 30            | 27824.00 |
| p22      | 360 | 9   | R1    | 2.6      | 4,5,7,8,9| 17577     | 126  | 24            | 37813.13 |
| p23      | 360 | 9   | R1    | 4.8      | 1,2,3,5,6| 18556.13  | 126  | 25            | 34065.42 |
| Average  |     |     | R1    |          |          |           |      |               |          |
| Overall  |     |     |       |          |          |           |      |               |          |
**Table S11.** Results of 3LRI-SMDVRP instances with \( u = 3, \ r = 1 \).

\[
\begin{array}{ccccccccc}
\text{Instance} & n & m & R_i & u_{ID} & r_{ID} & \text{Obj. Value} & \text{MNPP} & \text{VND+TSH Calls} & \text{Time (s)} \\
\hline
p01 & 50 & 4 & R2 & 1.2,4 & 3 & 573.37 & 4 & 1 & 68.12 \\
p02 & 50 & 4 & R2 & 1.2,4 & 3 & 460.73 & 4 & 2 & 154.41 \\
p03 & 75 & 5 & R1 & 2.3,5 & 4 & 645.73 & 5 & 5 & 422.24 \\
p07 & 100 & 4 & R2 & 1.2,4 & 3 & 901.15 & 4 & 2 & 492.01 \\
p10 & 249 & 4 & R2 & 1.2,3 & 4 & 4027.65 & 4 & 3 & 981.62 \\
p11 & 249 & 5 & R1 & 2.3,4 & 1 & 3843.38 & 5 & 5 & 1623.26 \\
p15 & 160 & 4 & R2 & 1.2,3 & 4 & 2929.46 & 4 & 1 & 97.63 \\
p16 & 160 & 4 & R2 & 1.2,3 & 4 & 4617.06 & 4 & 4 & 335.14 \\
p17 & 160 & 4 & R2 & 1.2,4 & 3 & 5095.39 & 4 & 4 & 342.67 \\
p18 & 240 & 6 & R1 & 3.5,6 & 2 & 3812.05 & 6 & 4 & 610.68 \\
p19 & 240 & 6 & R1 & 2.5,6 & 3 & 5894.56 & 6 & 4 & 846.32 \\
p20 & 240 & 6 & R1 & 1.3,6 & 2 & 6399.78 & 6 & 4 & 825.89 \\
p21 & 360 & 9 & R1 & 3.7,9 & 4 & 6022 & 9 & 9 & 8973.16 \\
p22 & 360 & 9 & R1 & 3.7,9 & 9 & 7752.31 & 9 & 5 & 2816.76 \\
p23 & 360 & 9 & R1 & 5.7,9 & 3 & 8357.14 & 9 & 6 & 3574.55 \\
pr01 & 48 & 4 & R2 & 1.3,4 & 2 & 698.89 & 4 & 1 & 35.30 \\
pr02 & 96 & 4 & R2 & 1.3,4 & 2 & 948.98 & 4 & 1 & 204.09 \\
pr03 & 144 & 4 & R2 & 1.2,3 & 4 & 1583.7 & 4 & 1 & 60.29 \\
pr04 & 192 & 4 & R2 & 1.3,4 & 2 & 1724.38 & 4 & 3 & 402.84 \\
pr05 & 240 & 4 & R2 & 1.3,4 & 2 & 2347.16 & 4 & 1 & 496.10 \\
pr06 & 288 & 4 & R2 & 1.2,3 & 4 & 2690.5 & 4 & 3 & 1529.17 \\
pr07 & 72 & 6 & R1 & 2.3,4 & 5 & 969.89 & 6 & 5 & 350.83 \\
pr08 & 144 & 6 & R1 & 1.2,5 & 6 & 1579.79 & 6 & 5 & 581.23 \\
pr09 & 216 & 6 & R1 & 3.4,6 & 5 & 1849.75 & 6 & 6 & 1057.16 \\
pr10 & 288 & 6 & R1 & 1.3,4 & 5 & 2822.88 & 6 & 6 & 4684.29 \\
\hline
\text{Average} & & & R1 & & & & & 6.6 & 5.3 & 2197.20 \\
Overall & & & & & & & & 4 & 2.1 & 399.95 \\
\end{array}
\]

**Table S12.** Results of 3LRI-SMDVRP instances with \( u = 3, \ r = 2 \).

\[
\begin{array}{ccccccccc}
\text{Instance} & n & m & R_i & u_{ID} & r_{ID} & \text{Obj. Value} & \text{MNPP} & \text{VND+TSH Calls} & \text{Time (s)} \\
\hline
p03 & 75 & 5 & R2 & 2.3,4 & 1.5 & 663.73 & 10 & 1 & 67.58 \\
p11 & 249 & 5 & R2 & 1.3,4 & 2.5 & 4060.68 & 10 & 5 & 1700.00 \\
p18 & 240 & 6 & R1 & 2.4,6 & 3.5 & 4336.78 & 15 & 9 & 1721.68 \\
p19 & 240 & 6 & R1 & 2.4,6 & 3.5 & 8134.62 & 15 & 9 & 2911.72 \\
p20 & 240 & 6 & R1 & 2.4,6 & 3.5 & 8900.85 & 15 & 10 & 3111.95 \\
p21 & 360 & 9 & R1 & 2.6,8 & 4.5 & 6808.1 & 36 & 7 & 5371.68 \\
p22 & 360 & 9 & R1 & 2.3,8 & 5.6 & 10262.69 & 36 & 8 & 7047.46 \\
p23 & 360 & 9 & R1 & 1.3,5 & 7.8 & 10921.29 & 36 & 10 & 7856.52 \\
pr07 & 72 & 6 & R1 & 2.3,4 & 1.5 & 979.33 & 15 & 13 & 845.52 \\
pr08 & 144 & 6 & R1 & 1.3,5 & 2.4 & 1611.75 & 15 & 15 & 1520.88 \\
pr09 & 216 & 6 & R1 & 2.3,4 & 1.6 & 1892.07 & 15 & 14 & 2408.22 \\
pr10 & 288 & 6 & R1 & 2.3,4 & 1.5 & 2923.81 & 15 & 14 & 8222.85 \\
\hline
\text{Average} & & & R1 & & & & & 21.3 & 10.9 & 4101.85 \\
Overall & & & & & & & & 19.4 & 9.6 & 3565.51 \\
\end{array}
\]
### Table S13. Results of 3LRI-SMDVRP instances with $u = 3$, $r = 3$.

| Instance | $n$  | $m$  | $R_i$ | $u_\text{ID}$ | $r_\text{ID}$ | Obj Value | MNPP | VND+TSH Calls | Time (s) |
|----------|------|------|-------|---------------|---------------|-----------|------|---------------|----------|
| p18      | 240  | 6    | R2    | 2.4,6        | 1.3,5         | 4719.11   | 20   | 7             | 1466.57  |
| p19      | 240  | 6    | R2    | 1.3,5        | 2.4,6         | 10038.72  | 20   | 2             | 880.70   |
| p20      | 240  | 6    | R2    | 2.4,6        | 1.3,5         | 11199.34  | 20   | 20            | 6879.64  |
| p21      | 360  | 9    | R1    | 3.6,9        | 5.7,8         | 7219.2    | 84   | 21            | 15080.03 |
| p22      | 360  | 9    | R1    | 4.7,9        | 1.2,3         | 12452.19  | 84   | 28            | 28992.56 |
| p23      | 360  | 9    | R1    | 3.5,8        | 1.2,4         | 13470.12  | 84   | 13            | 12320.53 |
| pr07     | 72   | 6    | R2    | 2.4,5        | 1.3,6         | 1005.16   | 20   | 2             | 88.45    |
| pr08     | 144  | 6    | R2    | 1.5,6        | 2.3,4         | 1613.69   | 20   | 2             | 344.92   |
| pr09     | 216  | 6    | R2    | 2.3,4        | 1.5,6         | 1925.33   | 20   | 7             | 1263.07  |
| pr10     | 288  | 6    | R2    | 3.4,6        | 1.2,5         | 2898.05   | 20   | 2             | 1133.13  |

Average

| $R_1$ | 84 | 20.7 | 18797.71 |
| $R_2$ | 20 | 6   | 1722.35  |
| Overall | 39.2 | 10.4 | 6844.96  |

### Table S14. Results of 3LRI-SMDVRP instances with $u = 3$, $r = 4$.

| Instance | $n$  | $m$  | $R_i$ | $u_\text{ID}$ | $r_\text{ID}$ | Obj Value | MNPP | VND+TSH Calls | Time (s) |
|----------|------|------|-------|---------------|---------------|-----------|------|---------------|----------|
| p21      | 360  | 9    | R1    | 3.6,9        | 1.2,7,8       | 7730.68   | 126  | 42            | 32627.03 |
| p22      | 360  | 9    | R1    | 3.6,8        | 2.4,5,9       | 14782.99  | 126  | 45            | 56296.28 |
| p23      | 360  | 9    | R1    | 2.5,8        | 3.4,7,9       | 15991.34  | 126  | 38            | 46390.98 |

Average

| $R_1$ | 126 | 41.7 | 45104.76 |
| $R_2$ | -   | -    | -        |
| Overall | 126 | 41.7 | 45104.76 |

### Table S15. Results of 3LRI-SMDVRP instances with $u = 3$, $r = 5$.

| Instance | $n$  | $m$  | $R_i$ | $u_\text{ID}$ | $r_\text{ID}$ | Obj Value | MNPP | VND+TSH Calls | Time (s) |
|----------|------|------|-------|---------------|---------------|-----------|------|---------------|----------|
| p21      | 360  | 9    | R1    | 4.7,9        | 1.2,3,5,6     | 8297.25   | 126  | 70            | 65191.60 |
| p22      | 360  | 9    | R1    | 4.6,8        | 1.2,3,7,9     | 17140.1   | 126  | 73            | 112809.86|
| p23      | 360  | 9    | R1    | 1.3,7        | 4.5,6,8,9     | 18451.88  | 126  | 64            | 84543.27 |

Average

| $R_1$ | 126 | 69   | 87514.91 |
| $R_2$ | -   | -    | -        |
| Overall | 126 | 69   | 87514.91 |
### Table S16. Results of 3LRI-SMDVRP instances with \( u = 4, \ r = 1 \).

| Instance | \( n \) | \( m \) | \( R_i \) | \( u_{\, ID} \) | \( r_{\, ID} \) | \( Obj\_Value \) | MNPP | VND+TSH Calls | Time (s) |
|----------|--------|--------|----------|----------------|----------------|----------------|-----|--------------|----------|
| p03      | 75     | 5      | R2       | 2,3,4,5       | 1              | 636.18         | 5   | 1            | 62.32    |
| p11      | 249    | 5      | R2       | 1,2,3,4       | 5              | 3706.4         | 5   | 1            | 258.80   |
| p18      | 240    | 6      | R1       | 2,3,5,6       | 1              | 3707.66        | 6   | 6            | 929.40   |
| p19      | 240    | 6      | R1       | 2,3,5,6       | 1              | 5795.24        | 6   | 6            | 1230.69  |
| p20      | 240    | 6      | R1       | 2,3,5,6       | 1              | 6399.11        | 6   | 5            | 1041.25  |
| p21      | 360    | 9      | R1       | 3,4,7,9       | 8              | 5972.87        | 9   | 9            | 9020.41  |
| p22      | 360    | 9      | R1       | 3,5,7,9       | 6              | 7728.91        | 9   | 5            | 2835.03  |
| p23      | 360    | 9      | R1       | 3,5,7,9       | 4              | 8342.6         | 7   | 7            | 4237.15  |
| pr07     | 72     | 6      | R1       | 2,3,4,5       | 6              | 959.61         | 6   | 5            | 343.65   |
| pr08     | 144    | 6      | R1       | 1,2,5,6       | 4              | 1566.05        | 6   | 6            | 671.22   |
| pr09     | 216    | 6      | R1       | 3,4,5,6       | 1              | 1837.68        | 6   | 6            | 1053.29  |
| pr10     | 288    | 6      | R1       | 1,3,4,5       | 2              | 2787.85        | 6   | 6            | 4696.79  |

| Overall  |       |        | R1       | 6.9          | 6.1           | 2605.89        |     |              |          |

### Table S17. Results of 3LRI-SMDVRP instances with \( u = 4, \ r = 2 \).

| Instance | \( n \) | \( m \) | \( R_i \) | \( u_{\, ID} \) | \( r_{\, ID} \) | \( Obj\_Value \) | MNPP | VND+TSH Calls | Time (s) |
|----------|--------|--------|----------|----------------|----------------|----------------|-----|--------------|----------|
| p18      | 240    | 6      | R2       | 2,4,5,6       | 1,3            | 4137.6         | 15  | 4            | 791.00   |
| p19      | 240    | 6      | R2       | 1,2,3,5       | 4,6            | 7741.25        | 15  | 4            | 1245.60  |
| p20      | 240    | 6      | R2       | 2,4,5,6       | 1,3            | 8815.51        | 15  | 15           | 4691.26  |
| p21      | 360    | 9      | R1       | 3,5,7,9       | 1,4            | 6470.67        | 36  | 17           | 13805.22 |
| p22      | 360    | 9      | R1       | 3,5,7,9       | 1,8            | 9976.64        | 36  | 11           | 8949.73  |
| p23      | 360    | 9      | R1       | 2,4,5,8       | 7,9            | 10874.18       | 36  | 12           | 9451.14  |
| pr07     | 72     | 6      | R2       | 2,3,4,5       | 1,6            | 958.91         | 15  | 2            | 81.06    |
| pr08     | 144    | 6      | R2       | 1,4,5,6       | 2,3            | 1574.47        | 15  | 4            | 489.76   |
| pr09     | 216    | 6      | R2       | 3,4,5,6       | 1,2            | 1867           | 15  | 4            | 593.95   |
| pr10     | 288    | 6      | R2       | 1,2,3,4       | 5,6            | 2822.6         | 15  | 2            | 1380.24  |

| Overall  |       |        | R1       | 36.0         | 13.3          | 10735.36       |     |              |          |

### Table S18. Results of 3LRI-SMDVRP instances with \( u = 4, \ r = 3 \).

| Instance | \( n \) | \( m \) | \( R_i \) | \( u_{\, ID} \) | \( r_{\, ID} \) | \( Obj\_Value \) | MNPP | VND+TSH Calls | Time (s) |
|----------|--------|--------|----------|----------------|----------------|----------------|-----|--------------|----------|
| p21      | 360    | 9      | R1       | 3,5,7,9       | 1,2,4          | 6983.88        | 84  | 45           | 34133.74 |
| p22      | 360    | 9      | R1       | 2,4,6,8       | 3,7,9          | 12180.33       | 84  | 40           | 41243.95 |
| p23      | 360    | 9      | R1       | 1,5,7,9       | 2,3,4          | 13379.66       | 84  | 37           | 36641.83 |

| Overall  |       |        | R1       | 84           | 40.7          | 37339.84       |     |              |          |

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**Table S19.** Results of 3LRI-SMDVRP instances with $u = 4$, $r = 4$.

| Instance | $n$ | $m$ | $R_i$ | $u_{ID}$ | $r_{ID}$ | Obj Value | MNPP | VND+TSH Calls | Time (s) |
|----------|-----|-----|-------|----------|----------|-----------|------|---------------|----------|
| p21      | 360 | 9   | R1    | 2,4,6,8  | 3,5,7,9  | 7324.14   | 126  | 89            | 70537.92 |
| p22      | 360 | 9   | R1    | 2,4,6,8  | 3,5,7,9  | 14149.21  | 126  | 83            | 104115.72|
| p23      | 360 | 9   | R1    | 1,5,7,9  | 2,3,4,6  | 15803.41  | 126  | 73            | 88482.46 |
| **Average** |   |     |       |          |          |           |      |               | 87712.03 |

**Table S20.** Results of 3LRI-SMDVRP instances with $u = 4$, $r = 5$.

| Instance | $n$ | $m$ | $R_i$ | $u_{ID}$ | $r_{ID}$ | Obj Value | MNPP | VND+TSH Calls | Time (s) |
|----------|-----|-----|-------|----------|----------|-----------|------|---------------|----------|
| p21      | 360 | 9   | R2    | 3,5,7,9  | 1,2,4,6,8| 7778.45   | 126  | 5             | 3323.48  |
| p22      | 360 | 9   | R2    | 2,4,6,8  | 1,3,5,7,9| 16152.84  | 126  | 5             | 6970.73  |
| p23      | 360 | 9   | R2    | 2,4,6,8  | 1,3,5,7,9| 18127.61  | 126  | 12            | 13460.37 |
| **Average** |   |     |       |          |          |           |      |               | 7918.20  |

**Table S21.** Results of 3LRI-SMDVRP instances with $u = 5$, $r = 1$.

| Instance | $n$ | $m$ | $R_i$ | $u_{ID}$ | $r_{ID}$ | Obj Value | MNPP | VND+TSH Calls | Time (s) |
|----------|-----|-----|-------|----------|----------|-----------|------|---------------|----------|
| p18      | 240 | 6   | R2    | 1,2,3,5,6| 4        | 3707.66   | 6    | 5             | 770.83   |
| p19      | 240 | 6   | R2    | 1,2,3,5,6| 4        | 5792.62   | 6    | 4             | 822.17   |
| p20      | 240 | 6   | R2    | 1,2,3,5,6| 4        | 6359.6    | 6    | 6             | 1248.58  |
| p21      | 360 | 9   | R1    | 3,4,7,8,9| 1        | 5967.49   | 9    | 9             | 9032.66  |
| p22      | 360 | 9   | R1    | 3,5,6,7,9| 2        | 7694.68   | 9    | 7             | 3794.43  |
| p23      | 360 | 9   | R1    | 3,4,5,7,9| 8        | 8280.29   | 9    | 9             | 5491.50  |
| pr07     | 72  | 6   | R2    | 2,3,4,5,6| 1        | 955.2     | 6    | 2             | 76.56    |
| pr08     | 144 | 6   | R2    | 1,2,4,5,6| 3        | 1544.22   | 6    | 2             | 233.18   |
| pr09     | 216 | 6   | R2    | 2,3,4,5,6| 1        | 1837.68   | 6    | 5             | 814.87   |
| pr10     | 288 | 6   | R2    | 1,2,3,4,5| 6        | 2740.41   | 6    | 1             | 1089.74  |
| **Average** |   |     |       |          |          |           |      |               | 722.28   |

**Table S22.** Results of 3LRI-SMDVRP instances with $u = 5$, $r = 2$.

| Instance | $n$ | $m$ | $R_i$ | $u_{ID}$ | $r_{ID}$ | Obj Value | MNPP | VND+TSH Calls | Time (s) |
|----------|-----|-----|-------|----------|----------|-----------|------|---------------|----------|
| p21      | 360 | 9   | R1    | 3,4,5,7,9| 1,2      | 6366.81   | 36   | 34            | 27340.13 |
| p22      | 360 | 9   | R1    | 1,3,5,7,9| 4,6      | 9717.41   | 36   | 21            | 15723.39 |
| p23      | 360 | 9   | R1    | 1,3,5,7,9| 2,6      | 10701.9   | 36   | 20            | 16169.73 |
| **Average** |   |     |       |          |          |           |      |               | 19744.42 |

S11
**Table S23.** Results of 3LRI-SMDVRP instances with $u = 5, \ r = 3$.

| Instance | $n$ | $m$ | $R_i$ | $u, ID$ | $r, ID$ | Obj_Value | MNPP | VND+TSH Calls | Time (s) |
|----------|----|----|-------|--------|--------|-----------|------|--------------|----------|
| p21      | 360| 9  | R1    | 1,3,5,7,9 | 2,4,8  | 6691.33   | 84   | 77           | 57311.34 |
| p22      | 360| 9  | R1    | 1,3,5,7,9 | 2,4,6  | 11602.03  | 84   | 67           | 66800.07 |
| p23      | 360| 9  | R1    | 1,3,5,7,9 | 2,4,6  | 13116.96  | 84   | 62           | 63643.16 |
| Average  |    |    |       |         |        |           |      |              |          |
| R1       |    |    |       |         |        |           | 84   | 68.7         | 62584.85 |
| R2       |    |    |       |         |        |           |      |              |          |
| Overall  |    |    |       |         |        |           | 84   | 68.7         | 62584.85 |

**Table S24.** Results of 3LRI-SMDVRP instances with $u = 5, \ r = 4$.

| Instance | $n$ | $m$ | $R_i$ | $u, ID$ | $r, ID$ | Obj_Value | MNPP | VND+TSH Calls | Time (s) |
|----------|----|----|-------|--------|--------|-----------|------|--------------|----------|
| p21      | 360| 9  | R2    | 1,3,5,7,9 | 2,4,6,8 | 6990.07   | 126  | 1            | 877.24   |
| p22      | 360| 9  | R2    | 1,3,5,7,9 | 2,4,6,8 | 13518.92  | 126  | 5            | 5445.66  |
| p23      | 360| 9  | R2    | 1,3,5,7,9 | 2,4,6,8 | 15491.23  | 126  | 10           | 10456.78 |
| Average  |    |    |       |         |        |           |      |              |          |
| R1       |    |    |       |         |        |           | 126  | 5.3          | 5593.23  |
| R2       |    |    |       |         |        |           |      |              |          |
| Overall  |    |    |       |         |        |           | 126  | 5.3          | 5593.23  |