

Options: queue, random restart, no recentering

| Pr. No. | Objective Value | | | | | Time | | | | % Deviation | | | |
|---------|-----------------|----|----|----|----|-------|-------|-------|-------|-------------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.74 | 1.63 | 2.07 | 1.93 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.24 | 2.25 | 2.66 | 2.68 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 28 | 28 | 28 | 2.29 | 2.17 | 2.56 | 2.54 | 0.00 | 7.69 | 7.69 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.23 | 2.22 | 2.51 | 2.87 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 30 | 30 | 29 | 29 | 2.54 | 2.68 | 2.67 | 2.76 | 3.45 | 3.45 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.60 | 2.59 | 2.80 | 2.95 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 32 | 32 | 32 | 30 | 2.83 | 2.72 | 3.23 | 3.30 | 6.67 | 6.67 | 6.67 | 0.00 |
| p8 | 31 | 32 | 31 | 32 | 31 | 2.51 | 2.62 | 2.91 | 2.87 | 3.23 | 0.00 | 3.23 | 0.00 |
| p9 | 28 | 29 | 29 | 29 | 29 | 3.47 | 3.33 | 3.50 | 3.59 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 35 | 35 | 36 | 36 | 6.95 | 6.36 | 6.89 | 6.66 | 9.38 | 9.38 | 12.50 | 12.50 |
| p11 | 19 | 21 | 24 | 23 | 22 | 20.37 | 23.05 | 28.47 | 32.99 | 10.53 | 26.32 | 21.05 | 15.79 |
| p12 | 20 | 24 | 23 | 23 | 25 | 19.43 | 22.64 | 31.23 | 30.72 | 20.00 | 15.00 | 15.00 | 25.00 |
| p13 | 20 | 21 | 23 | 22 | 23 | 20.43 | 22.39 | 29.13 | 33.68 | 5.00 | 15.00 | 10.00 | 15.00 |
| p14 | 20 | 23 | 23 | 23 | 23 | 21.38 | 25.46 | 30.36 | 33.57 | 15.00 | 15.00 | 15.00 | 15.00 |
| p15 | 21 | 22 | 23 | 23 | 23 | 20.12 | 23.01 | 29.90 | 31.84 | 4.76 | 9.52 | 9.52 | 9.52 |
| p16 | 20 | 22 | 22 | 21 | 23 | 21.77 | 26.33 | 33.98 | 35.38 | 10.00 | 10.00 | 5.00 | 15.00 |
| p17 | 22 | 24 | 24 | 24 | 24 | 20.86 | 25.66 | 28.75 | 35.62 | 9.09 | 9.09 | 9.09 | 9.09 |
| p18 | 21 | 23 | 23 | 22 | 23 | 18.11 | 23.45 | 24.03 | 31.17 | 9.52 | 9.52 | 4.76 | 9.52 |
| p19 | 21 | 23 | 24 | 23 | 23 | 21.21 | 26.38 | 32.92 | 36.33 | 9.52 | 14.29 | 9.52 | 9.52 |
| p20 | 21 | 23 | 23 | 23 | 23 | 20.69 | 27.81 | 27.54 | 33.12 | 9.52 | 9.52 | 9.52 | 9.52 |
| Avg. | | | | | | 11.69 | 13.84 | 16.41 | 18.33 | 6.73 | 8.46 | 7.37 | 8.10 |

Options: queue, random restart, approximate recentering

| Pr. No. | Objective Value | | | | | Time | | | | % Deviation | | | |
|---------|-----------------|----|----|----|----|-------|-------|-------|-------|-------------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.18 | 1.36 | 1.40 | 1.37 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 1.89 | 2.07 | 2.41 | 2.57 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 28 | 28 | 26 | 1.55 | 1.90 | 2.15 | 2.23 | 0.00 | 7.69 | 7.69 | 0.00 |
| p4 | 32 | 32 | 32 | 32 | 32 | 1.82 | 2.26 | 2.32 | 2.32 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 30 | 29 | 30 | 29 | 2.08 | 2.26 | 2.48 | 2.46 | 3.45 | 0.00 | 3.45 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 1.88 | 2.29 | 2.48 | 2.39 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 32 | 32 | 32 | 32 | 2.31 | 2.52 | 2.93 | 2.94 | 6.67 | 6.67 | 6.67 | 6.67 |
| p8 | 31 | 32 | 32 | 31 | 32 | 2.08 | 2.20 | 2.50 | 2.47 | 3.23 | 3.23 | 0.00 | 3.23 |
| p9 | 28 | 29 | 29 | 29 | 29 | 3.08 | 3.32 | 3.30 | 3.26 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 34 | 35 | 36 | 34 | 6.08 | 6.19 | 6.68 | 7.36 | 6.25 | 9.38 | 12.50 | 6.25 |
| p11 | 19 | 23 | 24 | 22 | 23 | 10.83 | 18.30 | 18.85 | 21.84 | 21.05 | 26.32 | 15.79 | 21.05 |
| p12 | 20 | 24 | 23 | 25 | 23 | 12.05 | 18.85 | 22.98 | 22.97 | 20.00 | 15.00 | 25.00 | 15.00 |
| p13 | 20 | 23 | 23 | 23 | 23 | 10.14 | 16.67 | 20.98 | 22.03 | 15.00 | 15.00 | 15.00 | 15.00 |
| p14 | 20 | 23 | 23 | 23 | 22 | 12.53 | 21.01 | 20.74 | 25.68 | 15.00 | 15.00 | 15.00 | 10.00 |
| p15 | 21 | 24 | 24 | 23 | 23 | 10.94 | 19.10 | 20.92 | 23.94 | 14.29 | 14.29 | 9.52 | 9.52 |
| p16 | 20 | 21 | 23 | 22 | 23 | 12.91 | 20.57 | 24.18 | 25.68 | 5.00 | 15.00 | 10.00 | 15.00 |
| p17 | 22 | 23 | 24 | 24 | 25 | 12.17 | 20.87 | 22.90 | 25.12 | 4.55 | 9.09 | 9.09 | 13.64 |
| p18 | 21 | 23 | 24 | 23 | 23 | 9.70 | 18.15 | 15.31 | 20.30 | 9.52 | 14.29 | 9.52 | 9.52 |
| p19 | 21 | 23 | 23 | 23 | 23 | 12.84 | 19.84 | 22.48 | 25.89 | 9.52 | 9.52 | 9.52 | 9.52 |
| p20 | 21 | 23 | 25 | 23 | 24 | 12.31 | 21.31 | 18.73 | 23.43 | 9.52 | 19.05 | 9.52 | 14.29 |
| Avg. | | | | | | 7.02 | 11.15 | 11.84 | 13.31 | 7.60 | 9.42 | 8.36 | 7.88 |

Options: queue, random restart, exact recentering

| Pr. No. | Objective Value | | | | | Time | | | | % Deviation | | | |
|---------|-----------------|----|----|----|----|-------|-------|-------|-------|-------------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 2.94 | 3.51 | 3.44 | 3.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 4.26 | 4.65 | 5.00 | 5.81 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 28 | 28 | 28 | 3.71 | 4.16 | 4.52 | 5.05 | 0.00 | 7.69 | 7.69 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 4.16 | 4.77 | 5.11 | 5.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 29 | 29 | 29 | 29 | 4.43 | 4.98 | 5.34 | 5.08 | 0.00 | 0.00 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 4.10 | 4.39 | 4.71 | 5.01 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 30 | 32 | 30 | 33 | 4.57 | 5.23 | 5.80 | 5.87 | 0.00 | 6.67 | 0.00 | 10.00 |
| p8 | 31 | 31 | 31 | 31 | 32 | 4.22 | 4.67 | 4.73 | 4.77 | 0.00 | 0.00 | 0.00 | 3.23 |
| p9 | 28 | 29 | 29 | 29 | 29 | 4.72 | 5.45 | 5.36 | 5.29 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 35 | 36 | 36 | 8.42 | 9.18 | 8.71 | 8.95 | 12.50 | 9.38 | 12.50 | 12.50 |
| p11 | 19 | 22 | 22 | 22 | 24 | 43.33 | 76.19 | 63.19 | 86.02 | 15.79 | 15.79 | 15.79 | 26.32 |
| p12 | 20 | 24 | 23 | 23 | 22 | 43.22 | 72.18 | 65.99 | 86.89 | 20.00 | 15.00 | 15.00 | 10.00 |
| p13 | 20 | 22 | 22 | 22 | 23 | 41.26 | 69.71 | 62.94 | 83.26 | 10.00 | 10.00 | 10.00 | 15.00 |
| p14 | 20 | 21 | 22 | 20 | 23 | 40.72 | 71.31 | 56.20 | 84.13 | 5.00 | 10.00 | 0.00 | 15.00 |
| p15 | 21 | 22 | 23 | 23 | 24 | 40.40 | 69.47 | 60.13 | 83.45 | 4.76 | 9.52 | 9.52 | 14.29 |
| p16 | 20 | 21 | 22 | 21 | 23 | 46.14 | 76.19 | 66.89 | 85.70 | 5.00 | 10.00 | 5.00 | 15.00 |
| p17 | 22 | 24 | 23 | 23 | 24 | 41.96 | 70.40 | 58.19 | 82.70 | 9.09 | 4.55 | 4.55 | 9.09 |
| p18 | 21 | 23 | 23 | 22 | 22 | 37.22 | 66.30 | 48.20 | 74.67 | 9.52 | 9.52 | 4.76 | 4.76 |
| p19 | 21 | 22 | 23 | 23 | 24 | 44.12 | 74.44 | 64.57 | 85.83 | 4.76 | 9.52 | 9.52 | 14.29 |
| p20 | 21 | 23 | 23 | 23 | 24 | 38.71 | 71.99 | 54.49 | 77.71 | 9.52 | 9.52 | 9.52 | 14.29 |
| Avg. | | | | | | 23.13 | 38.56 | 32.68 | 44.26 | 5.74 | 6.80 | 5.64 | 9.01 |

Options: queue, perturbation restart, no recentering

| Pr. No. | Objective Value | | | | Time | | | | % Deviation | | | | |
|---------|-----------------|----|----|----|------|-------|-------|-------|-------------|-------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.60 | 1.55 | 1.74 | 1.80 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.13 | 2.01 | 2.57 | 2.68 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 28 | 26 | 28 | 26 | 2.00 | 1.99 | 2.48 | 2.37 | 7.69 | 0.00 | 7.69 | 0.00 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.21 | 2.27 | 2.73 | 2.47 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 30 | 29 | 29 | 29 | 2.30 | 2.53 | 2.94 | 2.78 | 3.45 | 0.00 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.37 | 2.59 | 2.90 | 2.71 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 32 | 32 | 30 | 30 | 2.70 | 2.59 | 3.13 | 3.07 | 6.67 | 6.67 | 0.00 | 0.00 |
| p8 | 31 | 31 | 31 | 32 | 32 | 2.63 | 2.43 | 2.87 | 2.83 | 0.00 | 0.00 | 3.23 | 3.23 |
| p9 | 28 | 28 | 29 | 29 | 29 | 3.23 | 3.35 | 3.42 | 3.85 | 0.00 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 37 | 35 | 36 | 7.01 | 7.05 | 7.16 | 6.94 | 12.50 | 15.62 | 9.38 | 12.50 |
| p11 | 19 | 22 | 21 | 21 | 22 | 16.13 | 17.88 | 22.33 | 23.43 | 15.79 | 10.53 | 10.53 | 15.79 |
| p12 | 20 | 23 | 22 | 23 | 23 | 15.82 | 17.73 | 21.37 | 23.96 | 15.00 | 10.00 | 15.00 | 15.00 |
| p13 | 20 | 22 | 22 | 21 | 22 | 14.97 | 16.17 | 21.01 | 20.13 | 10.00 | 10.00 | 5.00 | 10.00 |
| p14 | 20 | 20 | 20 | 21 | 22 | 16.52 | 18.22 | 22.30 | 27.70 | 0.00 | 0.00 | 5.00 | 10.00 |
| p15 | 21 | 21 | 22 | 22 | 23 | 15.75 | 17.70 | 21.94 | 23.14 | 0.00 | 4.76 | 4.76 | 9.52 |
| p16 | 20 | 21 | 21 | 21 | 23 | 16.99 | 19.12 | 23.77 | 25.60 | 5.00 | 5.00 | 5.00 | 15.00 |
| p17 | 22 | 24 | 24 | 23 | 23 | 17.21 | 18.95 | 23.88 | 26.99 | 9.09 | 9.09 | 4.55 | 4.55 |
| p18 | 21 | 22 | 23 | 23 | 22 | 13.07 | 15.37 | 19.69 | 22.05 | 4.76 | 9.52 | 9.52 | 4.76 |
| p19 | 21 | 22 | 23 | 23 | 23 | 17.83 | 20.16 | 24.72 | 28.99 | 4.76 | 9.52 | 9.52 | 9.52 |
| p20 | 21 | 23 | 23 | 23 | 24 | 19.39 | 25.55 | 23.82 | 30.34 | 9.52 | 9.52 | 9.52 | 14.29 |
| Avg. | | | | | | 9.59 | 10.86 | 12.84 | 14.19 | 5.48 | 5.45 | 5.38 | 6.65 |

Options: queue, perturbation restart, approximate recentering

| Pr. No. | Objective Value | | | | Time | | | | % Deviation | | | | |
|---------|-----------------|----|----|----|------|-------|-------|-------|-------------|-------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.31 | 1.24 | 1.33 | 1.32 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.56 | 1.97 | 2.35 | 2.57 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 28 | 28 | 28 | 28 | 1.84 | 1.76 | 1.92 | 1.82 | 7.69 | 7.69 | 7.69 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.48 | 2.00 | 2.42 | 2.48 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 29 | 29 | 29 | 29 | 2.55 | 2.28 | 2.44 | 2.56 | 0.00 | 0.00 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.52 | 2.25 | 2.38 | 2.53 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 30 | 32 | 30 | 30 | 2.71 | 2.45 | 2.80 | 2.69 | 0.00 | 6.67 | 0.00 | 0.00 |
| p8 | 31 | 31 | 31 | 32 | 31 | 2.33 | 2.33 | 2.48 | 2.32 | 0.00 | 0.00 | 3.23 | 0.00 |
| p9 | 28 | 29 | 29 | 28 | 29 | 3.03 | 2.81 | 3.13 | 3.04 | 3.57 | 3.57 | 0.00 | 3.57 |
| p10 | 32 | 36 | 34 | 33 | 36 | 7.27 | 7.09 | 6.57 | 7.25 | 12.50 | 6.25 | 3.12 | 12.50 |
| p11 | 19 | 22 | 22 | 20 | 22 | 14.97 | 12.58 | 14.58 | 14.92 | 15.79 | 15.79 | 5.26 | 15.79 |
| p12 | 20 | 24 | 23 | 22 | 24 | 16.11 | 12.77 | 14.43 | 16.09 | 20.00 | 15.00 | 10.00 | 20.00 |
| p13 | 20 | 22 | 23 | 21 | 22 | 13.46 | 11.09 | 12.36 | 13.47 | 10.00 | 15.00 | 5.00 | 10.00 |
| p14 | 20 | 21 | 21 | 22 | 21 | 16.25 | 14.27 | 14.86 | 16.24 | 5.00 | 5.00 | 10.00 | 5.00 |
| p15 | 21 | 23 | 23 | 23 | 23 | 16.18 | 12.47 | 13.16 | 16.30 | 9.52 | 9.52 | 9.52 | 9.52 |
| p16 | 20 | 21 | 22 | 21 | 21 | 17.54 | 15.22 | 17.10 | 17.59 | 5.00 | 10.00 | 5.00 | 5.00 |
| p17 | 22 | 24 | 24 | 23 | 24 | 18.64 | 15.50 | 17.14 | 18.62 | 9.09 | 9.09 | 4.55 | 9.09 |
| p18 | 21 | 23 | 23 | 23 | 23 | 14.10 | 12.53 | 11.42 | 14.08 | 9.52 | 9.52 | 9.52 | 9.52 |
| p19 | 21 | 22 | 22 | 23 | 22 | 16.08 | 13.20 | 14.90 | 15.99 | 4.76 | 4.76 | 9.52 | 4.76 |
| p20 | 21 | 23 | 22 | 23 | 23 | 19.94 | 20.36 | 16.56 | 19.94 | 9.52 | 4.76 | 9.52 | 9.52 |
| Avg. | | | | | | 9.59 | 8.41 | 8.72 | 9.59 | 6.36 | 6.40 | 4.86 | 6.36 |

Options: queue, perturbation restart, exact recentering

| Pr. No. | Objective Value | | | | Time | | | | % Deviation | | | | |
|---------|-----------------|----|----|----|------|-------|-------|-------|-------------|-------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 2.84 | 3.15 | 3.34 | 3.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 3.87 | 4.49 | 4.99 | 5.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 28 | 26 | 26 | 28 | 3.62 | 3.87 | 4.18 | 4.38 | 7.69 | 0.00 | 0.00 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 4.00 | 4.72 | 4.81 | 4.93 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 30 | 29 | 29 | 29 | 4.19 | 4.49 | 4.86 | 4.64 | 3.45 | 0.00 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 4.05 | 4.05 | 4.49 | 4.65 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 30 | 33 | 30 | 33 | 4.56 | 5.06 | 5.55 | 5.61 | 0.00 | 10.00 | 0.00 | 10.00 |
| p8 | 31 | 31 | 31 | 31 | 31 | 4.03 | 4.42 | 4.73 | 4.60 | 0.00 | 0.00 | 0.00 | 0.00 |
| p9 | 28 | 29 | 29 | 29 | 29 | 4.90 | 4.86 | 5.11 | 5.15 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 36 | 36 | 36 | 8.05 | 9.01 | 8.83 | 9.00 | 12.50 | 12.50 | 12.50 | 12.50 |
| p11 | 19 | 22 | 23 | 22 | 22 | 37.26 | 56.16 | 55.30 | 61.88 | 15.79 | 21.05 | 15.79 | 15.79 |
| p12 | 20 | 22 | 22 | 22 | 22 | 36.58 | 52.39 | 52.80 | 61.36 | 10.00 | 10.00 | 10.00 | 10.00 |
| p13 | 20 | 20 | 22 | 20 | 22 | 34.97 | 45.05 | 49.36 | 57.52 | 0.00 | 10.00 | 0.00 | 10.00 |
| p14 | 20 | 21 | 21 | 20 | 21 | 33.60 | 55.72 | 45.04 | 65.65 | 5.00 | 5.00 | 0.00 | 5.00 |
| p15 | 21 | 22 | 23 | 21 | 24 | 35.91 | 53.37 | 53.22 | 66.02 | 4.76 | 9.52 | 0.00 | 14.29 |
| p16 | 20 | 21 | 21 | 20 | 21 | 37.91 | 55.84 | 53.07 | 64.90 | 5.00 | 5.00 | 0.00 | 5.00 |
| p17 | 22 | 23 | 24 | 23 | 24 | 34.77 | 58.87 | 49.89 | 65.60 | 4.55 | 9.09 | 4.55 | 9.09 |
| p18 | 21 | 23 | 23 | 22 | 23 | 31.43 | 49.37 | 40.34 | 54.67 | 9.52 | 9.52 | 4.76 | 9.52 |
| p19 | 21 | 22 | 22 | 22 | 23 | 37.25 | 54.52 | 51.14 | 62.18 | 4.76 | 4.76 | 4.76 | 9.52 |
| p20 | 21 | 23 | 23 | 23 | 23 | 36.79 | 61.61 | 51.16 | 71.45 | 9.52 | 9.52 | 9.52 | 9.52 |
| Avg. | | | | | | 20.03 | 29.65 | 27.61 | 34.14 | 5.07 | 6.24 | 3.54 | 6.84 |

Options: stack, random restart, no recentering

| Pr. No. | Objective Value | | | | | Time | | | | % Deviation | | | |
|---------|-----------------|----|----|----|----|-------|-------|-------|-------|-------------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.73 | 1.84 | 2.25 | 2.24 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.36 | 2.24 | 3.03 | 3.16 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 28 | 28 | 26 | 26 | 2.19 | 2.25 | 3.08 | 3.05 | 7.69 | 7.69 | 0.00 | 0.00 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.29 | 2.24 | 3.03 | 2.79 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 30 | 30 | 30 | 29 | 2.35 | 2.59 | 3.08 | 2.99 | 3.45 | 3.45 | 3.45 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.70 | 2.46 | 3.21 | 3.33 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 32 | 32 | 32 | 32 | 3.02 | 2.74 | 3.69 | 3.69 | 6.67 | 6.67 | 6.67 | 6.67 |
| p8 | 31 | 31 | 34 | 31 | 31 | 2.47 | 2.59 | 3.02 | 3.14 | 0.00 | 9.68 | 0.00 | 0.00 |
| p9 | 28 | 29 | 29 | 29 | 29 | 3.46 | 3.31 | 3.67 | 3.70 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 32 | 36 | 36 | 6.53 | 6.63 | 6.56 | 6.69 | 12.50 | 0.00 | 12.50 | 12.50 |
| p11 | 19 | 23 | 24 | 23 | 23 | 20.43 | 25.68 | 33.94 | 39.45 | 21.05 | 26.32 | 21.05 | 21.05 |
| p12 | 20 | 25 | 25 | 24 | 23 | 22.08 | 25.60 | 37.40 | 39.41 | 25.00 | 25.00 | 20.00 | 15.00 |
| p13 | 20 | 23 | 22 | 22 | 24 | 21.31 | 23.76 | 34.94 | 39.95 | 15.00 | 10.00 | 10.00 | 20.00 |
| p14 | 20 | 21 | 21 | 22 | 23 | 22.18 | 28.61 | 35.26 | 42.71 | 5.00 | 5.00 | 10.00 | 15.00 |
| p15 | 21 | 24 | 23 | 23 | 24 | 21.38 | 26.66 | 36.15 | 40.90 | 14.29 | 9.52 | 9.52 | 14.29 |
| p16 | 20 | 21 | 23 | 23 | 23 | 23.42 | 28.75 | 41.43 | 44.90 | 5.00 | 15.00 | 15.00 | 15.00 |
| p17 | 22 | 23 | 24 | 23 | 24 | 21.41 | 25.75 | 33.66 | 39.26 | 4.55 | 9.09 | 4.55 | 9.09 |
| p18 | 21 | 23 | 23 | 23 | 24 | 18.92 | 25.44 | 28.71 | 35.57 | 9.52 | 9.52 | 9.52 | 14.29 |
| p19 | 21 | 23 | 23 | 23 | 23 | 23.64 | 28.51 | 36.61 | 43.10 | 9.52 | 9.52 | 9.52 | 9.52 |
| p20 | 21 | 23 | 23 | 23 | 23 | 21.37 | 28.19 | 32.13 | 41.34 | 9.52 | 9.52 | 9.52 | 9.52 |
| Avg. | | | | | | 12.26 | 14.89 | 19.24 | 22.07 | 7.88 | 8.24 | 7.51 | 8.54 |

Options: stack, random restart, approximate recentering

| Pr. No. | Objective Value | | | | | Time | | | | % Deviation | | | |
|---------|-----------------|----|----|----|----|-------|-------|-------|-------|-------------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.24 | 1.44 | 1.63 | 1.66 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 1.83 | 2.13 | 2.64 | 2.84 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 28 | 26 | 28 | 28 | 1.55 | 1.98 | 2.20 | 2.33 | 7.69 | 0.00 | 7.69 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 1.75 | 1.99 | 2.56 | 2.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 30 | 30 | 30 | 29 | 2.10 | 2.49 | 2.71 | 2.75 | 3.45 | 3.45 | 3.45 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.07 | 2.26 | 2.56 | 2.62 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 33 | 32 | 30 | 32 | 2.39 | 2.56 | 3.20 | 2.89 | 10.00 | 6.67 | 0.00 | 6.67 |
| p8 | 31 | 31 | 31 | 31 | 31 | 2.11 | 2.25 | 2.80 | 2.82 | 0.00 | 0.00 | 0.00 | 0.00 |
| p9 | 28 | 29 | 29 | 29 | 29 | 2.90 | 3.16 | 3.40 | 3.58 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 35 | 34 | 35 | 6.19 | 6.70 | 7.08 | 6.35 | 12.50 | 9.38 | 6.25 | 9.38 |
| p11 | 19 | 22 | 24 | 23 | 24 | 11.41 | 19.94 | 21.07 | 28.08 | 15.79 | 26.32 | 21.05 | 26.32 |
| p12 | 20 | 25 | 24 | 23 | 22 | 12.48 | 19.22 | 25.31 | 27.25 | 25.00 | 20.00 | 15.00 | 10.00 |
| p13 | 20 | 22 | 23 | 22 | 25 | 12.48 | 18.34 | 22.43 | 26.07 | 10.00 | 15.00 | 10.00 | 25.00 |
| p14 | 20 | 23 | 22 | 23 | 22 | 12.90 | 20.95 | 22.99 | 27.17 | 15.00 | 10.00 | 15.00 | 10.00 |
| p15 | 21 | 24 | 25 | 23 | 24 | 12.39 | 20.37 | 22.88 | 27.82 | 14.29 | 19.05 | 9.52 | 14.29 |
| p16 | 20 | 23 | 23 | 21 | 23 | 14.49 | 21.24 | 28.03 | 32.54 | 15.00 | 15.00 | 5.00 | 15.00 |
| p17 | 22 | 24 | 24 | 23 | 25 | 12.96 | 21.60 | 23.85 | 29.70 | 9.09 | 9.09 | 4.55 | 13.64 |
| p18 | 21 | 23 | 24 | 24 | 24 | 10.72 | 17.67 | 18.22 | 23.47 | 9.52 | 14.29 | 14.29 | 14.29 |
| p19 | 21 | 24 | 23 | 23 | 23 | 13.50 | 20.74 | 26.06 | 29.34 | 14.29 | 9.52 | 9.52 | 9.52 |
| p20 | 21 | 23 | 24 | 23 | 23 | 12.87 | 21.52 | 21.18 | 26.67 | 9.52 | 14.29 | 9.52 | 9.52 |
| Avg. | | | | | | 7.52 | 11.53 | 13.14 | 15.42 | 9.00 | 9.04 | 6.98 | 9.01 |

Options: stack, random restart, exact recentering

| Pr. No. | Objective Value | | | | | Time | | | | % Deviation | | | |
|---------|-----------------|----|----|----|----|-------|-------|-------|--------|-------------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 3.01 | 3.72 | 3.76 | 3.93 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 4.22 | 5.02 | 5.65 | 6.24 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 28 | 26 | 28 | 28 | 3.79 | 4.14 | 4.82 | 5.31 | 7.69 | 0.00 | 7.69 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 4.20 | 4.87 | 5.78 | 5.94 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 30 | 29 | 29 | 29 | 4.25 | 4.95 | 5.83 | 5.49 | 3.45 | 0.00 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 3.74 | 4.73 | 5.06 | 5.32 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 30 | 30 | 30 | 33 | 4.66 | 5.16 | 6.05 | 5.87 | 0.00 | 0.00 | 0.00 | 10.00 |
| p8 | 31 | 31 | 31 | 31 | 31 | 4.27 | 4.51 | 5.30 | 5.36 | 0.00 | 0.00 | 0.00 | 0.00 |
| p9 | 28 | 29 | 29 | 29 | 29 | 5.02 | 5.27 | 5.52 | 5.89 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 35 | 35 | 35 | 35 | 8.50 | 8.89 | 9.43 | 10.03 | 9.38 | 9.38 | 9.38 | 9.38 |
| p11 | 19 | 22 | 23 | 21 | 23 | 46.35 | 76.15 | 73.30 | 96.87 | 15.79 | 21.05 | 10.53 | 21.05 |
| p12 | 20 | 23 | 23 | 23 | 24 | 46.77 | 75.85 | 75.36 | 96.19 | 15.00 | 15.00 | 15.00 | 20.00 |
| p13 | 20 | 22 | 24 | 21 | 23 | 46.27 | 69.90 | 68.35 | 94.71 | 10.00 | 20.00 | 5.00 | 15.00 |
| p14 | 20 | 22 | 22 | 22 | 23 | 42.17 | 71.42 | 64.24 | 91.80 | 10.00 | 10.00 | 10.00 | 15.00 |
| p15 | 21 | 21 | 23 | 22 | 22 | 44.58 | 74.77 | 69.43 | 92.00 | 0.00 | 9.52 | 4.76 | 4.76 |
| p16 | 20 | 21 | 23 | 21 | 22 | 49.97 | 78.42 | 82.93 | 100.39 | 5.00 | 15.00 | 5.00 | 10.00 |
| p17 | 22 | 23 | 24 | 23 | 24 | 42.26 | 71.69 | 64.63 | 94.76 | 4.55 | 9.09 | 4.55 | 9.09 |
| p18 | 21 | 22 | 23 | 23 | 24 | 38.67 | 67.44 | 60.17 | 86.93 | 4.76 | 9.52 | 9.52 | 14.29 |
| p19 | 21 | 23 | 23 | 22 | 23 | 47.52 | 75.02 | 77.33 | 100.67 | 9.52 | 9.52 | 4.76 | 9.52 |
| p20 | 21 | 23 | 24 | 23 | 23 | 41.79 | 75.31 | 61.42 | 88.98 | 9.52 | 14.29 | 9.52 | 9.52 |
| Avg. | | | | | | 24.60 | 39.46 | 37.72 | 50.13 | 5.68 | 7.56 | 5.23 | 8.21 |

Options: stack, perturbation restart, no recentering

| Pr. No. | Objective Value | | | | Time | | | | % Deviation | | | | |
|---------|-----------------|----|----|----|------|-------|-------|-------|-------------|-------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.54 | 1.63 | 2.00 | 2.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.19 | 2.24 | 2.78 | 2.94 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 26 | 28 | 28 | 1.95 | 2.08 | 2.70 | 2.86 | 0.00 | 0.00 | 7.69 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.15 | 2.20 | 2.98 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 30 | 29 | 29 | 30 | 2.44 | 2.36 | 2.92 | 3.09 | 3.45 | 0.00 | 0.00 | 3.45 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.51 | 2.48 | 3.03 | 3.00 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 32 | 30 | 32 | 32 | 2.82 | 2.74 | 3.27 | 3.48 | 6.67 | 0.00 | 6.67 | 6.67 |
| p8 | 31 | 31 | 31 | 31 | 31 | 2.58 | 2.56 | 3.21 | 3.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| p9 | 28 | 29 | 29 | 29 | 29 | 3.23 | 3.25 | 3.43 | 3.68 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 36 | 37 | 37 | 6.97 | 7.11 | 7.32 | 7.37 | 12.50 | 12.50 | 15.62 | 15.62 |
| p11 | 19 | 20 | 20 | 22 | 22 | 16.55 | 16.97 | 25.80 | 28.28 | 5.26 | 5.26 | 15.79 | 15.79 |
| p12 | 20 | 24 | 23 | 23 | 23 | 16.67 | 18.24 | 27.72 | 28.17 | 20.00 | 15.00 | 15.00 | 15.00 |
| p13 | 20 | 22 | 21 | 22 | 22 | 16.25 | 18.18 | 23.51 | 25.12 | 10.00 | 5.00 | 10.00 | 10.00 |
| p14 | 20 | 21 | 21 | 21 | 22 | 17.44 | 20.40 | 27.45 | 31.65 | 5.00 | 5.00 | 5.00 | 10.00 |
| p15 | 21 | 21 | 24 | 22 | 24 | 15.56 | 19.86 | 27.75 | 28.35 | 0.00 | 14.29 | 4.76 | 14.29 |
| p16 | 20 | 22 | 21 | 21 | 21 | 19.03 | 20.03 | 31.27 | 29.48 | 10.00 | 5.00 | 5.00 | 5.00 |
| p17 | 22 | 24 | 24 | 23 | 24 | 16.82 | 23.22 | 28.71 | 32.04 | 9.09 | 9.09 | 4.55 | 9.09 |
| p18 | 21 | 21 | 23 | 22 | 23 | 13.98 | 17.67 | 22.67 | 25.62 | 0.00 | 9.52 | 4.76 | 9.52 |
| p19 | 21 | 22 | 22 | 23 | 22 | 18.07 | 21.44 | 31.17 | 34.09 | 4.76 | 4.76 | 9.52 | 4.76 |
| p20 | 21 | 23 | 23 | 23 | 23 | 20.39 | 26.40 | 29.79 | 37.02 | 9.52 | 9.52 | 9.52 | 9.52 |
| Avg. | | | | | | 9.96 | 11.65 | 15.47 | 16.71 | 5.26 | 5.19 | 6.14 | 7.26 |

Options: stack, perturbation restart, approximate recentering

| Pr. No. | Objective Value | | | | Time | | | | % Deviation | | | | |
|---------|-----------------|----|----|----|------|-------|-------|-------|-------------|-------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.44 | 1.18 | 1.42 | 1.43 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.64 | 2.04 | 2.52 | 2.64 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 28 | 26 | 26 | 2.15 | 1.74 | 2.14 | 2.14 | 0.00 | 7.69 | 0.00 | 0.00 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.42 | 2.05 | 2.48 | 2.42 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 29 | 29 | 29 | 29 | 2.84 | 2.17 | 2.66 | 2.86 | 0.00 | 0.00 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.63 | 2.14 | 2.36 | 2.65 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 32 | 32 | 30 | 32 | 2.88 | 2.48 | 2.82 | 2.88 | 6.67 | 6.67 | 0.00 | 6.67 |
| p8 | 31 | 32 | 31 | 31 | 32 | 2.56 | 2.31 | 2.56 | 2.55 | 3.23 | 0.00 | 0.00 | 3.23 |
| p9 | 28 | 29 | 29 | 29 | 29 | 3.26 | 2.83 | 3.39 | 3.26 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 36 | 36 | 36 | 7.05 | 6.73 | 7.08 | 7.05 | 12.50 | 12.50 | 12.50 | 12.50 |
| p11 | 19 | 23 | 21 | 20 | 23 | 18.26 | 13.39 | 17.04 | 18.36 | 21.05 | 10.53 | 5.26 | 21.05 |
| p12 | 20 | 24 | 24 | 23 | 24 | 19.21 | 11.64 | 17.17 | 19.17 | 20.00 | 20.00 | 15.00 | 20.00 |
| p13 | 20 | 22 | 22 | 21 | 22 | 15.89 | 11.11 | 15.79 | 15.87 | 10.00 | 10.00 | 5.00 | 10.00 |
| p14 | 20 | 21 | 21 | 21 | 21 | 21.22 | 15.67 | 15.39 | 21.21 | 5.00 | 5.00 | 5.00 | 5.00 |
| p15 | 21 | 24 | 24 | 22 | 24 | 20.77 | 13.94 | 16.87 | 20.72 | 14.29 | 14.29 | 4.76 | 14.29 |
| p16 | 20 | 21 | 22 | 21 | 21 | 21.38 | 15.07 | 21.16 | 21.36 | 5.00 | 10.00 | 5.00 | 5.00 |
| p17 | 22 | 23 | 24 | 23 | 23 | 20.80 | 14.38 | 19.02 | 20.84 | 4.55 | 9.09 | 4.55 | 4.55 |
| p18 | 21 | 22 | 22 | 23 | 22 | 14.87 | 13.41 | 13.14 | 14.97 | 4.76 | 4.76 | 9.52 | 4.76 |
| p19 | 21 | 23 | 23 | 22 | 23 | 21.74 | 14.60 | 18.87 | 21.70 | 9.52 | 9.52 | 4.76 | 9.52 |
| p20 | 21 | 24 | 24 | 23 | 24 | 25.52 | 18.87 | 20.16 | 25.50 | 14.29 | 14.29 | 9.52 | 14.29 |
| Avg. | | | | | | 11.48 | 8.49 | 10.20 | 11.48 | 6.99 | 7.16 | 4.49 | 6.98 |

Options: stack, perturbation restart, exact recentering

| Pr. No. | Objective Value | | | | Time | | | | % Deviation | | | | |
|---------|-----------------|----|----|----|------|-------|-------|-------|-------------|-------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 2.76 | 3.26 | 3.32 | 3.85 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 4.29 | 4.63 | 5.30 | 5.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 28 | 26 | 26 | 28 | 3.94 | 4.14 | 5.03 | 5.10 | 7.69 | 0.00 | 0.00 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 4.22 | 4.50 | 4.98 | 5.61 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 29 | 29 | 29 | 29 | 4.32 | 4.72 | 5.64 | 5.56 | 0.00 | 0.00 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 3.95 | 4.36 | 4.70 | 4.87 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 30 | 30 | 30 | 30 | 4.57 | 5.26 | 5.62 | 5.96 | 0.00 | 0.00 | 0.00 | 0.00 |
| p8 | 31 | 31 | 32 | 31 | 35 | 4.21 | 4.68 | 4.79 | 5.38 | 0.00 | 3.23 | 0.00 | 12.90 |
| p9 | 28 | 29 | 29 | 29 | 29 | 4.57 | 5.24 | 5.13 | 5.57 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 36 | 36 | 36 | 8.87 | 8.43 | 8.97 | 9.34 | 12.50 | 12.50 | 12.50 | 12.50 |
| p11 | 19 | 21 | 23 | 22 | 22 | 39.23 | 58.33 | 62.21 | 75.61 | 10.53 | 21.05 | 15.79 | 15.79 |
| p12 | 20 | 23 | 22 | 21 | 22 | 40.22 | 56.37 | 61.30 | 76.95 | 15.00 | 10.00 | 5.00 | 10.00 |
| p13 | 20 | 21 | 22 | 21 | 21 | 34.73 | 56.54 | 53.59 | 66.90 | 5.00 | 10.00 | 5.00 | 5.00 |
| p14 | 20 | 21 | 22 | 21 | 22 | 35.92 | 63.11 | 49.32 | 76.00 | 5.00 | 10.00 | 5.00 | 10.00 |
| p15 | 21 | 21 | 23 | 22 | 23 | 40.77 | 57.81 | 60.33 | 76.64 | 0.00 | 9.52 | 4.76 | 9.52 |
| p16 | 20 | 21 | 22 | 21 | 21 | 40.07 | 60.73 | 60.07 | 78.84 | 5.00 | 10.00 | 5.00 | 5.00 |
| p17 | 22 | 24 | 24 | 23 | 23 | 36.32 | 61.52 | 58.17 | 80.70 | 9.09 | 9.09 | 4.55 | 4.55 |
| p18 | 21 | 21 | 23 | 22 | 23 | 34.58 | 50.05 | 46.90 | 67.67 | 0.00 | 9.52 | 4.76 | 9.52 |
| p19 | 21 | 22 | 23 | 22 | 23 | 40.25 | 64.41 | 60.12 | 80.94 | 4.76 | 9.52 | 4.76 | 9.52 |
| p20 | 21 | 23 | 24 | 22 | 23 | 39.95 | 67.96 | 55.50 | 81.71 | 9.52 | 14.29 | 4.76 | 9.52 |
| Avg. | | | | | | 21.39 | 32.40 | 31.05 | 40.94 | 4.65 | 6.88 | 4.04 | 6.52 |

Options: priority queue, random restart, no recentering

| Pr. No. | Objective Value | | | | Time | | | | % Deviation | | | | |
|------------|-----------------|----|----|----|------|-------|-------|-------|-------------|-------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.83 | 2.00 | 2.44 | 2.26 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.64 | 2.75 | 3.06 | 3.26 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 26 | 26 | 28 | 2.49 | 2.60 | 2.89 | 3.01 | 0.00 | 0.00 | 0.00 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.61 | 2.56 | 3.39 | 3.17 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 29 | 30 | 30 | 29 | 2.73 | 2.70 | 3.23 | 3.18 | 0.00 | 3.45 | 3.45 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.94 | 2.88 | 3.27 | 3.14 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 30 | 30 | 30 | 32 | 3.27 | 3.07 | 3.71 | 3.64 | 0.00 | 0.00 | 0.00 | 6.67 |
| p8 | 31 | 31 | 32 | 32 | 34 | 2.81 | 2.78 | 3.28 | 2.99 | 0.00 | 3.23 | 3.23 | 9.68 |
| p9 | 28 | 29 | 29 | 29 | 28 | 3.55 | 3.71 | 3.91 | 3.74 | 3.57 | 3.57 | 3.57 | 0.00 |
| p10 | 32 | 36 | 37 | 36 | 37 | 7.04 | 6.63 | 7.53 | 7.32 | 12.50 | 15.62 | 12.50 | 15.62 |
| p11 | 19 | 20 | 22 | 22 | 23 | 24.80 | 27.45 | 30.21 | 37.16 | 5.26 | 15.79 | 15.79 | 21.05 |
| p12 | 20 | 24 | 25 | 25 | 24 | 26.45 | 26.36 | 34.98 | 39.46 | 20.00 | 25.00 | 25.00 | 20.00 |
| p13 | 20 | 21 | 23 | 23 | 23 | 24.84 | 26.99 | 32.30 | 35.39 | 5.00 | 15.00 | 15.00 | 15.00 |
| p14 | 20 | 22 | 23 | 22 | 22 | 25.15 | 28.42 | 33.59 | 39.97 | 10.00 | 15.00 | 10.00 | 10.00 |
| p15 | 21 | 23 | 24 | 22 | 23 | 24.59 | 27.30 | 32.64 | 37.71 | 9.52 | 14.29 | 4.76 | 9.52 |
| p16 | 20 | 22 | 21 | 20 | 21 | 28.06 | 29.80 | 37.90 | 41.33 | 10.00 | 5.00 | 0.00 | 5.00 |
| p17 | 22 | 24 | 25 | 23 | 25 | 24.60 | 28.60 | 31.19 | 38.32 | 9.09 | 13.64 | 4.55 | 13.64 |
| p18 | 21 | 23 | 23 | 23 | 23 | 21.85 | 26.42 | 26.43 | 35.61 | 9.52 | 9.52 | 9.52 | 9.52 |
| p19 | 21 | 23 | 23 | 23 | 23 | 27.38 | 29.06 | 34.79 | 40.60 | 9.52 | 9.52 | 9.52 | 9.52 |
| p20 | 21 | 23 | 23 | 23 | 23 | 26.02 | 31.32 | 29.36 | 38.58 | 9.52 | 9.52 | 9.52 | 9.52 |
| Avg. | | | | | | 14.28 | 15.77 | 18.00 | 20.99 | 5.94 | 8.17 | 6.58 | 8.38 |

Options: priority queue, random restart, approximate recentering

| Pr. No. | Objective Value | | | | Time | | | | % Deviation | | | | |
|------------|-----------------|----|----|----|------|-------|-------|-------|-------------|-------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.47 | 1.71 | 1.69 | 1.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.40 | 2.54 | 2.81 | 3.16 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 28 | 28 | 28 | 26 | 2.07 | 2.18 | 2.55 | 2.87 | 7.69 | 7.69 | 7.69 | 0.00 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.27 | 2.44 | 2.72 | 2.64 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 29 | 29 | 30 | 29 | 2.54 | 2.60 | 2.64 | 2.96 | 0.00 | 0.00 | 3.45 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.40 | 2.72 | 2.72 | 2.81 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 32 | 32 | 32 | 30 | 2.71 | 3.03 | 3.05 | 3.29 | 6.67 | 6.67 | 6.67 | 0.00 |
| p8 | 31 | 31 | 32 | 31 | 31 | 2.28 | 2.46 | 2.91 | 2.81 | 0.00 | 3.23 | 0.00 | 0.00 |
| p9 | 28 | 29 | 29 | 29 | 29 | 3.27 | 3.56 | 3.39 | 3.68 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 35 | 34 | 36 | 35 | 6.23 | 6.62 | 6.84 | 6.63 | 9.38 | 6.25 | 12.50 | 9.38 |
| p11 | 19 | 22 | 24 | 23 | 25 | 15.84 | 23.60 | 22.29 | 27.71 | 15.79 | 26.32 | 21.05 | 31.58 |
| p12 | 20 | 23 | 25 | 23 | 24 | 16.73 | 23.25 | 27.25 | 28.72 | 15.00 | 25.00 | 15.00 | 20.00 |
| p13 | 20 | 22 | 22 | 23 | 24 | 16.65 | 20.53 | 22.20 | 24.73 | 10.00 | 10.00 | 15.00 | 20.00 |
| p14 | 20 | 21 | 23 | 21 | 23 | 16.74 | 23.68 | 23.42 | 30.59 | 5.00 | 15.00 | 5.00 | 15.00 |
| p15 | 21 | 23 | 24 | 23 | 24 | 16.20 | 22.27 | 23.75 | 29.56 | 9.52 | 14.29 | 9.52 | 14.29 |
| p16 | 20 | 22 | 22 | 21 | 23 | 17.98 | 26.77 | 27.88 | 31.49 | 10.00 | 10.00 | 5.00 | 15.00 |
| p17 | 22 | 24 | 24 | 24 | 25 | 16.97 | 24.48 | 25.65 | 28.41 | 9.09 | 9.09 | 9.09 | 13.64 |
| p18 | 21 | 23 | 24 | 23 | 23 | 13.29 | 21.84 | 19.94 | 25.56 | 9.52 | 14.29 | 9.52 | 9.52 |
| p19 | 21 | 23 | 23 | 23 | 23 | 19.00 | 24.84 | 26.70 | 29.63 | 9.52 | 9.52 | 9.52 | 9.52 |
| p20 | 21 | 24 | 24 | 22 | 25 | 16.34 | 23.90 | 21.43 | 27.47 | 14.29 | 14.29 | 4.76 | 19.05 |
| Avg. | | | | | | 9.67 | 13.35 | 13.59 | 15.82 | 7.02 | 9.02 | 7.13 | 9.29 |

Options: priority queue, random restart, exact recentering

| Pr. No. | Objective Value | | | | Time | | | | % Deviation | | | | |
|------------|-----------------|----|----|----|------|-------|-------|-------|-------------|-------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 3.38 | 3.75 | 3.65 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 4.89 | 5.69 | 5.15 | 5.74 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 28 | 26 | 28 | 4.36 | 4.35 | 4.91 | 5.24 | 0.00 | 7.69 | 0.00 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 4.75 | 5.04 | 5.36 | 5.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 29 | 30 | 29 | 29 | 4.69 | 5.04 | 4.81 | 5.28 | 0.00 | 3.45 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 4.58 | 4.55 | 4.85 | 5.57 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 33 | 33 | 33 | 32 | 5.07 | 5.73 | 5.94 | 6.16 | 10.00 | 10.00 | 10.00 | 6.67 |
| p8 | 31 | 31 | 31 | 31 | 31 | 4.54 | 4.99 | 4.64 | 5.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| p9 | 28 | 29 | 29 | 29 | 29 | 4.89 | 5.55 | 5.29 | 5.62 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 36 | 35 | 36 | 8.70 | 9.55 | 8.67 | 9.73 | 12.50 | 12.50 | 9.38 | 12.50 |
| p11 | 19 | 22 | 25 | 22 | 23 | 48.86 | 72.82 | 64.05 | 82.71 | 15.79 | 31.58 | 15.79 | 21.05 |
| p12 | 20 | 22 | 21 | 23 | 22 | 48.52 | 68.79 | 63.79 | 84.10 | 10.00 | 5.00 | 15.00 | 10.00 |
| p13 | 20 | 23 | 22 | 22 | 24 | 46.70 | 68.01 | 63.35 | 82.82 | 15.00 | 10.00 | 10.00 | 20.00 |
| p14 | 20 | 21 | 21 | 21 | 23 | 42.12 | 68.63 | 58.73 | 83.48 | 5.00 | 5.00 | 5.00 | 15.00 |
| p15 | 21 | 23 | 24 | 22 | 22 | 46.07 | 69.69 | 61.23 | 84.16 | 9.52 | 14.29 | 4.76 | 4.76 |
| p16 | 20 | 22 | 21 | 23 | 23 | 53.99 | 73.72 | 68.84 | 83.50 | 10.00 | 5.00 | 15.00 | 15.00 |
| p17 | 22 | 23 | 23 | 23 | 24 | 47.80 | 69.29 | 59.06 | 87.45 | 4.55 | 4.55 | 4.55 | 9.09 |
| p18 | 21 | 22 | 24 | 23 | 23 | 39.35 | 67.28 | 52.15 | 75.43 | 4.76 | 14.29 | 9.52 | 9.52 |
| p19 | 21 | 22 | 23 | 23 | 23 | 49.13 | 75.09 | 64.30 | 89.11 | 4.76 | 9.52 | 9.52 | 9.52 |
| p20 | 21 | 23 | 24 | 22 | 23 | 43.89 | 70.03 | 54.22 | 78.01 | 9.52 | 14.29 | 4.76 | 9.52 |
| Avg. | | | | | | 25.81 | 37.98 | 33.15 | 44.43 | 6.01 | 7.80 | 6.11 | 7.96 |

Options: priority queue, perturbation restart, no recentering

| Pr. No. | Objective Value | | | | | Time | | | | % Deviation | | | |
|---------|-----------------|----|----|----|----|-------|-------|-------|-------|-------------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.71 | 1.84 | 2.27 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.65 | 2.58 | 3.03 | 3.25 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 26 | 28 | 28 | 2.37 | 2.41 | 2.50 | 2.61 | 0.00 | 0.00 | 7.69 | 7.69 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.78 | 2.51 | 3.08 | 3.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 30 | 30 | 29 | 30 | 2.68 | 2.78 | 3.00 | 3.02 | 3.45 | 3.45 | 0.00 | 3.45 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.79 | 2.63 | 3.06 | 3.01 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 30 | 32 | 30 | 32 | 3.17 | 3.03 | 3.45 | 3.53 | 0.00 | 6.67 | 0.00 | 6.67 |
| p8 | 31 | 31 | 31 | 31 | 32 | 2.87 | 2.81 | 3.08 | 3.09 | 0.00 | 0.00 | 0.00 | 3.23 |
| p9 | 28 | 29 | 29 | 29 | 29 | 3.79 | 3.68 | 3.93 | 3.78 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 36 | 37 | 36 | 37 | 7.04 | 6.82 | 7.59 | 7.64 | 12.50 | 15.62 | 12.50 | 15.62 |
| p11 | 19 | 21 | 22 | 22 | 22 | 19.22 | 18.36 | 25.86 | 27.50 | 10.53 | 15.79 | 15.79 | 15.79 |
| p12 | 20 | 23 | 25 | 23 | 23 | 20.71 | 20.62 | 27.05 | 25.71 | 15.00 | 25.00 | 15.00 | 15.00 |
| p13 | 20 | 22 | 22 | 22 | 23 | 19.43 | 19.65 | 24.55 | 25.47 | 10.00 | 10.00 | 10.00 | 15.00 |
| p14 | 20 | 21 | 21 | 21 | 21 | 20.89 | 19.25 | 24.71 | 30.93 | 5.00 | 5.00 | 5.00 | 5.00 |
| p15 | 21 | 22 | 23 | 21 | 23 | 17.99 | 19.63 | 25.08 | 25.17 | 4.76 | 9.52 | 0.00 | 9.52 |
| p16 | 20 | 21 | 21 | 21 | 21 | 21.42 | 23.02 | 28.65 | 29.31 | 5.00 | 5.00 | 5.00 | 5.00 |
| p17 | 22 | 23 | 23 | 24 | 23 | 19.49 | 22.31 | 24.93 | 28.30 | 4.55 | 4.55 | 9.09 | 4.55 |
| p18 | 21 | 23 | 23 | 23 | 23 | 16.68 | 17.76 | 21.81 | 25.71 | 9.52 | 9.52 | 9.52 | 9.52 |
| p19 | 21 | 22 | 22 | 23 | 22 | 21.02 | 22.19 | 28.94 | 29.92 | 4.76 | 4.76 | 9.52 | 4.76 |
| p20 | 21 | 23 | 23 | 22 | 23 | 21.88 | 27.85 | 25.86 | 34.49 | 9.52 | 9.52 | 4.76 | 9.52 |
| Avg. | | | | | | 11.53 | 12.19 | 14.62 | 15.87 | 5.17 | 6.66 | 5.64 | 6.96 |

Options: priority queue, perturbation restart, approximate recentering

| Pr. No. | Objective Value | | | | | Time | | | | % Deviation | | | |
|---------|-----------------|----|----|----|----|-------|-------|-------|-------|-------------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 1.56 | 1.53 | 1.51 | 1.57 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 2.96 | 2.20 | 2.57 | 2.96 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 28 | 26 | 26 | 2.42 | 2.26 | 2.34 | 2.42 | 0.00 | 7.69 | 0.00 | 0.00 |
| p4 | 32 | 32 | 32 | 32 | 32 | 2.56 | 2.40 | 2.53 | 2.56 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 29 | 29 | 29 | 29 | 2.71 | 2.48 | 2.60 | 2.71 | 0.00 | 0.00 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 2.53 | 2.44 | 2.87 | 2.54 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 30 | 32 | 31 | 30 | 3.13 | 2.66 | 3.35 | 3.14 | 0.00 | 6.67 | 3.33 | 0.00 |
| p8 | 31 | 31 | 31 | 32 | 31 | 2.69 | 2.50 | 2.63 | 2.69 | 0.00 | 0.00 | 3.23 | 0.00 |
| p9 | 28 | 29 | 28 | 28 | 29 | 3.55 | 3.16 | 3.34 | 3.56 | 3.57 | 0.00 | 0.00 | 3.57 |
| p10 | 32 | 36 | 34 | 36 | 36 | 7.27 | 7.54 | 6.53 | 7.24 | 12.50 | 6.25 | 12.50 | 12.50 |
| p11 | 19 | 23 | 22 | 22 | 23 | 19.82 | 15.03 | 16.68 | 19.81 | 21.05 | 15.79 | 15.79 | 21.05 |
| p12 | 20 | 22 | 23 | 23 | 22 | 19.57 | 15.85 | 17.72 | 19.57 | 10.00 | 15.00 | 15.00 | 10.00 |
| p13 | 20 | 22 | 20 | 21 | 22 | 15.97 | 14.47 | 14.94 | 15.96 | 10.00 | 0.00 | 5.00 | 10.00 |
| p14 | 20 | 21 | 22 | 21 | 21 | 21.06 | 17.01 | 17.28 | 21.06 | 5.00 | 10.00 | 5.00 | 5.00 |
| p15 | 21 | 24 | 23 | 23 | 24 | 20.24 | 15.73 | 16.89 | 20.24 | 14.29 | 9.52 | 9.52 | 14.29 |
| p16 | 20 | 21 | 22 | 22 | 21 | 23.17 | 18.66 | 21.93 | 23.21 | 5.00 | 10.00 | 10.00 | 5.00 |
| p17 | 22 | 23 | 24 | 23 | 23 | 20.06 | 16.89 | 16.67 | 20.05 | 4.55 | 9.09 | 4.55 | 4.55 |
| p18 | 21 | 24 | 23 | 23 | 24 | 16.37 | 14.00 | 13.47 | 16.31 | 14.29 | 9.52 | 9.52 | 14.29 |
| p19 | 21 | 22 | 23 | 22 | 22 | 22.50 | 17.39 | 18.97 | 22.53 | 4.76 | 9.52 | 4.76 | 4.76 |
| p20 | 21 | 24 | 23 | 23 | 24 | 25.39 | 22.39 | 19.45 | 25.50 | 14.29 | 9.52 | 9.52 | 14.29 |
| Avg. | | | | | | 11.78 | 9.93 | 10.21 | 11.78 | 6.23 | 6.19 | 5.65 | 6.23 |

Options: priority queue, perturbation restart, exact recentering

| Pr. No. | Objective Value | | | | | Time | | | | % Deviation | | | |
|---------|-----------------|----|----|----|----|-------|-------|-------|-------|-------------|-------|-------|-------|
| | Opt | 1S | tS | 1B | tB | 1S | tS | 1B | tB | 1S | tS | 1B | tB |
| p1 | 29 | 29 | 29 | 29 | 29 | 3.03 | 3.44 | 3.45 | 3.49 | 0.00 | 0.00 | 0.00 | 0.00 |
| p2 | 33 | 33 | 33 | 33 | 33 | 4.73 | 5.01 | 5.01 | 5.68 | 0.00 | 0.00 | 0.00 | 0.00 |
| p3 | 26 | 26 | 28 | 26 | 26 | 3.92 | 4.80 | 4.52 | 4.53 | 0.00 | 7.69 | 0.00 | 0.00 |
| p4 | 32 | 32 | 32 | 32 | 32 | 4.58 | 4.57 | 5.24 | 5.05 | 0.00 | 0.00 | 0.00 | 0.00 |
| p5 | 29 | 29 | 30 | 29 | 29 | 4.69 | 4.89 | 4.93 | 4.92 | 0.00 | 3.45 | 0.00 | 0.00 |
| p6 | 31 | 32 | 32 | 32 | 32 | 4.34 | 4.63 | 4.58 | 4.94 | 3.23 | 3.23 | 3.23 | 3.23 |
| p7 | 30 | 30 | 30 | 30 | 30 | 5.20 | 5.35 | 5.70 | 5.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| p8 | 31 | 31 | 31 | 32 | 32 | 4.20 | 4.79 | 4.86 | 4.91 | 0.00 | 0.00 | 3.23 | 3.23 |
| p9 | 28 | 29 | 29 | 29 | 29 | 5.01 | 5.10 | 5.17 | 5.36 | 3.57 | 3.57 | 3.57 | 3.57 |
| p10 | 32 | 35 | 35 | 36 | 36 | 8.53 | 8.56 | 9.00 | 9.20 | 9.38 | 9.38 | 12.50 | 12.50 |
| p11 | 19 | 22 | 20 | 22 | 23 | 41.52 | 53.49 | 56.53 | 69.13 | 15.79 | 5.26 | 15.79 | 21.05 |
| p12 | 20 | 22 | 23 | 20 | 22 | 39.19 | 53.71 | 46.16 | 60.21 | 10.00 | 15.00 | 0.00 | 10.00 |
| p13 | 20 | 22 | 23 | 21 | 21 | 37.09 | 52.25 | 50.48 | 60.84 | 10.00 | 15.00 | 5.00 | 5.00 |
| p14 | 20 | 20 | 22 | 21 | 21 | 35.22 | 56.34 | 47.36 | 69.78 | 0.00 | 10.00 | 5.00 | 5.00 |
| p15 | 21 | 21 | 22 | 22 | 22 | 39.04 | 54.90 | 54.00 | 66.38 | 0.00 | 4.76 | 4.76 | 4.76 |
| p16 | 20 | 21 | 22 | 21 | 21 | 42.82 | 55.98 | 59.11 | 66.26 | 5.00 | 10.00 | 5.00 | 5.00 |
| p17 | 22 | 23 | 24 | 23 | 23 | 40.22 | 53.18 | 54.32 | 64.51 | 4.55 | 9.09 | 4.55 | 4.55 |
| p18 | 21 | 22 | 22 | 22 | 23 | 34.05 | 47.70 | 40.78 | 55.35 | 4.76 | 4.76 | 4.76 | 9.52 |
| p19 | 21 | 22 | 23 | 22 | 23 | 38.97 | 59.18 | 51.54 | 66.93 | 4.76 | 9.52 | 4.76 | 9.52 |
| p20 | 21 | 22 | 23 | 23 | 23 | 37.43 | 63.75 | 47.63 | 67.80 | 4.76 | 9.52 | 9.52 | 9.52 |
| Avg. | | | | | | 21.69 | 30.18 | 28.02 | 35.05 | 3.89 | 6.11 | 4.19 | 5.42 |