**ulysses22.tsp**

SIGMA 1000

Iteration 1

COUNT : 25

COST:63.0

2 1 16 21 3 17 7 0 14 4 10 8 9 18 19 20 6 5 13 11 12 15

Iteration 2

COUNT : 31

COST:64.0

21 3 17 7 0 14 4 10 8 9 18 19 20 6 5 13 11 12 15 2 1 16

Iteration 3

COUNT : 45

COST:66.0

15 0 7 17 3 1 2 16 21 14 4 10 8 9 18 20 19 5 6 11 13 12

Iteration 4

COUNT : 35

COST:63.0

6 5 14 4 10 8 9 18 20 19 15 0 1 2 16 21 17 3 7 12 13 11

Iteration 5

COUNT : 40

COST:66.0

20 19 18 9 8 10 4 14 5 6 12 11 13 17 3 21 16 1 2 7 0 15

Iteration 6

COUNT : 27

COST:65.0

15 11 13 12 6 5 14 4 10 8 9 18 19 20 1 2 16 21 3 17 7 0

Iteration 7

COUNT : 35

COST:66.0

15 13 11 12 6 5 19 20 18 9 8 10 4 14 0 7 17 3 2 1 16 21

Iteration 8

COUNT : 33

COST:66.0

7 17 3 21 16 1 2 15 12 11 13 14 4 10 8 5 6 9 18 19 20 0

Iteration 9

COUNT : 35

COST:66.0

2 16 21 17 3 7 0 15 12 11 13 6 5 14 4 10 8 9 18 19 20 1

Iteration 10

COUNT : 33

COST:65.0

3 17 7 0 12 11 13 6 5 14 4 10 8 9 18 19 20 15 2 1 16 21

SIGMA 2000

Iteration 1

COUNT : 24

COST:66.0

14 4 10 8 9 18 19 20 5 6 11 0 7 17 3 21 16 1 2 15 12 13

Iteration 2

COUNT : 40

COST:67.0

1 0 15 12 13 11 9 18 20 19 6 5 8 10 4 14 7 3 17 21 16 2

Iteration 3

COUNT : 45

COST:63.0

8 9 18 19 20 6 5 13 12 11 15 2 1 16 21 17 3 7 0 14 4 10

Iteration 4

COUNT : 31

COST:64.0

2 1 16 21 3 17 15 19 20 18 9 8 10 4 6 5 14 13 12 11 0 7

Iteration 5

COUNT : 24

COST:65.0

0 7 17 3 21 16 1 2 15 11 13 12 14 5 6 4 10 8 9 18 20 19

Iteration 6

COUNT : 41

COST:64.0

15 11 13 12 6 5 14 4 10 8 9 18 20 19 0 7 17 3 21 16 1 2

Iteration 7

COUNT : 37

COST:67.0

2 1 16 21 3 17 15 20 19 18 9 8 10 4 14 5 6 13 11 12 0 7

Iteration 8

COUNT : 26

COST:65.0

9 18 20 19 7 0 21 17 3 2 1 16 15 12 11 13 14 5 6 4 10 8

Iteration 9

COUNT : 29

COST:64.0

0 7 17 3 21 16 1 2 15 13 11 12 14 4 10 8 5 6 9 18 19 20

Iteration 10

COUNT : 30

COST:69.0

16 2 1 0 15 6 5 8 10 4 14 13 11 12 19 9 18 20 7 17 3 21

SIGMA 3000

Iteration 1

COUNT : 38

COST:64.0

5 6 20 19 18 9 8 10 4 14 7 3 17 21 16 2 1 0 15 12 11 13

Iteration 2

COUNT : 29

COST:65.0

9 18 20 19 7 0 21 17 3 16 1 2 15 12 11 13 14 4 10 8 5 6

Iteration 3

COUNT : 35

COST:68.0

14 21 16 1 2 3 17 7 0 15 13 12 11 9 18 20 19 6 5 8 10 4

Iteration 4

COUNT : 32

COST:63.0

2 1 16 21 3 17 7 0 19 20 18 9 8 10 4 14 5 6 13 12 11 15

Iteration 5

COUNT : 29

COST:64.0

13 5 6 20 19 18 9 8 10 4 14 0 7 3 17 21 16 1 2 15 11 12

Iteration 6

COUNT : 31

COST:67.0

11 15 0 7 21 16 2 1 3 17 12 9 18 19 20 6 5 8 10 4 14 13

Iteration 7

COUNT : 21

COST:66.0

13 12 11 19 20 18 9 6 5 8 10 4 14 17 3 21 16 1 2 7 0 15

Iteration 8

COUNT : 32

COST:64.0

11 7 3 17 21 16 2 1 0 15 19 20 18 9 8 10 4 14 5 6 13 12

Iteration 9

COUNT : 33

COST:63.0

15 0 7 17 3 1 2 16 21 12 13 11 6 5 14 4 10 8 9 18 19 20

Iteration 10

COUNT : 36

COST:67.0

9 18 20 19 0 7 2 1 16 3 17 21 15 13 11 12 14 5 6 4 10 8

SIGMA 4000

Iteration 1

COUNT : 40

COST:64.0

15 13 12 11 6 5 14 4 10 8 9 18 20 19 0 7 17 3 21 16 1 2

Iteration 2

COUNT : 32

COST:64.0

0 7 17 3 21 16 1 2 15 12 11 13 6 5 14 4 10 8 9 18 20 19

Iteration 3

COUNT : 37

COST:64.0

9 18 20 19 15 2 1 16 21 17 3 7 0 12 11 13 14 4 10 8 5 6

Iteration 4

COUNT : 38

COST:63.0

15 11 13 12 6 5 14 4 10 8 9 18 19 20 0 7 17 3 21 16 1 2

Iteration 5

COUNT : 35

COST:65.0

14 4 10 8 9 18 19 20 5 6 12 13 11 15 2 1 16 21 3 17 7 0

Iteration 6

COUNT : 26

COST:64.0

12 13 11 15 2 1 16 21 3 17 7 0 19 20 18 9 8 10 4 14 5 6

Iteration 7

COUNT : 32

COST:64.0

19 20 18 9 8 10 4 14 5 6 11 12 13 0 7 3 17 21 16 1 2 15

Iteration 8

COUNT : 38

COST:68.0

7 0 21 3 17 16 1 2 15 20 19 18 9 6 5 14 4 10 8 12 11 13

Iteration 9

COUNT : 25

COST:65.0

6 5 8 10 4 14 12 13 11 0 7 17 3 21 16 1 2 15 20 19 18 9

Iteration 10

COUNT : 33

COST:65.0

21 16 1 2 15 19 20 18 9 8 10 4 14 5 6 12 13 11 0 7 17 3

SIGMA 5000

Iteration 1

COUNT : 37

COST:66.0

14 12 11 13 7 17 3 1 2 16 21 0 15 20 19 18 9 8 10 4 6 5

Iteration 2

COUNT : 33

COST:62.0

8 9 18 19 20 0 7 17 3 2 1 16 21 15 12 13 11 6 5 14 4 10

Iteration 3

COUNT : 39

COST:65.0

21 17 3 7 0 15 20 19 18 9 8 10 4 14 5 6 11 13 12 1 2 16

Iteration 4

COUNT : 39

COST:62.0

5 14 12 11 13 15 2 1 16 3 17 21 0 7 20 19 18 9 8 10 4 6

Iteration 5

COUNT : 37

COST:65.0

10 8 9 18 19 20 21 16 2 1 17 3 7 0 15 12 13 11 6 5 14 4

Iteration 6

COUNT : 31

COST:66.0

16 2 1 3 17 7 0 13 11 12 14 5 6 4 10 8 9 18 19 20 15 21

Iteration 7

COUNT : 33

COST:69.0

12 9 18 20 19 7 17 3 1 2 16 21 0 15 13 11 6 5 8 10 4 14

Iteration 8

COUNT : 31

COST:64.0

0 7 3 17 21 16 1 2 15 13 11 12 6 5 14 4 10 8 9 18 20 19

Iteration 9

COUNT : 37

COST:67.0

20 19 18 9 11 12 13 14 4 10 8 5 6 0 7 17 3 21 16 1 2 15

Iteration 10

COUNT : 31

COST:63.0

15 2 1 16 21 3 17 7 0 14 4 10 8 9 18 20 19 6 5 13 12 11

SIGMA 6000

Iteration 1

COUNT : 41

COST:66.0

13 11 19 20 18 9 8 10 4 14 5 6 15 0 7 17 3 21 16 2 1 12

Iteration 2

COUNT : 34

COST:64.0

19 20 0 7 3 17 21 16 1 2 15 11 12 13 6 5 14 4 10 8 9 18

Iteration 3

COUNT : 30

COST:66.0

2 1 16 21 3 17 7 0 14 5 6 4 10 8 9 18 19 20 11 12 13 15

Iteration 4

COUNT : 40

COST:66.0

19 20 18 9 8 10 4 6 5 14 13 11 12 0 7 17 3 21 16 1 2 15

Iteration 5

COUNT : 35

COST:65.0

9 8 10 4 14 0 7 3 17 21 16 1 2 15 11 12 13 5 6 19 20 18

Iteration 6

COUNT : 29

COST:64.0

17 3 2 1 16 21 0 15 19 20 18 9 8 10 4 14 5 6 13 11 12 7

Iteration 7

COUNT : 33

COST:63.0

19 20 15 0 21 16 2 1 17 3 7 13 11 12 6 5 14 4 10 8 9 18

Iteration 8

COUNT : 24

COST:68.0

15 21 16 1 2 3 17 7 0 12 11 13 14 5 8 10 4 6 19 18 9 20

Iteration 9

COUNT : 41

COST:65.0

13 11 12 7 17 3 2 1 16 21 0 15 19 20 18 9 8 10 4 14 5 6

Iteration 10

COUNT : 28

COST:63.0

16 21 17 3 7 0 19 20 18 9 8 10 4 14 5 6 13 11 12 15 2 1

SIGMA 7000

Iteration 1

COUNT : 40

COST:66.0

6 13 11 12 3 17 21 2 1 16 7 0 15 20 19 18 9 8 10 4 14 5

Iteration 2

COUNT : 33

COST:66.0

6 5 14 4 10 8 11 12 13 15 2 1 16 21 3 17 7 0 20 19 18 9

Iteration 3

COUNT : 30

COST:64.0

18 19 20 0 7 17 3 21 16 1 2 15 11 13 12 6 5 14 4 10 8 9

Iteration 4

COUNT : 35

COST:66.0

15 2 1 16 17 3 21 0 7 13 11 12 14 5 6 4 10 8 9 18 20 19

Iteration 5

COUNT : 21

COST:68.0

2 1 16 21 3 17 7 0 11 13 6 5 8 10 4 14 12 20 9 18 19 15

Iteration 6

COUNT : 30

COST:66.0

13 15 0 7 21 16 1 2 3 17 12 11 19 20 18 9 8 10 4 14 5 6

Iteration 7

COUNT : 36

COST:65.0

4 10 8 9 18 19 20 0 7 17 3 21 16 1 2 15 11 12 13 6 5 14

Iteration 8

COUNT : 35

COST:67.0

9 18 20 19 6 11 12 13 15 0 7 17 3 1 2 16 21 14 5 4 10 8

Iteration 9

COUNT : 33

COST:65.0

14 4 10 8 9 18 20 19 15 0 7 21 16 2 1 3 17 12 11 13 6 5

Iteration 10

COUNT : 33

COST:65.0

7 17 3 21 16 1 2 15 9 18 19 20 6 5 8 10 4 14 13 11 12 0

SIGMA 8000

Iteration 1

COUNT : 19

COST:65.0

13 6 5 14 4 10 8 9 18 20 19 15 0 7 21 16 2 1 3 17 12 11

Iteration 2

COUNT : 35

COST:65.0

0 12 6 19 20 18 9 8 10 4 5 14 13 11 15 2 1 16 21 17 3 7

Iteration 3

COUNT : 34

COST:65.0

6 12 11 13 15 2 1 16 21 17 3 7 0 19 20 18 9 8 10 4 14 5

Iteration 4

COUNT : 35

COST:64.0

21 16 1 2 15 12 13 11 6 5 14 4 10 8 9 18 19 20 0 7 3 17

Iteration 5

COUNT : 28

COST:64.0

3 21 16 1 2 15 19 20 18 9 8 10 4 14 5 6 11 12 13 0 7 17

Iteration 6

COUNT : 27

COST:65.0

21 16 1 2 3 17 7 0 20 19 18 9 8 10 4 14 5 6 12 11 13 15

Iteration 7

COUNT : 37

COST:65.0

14 4 10 8 9 18 20 19 6 5 13 11 21 16 2 1 17 3 7 0 15 12

Iteration 8

COUNT : 34

COST:66.0

5 14 4 10 8 9 18 19 20 7 0 21 3 17 16 1 2 15 13 12 11 6

Iteration 9

COUNT : 34

COST:65.0

9 18 19 20 0 7 3 17 1 2 16 21 15 11 13 12 6 5 14 4 10 8

Iteration 10

COUNT : 45

COST:65.0

18 9 8 10 4 14 5 6 13 11 12 0 7 3 17 21 16 1 2 15 19 20

SIGMA 9000

Iteration 1

COUNT : 27

COST:70.0

2 3 17 12 13 11 6 5 8 10 4 14 19 20 18 9 15 0 7 21 16 1

Iteration 2

COUNT : 24

COST:67.0

5 6 9 18 20 19 7 0 21 17 3 16 1 2 15 12 11 13 14 4 10 8

Iteration 3

COUNT : 30

COST:69.0

14 4 10 8 6 11 13 12 17 3 21 16 1 2 7 0 15 19 9 18 20 5

Iteration 4

COUNT : 35

COST:64.0

5 6 13 12 11 7 3 17 21 16 2 1 0 15 20 19 18 9 8 10 4 14

Iteration 5

COUNT : 25

COST:60.0

9 18 19 6 5 8 10 4 14 13 12 11 15 0 7 17 3 1 2 16 21 20

Iteration 6

COUNT : 23

COST:66.0

12 20 19 18 9 8 10 4 5 6 14 7 3 17 21 16 2 1 0 15 11 13

Iteration 7

COUNT : 29

COST:64.0

6 19 20 18 9 8 10 4 14 0 7 3 17 21 16 1 2 15 11 12 13 5

Iteration 8

COUNT : 26

COST:65.0

19 0 7 17 3 21 16 1 2 15 11 13 12 14 4 10 8 5 6 9 18 20

Iteration 9

COUNT : 37

COST:68.0

14 4 10 8 11 13 12 7 17 3 21 16 2 1 0 15 19 20 18 9 6 5

Iteration 10

COUNT : 31

COST:64.0

9 18 20 19 5 6 11 13 12 15 2 1 16 21 17 3 7 0 14 4 10 8

SIGMA 10000

Iteration 1

COUNT : 39

COST:67.0

12 11 21 16 2 1 3 17 7 0 15 13 14 4 10 8 9 18 19 20 5 6

Iteration 2

COUNT : 27

COST:58.0

15 20 19 18 9 8 10 4 14 5 6 11 13 12 17 3 1 2 16 21 7 0

Iteration 3

COUNT : 27

COST:66.0

12 13 11 15 0 1 2 16 21 17 3 7 14 5 6 4 10 8 9 18 20 19

Iteration 4

COUNT : 42

COST:67.0

21 15 13 11 12 19 20 18 9 8 10 4 5 6 14 0 7 17 3 2 1 16

Iteration 5

COUNT : 33

COST:65.0

5 6 19 20 18 9 8 10 4 14 7 17 3 21 16 2 1 0 15 11 12 13

Iteration 6

COUNT : 35

COST:67.0

9 5 14 4 10 8 6 13 12 11 0 7 17 3 21 16 1 2 15 20 19 18

Iteration 7

COUNT : 41

COST:64.0

5 14 4 10 8 9 18 19 20 0 7 3 17 21 16 1 2 15 11 13 12 6

Iteration 8

COUNT : 32

COST:66.0

19 6 5 13 12 11 15 0 21 16 1 2 3 17 7 14 4 10 8 9 18 20

Iteration 9

COUNT : 35

COST:65.0

2 15 12 13 11 6 5 14 4 10 8 9 18 20 19 0 7 17 3 21 16 1

Iteration 10

COUNT : 40

COST:64.0

3 17 7 0 15 19 20 18 9 8 10 4 14 5 6 13 11 12 1 2 16 21