Locations found by node degree = 7 10 11 20

cost = 2.7109 \* 104

(the data are taken after running the program for 10 times each)

***Number of controllers = 2***

1. Locations = 12 25 , cost = 1.4101 \* 104
2. **Locations = 4 20 , cost = 1.4234 \* 104**
3. Locations = 12 10 , cost = 1.4101 \* 104
4. **Locations = 16 20 , cost = 1.424 \* 104**
5. Locations = 12 25 , cost = 1.4101 \* 104
6. Locations = 12 20 , cost = 1.4101 \* 104
7. Locations = 10 12 , cost = 1.4101 \* 104
8. Locations = 12 10 , cost = 1.4101 \* 104
9. Locations = 10 12 , cost = 1.4101 \* 104
10. Locations = 10 12 , cost = 1.4101 \* 104

***Number of controllers = 3***

1. Locations = 12 7 20 , cost = 2.0373 \* 104
2. Locations = 20 4 12 , cost = 2.0373 \* 104
3. Locations = 7 12 20 , cost = 2.0373 \* 104
4. Locations = 20 4 12 , cost = 2.0373 \* 104
5. Locations = 18 4 12 , cost = 2.0373 \* 104
6. Locations = 18 7 12 , cost = 2.0373 \* 104
7. **Locations = 12 16 25 , cost = 2.0379 \* 104**
8. Locations = 20 4 12 , cost = 2.0373 \* 104
9. Locations = 20 12 7 , cost = 2.0373 \* 104
10. **Locations = 20 7 9 , cost = 2.0523 \* 104**

***Number of controllers = 4***

1. Locations = 20 12 4 9 , cost = 2.6662 \* 104
2. Locations = 12 4 9 20 , cost = 2.6662 \* 104
3. Locations = 20 12 7 9 , cost = 2.6662 \* 104
4. Locations = 20 12 4 9 , cost = 2.6662 \* 104
5. Locations = 20 12 4 9 , cost = 2.6662 \* 104
6. Locations = 7 9 18 12 , cost = 2.6662 \* 104
7. Locations = 20 7 9 12 , cost = 2.6662 \* 104
8. Locations = 9 7 18 12 , cost = 2.6662 \* 104
9. Locations = 20 4 12 9 , cost = 2.6662 \* 104
10. **Locations = 12 14 4 18 , cost = 2.6671 \* 104**

***Number of controllers = 5***

1. Locations = 7 9 12 14 18 , cost = 3.2959 \* 104
2. Locations = 14 4 12 9 20 , cost = 3.2959 \* 104
3. **Locations = 9 4 10 14 23 , cost = 3.3172 \* 104**
4. Locations = 14 4 9 20 12 , cost = 3.2959 \* 104
5. Locations = 14 4 9 12 20 , cost = 3.2959 \* 104
6. Locations = 12 14 7 20 9 , cost = 3.2959 \* 104
7. Locations = 20 4 9 12 14 , cost = 3.2959 \* 104
8. Locations = 12 9 7 20 14 , cost = 3.2959 \* 104
9. Locations = 14 12 9 17 20 , cost = 3.2959 \* 104
10. Locations = 7 9 14 18 12 , cost = 3.2959 \* 104

**Data for plot**

Execution Time🡪

Rough—133.947936 seconds (2-5)

143.803143 seconds (2-5)

(1-6)