ПОСТРОЕНИЕ КРАТЧАЙШЕГО ОСТОВА ГРАФА

РАСКРАСКА ГРАФА

НАХОЖДЕНИЕ МАКСИМАЛЬНОГО ПОТОКА В СЕТИ

Граф G задан списком ребер E с указанием веса ребра. Требуется, в соответствии с вариантом задания:

1. Построить граф;

2. Раскрасить граф, используя минимальное количество цветов;

2. Найти кратчайший остов графа, полагая длину ребра, равной весу ребра;

3. Считая, что множество E есть множество ориентированных ребер с пропускной способностью, равной весу ребра, а G - сетевой граф с источником в вершине V1 и стоком в вершине V45, найти максимальный поток в сети и указать минимальный (минимальные) разрез(ы) сети.

**Вариант 1.**

E={{1,2,5},{1,3,11},{1,4,11},{1,5,4},{1,9,5},{1,10,11},{1,12,10},{1,14,12},{1,15,6},{1,16,6},{2,6,4},{2,10,11},{3,5,4},{3,6,11},{4,15,5},{4,16,7},{5,22,10},{6,10,10},{9,20,7},{9,23,10},{10,14,4},{10,16,11},{10,22,9},{10,23,4},{12,24,10},{12,27,5},{14,16,12},{14,20,6},{15,22,9},{15,26,5},{16,18,10},{16,25,11},{16,27,4},{16,28,9},{16,29,7},{18,31,10},{18,38,6},{20,29,4},{22,26,10},{22,33,8},{23,25,8},{23,33,9},{24,28,6},{24,32,9},{25,30,5},{25,36,12},{26,31,6},{27,32,9},{27,36,6},{27,39,6},{28,37,12},{29,35,4},{29,40,7},{30,35,11},{30,40,6},{31,37,5},{31,39,6},{31,41,8},{32,33,9},{32,45,6},{33,36,5},{33,39,10},{33,45,10},{35,41,6},{35,45,5},{36,38,9},{36,45,10},{37,39,4},{38,45,11},{39,41,12},{39,45,10},{40,45,12},{41,45,4}}

**Вариант 2.**

E={{1,2,12},{1,3,8},{1,4,7},{1,5,4},{1,8,6},{1,9,12},{1,13,9},{1,14,7},{1,15,10},{2,5,8},{2,9,12},{3,5,7},{3,18,5},{4,8,4},{4,21,11},{5,10,8},{5,13,7},{5,17,5},{8,17,9},{9,16,9},{9,23,5},{9,38,9},{10,25,8},{10,29,5},{10,33,5},{13,18,6},{13,22,9},{14,15,5},{14,21,7},{15,16,5},{15,33,8},{16,21,10},{16,25,10},{17,22,7},{17,27,10},{17,28,12},{18,23,11},{18,31,6},{21,27,9},{21,29,11},{21,36,7},{22,27,11},{22,28,4},{23,25,8},{23,36,12},{25,30,8},{25,35,5},{25,38,12},{27,31,5},{27,35,12},{27,39,10},{28,31,12},{28,34,12},{29,30,7},{30,34,11},{30,35,8},{31,35,6},{31,37,5},{31,41,9},{33,37,7},{34,44,10},{34,45,8},{35,36,7},{35,45,4},{36,37,11},{36,45,7},{37,41,5},{37,45,9},{38,45,7},{39,44,4},{39,45,6},{41,45,6},{44,45,9}}

**Вариант 3.**

E={{1,2,5},{1,4,11},{1,5,8},{1,7,9},{1,8,10},{1,12,10},{1,13,8},{1,16,9},{2,9,5},{2,17,5},{4,14,5},{4,18,4},{5,8,12},{5,14,5},{5,17,7},{7,9,5},{7,13,8},{8,12,11},{8,20,10},{9,12,6},{9,16,4},{12,16,4},{12,20,8},{12,24,12},{12,26,8},{13,17,5},{13,19,10},{13,24,4},{14,20,8},{16,19,7},{16,29,6},{17,18,8},{17,19,5},{17,24,7},{18,19,11},{19,20,11},{19,22,4},{19,24,4},{19,31,9},{20,22,10},{20,23,6},{20,26,6},{20,27,10},{20,35,6},{22,31,11},{22,33,12},{22,40,4},{23,37,8},{23,41,5},{24,26,7},{24,28,7},{24,34,8},{26,32,6},{26,35,8},{26,41,12},{27,29,5},{27,40,4},{28,36,4},{28,45,6},{29,33,6},{31,32,11},{31,36,5},{31,42,10},{32,33,12},{32,34,4},{33,35,8},{33,42,10},{33,43,5},{34,35,10},{34,38,6},{35,45,4},{36,45,9},{37,40,5},{37,45,8},{38,42,10},{38,43,5},{40,45,5},{41,45,9},{42,45,9},{43,45,11}}

**Вариант 4.**

E={{1,3,7},{1,4,8},{1,5,10},{1,7,4},{1,13,9},{1,16,10},{3,12,8},{3,20,4},{4,6,8},{4,14,11},{4,17,4},{5,10,10},{5,16,11},{6,13,6},{6,20,8},{7,10,11},{7,25,6},{10,19,11},{10,22,11},{12,27,6},{12,38,5},{13,27,8},{14,22,5},{14,26,5},{16,22,6},{16,25,9},{16,26,8},{16,29,5},{16,30,8},{17,29,7},{17,42,5},{19,31,9},{19,35,5},{20,26,9},{22,26,9},{22,34,8},{22,35,6},{25,31,12},{26,29,9},{26,30,11},{26,34,4},{26,38,8},{27,36,8},{27,42,7},{29,30,9},{29,36,6},{29,41,9},{30,39,5},{30,40,6},{30,44,4},{31,32,4},{31,44,5},{32,41,4},{32,45,8},{34,43,9},{35,39,12},{36,43,7},{36,44,6},{38,43,12},{39,40,6},{39,45,10},{40,45,7},{41,45,6},{42,45,10},{43,45,9},{44,45,4}}

**Вариант 5.**

E={{1,2,6},{1,5,4},{1,6,10},{1,7,8},{1,9,7},{1,12,4},{1,13,5},{1,14,10},{2,6,12},{2,7,10},{5,14,3},{5,18,5},{6,9,9},{6,20,10},{7,12,9},{7,16,6},{7,25,7},{9,19,8},{9,20,4},{9,21,11},{12,20,12},{12,21,12},{13,15,10},{13,23,11},{13,24,6},{14,16,8},{15,28,7},{15,32,5},{16,19,4},{16,23,7},{18,32,4},{18,36,4},{19,26,4},{19,31,6},{20,22,11},{20,25,5},{20,33,9},{21,28,4},{21,35,11},{22,24,4},{22,33,6},{23,26,6},{23,36,12},{24,25,10},{24,30,11},{25,29,7},{25,35,10},{26,31,12},{26,38,6},{28,39,5},{28,40,5},{28,41,11},{29,34,3},{29,45,7},{30,44,5},{30,45,11},{31,38,12},{31,44,10},{32,39,5},{33,34,12},{33,37,9},{34,45,10},{35,45,11},{36,45,12},{37,41,4},{37,45,9},{38,40,9},{38,45,11},{39,45,6},{40,45,7},{41,45,5},{44,45,9}}

**Вариант 6.**

E={{1,2,5},{1,3,4},{1,9,10},{1,10,5},{1,13,6},{1,14,4},{1,15,12},{2,14,8},{2,31,5},{3,12,4},{3,25,4},{9,15,11},{9,29,7},{10,13,4},{10,32,3},{12,17,7},{12,28,4},{13,15,5},{13,17,6},{13,26,5},{14,19,9},{14,22,9},{14,23,10},{15,19,7},{15,20,8},{15,23,10},{15,25,9},{15,26,7},{15,29,8},{17,20,7},{17,27,4},{19,22,10},{19,30,10},{20,30,5},{20,32,9},{22,31,10},{22,34,7},{23,35,4},{23,36,4},{23,38,4},{25,28,7},{26,35,9},{26,40,11},{27,36,8},{27,43,5},{28,40,10},{28,41,5},{29,38,12},{30,35,5},{30,39,5},{31,43,6},{32,35,6},{32,44,5},{34,37,5},{34,38,9},{35,36,6},{35,38,4},{35,41,10},{35,45,10},{36,37,9},{36,45,4},{37,39,6},{38,45,7},{39,44,12},{39,45,6},{40,45,8},{41,45,10},{43,45,4},{44,45,12}}

**Вариант 7.**

E={{1,2,11},{1,5,12},{1,6,5},{1,8,4},{1,9,7},{1,10,8},{1,11,8},{1,12,11},{1,13,10},{1,16,4},{2,8,5},{2,25,5},{5,19,8},{5,21,6},{6,8,10},{6,11,6},{8,12,7},{8,19,6},{8,23,7},{9,19,5},{9,37,4},{10,24,9},{10,38,4},{11,12,12},{11,22,9},{11,35,5},{12,24,6},{12,25,5},{12,26,12},{13,24,4},{13,31,4},{16,19,10},{16,26,6},{19,21,12},{19,22,12},{19,33,7},{19,34,6},{21,22,11},{22,29,5},{22,30,4},{22,37,6},{23,24,5},{24,26,10},{24,31,4},{24,33,5},{25,26,8},{26,29,7},{26,30,8},{26,34,12},{26,38,7},{29,40,11},{29,42,6},{30,36,5},{30,40,7},{31,34,8},{33,40,11},{33,45,8},{34,38,10},{34,40,9},{34,42,5},{35,36,4},{35,45,12},{36,45,4},{37,45,8},{38,40,7},{38,44,5},{38,45,7},{40,44,9},{40,45,9},{42,45,9},{44,45,10}}

**Вариант 8.**

E={{1,2,7},{1,4,12},{1,5,6},{1,10,9},{1,11,6},{1,13,8},{1,14,4},{1,15,12},{2,8,5},{2,12,4},{4,5,10},{4,11,9},{4,12,4},{5,6,4},{5,9,11},{5,14,10},{5,18,12},{6,9,10},{6,20,4},{8,20,5},{8,37,5},{9,14,10},{9,21,4},{10,18,12},{10,24,7},{11,22,7},{11,25,6},{12,16,11},{13,16,4},{13,19,6},{14,15,12},{14,21,5},{14,27,10},{15,25,4},{15,29,10},{16,27,9},{18,19,12},{18,28,7},{19,31,6},{19,34,6},{20,30,11},{21,27,6},{21,30,5},{21,38,4},{22,27,12},{22,39,5},{24,32,10},{24,36,4},{25,27,5},{25,39,10},{27,28,6},{27,30,7},{27,31,8},{27,32,6},{27,40,11},{28,29,11},{29,32,9},{29,35,4},{29,36,8},{30,37,4},{30,41,10},{31,38,8},{31,42,9},{32,34,12},{32,35,7},{32,45,4},{34,40,11},{34,45,5},{35,42,5},{35,43,5},{36,45,5},{37,45,5},{38,45,9},{39,45,4},{40,45,8},{41,42,10},{41,45,12},{42,43,11},{42,45,9},{43,45,11}}

**Вариант 9.**

E={{1,2,7},{1,3,9},{1,4,12},{1,10,12},{1,11,5},{1,12,5},{1,14,4},{1,16,11},{2,7,7},{2,21,4},{3,4,9},{3,18,4},{4,13,4},{4,14,7},{7,11,4},{7,17,4},{10,12,5},{10,16,11},{11,19,7},{11,23,6},{12,13,11},{12,17,8},{12,20,10},{13,21,6},{13,24,8},{14,16,12},{14,23,11},{14,24,5},{14,28,5},{14,29,8},{16,18,7},{16,20,8},{16,28,10},{17,19,12},{18,24,10},{19,27,10},{19,28,7},{20,23,9},{21,28,10},{23,25,8},{23,29,9},{23,30,12},{23,33,5},{24,25,8},{24,38,8},{25,26,9},{25,28,12},{25,32,10},{26,31,5},{26,34,3},{27,36,3},{27,38,7},{28,29,12},{28,32,9},{28,33,8},{28,36,5},{28,38,6},{29,30,12},{29,34,6},{29,40,7},{30,38,12},{30,44,6},{31,43,4},{31,45,10},{32,34,9},{32,39,9},{33,38,12},{33,39,10},{34,43,9},{34,45,4},{36,38,8},{38,44,4},{38,45,7},{39,40,11},{39,45,6},{40,45,7},{43,45,7},{44,45,10}}

**Вариант 10.**

E={{1,2,12},{1,4,11},{1,5,9},{1,6,11},{1,9,5},{1,10,6},{1,12,9},{1,15,7},{1,16,7},{2,4,10},{2,10,9},{4,8,12},{4,16,6},{5,7,8},{5,12,10},{5,13,10},{6,19,10},{6,30,4},{7,14,10},{7,20,5},{8,19,8},{8,23,4},{9,19,5},{9,24,4},{10,13,11},{10,23,8},{12,20,7},{12,22,9},{12,27,4},{13,22,7},{13,27,12},{14,18,10},{14,23,3},{15,25,11},{15,34,5},{16,18,5},{16,31,9},{18,19,9},{18,25,10},{19,24,6},{19,25,8},{19,28,4},{19,30,7},{20,34,4},{20,44,7},{22,27,9},{22,36,7},{23,33,11},{24,35,7},{25,27,7},{25,31,4},{25,38,11},{27,28,7},{27,40,10},{27,41,6},{28,33,10},{28,35,8},{28,37,4},{30,38,12},{31,41,7},{31,45,7},{33,37,7},{33,41,4},{34,37,7},{35,36,7},{35,43,6},{36,37,6},{36,45,11},{37,41,6},{37,45,9},{38,45,8},{40,44,4},{40,45,8},{41,43,4},{41,44,6},{41,45,9},{43,45,8},{44,45,10}}

**Вариант 11.**

E={{1,2,7},{1,5,7},{1,6,9},{1,7,12},{1,8,12},{1,9,5},{1,10,8},{1,11,5},{1,12,10},{1,16,7},{2,6,11},{2,8,8},{5,11,3},{5,15,5},{6,13,10},{6,19,11},{7,9,8},{7,18,3},{8,10,8},{8,17,6},{8,19,7},{9,14,4},{9,19,12},{10,18,11},{10,19,12},{10,21,6},{11,24,11},{11,30,3},{12,17,4},{12,21,10},{13,15,11},{14,16,5},{14,23,6},{15,23,6},{16,17,7},{16,21,11},{17,21,8},{17,29,4},{18,22,7},{19,31,11},{19,34,7},{21,24,10},{21,26,6},{21,27,5},{21,35,8},{22,36,8},{22,40,6},{23,27,12},{23,28,11},{24,26,8},{24,32,7},{26,27,10},{26,29,11},{27,30,10},{27,36,11},{28,29,11},{28,39,4},{28,41,5},{29,32,4},{29,33,7},{30,43,11},{31,32,9},{31,42,9},{32,35,8},{32,43,6},{32,45,6},{33,37,12},{33,42,9},{34,40,6},{34,41,11},{35,44,12},{35,45,7},{36,39,8},{36,45,8},{37,44,6},{37,45,11},{39,45,10},{40,45,5},{41,45,4},{42,45,4},{43,45,12},{44,45,4}}

**Вариант 12.**

E={{1,3,7},{1,7,5},{1,9,6},{1,10,9},{1,11,5},{1,12,7},{1,13,9},{1,14,7},{3,11,6},{3,20,3},{7,16,10},{7,25,4},{9,13,8},{9,33,3},{10,15,8},{10,18,5},{11,16,5},{11,20,4},{11,24,4},{11,26,10},{12,15,10},{12,25,4},{13,21,5},{13,27,6},{13,28,11},{14,15,9},{14,23,10},{15,21,5},{15,27,10},{15,28,6},{16,18,6},{16,20,8},{18,30,8},{18,41,4},{20,24,8},{20,34,5},{21,23,6},{21,28,4},{23,30,4},{23,36,9},{24,35,11},{24,37,12},{25,34,4},{26,36,6},{26,44,7},{27,28,4},{27,33,4},{28,29,4},{28,39,12},{28,43,7},{29,30,7},{29,32,4},{30,32,10},{30,39,8},{30,45,7},{32,35,6},{33,39,4},{34,37,10},{34,43,11},{35,41,10},{35,43,8},{35,45,8},{36,39,11},{36,45,7},{37,45,7},{39,41,11},{39,45,10},{41,44,9},{41,45,8},{43,45,4},{44,45,4}}

**Вариант 13.**

E={{1,2,9},{1,3,10},{1,4,6},{1,5,4},{1,6,7},{1,10,7},{1,11,5},{1,12,11},{1,14,8},{1,15,10},{1,16,10},{2,5,5},{2,12,3},{2,16,6},{3,4,12},{3,10,10},{4,13,9},{4,17,8},{5,15,6},{5,19,8},{6,10,4},{6,21,3},{10,15,11},{10,17,5},{10,21,5},{11,17,7},{11,41,5},{12,24,4},{12,27,12},{13,16,5},{13,33,4},{14,27,6},{14,29,11},{15,19,11},{15,28,5},{16,17,12},{16,28,10},{17,26,4},{17,28,11},{19,24,6},{19,29,4},{19,30,6},{21,26,4},{21,30,5},{21,35,6},{24,38,5},{26,28,12},{26,29,12},{27,40,4},{28,34,10},{28,38,9},{28,41,11},{28,43,9},{29,35,6},{29,38,11},{29,42,12},{30,32,9},{30,33,8},{32,36,12},{32,44,5},{33,37,5},{34,37,6},{34,45,6},{35,36,10},{36,45,12},{37,42,5},{38,40,9},{38,45,11},{40,45,6},{41,45,7},{42,43,8},{42,45,11},{43,44,5},{43,45,12},{44,45,6}}

**Вариант 14.**

E={{1,2,11},{1,4,8},{1,5,12},{1,6,10},{1,8,7},{1,10,10},{1,13,12},{1,14,5},{1,15,7},{1,16,5},{2,8,7},{2,12,12},{2,16,5},{4,19,6},{4,27,3},{5,14,5},{5,32,4},{6,16,8},{6,21,5},{8,13,10},{8,18,9},{10,17,10},{10,28,4},{12,20,7},{12,26,6},{13,21,5},{13,28,8},{14,24,12},{14,29,9},{15,19,12},{15,29,4},{16,17,4},{16,19,11},{16,27,7},{17,18,9},{17,19,9},{17,27,6},{18,19,5},{18,27,5},{19,20,10},{19,24,12},{19,26,5},{19,28,5},{19,31,12},{20,28,7},{21,31,10},{21,34,3},{24,27,7},{24,30,10},{26,36,8},{26,37,10},{27,30,7},{27,34,8},{27,37,12},{27,41,5},{28,30,5},{28,32,9},{28,36,8},{29,32,7},{29,44,5},{30,35,12},{30,37,6},{30,43,8},{31,35,5},{31,43,8},{32,37,7},{32,39,3},{32,45,10},{34,35,7},{35,45,8},{36,45,12},{37,39,4},{37,41,9},{37,43,5},{37,45,5},{39,45,8},{41,44,10},{41,45,5},{43,45,12},{44,45,12}}

**Вариант 15.**

E={{1,2,11},{1,4,5},{1,5,5},{1,8,8},{1,12,6},{1,13,10},{1,14,12},{1,16,5},{2,14,4},{2,27,3},{4,9,9},{4,15,9},{4,19,9},{5,12,9},{5,15,4},{8,11,12},{8,21,5},{9,19,9},{9,31,6},{11,16,11},{11,29,7},{12,24,12},{12,27,5},{13,23,4},{13,25,6},{14,20,8},{14,22,11},{14,27,4},{15,21,4},{15,30,10},{16,22,4},{16,28,9},{19,22,11},{19,31,10},{20,28,4},{20,35,9},{21,25,10},{22,23,7},{22,25,8},{23,24,6},{23,30,5},{24,32,4},{24,34,6},{25,29,6},{25,30,5},{25,35,8},{27,32,8},{27,36,9},{28,40,4},{28,42,12},{29,34,6},{30,32,7},{30,36,9},{30,37,11},{31,40,4},{31,42,7},{32,36,11},{32,38,10},{32,43,6},{34,37,6},{34,43,9},{35,42,7},{35,43,10},{36,38,9},{36,43,11},{36,45,9},{37,45,5},{38,41,8},{38,42,4},{40,41,12},{41,45,10},{42,45,6},{43,45,9}}

**Вариант 16.**

E={{1,2,7},{1,3,8},{1,5,6},{1,8,4},{1,10,10},{1,11,4},{1,14,4},{2,12,4},{2,14,6},{3,12,4},{3,13,8},{5,17,9},{5,22,5},{8,12,12},{8,13,8},{8,17,8},{8,21,5},{10,11,8},{10,21,10},{11,14,7},{11,19,7},{11,23,8},{12,15,12},{13,17,10},{13,19,11},{14,16,12},{14,20,9},{14,22,6},{14,25,12},{15,28,12},{15,32,3},{15,43,5},{16,19,12},{16,26,5},{17,20,4},{17,25,4},{17,32,8},{19,21,7},{19,30,11},{19,31,9},{20,26,4},{20,29,12},{21,28,10},{21,30,4},{21,32,10},{22,31,12},{23,30,12},{23,34,6},{25,32,9},{25,40,7},{26,33,10},{26,37,4},{28,30,10},{28,33,12},{29,37,12},{29,45,3},{30,31,9},{30,41,8},{30,42,7},{31,34,6},{31,36,5},{31,43,7},{32,33,11},{32,44,4},{32,45,12},{33,40,6},{33,42,9},{33,44,4},{34,36,6},{36,41,5},{36,45,7},{37,44,9},{40,45,8},{41,45,4},{42,45,5},{43,45,8},{44,45,6}

**Вариант 17.**

E={{1,2,8},{1,5,10},{1,7,4},{1,10,6},{1,11,7},{1,12,9},{1,13,5},{1,15,10},{1,19,7},{2,7,5},{2,12,9},{5,16,9},{5,20,3},{7,10,12},{10,13,5},{10,15,8},{10,16,12},{11,13,10},{11,16,11},{12,13,6},{12,19,10},{12,20,6},{12,25,9},{13,18,8},{13,23,5},{13,24,6},{15,23,8},{16,18,10},{16,23,12},{16,31,6},{18,22,6},{18,23,10},{19,31,11},{19,33,3},{20,22,3},{20,30,6},{20,33,8},{22,26,3},{22,35,5},{23,24,10},{23,28,4},{23,30,12},{23,34,11},{23,36,12},{24,25,6},{24,39,7},{25,26,9},{25,36,7},{25,37,10},{26,41,10},{28,37,4},{28,43,10},{30,34,11},{31,40,5},{31,42,12},{33,35,6},{33,40,5},{34,35,4},{34,39,6},{35,36,8},{35,43,9},{35,45,8},{36,44,4},{36,45,7},{37,39,8},{39,41,10},{39,42,9},{39,45,5},{40,42,10},{41,42,6},{41,45,10},{42,45,5},{43,44,5},{43,45,5},{44,45,11}}

**Вариант 18.**

E={{1,4,7},{1,5,12},{1,6,7},{1,7,6},{1,10,6},{1,11,11},{1,12,10},{1,16,12},{4,18,7},{4,32,7},{5,12,9},{5,19,8},{6,11,9},{6,24,5},{7,11,12},{7,19,9},{10,19,4},{10,20,4},{11,20,7},{11,21,8},{11,24,7},{12,18,5},{12,21,12},{12,26,12},{16,19,10},{16,22,4},{18,22,12},{18,23,8},{18,32,12},{19,20,8},{19,31,7},{19,32,6},{20,21,11},{20,26,11},{20,34,4},{20,40,5},{21,22,6},{21,31,5},{22,26,4},{22,35,12},{23,32,6},{23,33,6},{24,28,8},{24,43,4},{26,28,4},{26,34,5},{26,38,11},{28,34,6},{31,36,11},{31,38,6},{31,40,9},{32,40,9},{32,45,12},{33,35,12},{33,36,5},{34,38,4},{34,42,5},{34,45,4},{35,38,7},{35,45,10},{36,45,7},{38,42,11},{38,43,8},{38,45,11},{40,45,6},{42,45,10},{43,45,12}}

**Вариант 19.**

E={{1,4,9},{1,5,8},{1,6,6},{1,8,12},{1,9,12},{1,10,8},{1,13,8},{1,14,6},{1,15,9},{4,10,8},{4,14,3},{5,9,10},{5,20,9},{6,11,9},{6,18,8},{8,23,8},{8,26,4},{9,16,7},{9,24,7},{10,13,9},{10,25,9},{11,19,10},{11,25,5},{13,16,9},{13,17,12},{13,26,5},{14,20,10},{15,18,3},{15,24,4},{16,19,8},{16,26,11},{16,27,5},{17,23,12},{17,35,4},{18,22,7},{19,20,6},{19,24,4},{19,36,5},{20,23,10},{20,29,12},{20,30,5},{20,33,12},{22,31,5},{22,37,5},{23,28,8},{23,29,10},{23,38,9},{24,29,9},{24,31,6},{24,39,5},{24,40,3},{25,31,10},{26,27,11},{26,36,7},{27,28,9},{27,40,8},{28,29,4},{28,36,5},{29,30,8},{29,35,8},{29,38,9},{29,39,5},{30,33,3},{30,38,6},{31,35,4},{31,37,9},{31,45,11},{33,45,10},{35,40,5},{35,45,9},{36,42,8},{36,45,7},{37,45,12},{38,42,5},{38,45,11},{39,44,4},{39,45,12},{40,44,9},{40,45,10},{42,45,9},{44,45,12}}

**Вариант 20.**

E={{1,2,10},{1,3,6},{1,5,6},{1,9,11},{1,11,6},{1,12,10},{1,14,7},{1,15,11},{2,7,3},{2,15,6},{3,7,10},{3,8,4},{5,20,8},{5,29,5},{7,8,9},{7,18,4},{8,20,9},{8,22,8},{9,11,5},{9,12,7},{9,13,10},{11,13,10},{11,16,10},{11,17,7},{12,18,4},{12,27,11},{13,17,10},{13,26,7},{14,16,4},{14,19,11},{15,16,9},{15,18,9},{15,21,10},{16,22,9},{16,30,12},{17,19,12},{17,25,8},{18,31,4},{18,33,8},{19,24,5},{19,26,7},{19,41,3},{20,21,8},{20,22,4},{21,24,12},{21,29,7},{22,24,11},{22,34,8},{22,37,11},{24,33,4},{24,36,7},{24,39,5},{25,29,4},{25,30,10},{26,38,5},{26,39,12},{27,31,3},{27,35,4},{27,37,6},{29,36,7},{29,38,8},{30,34,8},{31,44,7},{33,35,4},{33,36,6},{33,42,5},{34,36,12},{34,41,5},{34,45,7},{35,45,12},{36,37,4},{36,39,10},{36,45,7},{37,42,11},{37,45,8},{38,45,6},{39,44,9},{39,45,5},{41,45,10},{42,44,4},{44,45,6}}