

КОНТРОЛЬНЫЕ ЗАДАНИЯ

Расчет простых цепей

Задача 1. Расчет простой цепи постоянного тока. Определить: а) потенциалы точек А, В, С, D, E, F, G относительно точек O_1, O_2 ; б) напряжение между точками С и O_2 , G и O_2 . Расчет выполнить для двух случаев питания цепи: от источника напряжения и от источника тока. Сопротивления участков цепи, величины напряжений и токов источников заданы в таблице вариантов.

Таблица 1

| № | $U_0, В$ (схема) | $I_0, А$ (схема) | R_1 | R_2 | R_3 | R_4 | R_5 | R_6 | R_7 | R_8 | R_9 | R_{10} | R_{11} | R_{12} |
|----|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|----------|----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 1 | 150(1) | - | 1 | 9 | 9 | 12 | 24 | 10 | 9 | 9 | 1 | 2 | 4 | 20 |
| | - | 24(30) | 2 | 5 | 4 | 3 | 8 | 6 | 12 | 22 | 4 | 18 | 40 | - |
| 2 | 270(2) | - | 4 | 12 | 12 | 6 | 5 | 12 | 12 | 1 | 8 | 12 | 12 | - |
| | - | 30(29) | 4 | 4 | 4 | 20 | 8 | 40 | 5 | 16 | 4 | 2 | 24 | - |
| 3 | 240(3) | - | 12 | 23 | 37 | 12 | 8 | 18 | 8 | 19 | 4 | 12 | 4 | 10 |
| | - | 54(28) | 3 | 2 | 46 | 12 | 10 | 24 | 8 | 10 | 2 | 5 | 20 | - |
| 4 | 100(4) | - | 4 | 2 | 6 | 27 | 10 | 4 | 8 | 19 | 13 | 19 | 5 | 2 |
| | - | 54(27) | 4 | 14 | 6 | 8 | 6 | 9 | 6 | 6 | 6 | 4 | 8 | - |
| 5 | 300(5) | - | 8 | 5 | 29 | 8 | 10 | 8 | 19 | 27 | 3 | 8 | 10 | - |
| | - | 30(26) | 4 | 3 | 12 | 18 | 24 | 9 | 10 | 4 | 18 | 2 | 8 | 12 |
| 6 | 120(6) | - | 36 | 1 | 12 | 6 | 7 | 56 | 8 | 49 | 2 | 7 | 5 | - |
| | - | 28(25) | 16 | 2 | 4 | 24 | 9 | 10 | 20 | 2 | 10 | 20 | 10 | - |
| 7 | 180(7) | - | 4 | 10 | 6 | 6 | 24 | 5 | 10 | 9 | 18 | 4 | 4 | - |
| | - | 90(24) | 4 | 4 | 30 | 20 | 2 | 12 | 10 | 10 | 5 | 20 | 30 | - |
| 8 | 250(8) | - | 4 | 2 | 9 | 2 | 40 | 24 | 10 | 9 | 9 | 9 | 12 | - |
| | - | 36(23) | 5 | 26 | 4 | 12 | 4 | 6 | 8 | 12 | 24 | 8 | - | - |
| 9 | 168(9) | - | 4 | 2 | 19 | 8 | 4 | 7 | 23 | 1 | 4 | 16 | - | - |
| | - | 24(22) | 14 | 20 | 20 | 10 | 12 | 6 | 10 | 9 | 18 | 2 | - | - |
| 10 | 120(10) | - | 7 | 1 | 15 | 18 | 6 | 10 | 25 | 12 | 3 | 24 | - | - |
| | - | 40(21) | 20 | 6 | 20 | 10 | 4 | 8 | 20 | 12 | 6 | 4 | 4 | - |
| 11 | 240(11) | - | 20 | 2 | 10 | 4 | 8 | 24 | 8 | 3 | 6 | 2 | 32 | 30 |
| | - | 10(20) | 4 | 3 | 2 | 15 | 24 | 4 | 10 | 2 | 8 | 24 | 12 | - |
| 12 | 300(12) | - | 6 | 1 | 18 | 15 | 5 | 40 | 42 | 5 | 3 | 5 | - | - |
| | - | 32(19) | 1 | 1 | 8 | 8 | 56 | 7 | 12 | 8 | 24 | 2 | 30 | 6 |
| 13 | 216(13) | - | 6 | 8 | 24 | 18 | 8 | 16 | 6 | 12 | 16 | - | - | - |
| | - | 72(18) | 3 | 6 | 6 | 8 | 4 | 12 | 6 | 6 | 6 | 12 | 9 | 18 |
| 14 | 160(14) | - | 2 | 7 | 3 | 7 | 42 | 56 | 4 | 3 | 14 | 12 | 4 | 9 |
| | - | 26(17) | 3 | 5 | 10 | 52 | 8 | 10 | 10 | 8 | 8 | 3 | 30 | 5 |
| 15 | 210(15) | - | 12 | 6 | 6 | 12 | 12 | 5 | 6 | 6 | 12 | 6 | - | - |
| | - | 12(16) | 6 | 9 | 6 | 6 | 4 | 9 | 9 | 24 | 12 | 9 | - | - |

Продолжение таблицы 1

| № | U_0, B (схема) | I_0, A (схема) | R_1 | R_2 | R_3 | R_4 | R_5 | R_6 | R_7 | R_8 | R_9 | R_{10} | R_{11} | R_{12} |
|----|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|----------|----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 216(16) | 30(15) | 6 | 9 | 6 | 6 | 4 | 9 | 9 | 24 | 12 | 9 | - | - |
| 17 | 320(17) | 24(14) | 12 | 6 | 6 | 12 | 12 | 5 | 6 | 6 | 12 | 6 | - | - |
| 18 | 180(18) | 60(13) | 3 | 5 | 10 | 52 | 8 | 10 | 10 | 8 | 8 | 3 | 30 | 5 |
| 19 | 176(19) | 60(12) | 2 | 7 | 3 | 7 | 42 | 56 | 4 | 3 | 14 | 12 | 4 | 9 |
| 20 | 200(20) | 60(11) | 3 | 6 | 6 | 8 | 4 | 12 | 6 | 6 | 6 | 12 | 9 | 18 |
| 21 | 240(21) | 10(10) | 6 | 8 | 24 | 18 | 8 | 16 | 6 | 12 | 16 | - | - | - |
| 22 | 72(22) | 35(9) | 1 | 1 | 8 | 8 | 56 | 7 | 12 | 8 | 24 | 2 | 30 | 6 |
| 23 | 180(23) | 50(8) | 6 | 1 | 18 | 15 | 5 | 40 | 42 | 5 | 3 | 5 | - | - |
| 24 | 120(24) | 30(7) | 4 | 3 | 2 | 15 | 24 | 4 | 10 | 2 | 8 | 24 | 12 | - |
| 25 | 320(25) | 24(6) | 4 | 2 | 10 | 4 | 8 | 24 | 8 | 20 | 12 | 6 | 4 | 4 |
| 26 | 120(26) | 40(5) | 20 | 6 | 20 | 10 | 4 | 8 | 20 | 12 | 6 | 4 | 4 | - |
| 27 | 180(27) | 48(4) | 7 | 1 | 15 | 18 | 6 | 10 | 25 | 12 | 3 | 24 | - | - |
| 28 | 120(28) | 64(3) | 14 | 20 | 20 | 10 | 12 | 6 | 10 | 9 | 18 | 2 | - | - |
| 29 | 180(29) | 90(2) | 4 | 2 | 19 | 8 | 4 | 7 | 23 | 1 | 4 | 16 | - | - |
| 30 | 240(30) | 60(1) | 5 | 26 | 4 | 12 | 4 | 6 | 8 | 12 | 24 | 8 | - | - |
| | | | 4 | 2 | 9 | 2 | 40 | 24 | 10 | 9 | 9 | 9 | 12 | - |
| | | | 4 | 4 | 30 | 20 | 2 | 12 | 10 | 10 | 5 | 20 | 30 | - |
| | | | 4 | 10 | 6 | 6 | 24 | 5 | 10 | 9 | 18 | 4 | 4 | - |
| | | | 16 | 2 | 4 | 24 | 9 | 10 | 20 | 2 | 10 | 20 | 10 | - |
| | | | 36 | 1 | 12 | 6 | 7 | 56 | 8 | 49 | 2 | 7 | 5 | - |
| | | | 4 | 3 | 12 | 18 | 24 | 9 | 10 | 4 | 18 | 2 | 8 | 12 |
| | | | 8 | 5 | 29 | 8 | 10 | 8 | 19 | 27 | 3 | 8 | 10 | - |
| | | | 4 | 14 | 6 | 8 | 6 | 9 | 6 | 6 | 6 | 4 | 8 | - |
| | | | 4 | 2 | 6 | 27 | 10 | 4 | 8 | 19 | 13 | 19 | 5 | 2 |
| | | | 3 | 2 | 46 | 12 | 10 | 24 | 8 | 10 | 2 | 5 | 20 | - |
| | | | 12 | 23 | 37 | 12 | 8 | 18 | 8 | 19 | 4 | 12 | 4 | 10 |
| | | | 4 | 4 | 4 | 20 | 8 | 40 | 5 | 16 | 4 | 2 | 24 | - |
| | | | 4 | 12 | 12 | 6 | 5 | 12 | 12 | 1 | 8 | 12 | 12 | - |
| | | | 2 | 5 | 4 | 3 | 8 | 6 | 12 | 22 | 4 | 18 | 40 | - |
| | | | 1 | 9 | 9 | 12 | 24 | 10 | 9 | 9 | 1 | 2 | 4 | 20 |

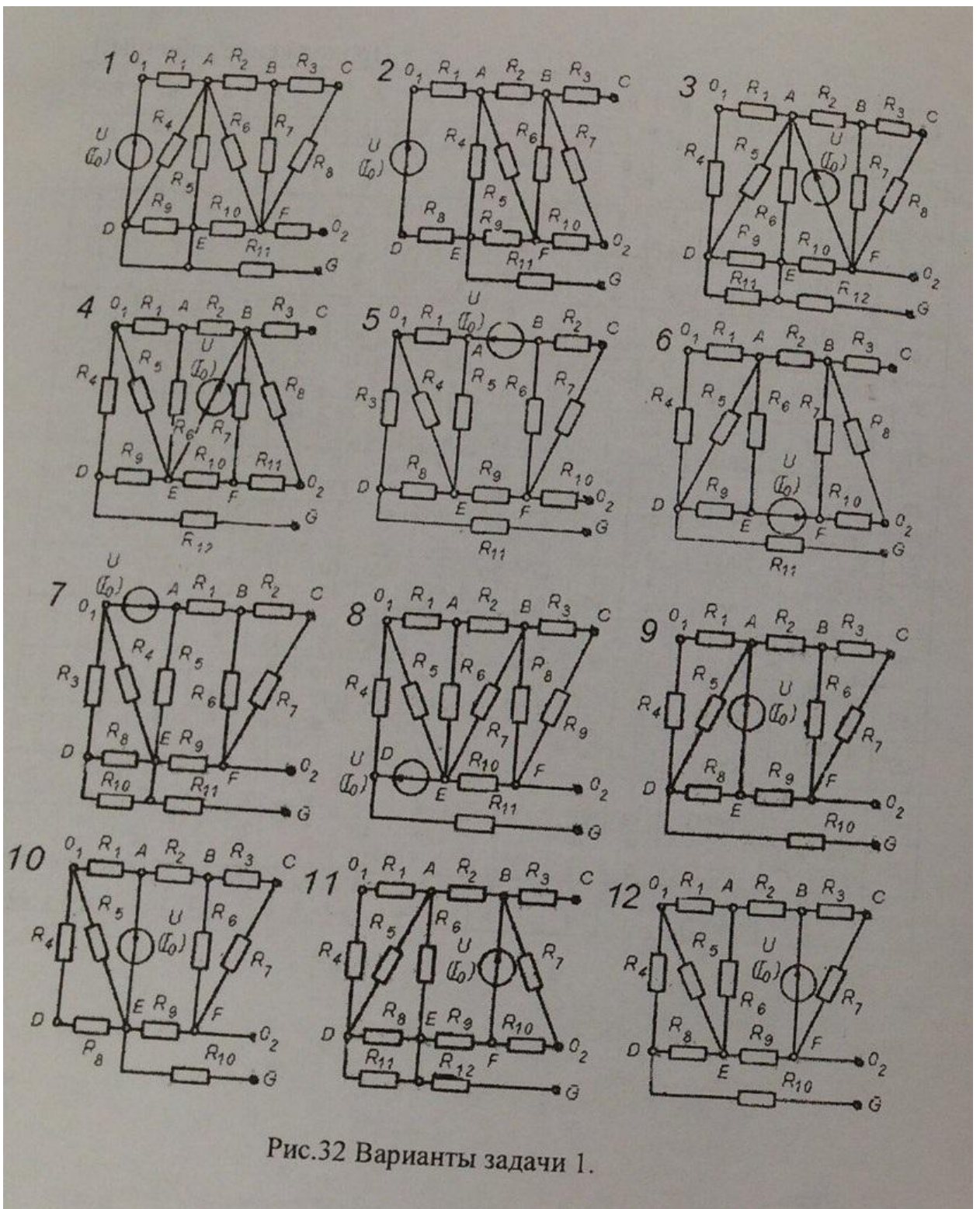


Рис.32 Варианты задачи 1.

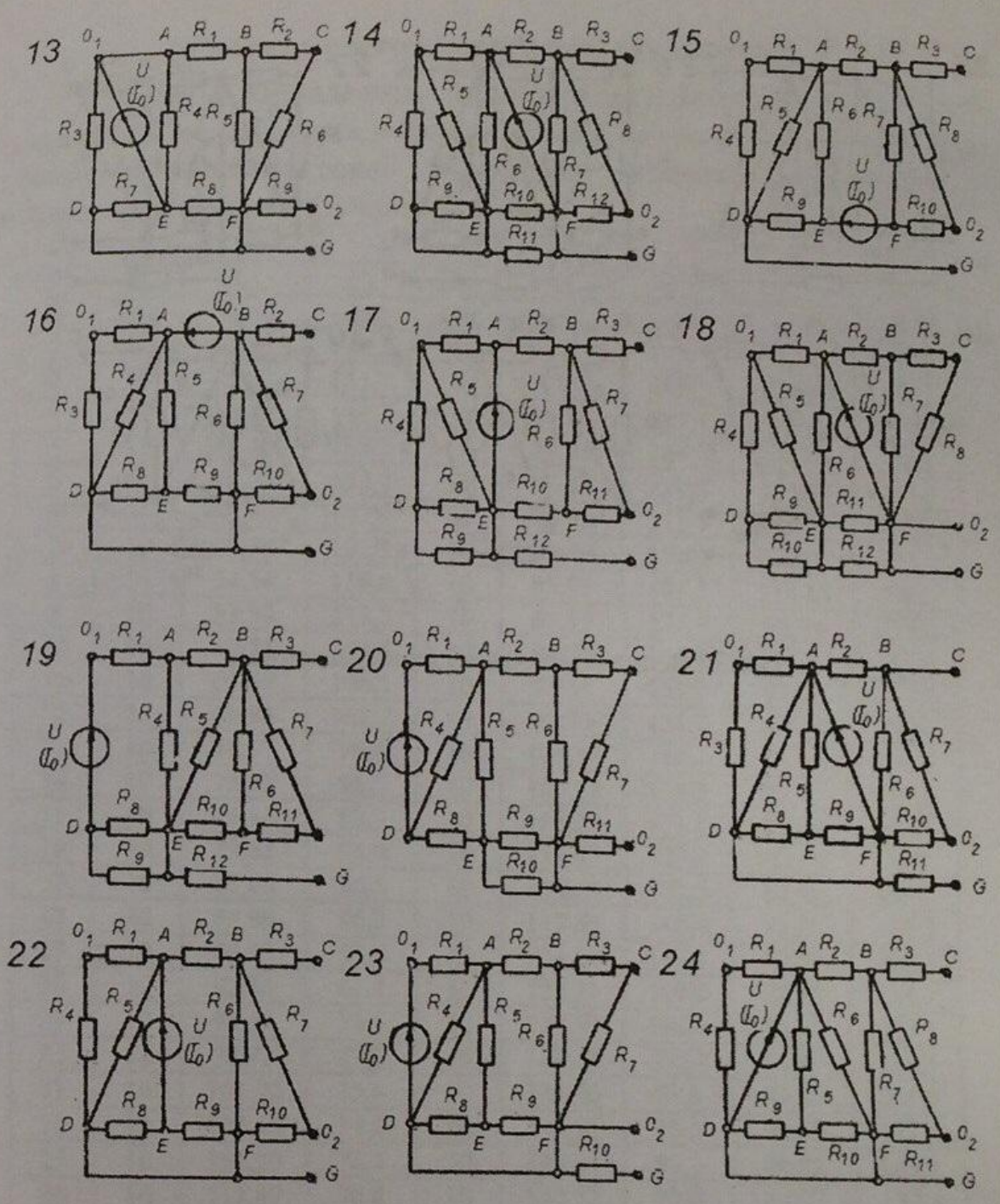


Рис.32 Варианты задачи 1 (продолжение).

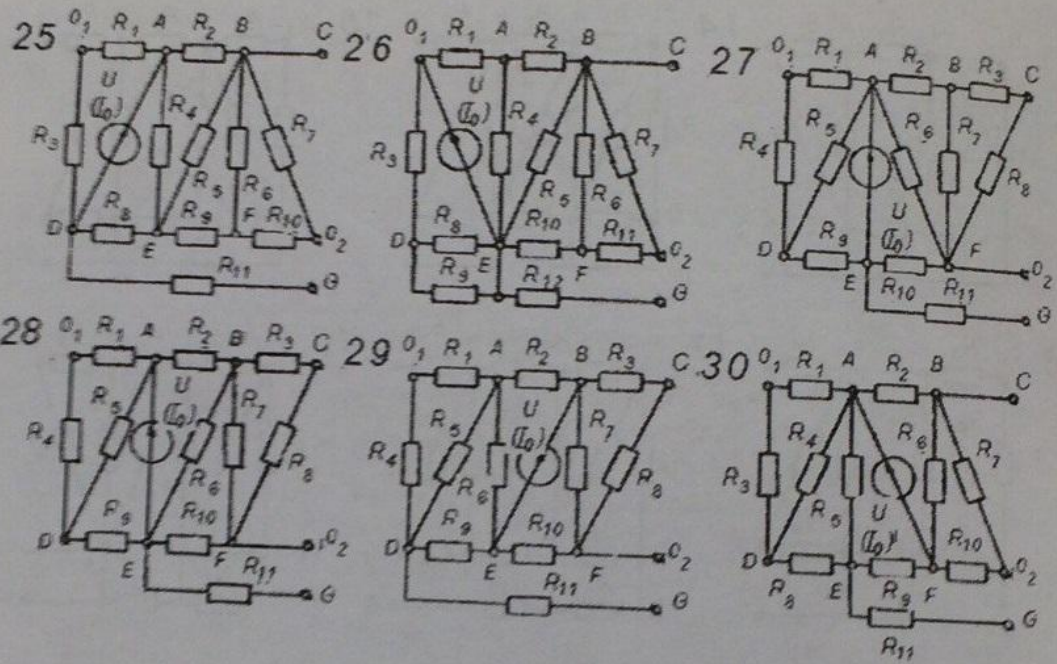


Рис.32 Варианты задачи 1 (продолжение).