**ДОМАШНЕЕ ЗАДАНИЕ №2**

Определить законы изменения во времени токов и напряжений, указанных на схеме стрелками. Построить временные зависимости рассчитанных токов и напряжений. Определить постоянную времени цепи.

Единицы измерения: *e* [В], *i* [А], *R* [Ом], *L* [Гн], *C* [Ф].

Таблица вариантов д.з. № 2.

(все параметры даны в единицах СИ)

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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1 | *Е* | *r* | *r1* | *L* | *C* | | а | 100 | 200 | 200 | 10-2 | 10-6 | | б | 100 | 50 | 50 | 5⋅10-2 | 4⋅10-5 | | в | 100 | 100 | 400 | 5⋅10-2 | 2⋅10-6 | | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 2 | *Е* | *r* | *L* | *C* | | а | 200 | 100 | 10-3 | 10-7 | | б | 100 | 10 | 6⋅10-3 | 10-5 | | в | 100 | 10 | 10-2 | 10-4 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 3 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 180 | 1 | 20 | 30 | 0,05 | 4⋅10-5 | | б | 60 | 2 | 30 | 20 | 0,05 | 4⋅10-5 | | в | 250 | 1 | 25 | 25 | 0,05 | 4⋅10-5 | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 4 | *Е1* | *Е2* | *r1* | *r2* | *L* | *C* | | а | 400 | 100 | 25 | 100 | 0,05 | 5⋅10-4 | | б | 30 | 10 | 20 | 20 | 0,05 | 4⋅10-4 | | в | 600 | 400 | 200 | 50 | 0,05 | (5/3)⋅10-4 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 5 | *E* | *r1* | *r2* | *L* | *C* | | а | 100 | 10 | 10 | 10-2 | 10-4 | | б | 100 | 10 | 10 | 6⋅10-3 | 10-5 | | в | 100 | 100 | 100 | 10-3 | 10-7 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 6 | *Е* | *r* | *r1* | *L* | *C* | | а | 20 | 10 | 10 | 6⋅10-3 | 10-5 | | б | 40 | 10 | 10 | 10-2 | 10-4 | | в | 100 | 100 | 100 | 10-3 | 10-7 | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 7 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 250 | 5 | 20 | 10 | 0,05 | 5⋅10-4 | | б | 250 | 15 | 10 | 10 | 0,05 | 4⋅10-4 | | в | 250 | 25 | 40 | 10 | 0,05 | (5/3)⋅10-4 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 8 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 200 | 5 | 10 | 10 | 0.1 | 10-3 | | б | 24 | 12 | 10 | 8 | 0.5 | 1,25⋅10-3 | | в | 200 | 10 | 15 | 20 | 1/12 | 2,5⋅10-3 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 9 | *E1* | *E3* | *r1* | *r2* | *r3* | *L* | *C* | | а | 100 | 200 | 10 | 10 | 10 | 0,1 | 10-3 | | б | 90 | 440 | 10 | 8 | 40 | 0,5 | 1,25⋅10-3 | | в | 200 | 500 | 15 | 20 | 30 | 1/12 | 2,5⋅10-3 | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 10 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 200 | 10 | 10 | 10 | 0,1 | 10-3 | | б | 180 | 9 | 10 | 8 | 0,5 | 1,25⋅10-3 | | в | 350 | 35/3 | 15 | 20 | 1/12 | 2,5⋅10-3 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 11 | *Е* | *J* | *r1* | *r2* | *L1* | *L2* | | а | 150 | 5 | 7 | 9 | 7/40 | 0,1 | | б | 60 | 10 | 4 | 8 | 0,05 | 0,1 | | в | 100 | 8 | 25 | 75 | 0,1 | 0,25 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 12 | *Е* | *J* | *r* | *L* | *C* | | а | 100 | 10 | 20 | 0,05 | 5⋅10-4 | | б | 200 | 5 | 10 | 0,05 | 4⋅10-4 | | в | 150 | 2,5 | 40 | 0,05 | (5/3)⋅10-4 | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 13 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 100 | 10 | 20 | 10 | 0,05 | 5⋅10-4 | | б | 50 | 5 | 10 | 10 | 0,05 | 4⋅10-4 | | в | 150 | 5 | 40 | 10 | 0,05 | (5/3)⋅10-4 | | |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | 14 | *E* | *J* | *r1* | *r2* | *r3* | *L1* | *L2* | | а | 48 | 14 | 6 | 6 | 8 | 0,1 | 2/15 | | б | 240 | 45 | 8 | 8 | 4 | 0,1 | 0,05 | | в | 300 | 6 | 75 | 75 | 25 | 0,25 | 0,1 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 15 | *Е1* | *Е2* | *r1* | *r2* | *L* | *C* | | а | 100 | 200 | 25 | 100 | 0,05 | 5⋅10-4 | | б | 150 | 100 | 20 | 20 | 0,05 | 4⋅10-4 | | в | 600 | 400 | 200 | 50 | 0,05 | (5/3)⋅10-4 | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 16 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 100 | 2 | 50 | 150 | 0,25 | 10-4 | | б | 200 | 1 | 50 | 50 | 0,25 | 10-4 | | в | 100 | 2,5 | 10 | 15 | 0,04 | 8⋅10-4 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 17 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 100 | 2 | 100 | 150 | 0,25 | 10-4 | | б | 200 | 1 | 100 | 50 | 0,25 | 10-4 | | в | 100 | 2,5 | 20 | 15 | 0,04 | 8⋅10-4 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 18 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 100 | 2 | 50 | 150 | 0,25 | 10-4 | | б | 200 | 1 | 50 | 50 | 0,25 | 10-4 | | в | 100 | 2,5 | 10 | 15 | 0,04 | 8⋅10-4 | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 19 | *Е1* | *Е2* | *r1* | *r2* | *L* | *C* | | а | 200 | 50 | 10 | 10 | 0,1 | 10-3 | | б | 24 | 42 | 10 | 8 | 0,5 | 1.25⋅10-3 | | в | 200 | -10 | 15 | 20 | 1/12 | 2.5⋅10-3 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 20 | *J1* | *J2* | *r1* | *r2* | *L* | *C* | | а | 5 | 10 | 20 | 10 | 0,05 | 5⋅10-4 | | б | 5 | 5 | 10 | 10 | 0,05 | 4⋅10-4 | | в | 15/4 | 5 | 40 | 10 | 0,05 | (5/3)⋅10-4 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 21 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 100 | 2,5 | 10 | 15 | 0,1 | 2.5⋅10-4 | | б | 200 | 5 | 25 | 40 | 0,1 | 2⋅10-4 | | в | 250 | 10 | 25 | 50 | 1/3 | 10-4 | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 22 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 100 | 0,2 | 200 | 100 | 10-2 | 10-6 | | б | 90 | 1 | 50 | 20 | 5⋅10-2 | 4⋅10-5 | | в | 75 | 0.5 | 100 | 10 | 5⋅10-2 | 2⋅10-6 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 23 | *Е* | *J* | *r1* | *r2* | *L* | *C* | | а | 300 | 4 | 50 | 150 | 0,25 | 10-4 | | б | 50 | 4 | 50 | 50 | 0,25 | 10-4 | | в | 37,5 | 10 | 10 | 15 | 0,04 | 8⋅10-4 | | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 24 | *Е* | *r* | *L* | *C* | | а | 20 | 10 | 10-2 | 10-4 | | б | 40 | 10 | 6⋅10-3 | 10-5 | | в | 10 | 100 | 10-3 | 10-7 | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 25 | *J* | *Е* | *r1* | *r2* | *L* | *C* | | а | 10 | 50 | 10 | 50 | 0,1 | 10-3 | | б | 2,4 | 42 | 8 | 42 | 0,5 | 1.25⋅10-3 | | в | 40/3 | 10 | 20 | 10 | 1/12 | 2.5⋅10-3 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 26 | *E* | *r* | *r1* | *r2* | *L* | *C* | | а | 100 | 10 | 30 | 10 | 10-2 | 10-4 | | б | 100 | 10 | 10 | 10 | 6⋅10-3 | 10-5 | | в | 100 | 100 | 50 | 100 | 10-3 | 10-7 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 27 | *Е* | *r* | *r1* | *L* | *C* | | а | 96 | 200 | 200 | 0,01 | 6.25⋅10-6 | | б | 96 | 1200 | 600 | 0,01 | 0.25⋅10-6 | | в | 100 | 400 | 400 | 0,01 | 10-6 | |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 28 | *Е* | *r* | *r1* | *L* | *C* | | а | 50 | 25 | 25 | 0,5 | 2⋅10-4 | | б | 50 | 25 | 25 | 0,4 | 2⋅10-4 | | в | 100 | 15 | 25 | 0,5 | 2⋅10-4 | | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 29 | *Е* | *J* | *r* | *r1* | *L* | *C* | | а | 10 | 1 | 1 | 20 | 0,05 | 5⋅10-4 | | б | 100 | 2 | 1 | 10 | 0,05 | 4⋅10-4 | | в | 400 | 2 | 15 | 40 | 0,05 | (5/3)⋅10-4 | | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 30 | *Е* | *r* | *r1* | *L* | *C* | | а | 100 | 10 | 10 | 10-2 | 10-4 | | б | 100 | 100 | 100 | 10-3 | 10-7 | | в | 100 | 10 | 10 | 6⋅10-3 | 10-5 | |

**Схемы задач ДЗ №2**.

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