ДОМАШНЕЕ ЗАДАНИЕ № 1 (второй семестр).

ОПЕРАТОРНЫЙ Метод РАСЧЕТА электрическОЙ цепИ.

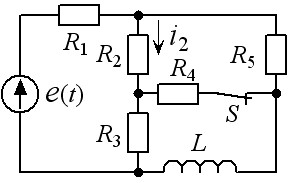
Рассчитать операторным методом ток или напряжение, обозначенные на схеме.

Построить графики входного воздействия и реакции.

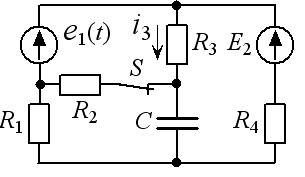
Определить постоянную времени цепи.

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

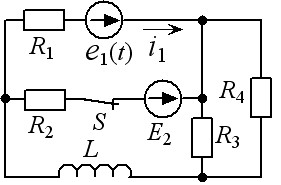
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 |  | *L* | *R*1 | *R*2 | *R*3 | *R*4 | *R*5 | *S* |
| а |  | 0.0909 | 3 | 10 | 20 | 20 | 30 | размык |
| б |  | 0.2 | 40 | 20 | 40 | 40 | 40 | размык |
| в |  | 0.052632 | 16 | 10 | 50 | 25 | 40 | размык |
| г |  | 0.1 | 20 | 10 | 10 | 10 | 10 | размык |



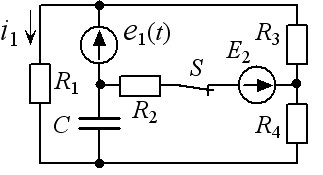
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| 2 |  | *E*2 | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 40 | 0.01 | 10 | 30 | 20 | 20 | размык |
| б |  | 90 | 0.04 | 60 | 20 | 10 | 30 | размык |
| в |  | 50 | 0.05 | 20 | 30 | 14 | 5 | размык |
| г |  | 100 | 0.002 | 20 | 30 | 10 | 20 | размык |



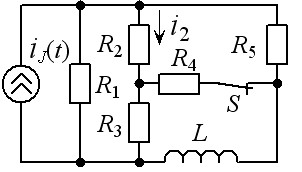
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| 3 |  | *E*2 | *L* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 45 | 0.1 | 2.5 | 2.5 | 10 | 10 | размык |
| б |  | 150 | 0.5 | 5 | 1.67 | 10 | 10 | размык |
| в |  | 60 | 0.5 | 3 | 1.2 | 3 | 1 | размык |
| г |  | 50 | 0.2 | 10 | 20 | 20 | 20 | размык |



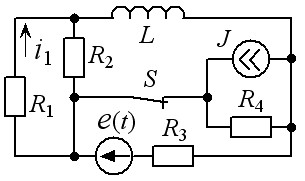
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| 4 |  | *E*2 | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 40 | 9.524·10-5 | 3 | 10 | 5 | 2 | размык |
| б |  | 140 | 1.143·10-4 | 10 | 30 | 60 | 10 | размык |
| в |  | 60 | 9.524·10-4 | 15 | 60 | 20 | 15 | размык |
| г |  | 100 | 0.001 | 20 | 20 | 20 | 20 | размык |



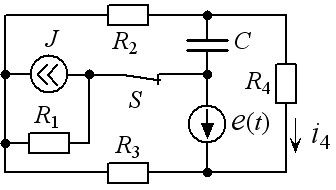
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5 |  | *L* | *R*1 | *R*2 | *R*3 | *R*4 | *R*5 | *S* |
| а |  | 0.2 | 40 | 20 | 40 | 40 | 40 | размык |
| б |  | 0.052632 | 16 | 10 | 50 | 25 | 40 | размык |
| в |  | 0.04545 | 3 | 10 | 20 | 20 | 30 | размык |
| г |  | 0.2 | 20 | 10 | 10 | 10 | 10 | размык |



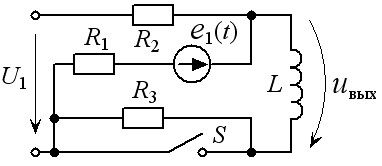
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6 |  | *J* | *L* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 90 | 0.5 | 10 | 10 | 5 | 1.667 | размык |
| б |  | 50 | 0.5 | 1 | 3 | 3 | 1.2 | размык |
| в |  | 18 | 0.1 | 10 | 10 | 2.5 | 25 | размык |
| г |  | 2.5 | 0.1 | 20 | 20 | 20 | 10 | размык |



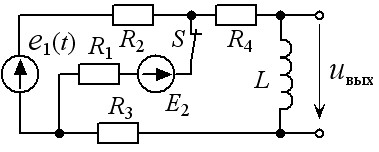
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| 7 |  | *J* | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 1 | 4.762·10-4 | 60 | 15 | 20 | 15 | размык |
| б |  | 4 | 9.524·10-5 | 10 | 2 | 5 | 3 | размык |
| в |  | 4.667 | 1.429·10-5 | 30 | 10 | 60 | 10 | размык |
| г |  | 10 | 5·10-4 | 20 | 20 | 20 | 20 | размык |



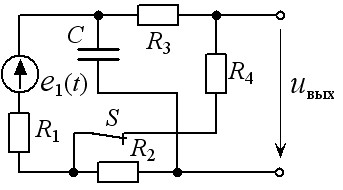
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| --- | --- | --- | --- | --- | --- | --- | --- |
| 8 |  | *U*1 | *L* | *R*1 | *R*2 | *R*3 | *S* |
| а |  | 40 | 0.1 | 40 | 20 | 40 | замык |
| б |  | 120 | 0.2 | 60 | 30 | 60 | замык |
| в |  | 20 | 0.5 | 5 | 5 | 10 | замык |
| г |  | 100 | 0.1 | 20 | 20 | 20 | замык |



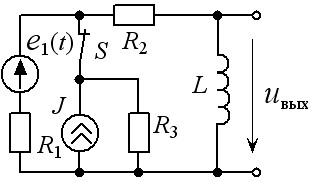
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| 9 |  | *E*2 | *L* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 80 | 0.2 | 40 | 20 | 20 | 20 | размык |
| б |  | 300 | 0.5 | 60 | 30 | 12 | 8 | размык |
| в |  | 90 | 0.25 | 30 | 15 | 3 | 7 | размык |
| г |  | 50 | 0.1 | 10 | 10 | 15 | 15 | размык |



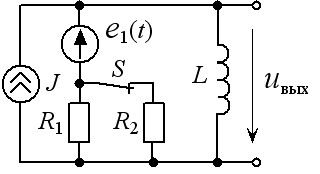
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| 10 |  | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 4·10-3 | 5 | 20 | 10 | 5 | размык |
| б |  | 2.5·10-3 | 10 | 30 | 40 | 40 | размык |
| в |  | 4·10-3 | 20 | 5 | 30 | 10 | размык |
| г |  | 0.0005 | 20 | 20 | 20 | 20 | размык |



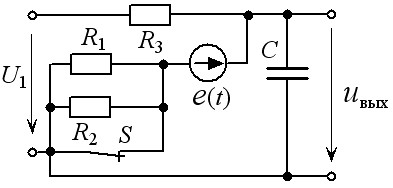
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| --- | --- | --- | --- | --- | --- | --- | --- |
| 11 |  | *J* | *L* | *R*1 | *R*2 | *R*3 | *S* |
| а |  | 3 | 0.25 | 15 | 10 | 30 | размык |
| б |  | 2 | 0.2 | 20 | 40 | 40 | размык |
| в |  | 5 | 0.5 | 30 | 20 | 60 | размык |
| г |  | 2 | 0.2 | 20 | 40 | 10 | размык |



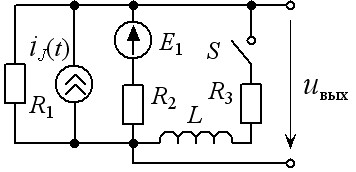
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| --- | --- | --- | --- | --- | --- | --- |
| 12 |  | *J* | *L* | *R*1 | *R*2 | *S* |
| а |  | 1 | 0.01 | 6 | 3 | размык |
| б |  | 8 | 0.02 | 20 | 40 | размык |
| в |  | 5 | 0.01 | 30 | 15 | размык |
| г |  | 10 | 0.1 | 20 | 20 | размык |



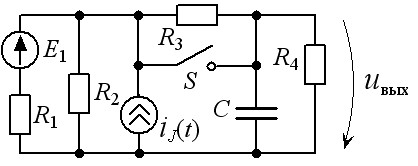
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| 13 |  | *U*1 | *C* | *R*1 | *R*2 | *R*3 | *S* |
| а |  | 80 | 10-3 | 30 | 20 | 24 | размык |
| б |  | 30 | 4·10-3 | 30 | 15 | 5 | размык |
| в |  | 150 | 10-3 | 60 | 10 | 30 | размык |
| г |  | 300 | 0.0005 | 40 | 40 | 20 | размык |



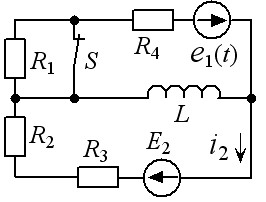
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| --- | --- | --- | --- | --- | --- | --- | --- |
| 14 |  | *E*1 | *L* | *R*1 | *R*2 | *R*3 | *S* |
| а |  | 20 | 0.5 | 5 | 5 | 10 | замык |
| б |  | 40 | 0.1 | 40 | 20 | 40 | замык |
| в |  | 120 | 0.2 | 60 | 30 | 60 | замык |
| г |  | 100 | 0.02 | 20 | 20 | 10 | замык |



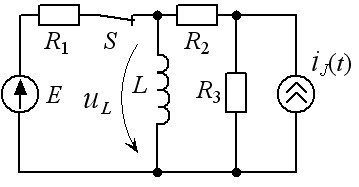
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| 15 |  | *E*1 | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 150 | 10-3 | 30 | 60 | 10 | 10 | замык |
| б |  | 40 | 10-3 | 20 | 40 | 20 | 20 | замык |
| в |  | 30 | 4·10-3 | 15 | 30 | 5 | 5 | замык |
| г |  | 100 | 0.0005 | 20 | 20 | 5 | 5 | замык |



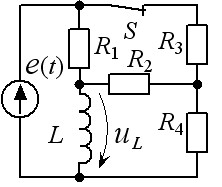
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 16 |  | *E*2 | *L* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 15 | 0.1 | 1 | 2 | 3 | 4 | размык |
| б |  | 24 | 0.25 | 5 | 2 | 4 | 5 | размык |
| в |  | 8 | 0.3 | 6 | 1 | 3 | 6 | размык |
| г |  | 50 | 0.5 | 10 | 10 | 10 | 10 | размык |



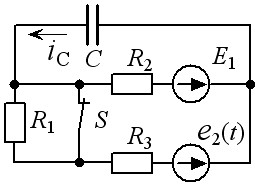
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| 17 |  | *E* | *L* | *R*1 | *R*2 | *R*3 | *S* |
| а |  | 20 | 0.3 | 10 | 18 | 12 | размык |
| б |  | 75 | 0.6 | 25 | 20 | 10 | размык |
| в |  | 72 | 0.5 | 12 | 15 | 20 | размык |
| г |  | 100 | 0.1 | 20 | 10 | 10 | размык |



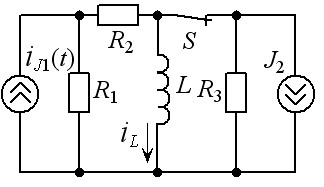
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| --- | --- | --- | --- | --- | --- | --- | --- |
| 18 |  | *L* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 0.01 | 6 | 4 | 2 | 8 | размык |
| б |  | 9.09·10-3 | 4 | 1 | 2 | 6 | размык |
| в |  | 0.02 | 6 | 3 | 2 | 6 | размык |
| г |  | 0.2 | 20 | 20 | 10 | 10 | размык |



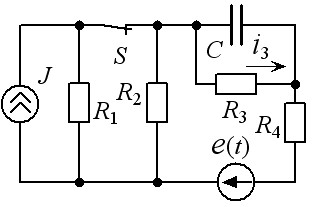
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| 19 |  | *E*1 | *C* | *R*1 | *R*2 | *R*3 | *S* |
| а |  | 12 | 0.5·10-3 | 2 | 3 | 4 | размык |
| б |  | 14 | 0.4·10-3 | 3 | 5 | 2 | размык |
| в |  | 6 | 0.25·10-3 | 9 | 6 | 3 | размык |
| г |  | 40 | 0.002 | 30 | 20 | 20 | размык |



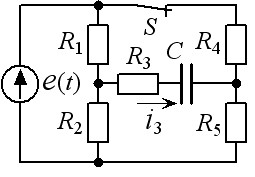
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| 20 |  | *J*2 | *L* | *R*1 | *R*2 | *R*3 | *S* |
| а |  | 3 | 0.4 | 27 | 9 | 4 | размык |
| б |  | 5 | 0.2 | 12 | 10 | 7 | размык |
| в |  | 12 | 0.1 | 8 | 16 | 24 | размык |
| г |  | 10 | 0.05 | 10 | 10 | 20 | размык |



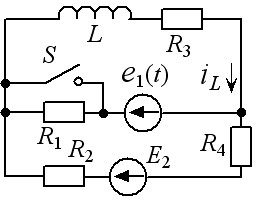
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| 21 |  | *J* | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 4 | 4·10-3 | 8 | 4 | 5 | 1 | размык |
| б |  | 3 | 6.818·10-5 | 3 | 10 | 4 | 1 | размык |
| в |  | 3 | 7.143·10-5 | 6 | 3 | 2 | 4 | размык |
| г |  | 5 | 0.0005 | 20 | 20 | 20 | 20 | размык |



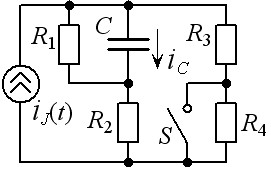
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 22 |  | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *R*5 | *S* |
| а |  | 1.25·10-4 | 2 | 4 | 1 | 5 | 3 | размык |
| б |  | 0.5·10-3 | 6 | 3 | 4 | 2 | 4 | размык |
| в |  | 2.5·10-4 | 3 | 2 | 5.8 | 6 | 3 | размык |
| г |  | 1·10-4 | 20 | 20 | 20 | 20 | 20 | размык |



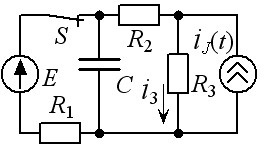
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| 23 |  | *E*2 | *L* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 9 | 0.01 | 4 | 1 | 3 | 5 | замык |
| б |  | 8 | 0.002 | 6 | 3 | 4 | 5 | замык |
| в |  | 64 | 0.25 | 3 | 8 | 3 | 2 | замык |
| г |  | 50 | 0.1 | 20 | 10 | 10 | 10 | замык |



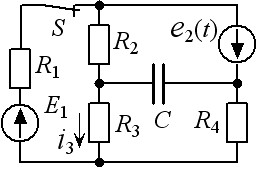
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| --- | --- | --- | --- | --- | --- | --- | --- |
| 24 |  | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 10-4 | 3 | 4 | 2 | 3 | замык |
| б |  | 1.667·10-4 | 4 | 5 | 1 | 5 | замык |
| в |  | 2.5·10-4 | 2 | 7 | 9 | 6 | замык |
| г |  | 2.5·10-4 | 5 | 20 | 20 | 5 | замык |



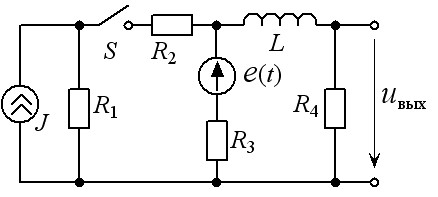
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| --- | --- | --- | --- | --- | --- | --- | --- |
| 25 |  | *E* | *C* | *R*1 | *R*2 | *R*3 | *S* |
| а |  | 120 | 4·10-4 | 250 | 15 | 10 | размык |
| б |  | 110 | 10-4 | 50 | 10 | 40 | размык |
| в |  | 100 | 2.5·10-5 | 20 | 20 | 80 | размык |
| г |  | 50 | 5·10-4 | 20 | 10 | 10 | размык |



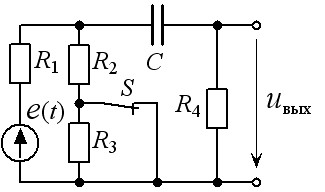
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 26 |  | *E*1 | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 32 | 3.704·10-6 | 8 | 1 | 3 | 6 | размык |
| б |  | 15 | 6.667·10-5 | 3 | 5 | 10 | 5 | размык |
| в |  | 16 | 1.25·10-4 | 4 | 4 | 5 | 3 | размык |
| г |  | 200 | 5·10-4 | 10 | 40 | 20 | 20 | размык |



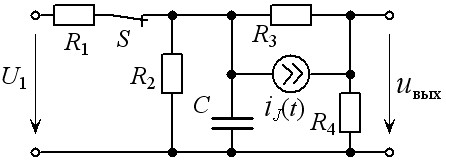
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 27 |  | *J* | *L* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 10 | 1.857 | 3 | 3 | 8 | 4 | замык |
| б |  | 5 | 0.3 | 3 | 1 | 4 | 1 | замык |
| в |  | 8 | 0.143 | 9 | 3 | 2 | 4 | замык |
| г |  | 5 | 0.1 | 10 | 10 | 20 | 20 | замык |



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 28 |  | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 0.25 | 2 | 4 | 6 | 5 | размык |
| б |  | 0.4 | 6 | 9 | 3 | 6 | размык |
| в |  | 0.01 | 30 | 20 | 25 | 32 | размык |
| г |  | 3·10-4 | 20 | 20 | 20 | 20 | размык |



|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 29 |  | *U*1 | *C* | *R*1 | *R*2 | *R*3 | *R*4 | *S* |
| а |  | 48 | 0.25 | 6 | 6 | 8 | 4 | размык |
| б |  | 60 | 2.833 | 15 | 5 | 4 | 8 | размык |
| в |  | 20 | 0.01667 | 4 | 12 | 6 | 6 | размык |
| г |  | 50 | 5·10-4 | 20 | 20 | 20 | 20 | размык |



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 30 |  | *E*1 | *C* | *R*1 | *R*2 | *R*3 | *S* |
| а |  | 24 | 0.5 | 6 | 12 | 16 | замык |
| б |  | 10 | 3.571 | 8 | 2 | 4 | замык |
| в |  | 120 | 0.1 | 1 | 9 | 99 | замык |
| г |  | 50 | 0.002 | 20 | 20 | 10 | замык |

