ДОМАШНЕЕ ЗАДАНИЕ №1

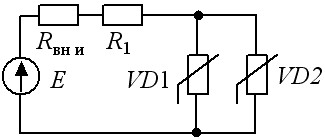
по курсу «Электротехника и электроника»

Расчет диодных и транзисторных цепей.

Задача 1

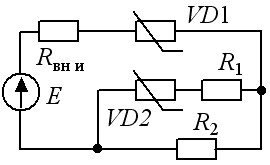
1. Определить типы нелинейных элементов (НЭ) по справочной литературе.
2. Нарисовать схему в соответствии с обозначением по ГОСТ для заданного типа НЭ (с учетом обратного включения стабилитронов и обращенных диодов).
3. Представить справочные данные НЭ в табличной форме.
4. Построить ВАХ НЭ.
5. Рассчитать токи в схеме и напряжение на НЭ.
6. Сделать выводы.

Номиналы резисторов, источников тока и напряжения и тип НЭ заданы в таблице.

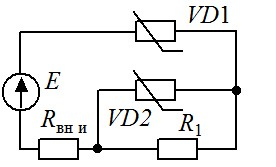


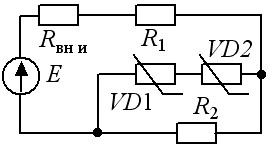
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 1 | а | 1 | 1 | 10 | - | 1П6А-П |
| б | 2 | 1.5 | 10 | - | АЛ310Б |
| в | 3 | 1 | 50 | - | 1П9А-Л |
| г | 4 | 1.5 | 100 | - | АЛ316Б |

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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 2 | а | 4 | 5 | 100 | 50 | АД110А |
| б | 5 | 2 | 50 | 40 | Д9Б |
| в | 2 | 1 | 50 | 20 | Д101 |
| г | 5 | 2 | 60 | 50 | Д102 |



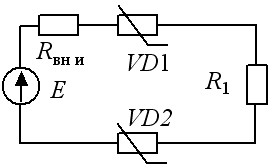
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 3 | а | 12 | 2 | 100 | - | КЛД901А |
| б | 10 | 2.5 | 200 | - | ARL-8013UBD |
| в | 14 | 3 | 200 | - | GNL-8013SBD |
| г | 10 | 4.5 | 50 | - | DFL-8AB4LD |

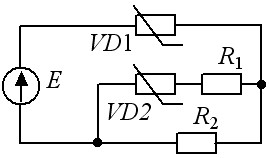




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 4 | а | 1 | 1 | 100 | 50 | 1И104А |
| б | 1.2 | 2 | 150 | 100 | 1И104В |
| в | 0.8 | 1.5 | 100 | 150 | ГИ103Б |
| г | 1 | 1 | 80 | 100 | ГИ103Г |

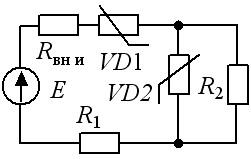
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 5 | а | 18 | 1 | 50 | - | Д808 |
| б | 10 | 0.5 | 10 | - | КС147 |
| в | 15 | 1.5 | 100 | - | КС175А |
| г | 20 | 0.8 | 40 | - | КС210Б |

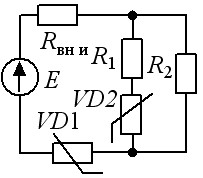




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 6 | а | 3 | - | 40 | 200 | 3ЛС331АМ |
| б | 4 | - | 60 | 100 | АЛС331А |
| в | 3 | - | 30 | 150 | КИПД18Б-М |
| г | 4 | - | 50 | 100 | КИПД37А-М |

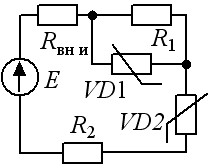
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 7 | а | 1 | 0.5 | 10 | 40 | КД268Б |
| б | 1.2 | 1 | 20 | 50 | КД269А |
| в | 1.4 | 0.8 | 15 | 100 | КД270Г |
| г | 1.2 | 1.2 | 25 | 80 | КД271Д |

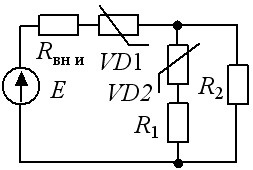




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 8 | а | 3 | 1 | 80 | 50 | АЛ336В |
| б | 4 | 2 | 100 | 80 | КИПД01А-1Л |
| в | 10 | 1.5 | 40 | 20 | КИПД17Б-Л |
| г | 4 | 1 | 80 | 30 | КИПД01А-1Л |

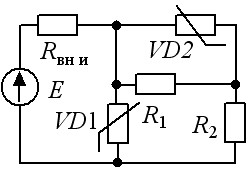
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 9 | а | 4 | 0.5 | 500 | 400 | 1И102А |
| б | 3 | 1 | 1к | 250 | 1И104Г |
| в | 2 | 1.5 | 800 | 300 | 1И104Е |
| г | 3 | 1 | 400 | 300 | 1И101Д |

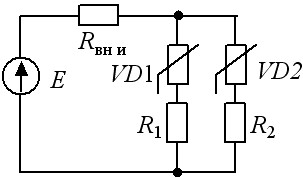




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 10 | а | 25 | 1 | 1к2 | 400 | Д810 |
| б | 15 | 0.5 | 220 | 40 | КС168В |
| в | 25 | 1 | 3к8 | 800 | КС191А |
| г | 40 | 2.5 | 5к | 1к | КС215Ж |

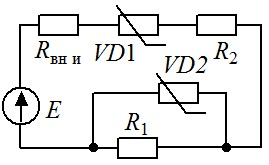
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 11 | а | 5 | 0.5 | 100 | 10 | ВР-1-1 10 |
| б | 20 | 1 | 150 | 20 | ВР-1-1 27 |
| в | 150 | 0.8 | 200 | 50 | CH2-1a 200 |
| г | 15 | 0.6 | 120 | 40 | TVR 05 180 |

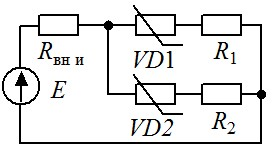




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 12 | а | 3 | 1 | 100 | 100 | 1П7А-Ж |
| б | 4 | 1.5 | 150 | 150 | 1П19А-Ж |
| в | 4 | 1 | 50 | 50 | АЛ310Д |
| г | 3 | 1.5 | 100 | 100 | АЛ336Ж |

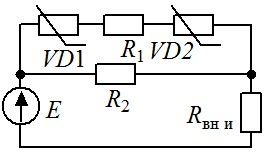
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 13 | а | 20 | 2 | 100 | 10 | Д202В |
| б | 50 | 1 | 50 | 50 | Д202Г |
| в | 10 | 0.5 | 80 | 40 | Д203А |
| г | 40 | 1 | 100 | 80 | Д204А |

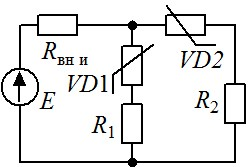




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 14 | а | 3 | 2 | 100 | 50 | 1П17-К/З |
| б | 3.5 | 1 | 50 | 30 | 1П21-К/З |
| в | 3 | 1 | 80 | 120 | КИПД18А-М |
| г | 3.5 | 2 | 40 | 100 | КИПД19А-М |

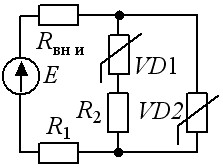
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 15 | а | 2 | 2 | 100 | 100 | ГИ103А |
| б | 1.5 | 1 | 150 | 50 | ГИ103В |
| в | 4 | 1.5 | 200 | 200 | 1И104Б |
| г | 2 | 1 | 150 | 150 | 1И104Д |

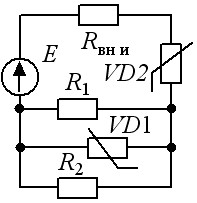




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 16 | а | 50 | 1 | 1к | 800 | Д901Б |
| б | 5 | 0.8 | 800 | 500 | КВ101А |
| в | 25 | 1.2 | 1к2 | 500 | КВ106А |
| г | 30 | 1 | 100 | 600 | КВ108А |

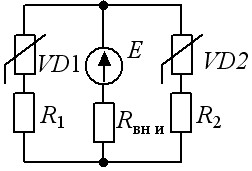
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 17 | а | 80 | 0.5 | 100 | 20 | КД901В |
| б | 50 | 0.8 | 500 | 40 | КВ102А |
| в | 40 | 1.2 | 200 | 50 | КВ104Е |
| г | 100 | 1 | 1к | 10 | КВ106Б |

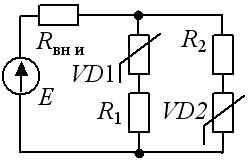




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 18 | а | 300 | 10 | 50 | 80 | TVR 05 390 |
| б | 340 | 5 | 100 | 200 | CH2-1А 430 |
| в | 120 | 12 | 80 | 40 | CH2-1a 180 |
| г | 15 | 8 | 150 | 80 | ВР-1-1 22 |

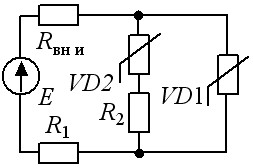
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 19 | а | 3 | 1 | 100 | 150 | 1П5А-О |
| б | 4 | 1.5 | 50 | 100 | 1П6А-О |
| в | 5 | 2 | 150 | 100 | 1П9А-О |
| г | 3 | 1.5 | 120 | 80 | 1П14А-О |

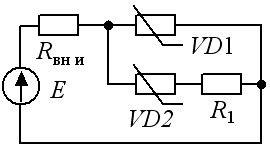




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 20 | а | 1 | 20 | 150 | 100 | Д207 |
| б | 2 | 40 | 100 | 50 | Д223А |
| в | 3 | 50 | 50 | 80 | КД103Б |
| г | 4 | 40 | 80 | 40 | Д226В |

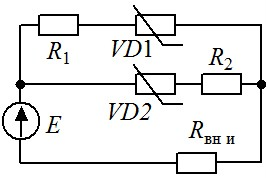
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 21 | а | 20 | 0.5 | 2к2 | 10 | Д809 |
| б | 7 | 0.8 | 200 | 10 | КС158А |
| в | 20 | 1 | 2к2 | 50 | КС182А |
| г | 20 | 0.8 | 900 | 20 | КС211Б |

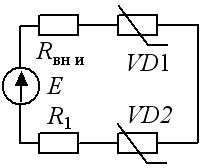




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 22 | а | 2 | 50 | 20 | - | 1П5А-З |
| б | 3 | 40 | 30 | - | 1П7А-7 |
| в | 2.5 | 20 | 50 | - | 1П8Б-И |
| г | 3 | 30 | 40 | - | 1П10Б-З |

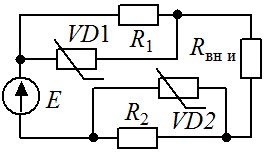
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 23 | а | 50 | 1 | 100 | 120 | Д229Г |
| б | 30 | 1.5 | 120 | 150 | Д242А |
| в | 40 | 1.2 | 150 | 100 | Д245Б |
| г | 60 | 1.4 | 140 | 120 | Д202Б |

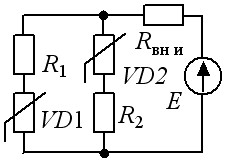




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 24 | а | 10 | 1 | 50 | - | КД272Б |
| б | 20 | 0.9 | 40 | - | КД271А |
| в | 12 | 1.2 | 50 | - | КД269Д |
| г | 14 | 0.8 | 30 | - | КД238ГС |

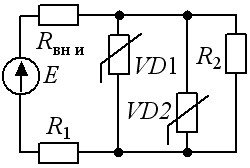
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| --- | --- | --- | --- | --- | --- | --- |
| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 25 | а | 200 | 100 | 200 | 400 | 2Д212А |
| б | 300 | 200 | 400 | 200 | 2Д907А-1 |
| в | 400 | 100 | 300 | 100 | 2Д2990А |
| г | 250 | 50 | 100 | 300 | 2Д2995А |

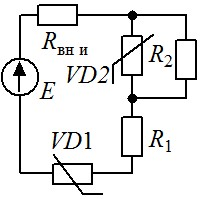




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 26 | а | 4 | 2 | 500 | 100 | КИПД33А-М |
| б | 3.5 | 1 | 200 | 300 | КИПД33Б-М |
| в | 3 | 1 | 400 | 200 | КИПД33А-М |
| г | 4 | 2 | 100 | 50 | КИПД33Б-М |

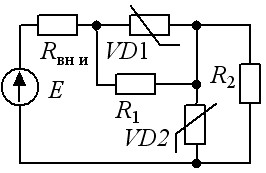
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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 27 | а | 2 | 1 | 20 | 50 | КД906Г |
| б | 3 | 2 | 40 | 40 | КД906Д |
| в | 2 | 0.5 | 30 | 100 | КД906Е |
| г | 2.5 | 1 | 20 | 20 | КД906Г |

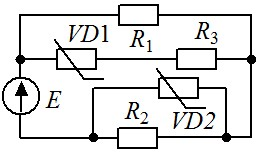




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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 28 | а | 20 | 0.8 | 10 | 400 | Д814А |
| б | 30 | 0.5 | 12 | 350 | Д814В |
| в | 20 | 1 | 8 | 15 | Д814Б |
| г | 40 | 1.2 | 15 | 50 | Д814Е |

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| Вар. | | *E*, В | *R*вн и, Ом | *R*1, Ом | *R*2, Ом | *VD*1,2 |
| 29 | а | 20 | 1 | 40 | 100 | TVR 05 270 |
| б | 300 | 1.2 | 50 | 50 | CH2-1a 390 |
| в | 25 | 0.8 | 10 | 120 | ВР-1-1 33 |
| г | 10 | 1 | 30 | 80 | ВР-1-1 15 |





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| Вар. | | *E*, В | *R*1, Ом | *R*2, Ом | *R*3, Ом | *VD*1,2 |
| 30 | а | 300 | 100 | 200 | 400 | Д18 |
| б | 200 | 200 | 100 | 200 | Д219А |
| в | 100 | 150 | 200 | 200 | Д311А |
| г | 400 | 200 | 100 | 500 | Д311Б |