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| **SERIES CIRCUIT AND PARALLEL CIRCUIT** |
| **branch** | **value** |
| **series** | **in 'order to** |
| **parallel ['раегэЫ]** | **(the) same** |
| **main** | **voltage drop** |
| **line** | **small** |
| **use** |  |

Compare circuits "a" and "b". Circuit "a" consists of a voltage source and two resistors. The resistors are con­nected in series. Circuit "a" is a series circuit.

Circuit "b" consists of a voltage source and two resistors. The resistors are connected in parallel. Circuit "b" is a parallel circuit.

A parallel circuit has the main line and parallel branches.

In circuit "b" the value of voltage in R1 is equal to the value of voltage in R2. The value of voltage is the same in all the elements of a parallel circuit while the value of current is different. A parallel circuit is used in order to have the same value of voltage.

In circuit "a" the value of current in R1 is equal to the value of current in R2. The value of current is the same in all the elements of a series circuit while the value of voltage is different. A series circuit is used in order to have the same value of current. In R1 V1 = IR1. IR1 is the voltage drop in R1. In R2 the voltage is equal to IR2; *IR2* is the voltage drop in R2. In circuit "c" a trouble in one element results in no current in the whole circuit. In circuit “d” a trouble in one branch results in no current in that branch only. A trouble in the main line results in no current in the whole circuit.

**Последовательная и параллельная цепь**

Сравните цепи «a» и «b». Цепь «а» состоит из источника питания и двух сопротивлений. Сопротивления соединены последовательно. Цепь «а» - последовательная цепь.

Цепь «b» состоит из источника питания и двух сопротивлений. Сопротивления соединены параллельно. Цепь «b» - параллельная цепь.

В параллельной цепи есть главная линия и параллельные ветви.

В цепи «b» напряжение в «R1» равно напряжению в «R2». Напряжение одинаково во всех элементах параллельной цепи, а ток разный. Параллельная цепь применяется, если надо иметь одинаковую величину напряжения.

В цепи «а» ток в «R1» равен току в «R2». Ток одинаковый во всех элементах

последовательной цепи, а напряжение разное. Последовательная цепь применяется, если надо иметь одинаковую величину тока. В R1 V1=IR1. IR1 – это падение напряжения в R1. В R2 напряжение равно I x R2.IR2 – это падение напряжения в R2. В цепи «с» поломка в одном элементе приводит к отсутствию тока во всей цепи. В цепи «d» поломка в одной ветви приводит к отсутствию тока только в этой ветви. Поломка в главной линии приводит к отсутствию тока во всей цепи.

Спишите отрывок и вставьте пропущенные слова

A parallel circuit is in order to have the same value of voltage.

In circuit "a" the value of current in R1 is equal to the value of current in R2. The value of current is the in all the elements of a series circuit while the value of voltage is different. A series circuit is used in order to have the same value of. In R1 V1 = IR1. IR1 is the voltage drop in R1. In R2 the voltage is equal to IR2; *IR2* is the voltage drop in R2. In circuit "c" a in one element results in no current in the whole circuit. In circuit “d” a in one branch results in no current in branch only. A in the main line results in no current in the whole circuit.

EXERCISES

A

**Выберите правильный вариант**:

1. a parallel circuit has

a) parallel branches only

b) the main line and parallel branches

2. a parallel circuit is used in order

a)' to have the same value of current in all the elements

b) to have the same value of voltage in all the elements

3. in a parallel circuit a trouble in one branch

a) results in no current in that branch only

b) results in no current in the whole circuit

4. no current in a parallel circuit

a) results from a trouble in one branch

b) results from a trouble in the main line

5. the sum of IR voltage drops

a) is equal to the value of voltage in the circuit

b) is less than the smallest voltage drop

c) is more than the value of voltage in the circuit

B

**Закончите предложения используя слова с противоположным значением**

M o d e 1: Resistors connected in. series have the same value of current …

Resistors connected in series have the same value of current while resistors connected in parallel have the same value of voltage.

1. Resistors connected in series have different values of voltage while... . 2. A trouble in one element of a series circuit results in no current in the whole circuit while....

3. In order to have. the same value of current in all the elements, a series circuit is used while.... 4. No current in a parallel circuit results from a trouble in the main line while....

C

**Ответьте на вопросы**

1.  What type of circuit has the main line and parallel branches? 2. What type of circuit is used in order to have the same value of current in all the elements? 3. What type of circuit is used in order to have the same value of voltage in all the elements? 4. What does a trouble in the main line result in? 5. What does a trouble in a branch result in? 6. What does no current in a series circuit result from? 7. How much is the sum of IR voltage drops equal to? 8. What is the difference between series and parallel circuits?