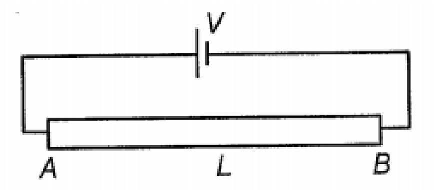
1.

The temperature coefficient of resistance of a wire is $2 \times 10^{-5}\ ^{\circ}C^{-1}$. If its temperature is increased by $200^{\circ}C$, then the percentage increase in its resistance will be:

1. 2%
2. 0.2%
3. 4%
4. 0.4%

2.

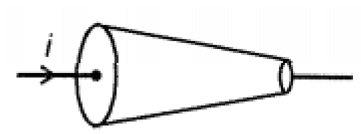
When the battery of emf V is applied across a conductor AB, the drift speed of electrons through the conductor is v. If the battery is replaced by a battery of emf $\frac{V}{2}$, then the new drift speed of free electrons will be:



1. v
2. $\frac{v}{2}$
3. 2v
4. Zero

3.

The current passes through a wire of variable cross-section in steady-state as shown. Then incorrect statement is:



(1) Current density increases in the direction of the current.

(2) Potential increases in the direction of the current.

(3) Electric field increases in the direction of the current.

(4) Drift speed increases in the direction of the current.

4.

The current in a wire varies with time according to the equation I = 4 + 2t, where I is in ampere and t is in sec. The quantity of charge which has passed through a cross-section of the wire during the time t = 2 sec to t = 6 sec will be:

(1) 60 coulomb

(2) 24 coulomb

(3) 48 coulomb

(4) 30 coulomb

5.

The length of a conductor is doubled keeping the volume constant. Percentage increase in its resistance is:

(1) 100%

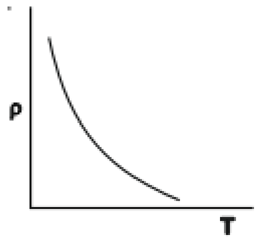
(2) 200%

(3) 300%

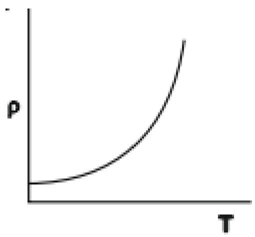
(4) 400%

6.

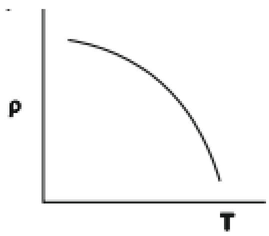
Which of the following graph represents the variation of resistivity (ρ) with temperature (T) for copper?



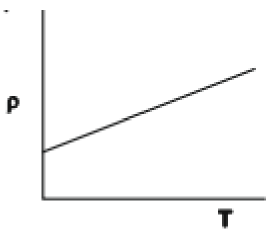
(1)



(2)



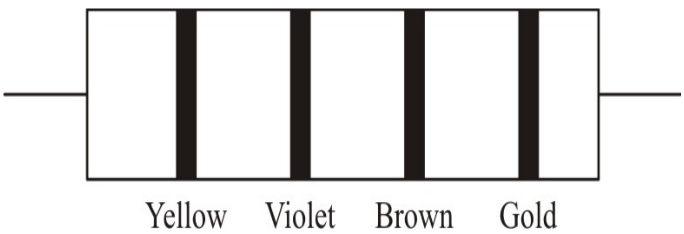
(3)



(4)

7.

The colour code of resistance is given below:



The values of resistance and tolerance, respectively are:

1. 47 kΩ, 10%
2. 4.7 kΩ, 5%
3. 470 Ω, 5%
4. 470 kΩ, 5%

8.

A carbon resistor of (47 ± 4.7) kΩ is to be marked with rings of different colours for its identification. The colour code sequence will be:

1. Violet - Yellow - Orange - Silver
2. Yellow - Violet - Orange - Silver
3. Yellow - Green - Violet - Gold
4. Green - Orange - Violet - Gold

9.

The smallest resistance that can be obtained by the combination of n resistors each of resistance R is:

1. n^2R
2. nR
3. $\frac{R}{n^2}$
4. $\frac{R}{n}$

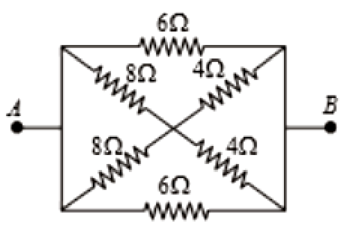
10.

The resultant resistance value of n resistors, each of r ohms and connected in series is x. When those n resistors are connected in parallel, the resultant value is

1. $\frac{x}{n}$
2. $\frac{x}{n^2}$
3. n^2x
4. nx

11.

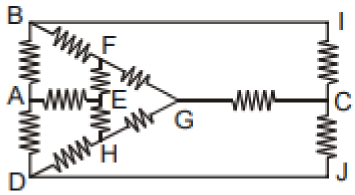
In the circuit shown in the figure, the effective resistance between A and B is:



1. 2Ω
2. 4Ω
3. 6Ω
4. 8Ω

12.

Find the equivalent resistance between A and E (the value of each resistor is R).



(1) $\frac{7}{12}$R

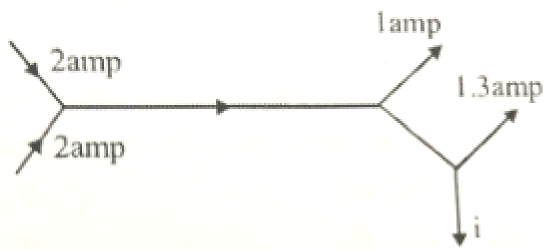
(2) $\frac{7}{13}$R

(3) $\frac{7}{15}$R

(4) $\frac{8}{13}$R

13.

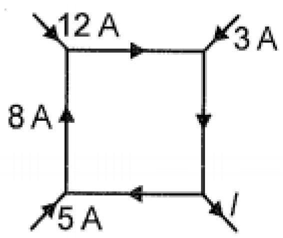
The figure below shows currents in a part of the electric circuit. The current 'i' is:



1. 1.7 amp
2. 3.7 amp
3. 1.3 amp
4. 1 amp

14.

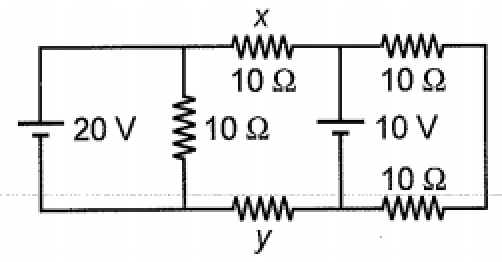
The current I in the circuit shown below is:



1. −3 A
2. 3 A
3. 13 A
4. 20 A

15.

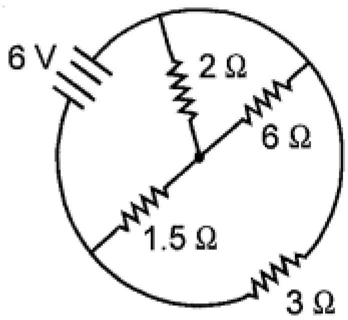
What is the ratio of currents flowing in the resistors x and y of resistance 10 Ω each?



1. 1
2. 0.5
3. 1.5
4. 2.0

16.

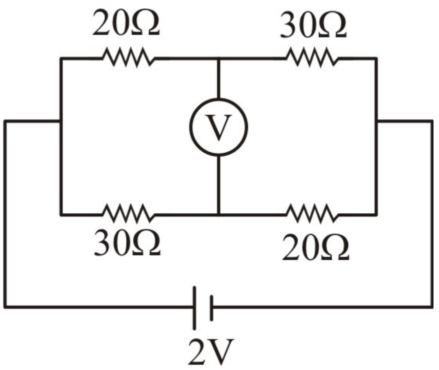
The total current supplied to the circuit by the battery in the given circuit is:



1. 1 A
2. 2 A
3. 4 A
4. 6 A

17.

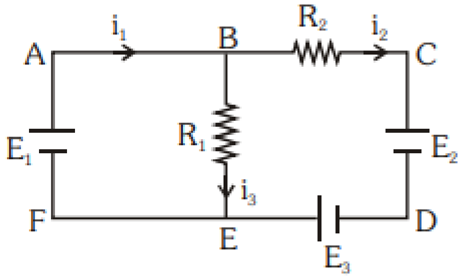
The reading of an ideal voltmeter in the circuit shown is:



1. 0.6 V
2. 0 V
3. 0.5 V
4. 0.4 V

18.

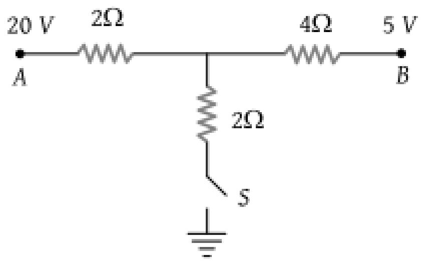
For the circuit given below, the Kirchoff's loop rule for the loop BCDEB is given by the equation:



1. $-i_2R_2 + E_2 - E_3 + i_3R_1 = 0$
2. $i_2R_2 + E_2 - E_3 - i_3R_1 = 0$
3. $i_2R_2 + E_2 + E_3 + i_3R_1 = 0$
4. $-i_2R_2 + E_2 + E_3 + i_3R_1 = 0$

19.

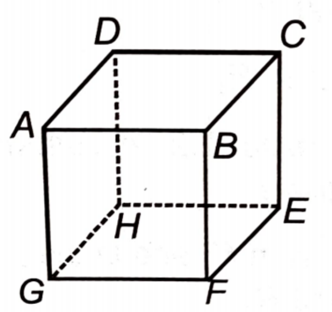
As the switch S is closed in the circuit shown in the figure, the current passed through it is:



(1) 4.5 A
(2) 6.0 A
(3) 3.0 A
(4) Zero

20.

Twelve wires of equal resistance R are connected to form a cube. The effective resistance between two diagonal ends A and E will be:



1. $\frac{5R}{6}$
2. $\frac{6R}{5}$
3. 12R
4. 3R

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