

DPP – 9 (Current Electricity)

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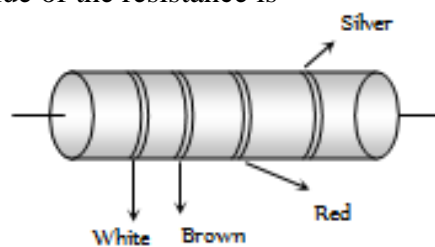
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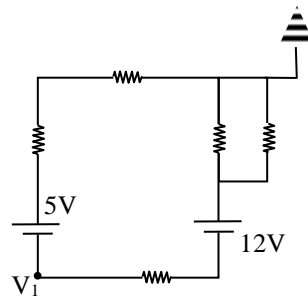
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- Q 1. In the figure a carbon resistor has bands of different colours on its body as mentioned in the figure. The value of the resistance is

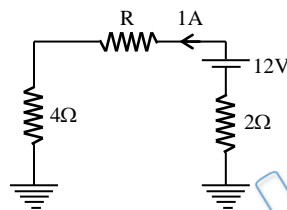


- (a) $2.2 \text{ k}\Omega$ (b) $3.3 \text{ k}\Omega$ (c) $5.6 \text{ k}\Omega$ (d) $9.1 \text{ k}\Omega$
- Q 2. The colour sequence in a carbon resistor is red, brown, orange and silver. The resistance of the resistor is
- (a) $21 \times 10^3 \pm 10\%$ (b) $23 \times 10^1 \pm 10\%$
(c) $21 \times 10^3 \pm 5\%$ (d) $12 \times 10^3 \pm 5\%$
- Q 3. What is the color code of $33\text{k}\Omega \pm 5\%$?
- (a) Orange, red, red, gold
(b) Red, red, red, silver
(c) orange, orange, orange, gold
(d) Yellow, yellow, red, silver
- Q 4. A resistor has only three bands and all bands are red. Find minimum resistance of resistor ?
- (a) 2200 ohm
(b) 3300 ohm
(c) 1100 ohm
(d) 1760 ohm
- Q 5. In the circuit shown, each resistance is 2ohm. The potential V_1 as indicated in the circuit, is equal to –



- (a) 11 V (b) - 11V
(c) 9 V (d) - 9 V

Q 6. In the circuit shown in figure the value of R is-

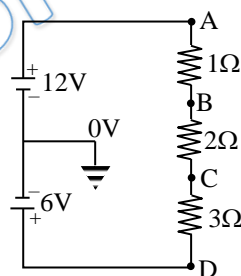


- (a) 8 ohm (b) 10 ohm
(c) 6 ohm (d) 9 ohm

Q 7. What is the resistance of a carbon resistance which has bands of colours brown, black and brown

- (a) 100 Ω (b) 1000 Ω
(c) 10 Ω (d) 1 Ω

Q 8. In the circuit diagram shown in Figure, the potentials of the points B, C and D are respectively-

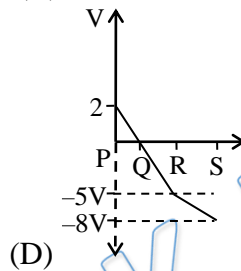
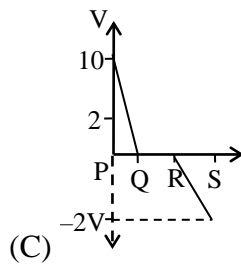
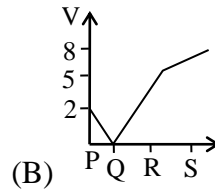
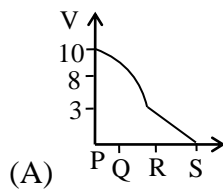
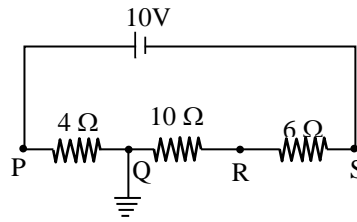


- (a) 12V, 10V, 6V (c) 11V, 9V, 0V
(b) 11V, 9V, 6V (d) 12V, 10V, 0V

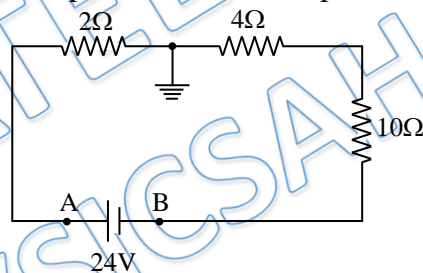
Q 9. A 24 volt battery of internal resistance of 4ohm is connected to a variable resistance. The rate of heat production in the resistor is maximum when current in the circuit is –

- (a) 2 A (c) 4 A
(b) 3 A (d) 6 A

Q 10. The correct graph representation of potential along the branch PQRS is -



Q 11. In given circuit potential of point A & B are respectively -



- (a) + 24 V, zero (c) + 24 V, - 24 V
 (b) + 3V, - 21 V (d) - 3V, + 21V



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Answer Key

Q.1 d	Q.2 a	Q.3 c	Q.4 d	Q.5 d
Q.6 c	Q.7 a	Q.8 b	Q.9 b	Q.10 d
Q.11 b				

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Awesome! **PHYSICSLIVE** code applied

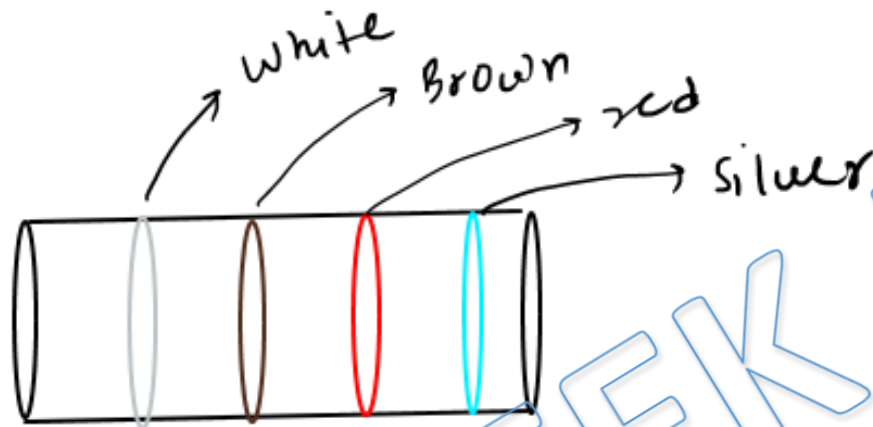
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Written Solution

**DPP-9 Current Electricity: Electrochemical equivalent,
colour coding, earthing**

By Physicsaholics Team

Solution: 1



$$\Rightarrow 91 \times 10^2 + 10\%.$$

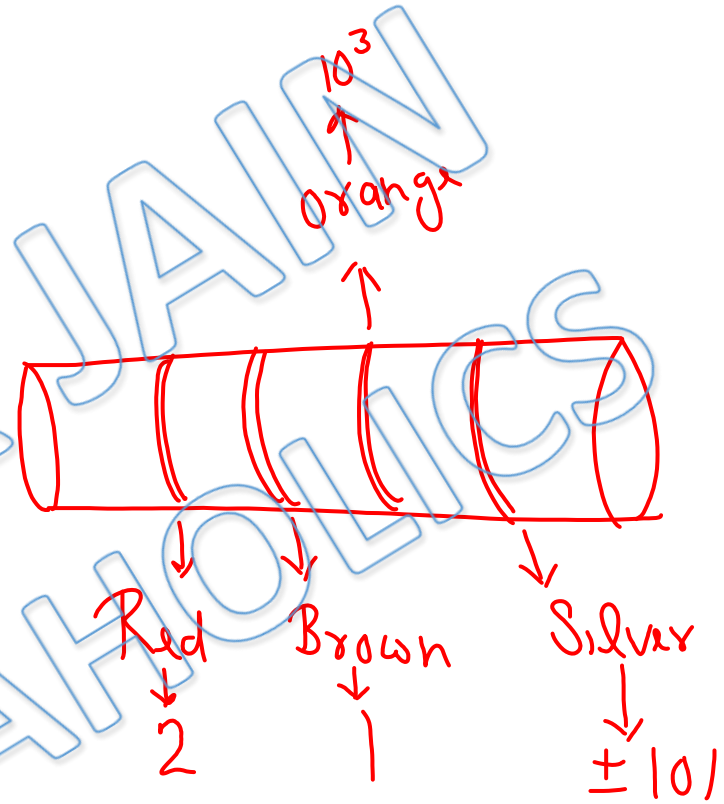
$\Rightarrow 9.1 \text{ k}\Omega$ option (d)

B	0
B	1
R	2
0	3
Y	4
G	5
B	6
V	7
G	8
W	9

Ans. d

Solution: 2

$$R = 21 \times 10^3 \pm 10\%$$
$$= 21 \text{ k}\Omega \pm 10\%$$



Ans. a

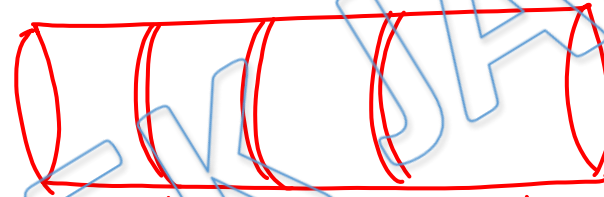
Solution: 3



Bands are orange, orange, orange, gold

Ans. c

Solution: 4



Red

Red

Red

no band \Rightarrow 20% tolerance

\downarrow
2

\downarrow
2

\downarrow
 10^2

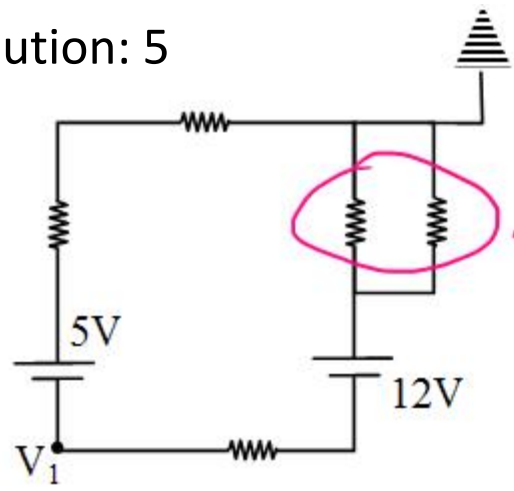
$$R = 22 \times 10^2 \pm 20\%$$

$$= 2200 \Omega \pm 20\%$$

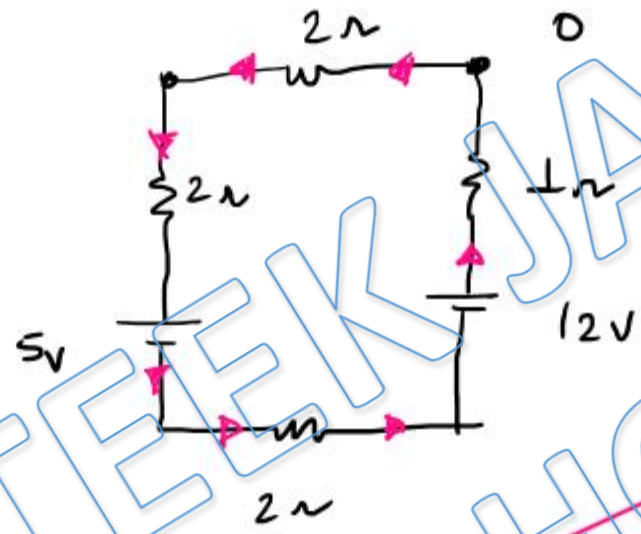
$$R_{\min} = \frac{2200 \times 80}{100} = 1760 \Omega$$

Ans. d

Solution: 5



after solving the resistance in parallel.



$$i = \frac{\text{Net EMF}}{\text{Net Resistance}}$$

$$i = \frac{12 - 5}{7}$$

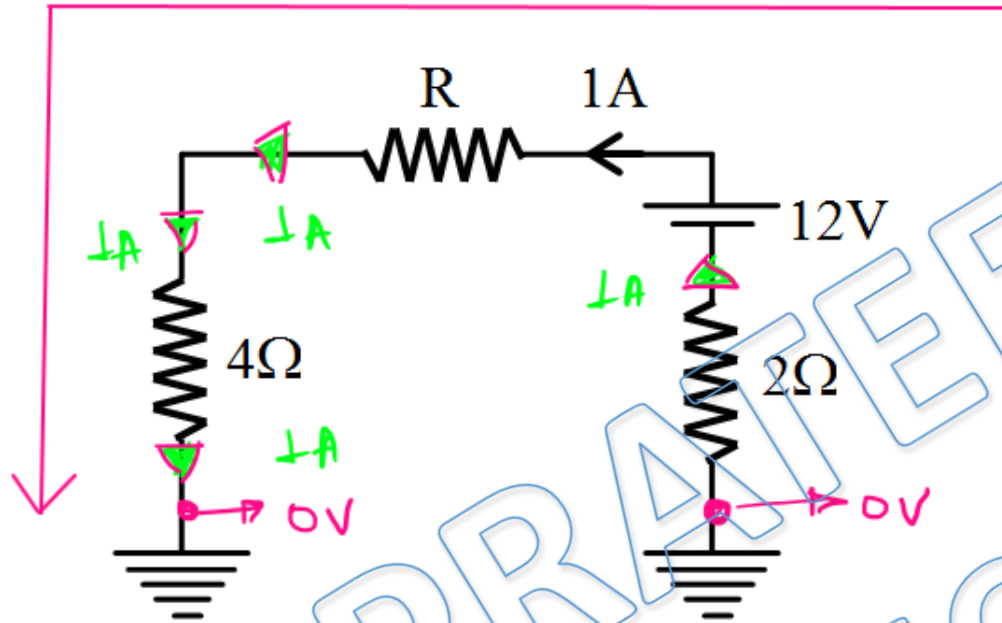
$$i = \frac{7V}{7\Omega} = 1A$$

Current flows in anticlockwise direction in the loop. Therefore $0 - 1 \times 2 - 1 \times 2 - 5 = V_1$

$$V_1 = -9V$$

Ans. d

Solution: 6



Writing potential \Rightarrow

$$0 - 1 \times 2 + 12 - 1 \times R - 1 \times 4 = 0$$

$$-2 + 12 - R - 4 = 0$$

$$R = 6 \Omega$$

Ans. c

Solution: 7

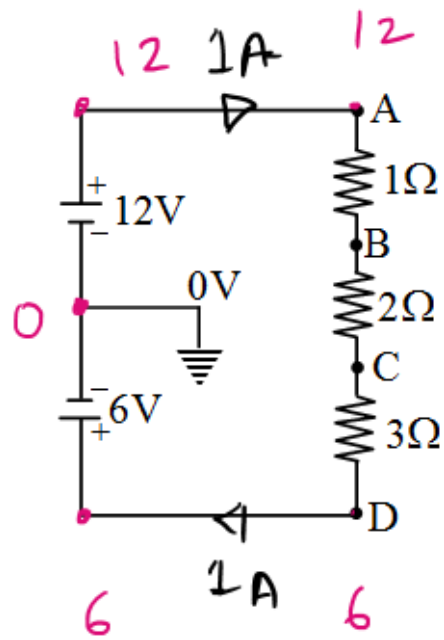
(a)

Significant figures		Multiplier
Brown	Black	Brown
1	0	10

$$\therefore R = 10 \times 10 = 100 \Omega$$

Ans. a

Solution: 8



$$12 - 1 \times 1 = 11 \text{ V}$$

$$11 - 1 \times 2 = 9 \text{ V}$$

$$9 - 1 \times 3 = 6 \text{ V}$$



$I = \frac{12 - 6}{6}$
$I = 1 \text{ A}$

hence potential of A B C & D are 12, 11, 9, 6 V respectively.

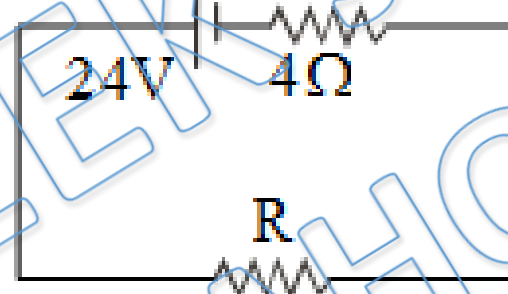
Ans. b

Solution: 9

When $R = r$ (power dissipated is maximum)

$$\therefore R = 4\Omega$$

$$\therefore I = \frac{V}{R_{\text{net}}} = \frac{24}{8} = 3 \text{ A}$$



Ans. b

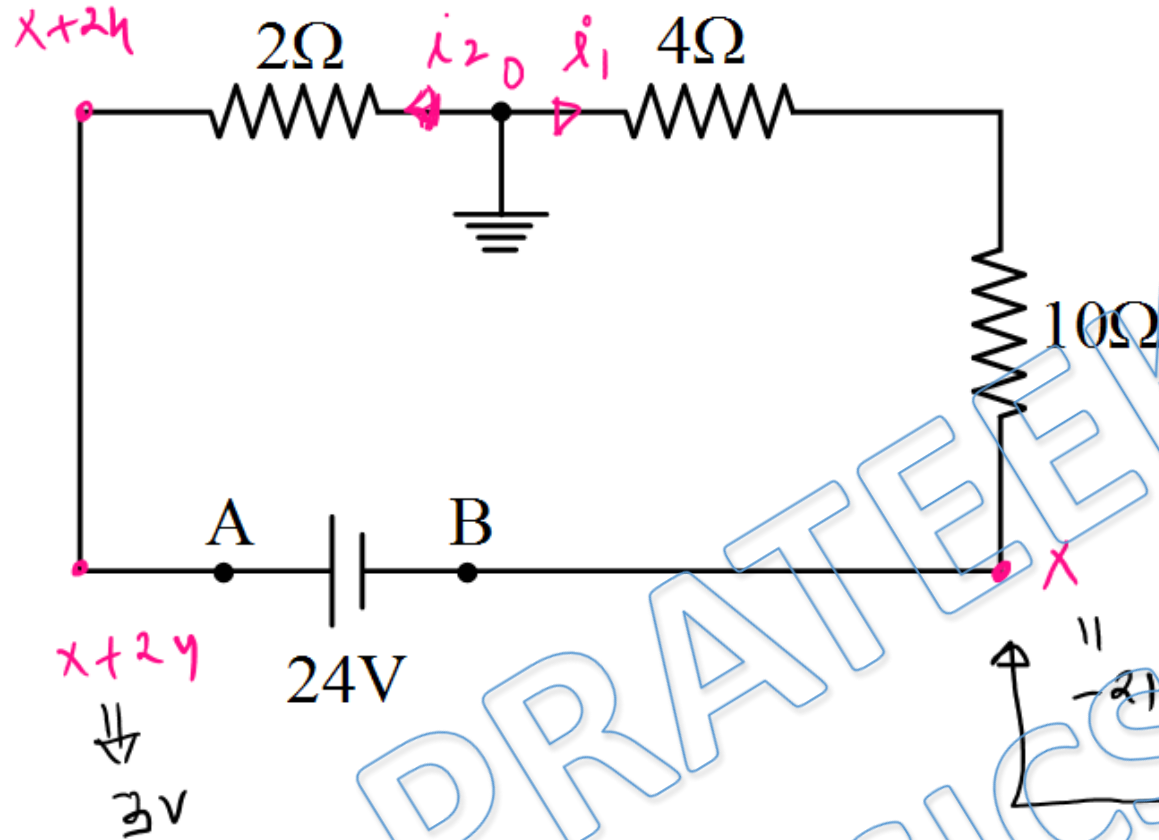
Solution: 10

[D]As we move from P to S we are moving from high potential to low potential. Since P is connected to + ve terminal of battery it should be at positive potential. Q is grounded hence it should be at zero potential. R & S should be at negative potential.

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Ans. d

Solution: 11



according to KCL

$$i_1 + i_2 = 0$$

$$\frac{0 - (x + 24)}{2} + \frac{0 - x}{4} = 0$$

$$-7x - 24 \times 7 - x = 0$$

$$-8x = 24 \times 7$$

$$x = -21 \text{ V}$$

hence potential at A & B are
3 & -21 volt.

Ans. b

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