BYJU'S Study Planner for Board Term I
(CBSE Grade 12)

Date: 11/11/2021

Subject: Physics

Topic : Current Electricity

Class: Standard XII

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1. A current of $5\ \mathrm{A}$ is passing through a metallic wire of cross sectional area $14 \times 10^{-6}\ \mathrm{m}^2$. If the density of the charge carries in the wire is $5 \times 10^{26}\ \mathrm{C/m}^3$, the drift speed of the electrons.

   A. $3.46 \times 10^{-3}\ \mathrm{ms}^{-1}$

   B. $4.46 \times 10^{-3}\ \mathrm{ms}^{-1}$

   C. $5.46 \times 10^{-3}\ \mathrm{ms}^{-1}$

   D. $6.46 \times 10^{-3}\ \mathrm{ms}^{-1}$

2. A hollow cylinder of length $3\ \mathrm{m}$ has inner and outer diameters of $4\ \mathrm{mm}$ and $8\ \mathrm{mm}$ respectively. The resistance of the cylinder is (specific resistance of the material $= 2.2 \times 10^{-8}\ \Omega\mathrm{m}$)

   A. $1.75 \times 10^{-3}\Omega$

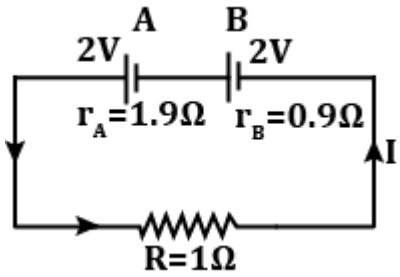
   B. $1.25 \times 10^{-3}\Omega$

   C. $1.5 \times 10^{-3}\Omega$

   D. $1.95 \times 10^{-3}\Omega$

BYJU'S Study Planner for Board Term I
(CBSE Grade 12)

3. Two cells A and B each of $2\ \text{V}$ are connected in series to an external resistance $R = 1\ \Omega$ as shown in figure. If the internal resistance of A is $r_A = 1.9\ \Omega$ and that of B is $r_B = 0.9\ \Omega$, then the potential difference between the terminals of A is



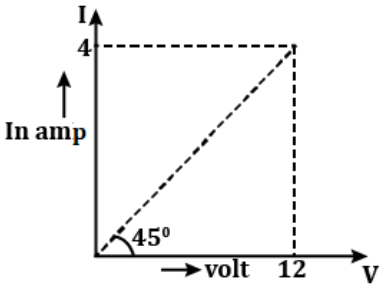
A. $1.75\ \text{V}$

B. $1.5\ \text{V}$

C. $1.25\ \text{V}$

D. zero

4. The variation of current and voltage in a conductor has been shown in figure. The conductance of the conductor is (Give your answer in Ω^{-1}).



A. $\frac{1}{2}$

B. $\frac{1}{5}$

C. $\frac{1}{3}$

D. $\frac{1}{4}$

BYJU'S Study Planner for Board Term I
(CBSE Grade 12)

5. The resistance of a metal wire is 10Ω. A current of $30\ \mathrm{mA}$ is flowing in it at $20^{\circ}C$. If the potential difference across its ends is constant and its increased to $120^{\circ}\ \mathrm{C}$, then the current flowing in the wire will be in (mA) (temperature coefficient of resistance is $5 \times 10^{-3}\ ^{\circ}C^{-1}$.

   A. 10

   B. 15

   C. 20

   D. 40

6. In an experiment with potentiometer , to measure the internal resistance of a cell. When it is shunted by 5Ω the null point obtained is at $2\ \mathrm{m}$ from one end. When cell is shunted by 20Ω, the null point is obtained at $3\ \mathrm{m}$ from the same end. The internal resistance of cell is

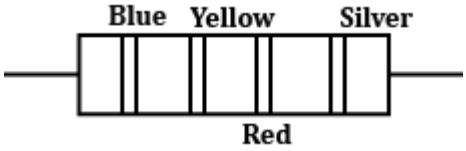
   A. 8Ω

   B. 6Ω

   C. 4Ω

   D. 2Ω

7. The colour coding on a resistor from the left are blue, yellow, red and silver as shown in figure. The value of resistance is



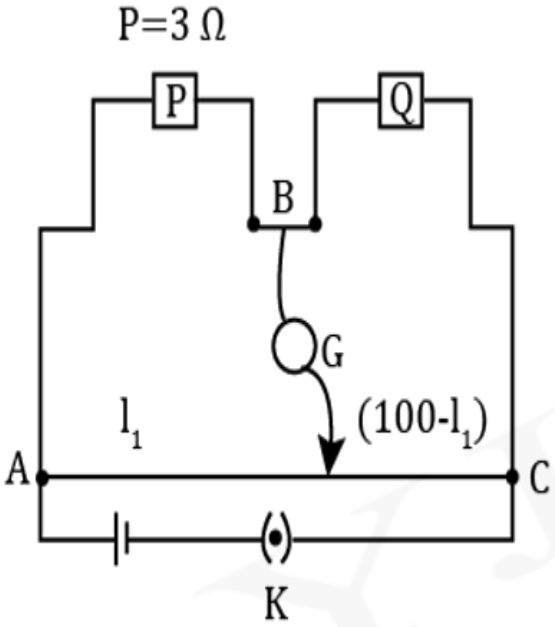
   A. $6400\ \Omega\ \pm\ 20$

   B. $6400\ \Omega\ \pm\ 10$

   C. $4600\ \Omega\ \pm\ 10$

   D. $6400\ \Omega\ \pm\ 5$

8. In a meter bridge experiment, resistances are connected as shown in figure. The balancing length l_1 is $55\ \text{cm}$. Now an unknown resistance x is connected in series with P and the new balancing length is found to be $75\ \text{cm}$. The value of x is



A. $\frac{54}{13}\Omega$

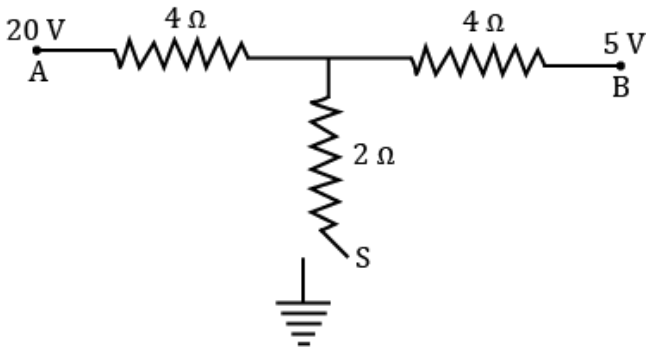
B. $\frac{20}{11}\Omega$

C. $\frac{48}{11}\Omega$

D. $\frac{11}{48}\Omega$

BYJU'S Study Planner for Board Term I
(CBSE Grade 12)

9. As the switch S is closed in the circuit shown in figure, current passing through it will be



A. 4.5 A

B. 6.0 A

C. $8/25$ A

D. $25/8$ A

10. Resistance of a wire is 8Ω.It is stretched in such away that it experiences a longitudinal strain of 400%. The new resistance is

A. $400\ \Omega$

B. $300\ \Omega$

C. $200\ \Omega$

D. $100\ \Omega$

BYJU'S Study Planner for Board Term I (CBSE Grade 12)

11. In the question given below, a statement of Assertion (A) is given followed by a corresponding statement of Reason (R) just below it. Of the statements mark the correct answer.

    Assertion (A): Potentiometer is much better than a voltmeter for measuring emf of cell.

    Reason (R): A potentiometer draws no current while measuring emf of a cell.

    A. Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'.

    B. Both 'A' and 'R' are true and 'R' is not the correct explanation of 'A'

    C. 'A' is true and 'R' is false

    D. 'A' is false and 'R' is true

12. In the question given below, a statement of Assertion (A) is given followed by a corresponding statement of Reason (R) just below it. Of the statements mark the correct answer.

    Assertion (A): In meterbridge experiment a high resistance is connected in series with the galvanometer.

    Reason (R): As resistance increases, current through the circuit increases.

    A. Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'.

    B. Both 'A' and 'R' are true and 'R' is not the correct explanation of 'A'

    C. 'A' is true and 'R' is false

    D. 'A' is false and 'R' is true

BYJU'S Study Planner for Board Term I (CBSE Grade 12)

13. In the question given below, a statement of Assertion (A) is given followed by a corresponding statement of Reason (R) just below it. Of the statements mark the correct answer.

    Assertion (A): Terminal voltage of a cell is greater than emf of the cell, during charging of the cell.

    Reason (R): The emf of a cell is always greater than its terminal voltage.

    A. Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'.

    B. Both 'A' and 'R' are true and 'R' is not the correct explanation of 'A'

    C. 'A' is true and 'R' is false

    D. 'A' is false and 'R' is true

14. In the question given below, a statement of Assertion (A) is given followed by a corresponding statement of Reason (R) just below it. Of the statements mark the correct answer.

    Assertion (A): At any junction of a network , the algebraic sum of various currents is zero.

    Reason (R): At steady state , there is no accumulation of charges at the junction.

    A. Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'.

    B. Both 'A' and 'R' are true and 'R' is not the correct explanation of 'A'

    C. 'A' is true and 'R' is false

    D. 'A' is false and 'R' is true

BYJU'S Study Planner for Board Term I
(CBSE Grade 12)

15. Assertion (A): A piece of copper and other of germanium are cooled from room temperature to $100\ \mathrm{K}$. Conductivity of copper increases and that of germanium decreases.
Reason (R): Copper has positive temperature coefficient where as germamium has negative temperature coefficient.

Study both the statements carefully and then
Select your answers, according to the codes given below

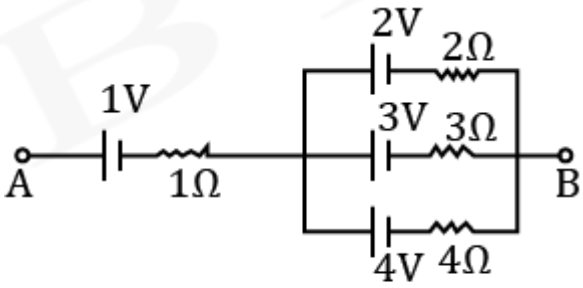
A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true and R is not the correct explanation of A

C. A is true and R is false

D. A is false and R is true

16. The circuit given below consists of cells with their internal resistance,



(i) The equivalent emf between the terminals A and B is

A. $\frac{24}{13}\mathrm{V}$

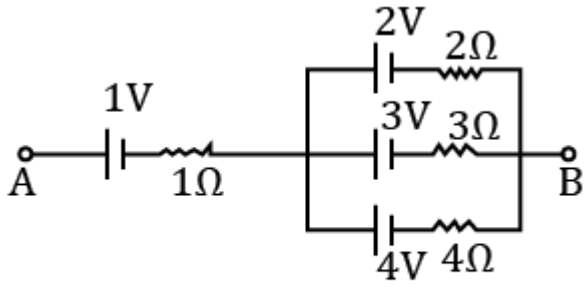
B. $\frac{37}{13}\mathrm{V}$

C. $\frac{36}{13}\mathrm{V}$

D. $\frac{49}{13}\mathrm{V}$

BYJU'S Study Planner for Board Term I
(CBSE Grade 12)

17. The circuit given below consists of cells with their internal resistance



(ii) The equivalent internal resistance of the combination is

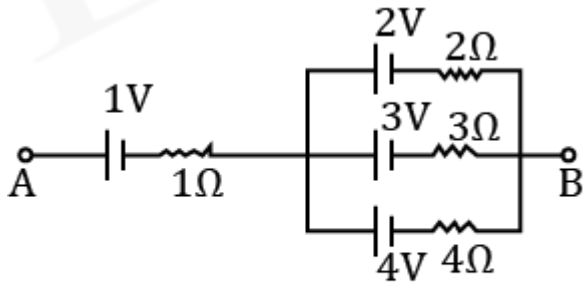
A. $\frac{24}{13}\Omega$

B. $\frac{13}{24}\Omega$

C. $\frac{25}{13}\Omega$

D. $\frac{13}{12}\Omega$

18. The circuit given below consists of cells with their internal resistance



(iii) If the polarity of cell of $4\ \mathrm{V}$ is reversed, the equivalent emf between the terminals A and B is

A. $\frac{1}{13}\mathrm{V}$

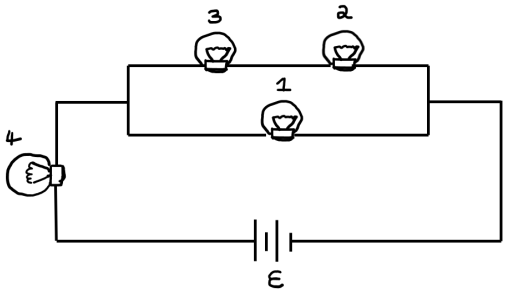
B. $\frac{37}{13}\mathrm{V}$

C. $\frac{25}{13}\mathrm{V}$

D. $\frac{12}{13}\mathrm{V}$

BYJU'S Study Planner for Board Term I
(CBSE Grade 12)

19. All bulbs consume same power. The resistance of bulb 1 is $36\ \Omega$.



(i) What is the resistance of bulb 3 ?

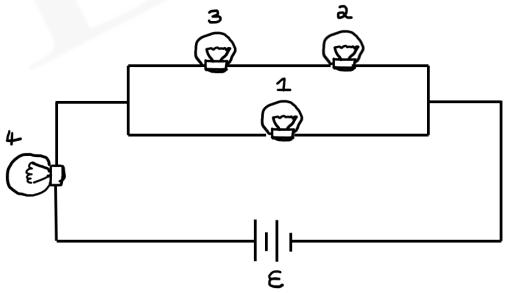
A. $4\ \Omega$

B. $9\ \Omega$

C. $12\ \Omega$

D. $18\ \Omega$

20. All bulbs consume same power. The resistance of bulb 1 is $36\ \Omega$.



(ii) What is the voltage output of the battery , if the power of each bulb is $4\ \mathrm{W}$?

A. $12\ \mathrm{V}$

B. $16\ \mathrm{V}$

C. $24\ \mathrm{V}$

D. $32\ \mathrm{V}$