Physicsaholics

DPP – 3 (Current Electricity)

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Q 1. An electric wire is connected across a cell of e.m.f. E. The current I is measured by an ammeter of resistance R. According to ohm's law:

(a) $E = I^2R$ (b) $E = IR$

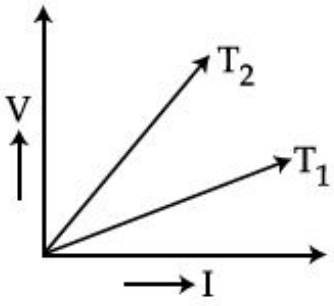
(c) $E = \frac{I}{R}$ (d) $E = \frac{R}{I}$

Q 2. In Ohm's law experiment, potential drop across a resistance was measured as $v = 5\ Volt$ and current was measured as $i = 2\ amp$. If least count of the (voltage measuring device) and ammeter (current measuring device) are 0.1V and 0.01A respectively then find the maximum permissible error in measuring resistance:

(a) 1.5% (b) 2.5%

(c) 1% (d) 5%

Q 3. The voltage-current (V-I) graph of a metallic circuit at two different temperature T_1 and T_2 is shown, then:



(a) $T_1 < T_2$ (b) $T_1 > T_2$

(c) $T_1 = T_2$ (d) cant say anything

Q 4. By a cell a current of 0.9 A flows through 2 ohm resistor and 0.3 A through 7 ohm resistor. The internal resistance of the cell is:

(a) 0.5Ω (b) 1.0Ω

(c) 1.2Ω (d) 2.0Ω

Q 5. A cell of e.m.f. E is connected with an external resistance R, then potential difference across cell is V. The internal resistance of cell will be:

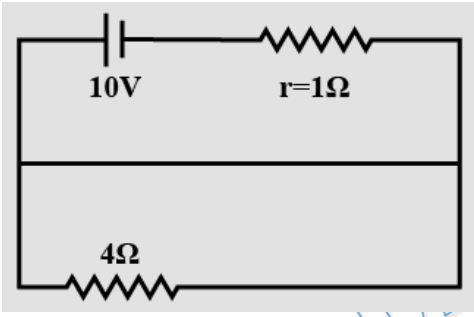
(a) $\frac{(E-V)}{E}R$ (b) $\frac{(E-V)}{V}R$

(c) $\frac{(V-E)}{V}R$ (d) $\frac{(V-E)}{E}R$

Q 6. The potential difference in open circuit for a cell is 2.2 volts. When a 4 ohm resistor is connected between its two electrodes the potential difference becomes 2 volts. The internal resistance of the cell will be:

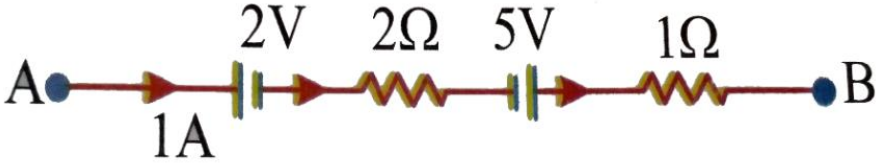
(a) 1 ohm (b) 0.2 ohm
(c) 2.5 ohm (d) 0.4 ohm

Q 7. Potential difference across the terminals of the battery shown in figure is - (r= internal resistance of battery)



(a) 8 V (b) 10 V
(c) 6 V (d) zero

Q 8. The potential difference between points A and B is:



(a) 0 V (b) 2 V
(c) 1 V (d) 3 V

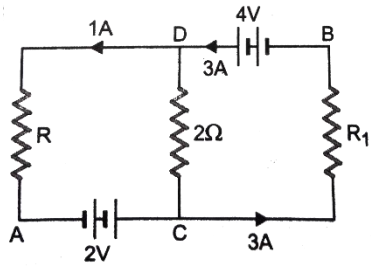
Q 9. The potential difference across terminals of a battery is 9V, when a current of 3.5A flows through it from its negative terminal to the positive terminal .When a current of 2A flows through in the opposite direction, the terminal potential difference is 12V. Find the internal resistance and emf of the battery:

(a) $0.545\Omega,\ 8.1\ V$ (b) $1.54\Omega,\ 8.1\ V$
(c) $0.545\Omega,\ 10.91\ V$ (d) $1.345\Omega,\ 9.1\ V$

Q 10. Kirchhoff's current law represents a mathematical statement of fact that:

(a) voltage cannot accumulate at node
(b) charge cannot accumulate at node
(c) charge at the node is infinite
(d) none of the mentioned

Q 11. In the given circuit assuming point A at zero potential use Kirchhoff's rules to determine the potential at point B:

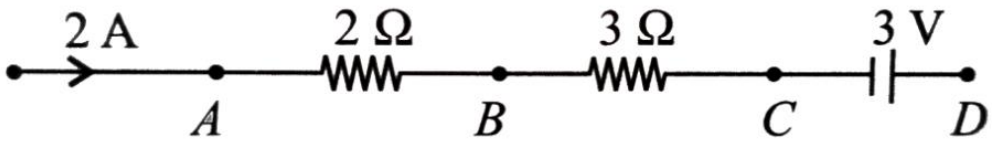


(a) 2 V (b) 4 V
(c) 8 V (d) 10 V

Q 12. If E is the emf of a cell of internal resistance r and external resistance R, then potential difference (V) across R is given as:

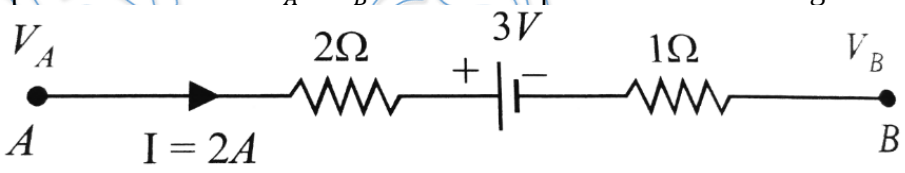
(a) $V = \frac{E}{R+r}$ (b) V = E
(c) $V = \frac{E}{1+\frac{r}{R}}$ (d) $V = \frac{E}{1+\frac{R}{r}}$

Q 13. In the given circuit the potential at point B is zero, the magnitude of potential at points A and D will be:



(a) $V_A = 4\,V, V_D = 9\,V$ (b) $V_A = 3\,V, V_D = 4\,V$
(c) $V_A = 9\,V, V_D = 3\,V$ (d) $V_A = 4\,V, V_D = 3\,V$

Q 14. The potential difference $V_A - V_B$ between the point A and B in the given figure is:



(a) 6 V (b) 9 V
(c) $-3\,V$ (d) 3 V

Answer Key

Q.1 b	**Q.2 b**	**Q.3 a**	**Q.4 a**
Q.5 b	**Q.6 d**	**Q.7 d**	**Q.8 a**
Q.9 c	**Q.10 b**	**Q.11 a**	**Q.12 c**
Q.13 d	**Q.14 b**		