PHYSICS

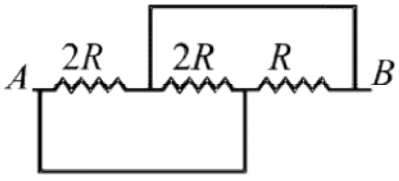
ELECTRIC CHARGES AND FIELDS, ELECTRIC POTENTIAL AND CAPACITORS AND CURRENT ELECTRICITY

91. A uniform metallic wire has a resistance of 18 Ω and is bent into an equilateral triangle. Then, the resistance between any two vertices of the triangle is
(1) 12 Ω (2) 8 Ω
(3) 2 Ω (4) 4 Ω

92. A steady current flows in a metallic conductor of non-uniform cross-section. The quantity/quantities constant along the length of the conductor is/are
(1) current, electric field and drift speed
(2) drift speed only
(3) current and drift speed
(4) current only

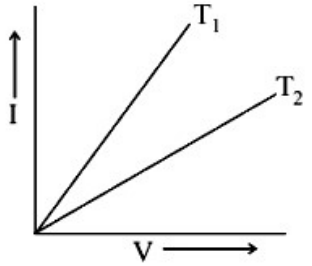
93. A piece of copper and another of germanium are cooled from room temperature to 80 K. The resistance of
(1) each of them increases
(2) each of them decreases
(3) copper increases and germanium decreases
(4) copper decreases and germanium increases

94. The equivalent resistance between points A and B of the circuit given below is…….



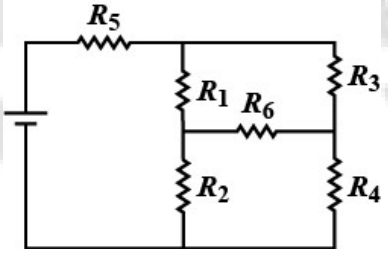
(1) $\frac{R}{2}$ (2) 2R
(3) 5R (4) 3R

95. The current-voltage graphs for a given metallic wire at two different temperatures T_1 and T_2 are shown in the figure.



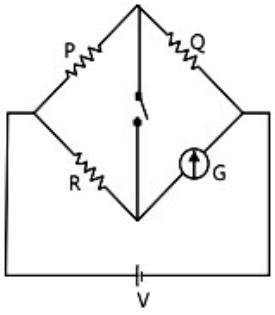
(1) $T_1 = T_2$
(2) $T_1 > T_2$
(3) $T_1 < T_2$
(4) $T_1 = T_2 = 0$

96. In the given circuit, it is observed that the current I is independent of the value of the resistance R_6. Then, the resistance values must satisfy



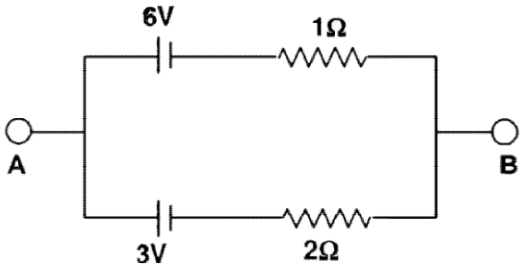
(1) $R_1R_2R_5 = R_3R_4R_6$
(2) $\frac{1}{R_5}+\frac{1}{R_6}=\frac{1}{R_1+R_2}+\frac{1}{R_3+R_4}$
(3) $R_1R_4 = R_2R_3$
(4) $R_1R_3 = R_2R_4$

97. In the circuit shown P ≠ R, the reading of galvanometer is same with switch S open or closed. Then



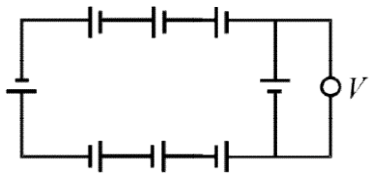
(1) $I_R = I_G$ (2) $I_P = I_G$
(3) $I_Q = I_G$ (4) $I_Q = I_R$

98. Two batteries of different emfs and different internal resistances are connected as shown. The voltage across AB in volt is



(1) 5 V (2) 9 V
(3) 2 V (4) 18 V

99. In the circuit shown below, each battery is 5 V and has an internal resistance of 0.2 Ω



The reading in the ideal voltmeter V is _____ V.

(1) 0 V (2) 40 V
(3) 5 V (4) 1 V

100. A cell of internal resistance r drives current through an external resistance R. The power delivered by the cell to the external resistance will be maximum when

(1) R = 2r (2) R = r
(3) R = 0.001r (4) R = 1000 r