OHMS LAW
AND
KIRCHHOFF'S LAW

1. A Wire of resistance of 9Ω is bent to form an equilateral triangle. A cell' is connected between any two vertices, then the ratio the larger to smaller currents through the branches is

a) 9:1 b) 3:1 c) 2:1 d) 3:2

2. An electric fan and a heater are marked as 100W, 220 V and 1000W, 220 V respectively. The ratio of their resistance is

a) 10 b) 100 c) 1/10 d) 1/100

3. The temperature at which the resistance of conductor is three times that at 0^0C is (TCR of the material = $0.008/^0c$)

a)250K b) 523K c) 250K d) 2500K

4. If one million electrons pass through a section of a wire in one microsecond, the resulting current in the wire is

a) 1μ A

b) 10^{12} A

c) 1.6 A

d) 0.16 μA

5. A cell supplies a current of 0.9 A through a 2Ω resistor and current of 0.3 A through a 7 Ω resistor. Then internal resistance of the cell is

a) 0.5Ω b) 1 Ω c) 1.2 Ω d) 2 Ω

6. A coil is embedded in a block of ice placed in an Insulated box. If a current of I A is passed through the coil by applying a potential difference of 170 V across it, the amount of ice melted in one hour is (Lice = 340 kJ/kg)

a) 1.8 kg b) 0.5 kg c) 2 kg d) 1 kg

7. A copper wire of length 50 cm and area of cross-section $10^{-6} m^2$ carries a current of 1 A. If the resistivity of copper is $1.8 \times 10^{-8}\ \Omega$ m, the electric field across the wire is

a) $0.09\ Vm^{-1}$ b) $0.0018\ Vm^{-1}$

c) $0.018\ Vm^{-1}$ d) $0.009\ Vm^{-1}$

8. A current of 2A passes through a copper voltameter. If the e.c.e. of copper is 3.3 x 10-4gC-1 the time taken to deposit 1 gram of copper is nearly equal to

a) 20 min b) 25 min c) 30 min d) 35 min

9. The masses of three copper wires are In the ratio 5:3:1 and their lengths are in the ratio 1:3:5. The ratio of their electrical resistances is

a) 1:3:5

b) 5:3:1

c) 1:15:125

d) 125:15:1

10. The effective resistance of a three resistors connected in parallel is x ohm. When one of the resistors is removed, the effective resistance becomes y ohm. The resistance of the resistor that is removed is

a) $\frac{xy}{(x+y)}$ b) $\frac{xy}{(y-x)}$ c) $(y-x)$ d) xy

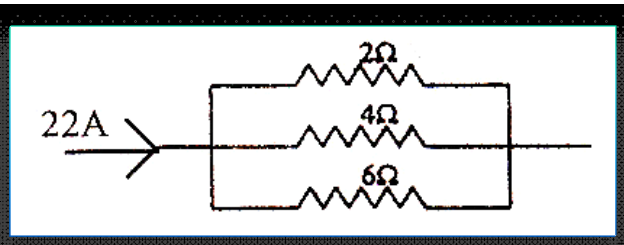
11. A strip of copper (Cu) and another germanium (Ge) are cooled from room temperature to 80K. Then conductance of

a) Each of these decreases
b) Each of these increases
c) Cu decreases and that of Ge increases
d) Cu increases and that of Ge decreases

12. A carbon resistor has a resistance of2k Ω Then colour of 3rd band is

a) Orange b) Red c) Brown
b) Yellow

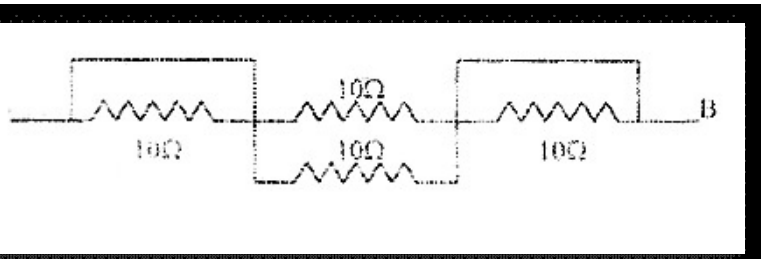
13.



In the given circuit, current through 4Ω is

a) 5.5A b) 6A c) 4 A d) 11A

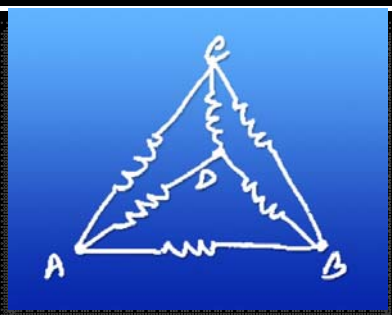
14.



In the given circuit, effective resistance between A and B is

a) 25Ω b) 20 Ω c) 40 Ω d) 5 Ω

15.Six resistors each of resistance R are connected as shown. Effective resistance between A and B is

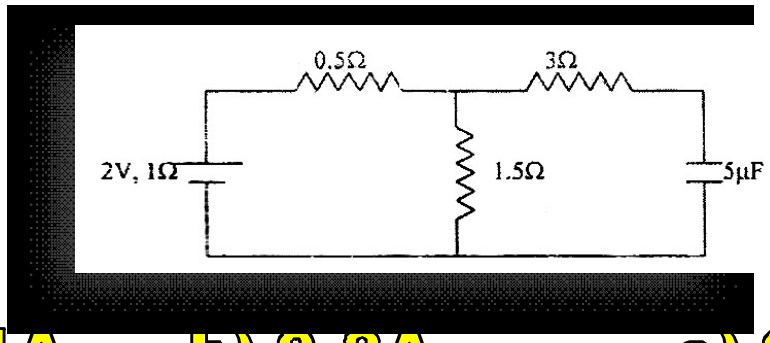


a) R/2 b) R c) 2R d) 3R/2

16. If the resistivity of the material of a cube of side 0.5 m is 1.2 x 10-6 m. Then resistance between its opposite faces is

a)1.2μΩ b) 0.6 μΩ
c) 2.4 μΩ d) 0.3 μΩ

17. In the given circuit current through 1.5Ω at steady state is



a) 1A b) 0.8A c) 0.667A

18. If the radius of a wire carrying current is doubled, the drift velocity of the electrons will be

a) Uncharged b) halved..

c) one fourth d) four times

19.Wire of resistance of 12.8Ω is cut into n identical parts. If the effective resistance of the circuit formed by parts in parallel is 0.2Ω, then n is

a) 4 b) 6 c) 8 d) 64

20. If p.d. across a conductor having a material of specific resistance p mains constant, them heat developed in the conductor is proportional to

a) P b) p2 c) 1/ p d) 1/p