ELECTRICITY

Q.1) Electric current is due to drift of electrons in

(A) metallic inductors (B) semiconductors

(C) insulator (D) all the above

Q.2) In metals the time of relaxation of electrons

(A) increases with increasing temperature

(B) decreases with increasing temperature

(C) does not depend on temperature

(D) changes suddenly at 400 K

Q.3) There is a current of 4.8 ampere in a conductor. The number of electrons that cross any section normal to the direction of flow per second, is

(A) 10^{19} (B) 2×10^{19}

(C) 3×10^{19} (D) 7.68×10^{20}

Q.4) A current of 5 amp exists in a 10 ohm resistance for 4 min. How many coulomb pass through any cross-section of the resistor in this time?

(A) 12 coulombs (B) 120 coulombs

(C) 1200 coulombs (D) 12000 coulombs

Q.5) Resistivity of a material depends on

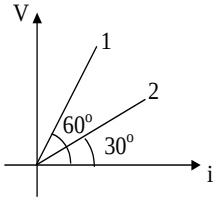
(A) temperature

(B) electric field

(C) shape of the material

(D) size of the material

Q.6) The V-i graph is given for two conductors of same area and length. If σ_1 and σ_2 are the conductivities of the conductors 1 and 2 respectively, σ_1/σ_2 =



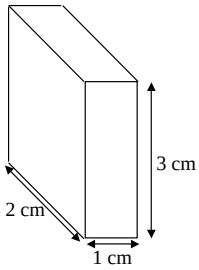
(A) 2 : 1

(B) 3 : 1

(C) $1:\sqrt{2}$

(D) 1 : 3

Q.7) The minimum ratio of the resistances between the opposite faces of the rectangular solid conductor is



(A) 1 : 9 (B) 1 : 18

(C) 1 : 6 (D) 1 : 12

Q.8) The ratio of masses of two aluminium wires is 2 : 1 and their corresponding ratio of lengths is 1 : 2. Then, the ratio of their resistances is

(A) 1 : 4 (B) 2 : 1

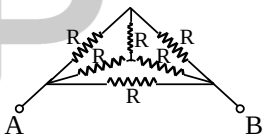
(C) 1 : 1 (D) 1 : 8

Q.9) When a piece of wire of resistance R is joined end to end with an identical wire, the resistance of the new wire is R_1, say; when these wires are joined in parallel the new resistance is R_2. Then R_1/R_2 =

(A) 2 : 1 (B) 4 : 1

(C) 1 : 2 (D) 1 : 1

Q.10) The value of R_{AB} is



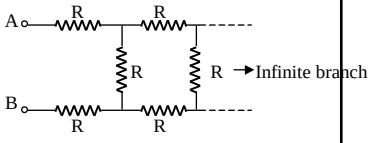
(A) R

(B) R/2

(C) 2R

(D) 2R/3

Q.11) RAB is equal to :



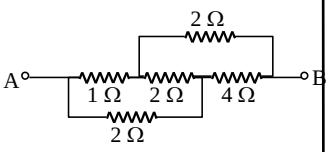
(A) ∞

(B) $\frac{R}{2}$

(C) $\left(\sqrt{5}+1\right)R$

(D) $R\left(1+\sqrt{3}\right)$

Q.12) RAB is equal to :



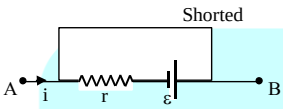
(A) 3 Ω

(B) 1 Ω

(C) $\frac{4}{3}$ Ω

(D) 2 Ω

Q.13) The terminal voltage between A and B is



(A) ir

(B) 0

(C) ε + ir

(D) ε

Q.14) The terminal potential difference of a cell is greater than its emf, when it is

(A) being charged (B) on open circuit

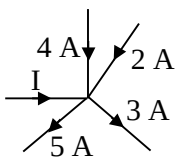
(C) being discharged (D) being either charged or discharged

Q.15) A primary cell has emf 2 volt. When short-circuited it gives a current of 4 amp. Its internal resistance in ohm will be

(A) 0.5 (B) 2

(C) 5 (D) 8

Q.16) In the given current distribution, what is the value of I ?



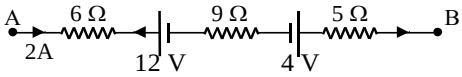
(A) 3 A

(B) 8 A

(C) 2 A

(D) 5 A

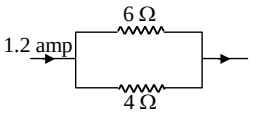
Q.17) The potential difference between A and B in the following figure is



(A) 32 V (B) 48 V

(C) 24 V (D) 14 V

Q.18) In the figure shown below the current passing through 6 Ω resistor is :



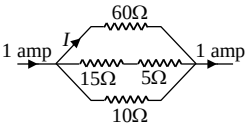
(A) 0.40 amp

(B) 0.48 amp

(C) 0.72 amp

(D) 0.80 amp

Q.19) The magnitude of I in ampere unit is :



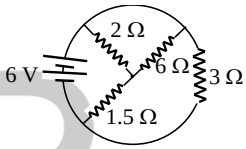
(A) 0.1

(B) 0.3

(C) 0.6

(D) 0.5

Q.20) The total current supplied to the circuit by the battery is :



(A) 4 A

(B) 2 A

(C) 1 A

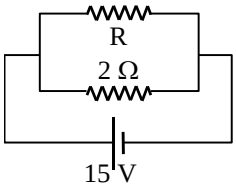
(D) 6 A

Q.21) If cut a wire into two equal parts, for a given voltage compared to its initial power loss, the power dissipation will be

(A) equal (B) halved

(C) doubled (D) four times

Q.22) If in the circuit, power dissipation is 150 W, then R is :



(A) 2 Ω

(B) 6 Ω

(C) 5 Ω

(D) 4 Ω

Q.23) A 220 volt, 1000 watt bulb is connected across a 110 volt mains supply. The power consumed will be :

(A) 750 watt (B) 500 watt

(C) 250 watt (D) 1000 watt

Q.24) An energy source will supply will supply a constant into the load if its internal resistance is:

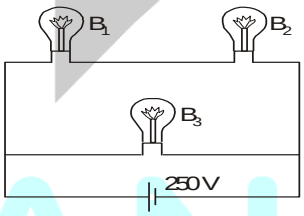
(A) very large as compared to the lad resistance

(B) equal to the resistance of the lad

(C) non-zero but less then the resistance of the load

(D) zero

Q.25) A 100 W bulb B_1 and two 60 W bulb B_2 and B_3, are connected to a 250 V source, as shown in the figure. Now W_1,W_2 and W_3 are the out put powers of the bulbs B_1,B_2 and B_3 respectively. Then :



(A) $W_1 > W_2 = W_3$
(B) $W_1 > W_2 > W_3$
(C) $W_1 < W_2 = W_3$
(D) $W_1 < W_2 < W_3$

Q.26) A heater coil is cut into two equal parts and only one part is now used in the heater. The heat generated will now be :

(A) four times (B) double times

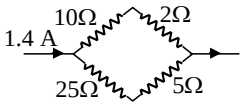
(C) halved (D) one fourth

Q.27) A wire when connected to 220 V mains supply has power dissipation P_1. Now the wire is cut into two equal pieces which are connected in parallel to the same supply. Power dissipation in this case is P_2. Then P_2:P_1 is :

(A) 1 (B) 4

(C) 2 (D) 3

Q.28) The current flowing the through resistance of 2 ohm in the figure is :



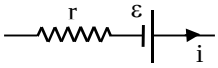
(A) 1.2 A

(B) 1.4 A

(C) 0.4 A

(D) 1.0 A

Q.29) The terminal potential difference of the cell of emf ε and internal resistance r while carrying a current i is



(A) ε - ir

(B) ε + ir

(C) ir

(D) ε

Q.30) An electric current is passed through a circuit containing two wires of the same material, connected in parallel. If the lengths and radii are in the raio of $\frac{4}{3}$ and $\frac{2}{3}$, then the ratio of the current passing through the wires will be :

(A) 8/9 (B) 1/3

(C) 3 (D) 2

Answer Sheet

Q.1	A	Q.11	D	Q.21	D
Q.2	B	Q.12	D	Q.22	B
Q.3	C	Q.13	B	Q.23	C
Q.4	C	Q.14	B	Q.24	D
Q.5	A	Q.15	A	Q.25	B
Q.6	D	Q.16	C	Q.26	B
Q.7	A	Q.17	B	Q.27	B
Q.8	D	Q.18	B	Q.28	D
Q.9	B	Q.19	A	Q.29	A
Q.10	B	Q.20	A	Q.30	B