Current Electricity

Q.No.1:
The supply voltage to a room is 120 V. The resistance of the lead wires is 6Ω. A 60 W bulb is already switched on. What is the decrease of voltage across the bulb, when a 240 W heater is switched on in parallel to the bulb?

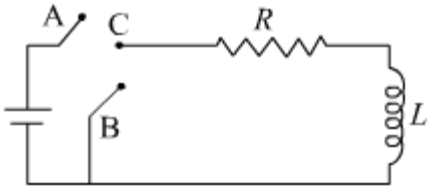
JEE 2013

A. Zero Volt
B. 2.9 Volt
C. 13.3 Volt
D. 10.04 Volt

Q.No.2: In a large building, there are 15 bulbs of 40 W, 5 bulbs of 100 W, 5 fans of 80 W and 1 heater of 1 kW. The voltage of the electric mains is 220 V. The minimum capacity of the main fuse of the building will be

A. 12 A
B. 14 A
C. 8 A
D. 10 A

Q.No.3: In the circuit shown here, point C is kept connected to point A till the current flowing through the circuit becomes constant. Afterwards, suddenly, point C is disconnected from point A and connected to point B at time $t = 0$. Ratio of the voltage across resistance and the inductor at $t = L/R$ will be equal to



A. −1
B. $\frac{1-e}{e}$

C. $\frac{e}{1-e}$

D. 1

Q.No.4: When 5 V potential difference is applied across a wire of length 0.1 m, the drift speed of electrons is 2.5×10^{-4} ms^{-1}. If the electron density in the wire is 8×10^{28} m^{-3}, the resistivity of the material is close to: **JEE 2015**

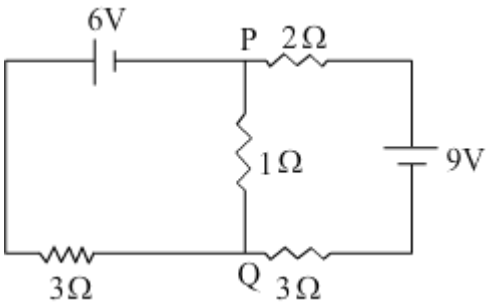
A. 1.6×10^{-8} Ωm

B. 1.6×10^{-7} Ωm

C. 1.6×10^{-6} Ωm

D. 1.6×10^{-5} Ωm

Q.No.5: In the circuit shown, the current in the 1 Ω resistor is : **JEE 2015**



A. 1.3 A, from P to Q

B. 0 A

C. 0.13 A, from Q to P

D. 0.13 A, from P to Q

Q.No.6: A galvanometer having a coil resistance of 100 Ω gives a full scale deflection, when a current of 1 mA is passed through it. The value of the resistance, which can convert this galvanometer into ammeter giving a full scale deflection for a current of 10 A, is : **JEE 2016**

A. 2 Ω

B. 0.1 Ω

C. 3 Ω

D. 0.01 Ω

Q.No.7: In the above circuit the current in each resistance is: **JEE 2017**

A. 0 A

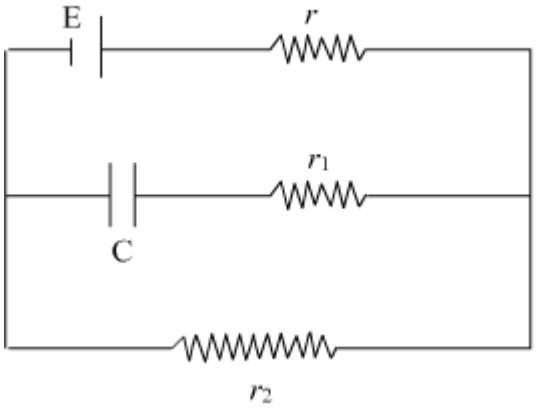
B. 1 A

C. 0.25 A

D. 0.5 A

Q.No.8: In the given circuit diagram when the current reaches a steady state in the circuit, the charge on the capacitor of capacitance *C* will be:

JEE 2017



A. $CE\frac{r_1}{(r_1+r)}$

B. *CE*

C. $CE\frac{r_1}{(r_2+r)}$

D. $CE\frac{r_2}{(r+r_2)}$

Q.No.9: Which of the following statements is false? **JEE 2017**

A. Krichhoff's second law represents energy conservation.

B. Wheatstone bridge is the most sensitive when all the four resistance are of the same order of magnitude.

C. In a balanced wheatstone bridge if the cell and the galvanometer are exchanged, the null point is disturbed.

D. A rheostat can be used as a potential divider.

Q.No.10: Two batteries with e.m.f. 12 V and 13 V are connected in parallel across a load resistor of 10 Ω. The internal resistances of the two batteries are 1 Ω and 2 Ω respectively. The voltage across the load lies between : **JEE 2018**

A. 11.4 V and 11.5 V

B. 11.7 V and 11.8 V

C. 11.6 V and 11.7 V

D. 11.5 V and 11.6 V