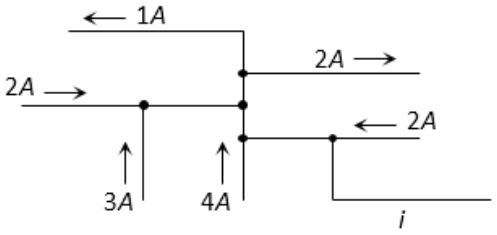
DPP
DAILY PRACTICE PROBLEMS

CLASS : XIITH **SUBJECT : PHYSICS**
DATE : **DPP NO. : 8**

Topic :- Current Electricity

1. The figure here shows a portion of a circuit. What are the magnitude and direction of the current i in the lower right-hand wire



a) $7\ A$ b) $8\ A$ c) $6\ A$ d) $2\ A$

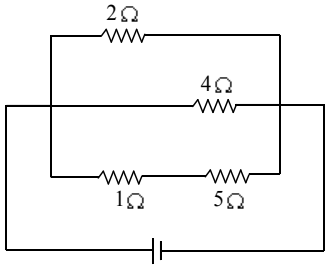
2. The current flowing through a wire depends on time as $I = 3t^2 + 2t + 5$. The charge flowing through the cross-section of the wire in time from $t = 0$ to $t = 2$ sec. is

a) 22 C b) 20 C c) 18 C d) 5 C

3. We have a galvanometer of resistance 25Ω. It is shunted by a 2.5 Ω wire. The part of total current that flows through the galvanometer is given as

a) $\frac{I}{I_0} = \frac{1}{11}$ b) $\frac{I}{I_0} = \frac{1}{10}$ c) $\frac{I}{I_0} = \frac{3}{11}$ d) $\frac{I}{I_0} = \frac{4}{11}$

4. A current of 3 amp. flows through the 2Ω resistor shown in the circuit. The power dissipated in the 5Ω resistor is

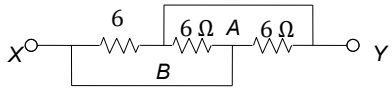


a) 1 $watt$ b) 5 $watt$ c) 4 $watt$ d) 2 $watt$

5. One junction of a certain thermoelectric couple is at a fixed temperature T_r and the other junction is at temperature T. The thermo-electromotive force for this is expressed by $E = k(T - T_r)\left[T_0 - \frac{1}{2}(T + T_r)\right]$. At temperature $T = \frac{1}{2}T_0$, the thermoelectric power is

a) $\frac{1}{2}kT_0$ b) kT_0 c) $\frac{1}{2}kT_0^2$ d) $\frac{1}{2}k(T_0 - T_r)^2$

6. In a given network, each resistance has value of 6Ω. The point *X* is connected to point *A* by a copper wire of negligible resistance and point *Y* is connected to point *B* by the same wire. The effective resistance between *X* and *Y* will be



a) 18Ω b) 6 Ω c) 3 Ω d) 2 Ω

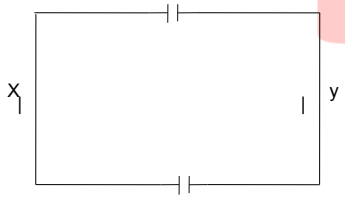
7. Faraday's laws of electrolysis are related to

a) The atomic number of positive ion b) The equivalent weight of electrolyte
c) The atomic number of negative ion d) The velocity of positive ion

8. A cell having emf of 1.5V, when connected across a resistance of 14 Ω, produces a voltage of only 1.4V across this resistance. The internal resistance of the cell must be

a) 1 Ω b) 14 Ω c) 15 Ω d) 21 Ω

9. Two similar accumulators each of emf E and internal resistance r are connected as shown in the following figure. Then, the potential difference between x and y is



a) 2E b) E c) Zero d) None of these

10. In a meter bridge experiment, the ratio of the left gap resistance to right gap resistance is 2:3, the balance point from left is

a) 60 cm b) 50 cm c) 40 cm d) 20 cm

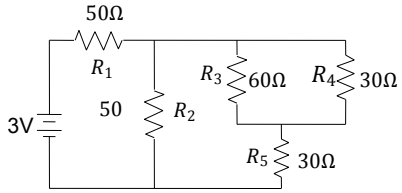
11. A conductor wire having 10^{29} free electrons/m^3 carries a current of 20A. If the cross-section of the wire is 1mm^2, then the drift velocity of electrons will be

a) $6.25 \times 10^{-3} ms^{-1}$ b) $1.25 \times 10^{-5} ms^{-1}$ c) $1.25 \times 10^{-3} ms^{-1}$ d) $1.25 \times 10^{-4} ms^{-1}$

12. A potentiometer wire of length 10 m and resistance 20 Ω is connected is series with a 15V battery and an external resistance 40 Ω. A secondary cell of emf E in the secondary circuit is balanced by 240 cm long the potentiometer wire. The emf E of the cell is

a) 2.4V b) 1.2V c) 2.0V d) 3V

13. In circuit shown below, the resistances are given in ohm and the battery is assumed ideal with emf equal to 3V. The voltage across the resistance R_4 is



a) 0.4V b) 0.6V c) 1.2V d) 1.5V

14. Constant current is flowing through a linear conductor of non-uniform area of cross-section. The charge flowing per second through the area of conductor at any cross-section is

a) Proportional to the area of cross- section
b) Inversely proportional to the area of cross-section
c) Independent of the area of cross-section
d) Dependent on the length of conductor

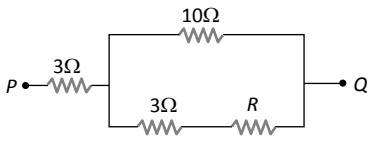
15. Total surface area of a cathode is $0.05m^2$ and 1 A current passes through it for 1 $hour$. Thickness of nickle deposited on the cathode is (Given that density of nickle = $9g/cc$ and it's E.C.E. = $3.04 \times 10^{-4} g/C$)

a) 2.4 m b) 0.24 μm c) 2.4 μm d) None of these

16. An AC generator of 220 V have internal resistance $r = 10\ \Omega$ and external resistance $R = 100\ \Omega$. What is the power developed in the external circuit?

a) 227 W b) 325 W c) 400 W d) 500 W

17. In the circuit shown here, what is the value of the unknown resistor R so that the total resistance of the circuit between points P and Q is also equal to R



a) 3 ohm b) $\sqrt{39}$ ohm c) $\sqrt{69}$ ohm d) 10 ohm

18. The resistance of a wire is R. If the length of the wire is doubled by stretching, then the new resistance will be

a) $2R$ b) $4R$ c) R d) $\frac{R}{4}$

19. By ammeter, which of the following can be measured
    a) Electric potential b)Potential difference c)Current d)Resistance

20. The maximum power drawn out of the cell from a source is given by (where r is internal resistance)
    a) $E^2/2r$ b) $E^2/4r$ c) E^2/r d) $E^2/3r$