DPP
DAILY PRACTICE PROBLEMS

CLASS : XIITH   SUBJECT : PHYSICS
DATE :   DPP NO. : 9

Topic :- Current Electricity

1. The emf is thermocouple changes sign at 600 K. If the neutral temperature is 210°C, the temperature of cold junction is
   a) 180 K   b) 117 K   c) 93°C   d) 90°C

2. How many minimum number of 2 Ω resistance can be connected to have an effective resistance of 1.5 Ω?
   a) 3   b) 2   c) 4   d) 6

3. Equal potentials are applied on an iron and copper wire of same length. In order to have the same current flow in the two wires, the ration r (iron)/r (copper) of their radii must be (Given that specific resistance of iron = 1.0×10^{-7} ohm - m and specific resistance of copper = $1.7 \times 10^{-8} ohm$ - m)
   a) About 1.2   b) About 2.4   c) About 3.6   d)About 4.8

4. A fuse wire of circuit cross-section and having diameter of 0.4 mm, allows 3 A of current to pass through it. But if another fuse wire of same material and circular cross-section and having diameter of 0.6 mm is taken, then the amount of current passed through the fuse is
   a) 3 A   b) $3 \times \sqrt{\frac{3}{2}}$ A   c) $3 \times \left(\frac{3}{2}\right)^{3/2}$ A   d) $3 \times \left(\frac{3}{2}\right)$ A

5. Two identical cells weather connected in parallel or in series gives the same current when connected to an external resistance 1.5 Ω. Find the value of internal resistance of each cell.
   a) 1 Ω   b) 0.5 Ω   c) Zero   d) 1.5 Ω

6. In the shown arrangement of the experiment of the meter bridge if AC corresponding to null deflection of galvanometer is x, what would be its value if the radius of the wire AB is doubled?
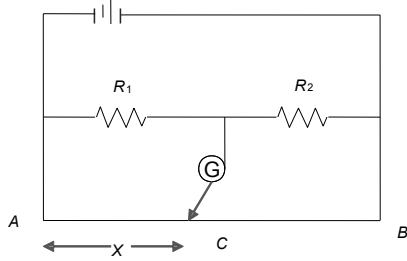

   a) x
   b) $\frac{x}{4}$
   c) $4x$
   d) $2x$

7. A current of two ampere is flowing through a cell of e.m.f. 5 $volt$ and internal resistance 0.5 oh m from negative to positive electrode. If the potential of negative electrode is $10V$, the potential of positive electrode will be
   a) 5 V
   b) 14 V
   c) 15 V
   d) 16 V

8. Two bulbs 25 W, 220 V and 100 W, 220 V are given. Which has higher resistance?
   a) 25 W bulb
   b)   100 W bulb
   c) Both bulbs will have equal resistance d)   Resistance of bulbs cannot be compared

9. The temperature of cold, hot junction of a thermocouple is 0°C and T°C respectively. The thermo-emf produced is $E = AT - \frac{1}{2}BT^2$. If $A = 16$, $B = 0.080$, the temperature of inversion will be
   a) 100°C
   b) 300°C
   c) 400°C
   d) 500°C

10. The equivalent resistance across A and B is

   a) 2Ω
   b) 3Ω
   c) 4Ω
   d) 5Ω
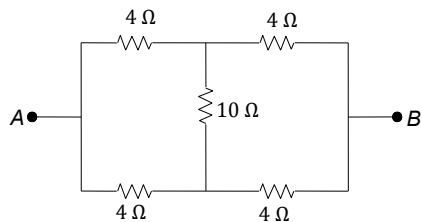
11. The length of a potentiometer wire is 5m. An electron in this wire experiences a force of 4.8×10^{-19}N, emf of the main cell used in potentiometer is
   a) 3 V
   b) 15 V
   c) 1.5 V
   d) 5 V

12. When a piece of aluminium wire of finite length is drawn through a series of dies to reduce its diameter to half its original value, its resistance will become
   a) Two times
   b) Four times
   c) Eight times
   d) Sixteen times

13. A voltmeter of resistance 1000 Ω is connected across a resistance of 500 Ω in the given circuit. What will be the reading of voltmeter
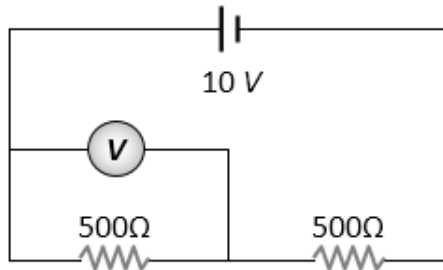
    a) $1\,V$ b) $2\,V$ c) $6\,V$ d) $4V$

14. A resistance of 4Ω and a wire of length 5 *metres* and resistance 5Ω are joined in series and connected to a cell of e.m.f. 10 *V* and internal resistance 1Ω. A parallel combination of two identical cells is balanced across 300 *cm* of the wire. The e.m.f. *E* of each cell is
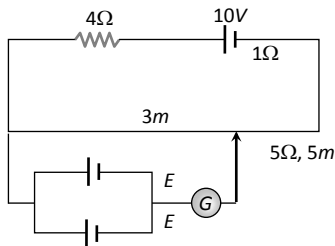
    a) $1.5\,V$ b) $3.0\,V$ c) $0.67\,V$ d) $1.33\,V$

15. Current flows through a metabolic conductor whose area of cross-section increases in the direction of the current. If we move in this direction,
a) The carrier density will change   b) The current will change
 c) The drift velocity will decrease   d) The drift velocity will increase

16. The resistance will be least in a wire with dimension
    a) $\frac{L}{2,2A}$ b) $2L, A$ c) L, A d) None of these

17. At room temperature, copper has free electron density of 8.4×10^{28} per m^3. The copper conductor has a cross-section of $10^{-6}m^2$ and carries a current of 5.4 *A*. The electron drift velocity in copper is
    a)$400\,m/s$ b)$0.4\,m/s$ c)$0.4\,mm/s$ d)$72\,m/s$

18. A battery is charged at a potential of 15 *V* in 8 hours when the current flowing is 10 *A*. The battery on discharge supplies a current of 5 *A* for 15 hours. The mean terminal voltage during discharge is 14 *V*. The "*Watt* - hₒᵤᵣ" efficiency of battery is
    a) 80%   b) 90%   c) 87.5%   d) 82.5%

19. A combination of two resistance of 2 W and 2/3 W connected in parallel is joined across a battery of emf of 3 V and of negligible internal resistance. The energy given out per sec will be

a) $\frac{1}{2} \times 3 \times 3$ J
b) $\frac{1}{2} \times \frac{1}{3} \times 3 \times 3$ J
c) 2×3 J
d) $3 \times 3 \times 2$ J

20. The length of the wire is doubled. Its conductance will be

a) Unchanged
b) Halved
c) Quadrupled
d) 1/4 of the original value