WORK SHEET 15

Subject : PHYSICS

CLASS : XII

13.6.20

Chapter : Current Electricity

Topic : KVL, KCL and application, concept of potentiometer.

Multiple Choice Question :　　　　　　　　　　　　　　　　　　　　　　**1 x 15 = 15**

1. KCL follows from which conservation law?
   a) charge 　　　　　 b) energy 　　　　　 c) momentum 　　　　　 d) all of these

2. KVL follows from which conservation law?

   a) charge 　　　　　 b) energy 　　　　　 c) mass 　　　　　 d) momentum

3. The area of cross section of the potentiometer wire is 10^{-6} m², specific resistance 10^{-7} Ω-m. If 0.1A flows in the wire, potential gradient along the wire is —

   (a) 10^{-2} Vm^{-1} 　　　 (b) 10^{-3} Vm^{-1} 　　　 (c) 10^{-4} Vm^{-1} 　　　 (d) 10^{-6} Vm^{-1}

4. Which instrument measures emf of a cell most accurately?
   (a) wheatstone bridge 　　 (b) ammeter 　　 (c) potentiometer 　　 (d) voltmeter

5. Kirchhoff's laws are valid for
   (a) linear circuits only 　　　　　　　　　 (b) non-linear circuits only

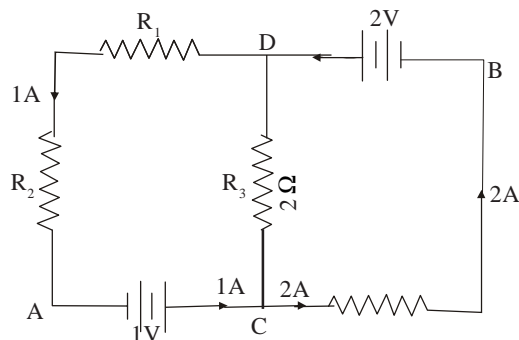   (c) both linear and non-linear circuits 　　　 (d) none of the above

6. In the circuit of the figure, the current l_2 exceeds the current l_1, by a factor of
   (a) 12

   (b) 20

   (c) 100
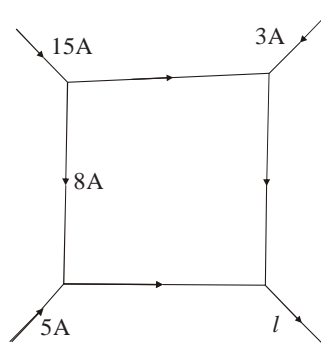
   (d) 120
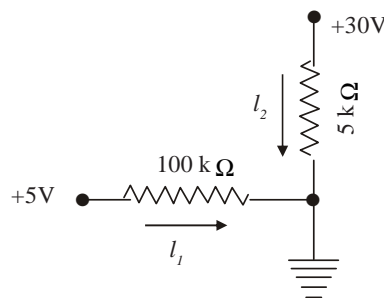
7. In the circuit shown in the figure, if the potential at point *A* is taken to be zero, the potential at point *B* is
   (a) +1V

   (b) −1V

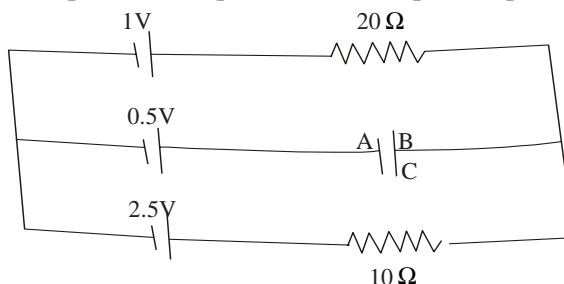   (c) +2V

   (d) −2V

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8. In the given network the magnire of currents is shown here. The current l will be

   (a)   −3A

   (b) 3A

   (c) 13A

   (d) 23A

9. In the circuit shown in the figure, the potential of point A with respect to point B is

   (a) 2V

   (b) −2V

   (c) −1.5V

   (d) +1.5V

10. In the circuit of Figure, the source of emf E has negligible internal resistance. C is the midpoint of the potentiometer wire AB. The resistance of the voltmeter V is not very high compared to that of the potentiomenter wire. Then the voltmeter reading will be

    (a) E   (b) $\dfrac{E}{2}$

    (c) greater that $\dfrac{E}{2}$ (d) less than $\dfrac{E}{2}$
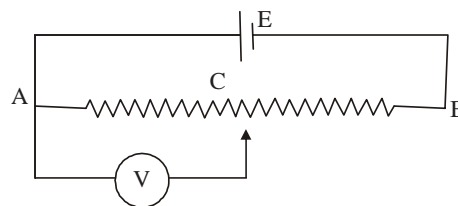
11. For a potentiometer wire of fixed length, the potential gradient can be decreased by
    (a) increasing the current by the potentiometer wire
    (b) reducing the current in the potentiometer wire
    (c) decreasing the value of attached resistances
    (d) none of the above

12. If the resistivity of a potentiometer wire be ρ and area of cross-section be A. If I is the current through the potentiometer wire then what will be the potential gradient along the wire?
    (a) I/ρ A   (b) $I\rho/A$ (c) IA/ρ (d) $IA\rho$

13. A potentiometer consists of a wire of length 4m and resistance $10\,\Omega$. It is connected to a cell of emf 2V. The potential difference per unit length of the wire will be

    (a)   0.5 Vm⁻¹   (b) 2 Vm⁻¹   (c) 5 Vm⁻¹   (d) 10 Vm⁻¹

14. The material of a wire of a potentiometer is
    (a)   copper   (b) steel   (c) manganin   (d) aluminium

15. Potentiometer measures potential more accurately because
    (a)   it uses sensitive galvanometer for null deflection
    (b)   it uses high resistance potentiometer wire
    (c)   it measures the potential in the closed circuit
    (d)   it measures the potential in the open circuit

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