

One Two academy

Std 12 Physics Unit -2

Time: 60 minutes

Maximum marks: 35

Choose the correct answer:-

5 x 1 = 5

1. In the case of insulators, as the temperature decreases resistivity
(a) increases (b) decreases
2. The resistance of a wire is R ohm. If it is melted and stretched n times it's original length, its new resistance will be
(a) nR (b) n^2R (c) R/n
3. In a Wheatstone bridge, all four arms have equal resistance R. If the resistance of the galvanometer arm is also R, the equivalent resistance of the combination as seen by the battery
(a) R (b) 2R (c) $\frac{R}{4}$
4. The internal resistance of a 2.1 V cell which gives a current of 0.2A through a resistance of 10 ohms is (in ohms)
(a) 0.2 (b) 0.5 (c) 0.8 (d) 1.0
5. The temperature coefficient of resistance of a wire is 0.00125 per °C. At 300 K, its resistance is 1 Ω . The resistance of the wire will be 2 Ω . at
(a) 1154 K (b) 1100 K (c) 1400 K (d) 1127 K

Answer any three of the following questions:-

3 x 2 = 6

6. Distinguish drift velocity and mobility.
7. Define electrical resistivity.
8. What are the changes observed at transition temperature?
9. A wire of resistance is stretched 10 ohms to thrice to its original length. Calculate the resistance of the stretched wire.

Answer any three of the following questions:

3 x 3 = 9

10. Explain the equivalent resistance of a parallel resistor network.
11. A copper wire of 10^{-6} m^2 area of cross-section, carries a current of 2 A. If the number of electrons per cubic meter is 8×10^{28} , calculate the current density and average drift velocity.
12. State and explain the Peltier effect.
13. Derive the expression for power $P = VI$ in an electrical circuit.

Answer the following questions:

3 x 5 = 15

14. a) State Joule's law of heating.
b) Find the heat energy produced in a resistance of 10ohms when 5A current flows through it for 5 minutes.

OR

15. Two cells each of 5V are connected in series across a 8ohms resistor and three parallel resistors of 4ohms, 6ohms and 12 ohms. Draw a circuit diagram for the above arrangement. Calculate (i) the current drawn from the cell. (ii) current through each resistor.

OR

Obtain the bridge balance condition in Wheatstone's bridge.

16. Explain the determination of the internal resistance of a cell using a voltmeter.

OR

Determine the microscopic model of current and obtain a general form of Ohm's law.

All the Best

