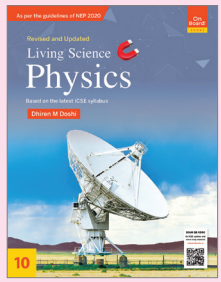
ICSE Living Science PHYSICS

Class 10



Multiple-Choice Questions

Chapter 8: CURRENT ELECTRICITY

1. Which of the following charged particles always remain attached to atoms?
   (a) Electrons only
   (b) Protons only
   (c) Neutrons only
   (d) Both electrons and protons
   Ans: (b)

2. Which electrons of a metal atom are free to move inside the metal?
   (a) Outermost electrons
   (b) Innermost electrons
   (c) Any electron of the metal
   (d) Any electron of another metal when in contact with this metal
   Ans: (a)

3. Which of the following statements is correct?
   (a) The conductor that has excess electrons is negatively charged and is said to be at a higher potential.
   (b) The conductor that has deficiency of electrons is negatively charged and is said to be at a higher potential.
   (c) The conductor that has excess electrons is negatively charged and is said to be at a lower potential.
   (d) The conductor that has deficiency of electrons is positively charged and is said to be at a lower potential.
   Ans: (c)

4. The following statements are about the potential that makes the electric current flow.
   (i) Electric current flows from lower potential to higher potential.
   (ii) Electric current flows when the level of the two potentials is same.
   (iii) Electric current flows from higher potential to lower potential.
   (iv) Electric current flows from both higher to lower and lower to higher potentials.
   Choose the incorrect option.
   (a) (i) only
   (b) (ii) only
   (c) (i), (iii) and (iv)
   (d) (i), (ii) and (iv)
   Ans: (d)

5. The SI unit of potential is
   (a) J C
   (b) J C^{-1}
   (c) J C^{2}
   (d) J C^{-2}
   Ans: (b)

6. In order to measure the potential difference between two points A and B in a circuit, voltmeter is connected
   (a) in series at the end of point B.
   (b) in series before the point A.
   (c) in parallel across the two points A and B.
   (d) in any order either in series or in parallel.
   Ans: (c)

7. If 1 coulomb of charge flows through a conductor in 1 second, the current flowing through it is
   (a) 0.1 ampere
   (b) 1 milliampere
   (c) 1 microampere
   (d) 1 ampere
   Ans: (d)

8. Which of the following expressions is the correct one about the Ohm's law?

(a) $V = 1/I$ (b) $V \propto 1/I$ (c) $V = I$ (d) $V \propto I$

Ans: (d)

9. The potential difference across the ends of a conductor is tripled. The current flowing through the conductor will

(a) remain unchanged. (b) be tripled. (c) be one-third. (d) be six times more.

Ans: (b)

10. Identify the correct relationship between the electrical resistance of a conductor (R), and its length (l) and area of cross-section (A).

(a) $R \propto (l + A)$ (b) $R \propto (l - A)$ (c) $R \propto (l \times A)$ (d) $R \propto (l / A)$

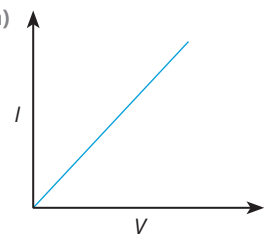
Ans: (d)

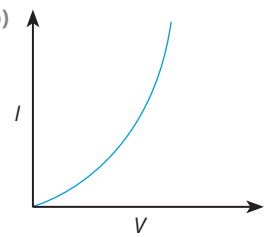
11. How does the resistance of pure metals change with temperature?

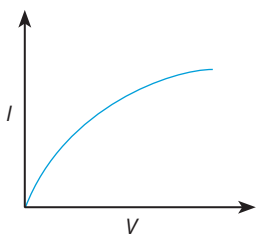
(a) It increases with increase in temperature.
(b) It decreases with increase in temperature.
(c) It does not change with temperature.
(d) It increases initially but later decreases with increase in temperature.

Ans: (a)

12. From the given V–I graphs, identify the one for ohmic resistor.

(a) 

(b) 

(c) 

(d) None of these

Ans: (a)

13. Which of the following is the correct statement about critical temperature or transition temperature (T_c) of metals? It is the temperature below which

(a) a metal becomes non-conductor.
(b) a metal becomes semiconductor.
(c) a metal becomes superconductor.
(d) a metal does not change its conducting property.

Ans: (c)

14. Identify the correct unit of resistivity.

(a) Ω m (b) Ω m^2 (c) Ω^2 m (d) Ω m^{-1}

Ans: (a)

15. An electric circuit has three cells connected to each other. Which of the following diagrams demonstrates the correct way of their combination?

(a) 

(b) 

(c) 

(d) 

Ans: (d)

16. Which of the following is correct about a cell?

(a) It consists of two plates of the same metal, dipped in an electrolyte in a beaker.
(b) It consists of two plates of the same metal, held inside an empty beaker.
(c) It consists of two plates of different metals, dipped in an electrolyte in a beaker.
(d) It consists of two plates of different metals, held inside an empty beaker.

Ans: (c)

17. Three resistances of value 2 Ω, 3 Ω, and 4 Ω are connected in such a way that their effective resistance is $\frac{12}{13}$ Ω. Which of the following combination of these resistances is the correct one to give this effective resistance?

(a) Resistances are in series.

(b) Resistances are in parallel.

(c) One resistance is in series with the other two which are in parallel.

(d) Two resistances are in series and other is parallel to it.

Ans: (b)

18. In our homes, what type of combination of electrical devices is used so that even if one device is out of order, other devices in the circuit can function without being affected?

(a) Series

(b) Parallel

(c) Combination of both series and parallel

(d) None of these

Ans: (b)

19. Two resistances, 6 Ω and 8 Ω, are connected in series and in parallel. The effective resistance is

(a) more when they are in series than when they are connected in parallel.

(b) more when they are in parallel than when they are connected in series.

(c) always the same regardless of the value of the individual resistances or how they are connected.

(d) only dependent on the values of the individual resistances but not on how they are connected.

Ans: (a)

20. In the cell in which zinc and copper electrodes are dipped in sulphuric acid, which of the following is correct?

(a) Zinc electrode is positively charged and copper electrode is negatively charged.

(b) Zinc electrode is negatively charged and copper electrode is positively charged.

(c) Zinc and copper electrodes both are charged and both have the same type of charge.

(d) Zinc and copper electrodes both do not have any charge.

Ans: (b)