# ELECTRIC CURRENT
½ Mark Questions

1. Give one live example which provides evidence for the motion of charge in the atmosphere?

2. How much net charge is flowing through a cross section of conductor in unit time when the conductor is in open circuit?

3. Which of the following statement is false?

   a) When the electrons are in ordered motion there will be a net charge crossing through any cross section of the conductor?

   b) When the electrons are in random motion there will be no net charge crossing through any cross section of the conductor.

   c) The positive ions of the metal conductor are fixed in their location

   d) The positive ions of the metal conductor are in motion.

4. Which of the following statement is/are correct?

   a) Electric current is ordered motion of charges

   b) The amount of charge crossing any cross-section of the conductor in one second is called electric current.

   c) One coloumb of charge crossing any cross-section of the conductor in one second is called one-ampere.

5. **X :** The free electrons in the conductor are accelerated by the electric field and move in a direction opposite to the direction of the electric field.

   Y: The free electrons in the conductor are accelerated by the electric field and move in a direction parallel to the direction of the electric field

   Which of the above statement is/are correct?

6. Match the suitable answers of section-B with section-A

Section A	Section B
1) Electric current (I)	p) It
2) Average drift speed (V_d)	q) I/nqA
3) Electric charge (Q)	R) nqAVd

7. Write the magnitude of electron?

8. Name the physical quantity which has S.I unit as coloumb?

9. Name the instrument which can be used to measure the e.m.f of a battery ?

10. Match the suitable answers of section-B, with section-A.

Section-A	Section-B
1) Ammeter	p) potential difference
2) Volt meter	q) electric current
3) 1 Joule/1 Coloumb	r) one – ampere
4) 1 Coloumb/1 sec	s) one – volt

11. **X:** The voltmeter is always connected in parallel and it has a high resistance so that it takes negligible current from the circuit.

    Y: The ammeter is always connected in series and it has low resistance so that it may not change the current flowing in the circuit?

    Which of the above statement is/are correct?

12. Write the relation between e.m.f of battery and drift speed of electrons in the conductor connected to a battery?

13. **X:** The materials which obey ohm's law are called ohmic conductors

    Y: The materials which don't obey ohm's law are called non-ohmic conductors

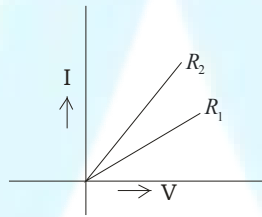   Which of the above statement is/are correct.

14. Which of the following V-I graph represent ohmic conductor.

A)   B)   C)   D)
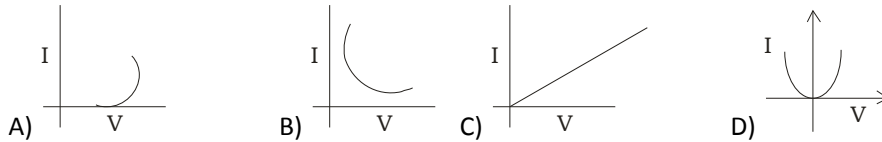
15. Find the resistance of a wire from the v-I graph?
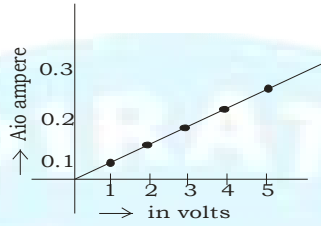
16. The v-I graph of two conductors of resistances R_1 and R_2 are shown in the figure. Which is having greater resistance.

17. What happens to the current when the resistance of a circuit is doubled and potential difference is constant?

18. Identify the factors that influences the electrical resistance of conductor.

A) Temperature of the conductor

B) Nature of the material of the conductor

C) Length of the conductor

D) Area of cross section of the conductor.

19. Which of the following statement is/are correct.

A) Ohm's law is valid for metal conductors provided the temperature and other physical conditions remain constant.

B) The V-I graph of a metal conductor will be non-linear for changing temperature.

C) Ohm's law is not applicable to gaseous conductors.

D) Ohm's law is not applicable to semi-conductors.

20. Match the suitable answers of section-B with section – A.

Section A	Section B
1) Ohm's Law	p) Ohm
2) Ohmic conductor	q) LED
3) Non-ohmic conductor	r) Iron
4) Resistance	s) V=IR

21. **Assertion (A) :** A long wire has more resistance than a short wire made by the same material and cross sectional area.

Reason (R) : The resistance of a conductor is directly proportional to it's length at constant temperature and cross-sectional area.

A) A and R are correct, R is the correct Explanation of A

B) A and R are correct, R is not correct explanation of A.

C) A is correct and R is incorrect

D) A is incorrect and R is correct.

22. What happens to the resistance of a conductor if the diameter of a conductor is halved?

23. Match the suitable answers of section-B. With section-A

   Section-A   **Section-B**

   1) $\rho \cdot \dfrac{l}{A}$ p) Resistance

   2) $R \cdot \dfrac{A}{l}$ q) Resistivity

   3) Ω

   4) Ω-m

24. **X:** The specific resistance of the conductor depends on the nature of the material and temperature of the material.

   Y: The resistance of the material depends on the nature of the material, temperature and geometrical factors of the material.

   Which of the above statement is/are correct?

25. Name the metal which has least resistivity value among copper, silver, tungsten and Nichrome.

26. Which of the following statement is/are false.

   A) The values of resistivity of alloys are 30-100 times larger

   B) The values of resistivity of alloys are smaller than those of metals.

   C) Alloys are used in the heating elements such as electric irons, toasters etc.

   D) Alloy's don't oxidize easily.

27. Three resistors of values $2\Omega, 4\Omega, 6\Omega$ are connected in series. What is equivalent resistance of the above resistors?

28. Find the effective resistance when two resistors of values $X\Omega$ and $\dfrac{X}{2}\Omega$ are connected in parallel combination?

29. A uniform wire of resistance 100Ω is cut into five equal parts. These parts are now connected in parallel. Find the equivalent resistance of the wire?

30. How many times resistance of the conductor increases if the length and diameter of a conductor both are halved.

31. If the potential difference in a circuit is 240 V and the resistance is 60Ω then find the current flowing through the circuit?
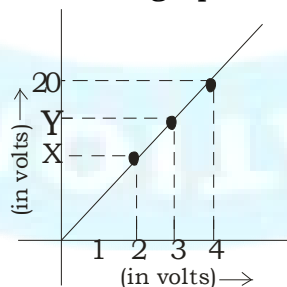
32. Write the equation for Ohm's law?

33. **X:** In series connection the same current flows through each resistor in a circuit.

   Y: In parallel connection the same potential difference gets applied across each resistor in a circuit
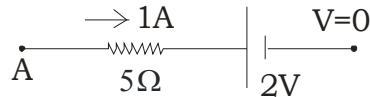
   Which of the above statement is/are correct?

34. Find the resistance of the conductor from the graph.

35. X: At any junction point in a circuit where the current divides the sum of the currents into the junction must equal the sum of the current leaving the junction.

36. Find the potential at A from the figure when the potential at B is zero

$\longrightarrow$ 1A   V=0

A   5Ω   2V

37. According to Kirchhoff's law which of the following equation is/are correct from the figure.
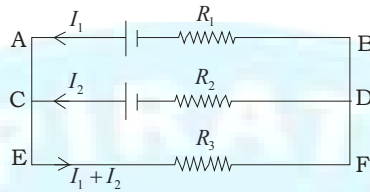
   A) For the loop ACDBA $-V_2+I_2R_2-I_1R_1+V_1=0$
   B) For the loop EFDCE $-(I_1+I_2)R_3-I_2R_2+V_2=0$
   C) For the loop EFBAE $-(I_1+I_2)R_3-I_1R_1+V_1=0$

38. Match the suitable answers of section-B with section-A

Section – A	Section-B
1) Electric power	p) Conservation of energy
2) Kirchhoff's junction law	q) Conservation of charge
3) Kirchhoff's loop law	r) VI

39. Express 1 KWH in Joules?

40. Two bulbs have rating 100W, 220V and 60W, 220V

   Ravi : The bulb 100W has greater resistance than 60W

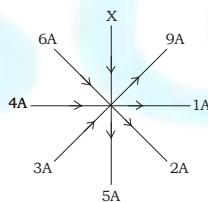   Ramu: The bulb 60W has greater resistance than 100W

   Whose statement is correct?

41. Which of the following statement is/are in correct?

   A) All the electrical devices of our home are connected in parallel connection.

   B) The fuse consist of thin wire of low melting point

   C) To prevent damages due to over loading we connect an electric fuse wire in series in the electric circuit.

   D) The fuse wire consists of a thick wire of high melting point.

42. The value of ' X' from the figure.

KEY

1. Lightining	2. Zero	3. D	4. A,B and C
5. X	6. 1-p, 2-q, 3-p	7. $1.602 \times 10^{-19}C$	8. Electric Charge
9. Voltmeter	10. 1-q, 2-p, 3-s, 4-r		11. X and Y
12. $V \propto I$	13. X and Y	14. C	15. 10Ω
16. R_1	17. It be come halved		18. A,B,C and D
19. A,B,C and D	20. 1-s, 2-r, 3-q, 4-p		21. A
22. 4 times increases	23. 1-p, 2-q, 3-p, 4-q		
24. X and Y	25. Silver	26. B	27. 12Ω
28. $x/3\,\Omega$	29. 4Ω	30. 2 times	
31. 4 A	32. V=IR	33. X and Y	
34. 5Ω	35. X	36. 7V	37. A,B and C
38. 1-R, 2-Q, 3-P	39. $3.6 \times 10^6 J$	40. Ramu	
41. D	42. 4A		

M.SRINIVASA RAO,SA(PS),AFC SCHOOL(AGKMHS),GUDIVADA.PH:9848143855
Visit: srini science mind