PHYSICS

BOOKS - CHETANA PUBLICATION

CURRENT ELECTRICITY

Example

1. Answer the following question:

You must have seen a waterfull. Which way does the water flow?

Watch Video Solution

2. Find the odd one out:

Voltmeter, Ammeter, Galvanometer, Thermometer

Watch Video Solution

3. Find the odd one out:

Rubber, Silver, Copper, Gold

Watch Video Solution

4. Find the odd one out:

Wood, Glass, Steel, Rubber

Watch Video Solution

5. Find the odd one out:

Graphite, Diamond, Fullerenes, Coal

Watch Video Solution

6. Distinguish between ammeter and voltmeter, (any two points).

Watch Video Solution

7. Distinguish between

Ohmic conductors and Non-Ohmic conductors

Watch Video Solution

8. Distinguish between

Conductors and Insulators

 Watch Video Solution

9. Make pair:

Copper : Conductor :: Rubber .....

 Watch Video Solution

10. Make pair:

Aluminium : .... :: Indium oxide : Super Insulator

Watch Video Solution

11. Make pair:

Parallel Connection $: \frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$ series Connection :.....

Watch Video Solution

12. Make pair:

Electric Current.....Electric charge:Coulomb

Watch Video Solution

13. Make pair:

Electric resistance : Ohm :: Potential difference:.....

Watch Video Solution

14. State whether the following statements are true or false. Correct the false statements:

The SI unit of charge is volt

Watch Video Solution

15. State whether the following statements are true or false. Correct the false statements:

Voltmeter is always connected in series with the device

Watch Video Solution

16. State whether the following statements are true or false. Correct the false statements:

The conventional direction of flow of current is from positive terminal to negative terminal.

Watch Video Solution

17. State whether the following statements are true or false. Correct the false statements:

Silver and copper are good conductors.

Watch Video Solution

18. State whether the following statements are true or false. Correct the false statements:

Resistivity of pure metals is more than alloys.

Watch Video Solution

19. State whether the following statements are true or false. Correct the false statements:

Resistance in series arrangement is used to decrease resistance of circuit

Watch Video Solution

20. State whether the following statements are true or false. Correct the false statements:

A conducting wire offersless resistance to flow of electrons

Watch Video Solution

21. State whether the following statements are true or false. Correct the false statements:

Charges are measured in ampere.

Watch Video Solution

22. State whether the following statements are true or false. Correct the false statements:

The unit of potential difference is ampere

Watch Video Solution

23. State whether the following statements are true or false. Correct the false statements:

Resistance of a conductor is inversely proportional to the length of the conductor.

Watch Video Solution

24. State whether the following statements are true or false. Correct the false statements:

Ammeter is connected in parallel to the cell to measure current.

Watch Video Solution

25. State whether the following statements are true or false. Correct the false statements:

Fuse is made of wire having high melting

Watch Video Solution

26. Which is the unit used to measure large voltages?

Watch Video Solution

27. What is the SI unit of potential difference?

Watch Video Solution

28. What is lightning?

Watch Video Solution

29. What is the unit of resistivity.

Watch Video Solution

30. Which substances are called conductors of electricity?

Watch Video Solution

31. What is Earth wire?

Watch Video Solution

32. Write formula:

Electric current

Watch Video Solution

33. Write formula:

Electric charge

Watch Video Solution

34. Write formula:

Potential difference

Watch Video Solution

35. Write formula:

Electric resistance

Watch Video Solution

36. Write formula:

Current

Watch Video Solution

37. Write formula:

Resistivity

Watch Video Solution

38. Free electrons are required for conduction of electricity.

Watch Video Solution

39. Wood and glass are good insulators.

Watch Video Solution

40. Give scientific reasons:

Connecting wires in a circuit are made of copper and aluminium.

Watch Video Solution

41. A thick wire has a low resistance.

Watch Video Solution

42. A series combination of resistances is used to increase the resistance of a circuit.

Watch Video Solution

43. Give scientific reasons:

Parallel combination of resistances decreases the effective resistance of the circuit.

Watch Video Solution

44. In street lights, bulbs are connected in parallel.

Watch Video Solution

45. Acurrent of 0.4Aflowsthrough a conductor for 5minutes. How much charge would have passed through the conductor?

Watch Video Solution

46. Solve the following examples (numerical problems):

If a charge of 420 C flows through a conducting wire in 5 minutes what is the value of the current?

Watch Video Solution

47. Find the amount of work done if 3 C of charge is moved through a potential difference of 9 V.

Watch Video Solution

48. The resistance of the filament of a bulb is 1000Ω. It is drawing a current from a source of 230 V. How much current isflowing through it?

Watch Video Solution

49. The length of a conducting wire is 50 cm and its radius is 0.5 mm. If its resistance is 30Ω what is the resistivity of its material?

Watch Video Solution

50. A current of 0.24 A flows through a conductor when a potential difference of 24 V is applied between its two ends. What is its resistance?

Watch Video Solution

51. If three resistors 15Ω, 3Ω and 4Ω each are connected in series, what is the effective resistance in the circuit?

Watch Video Solution

52. Three resistances 15Ω , 20Ω and 10Ω are connected in parallel. Find the effective resistance of the circui

Watch Video Solution

53. Write a note on the following:

Electric current

Watch Video Solution

54. Write a note on the following:

1 ampere

Watch Video Solution

55. Write a note on the following:

1 volt

Watch Video Solution

56. Write a note on the following:

Potential Difference

Watch Video Solution

57. Write a note on the following:

Conductor

Watch Video Solution

58. Write a note on the following:

Insulators

Watch Video Solution

59. Write a note on the following:

Lohm

Watch Video Solution

60. Write a note on the following:

Potential Difference

 Watch Video Solution

61. Write a note on the following:

Ohm's Law

 Watch Video Solution

62. Write a note on the following:

Superconductors

Watch Video Solution

63. Write a note on the following:

Non-ohmic conductors

Watch Video Solution

64. Distinguish between ammeter and voltmeter.

Watch Video Solution

65. Distinguish between ammeter and voltmeter, (any two points).

Watch Video Solution

66. Distinguish between

Conductors and Insulators

Watch Video Solution

67. Distinguish between:

Resistance and Resistivit

Watch Video Solution

68. Distinguish between resistance in series and resistance in parallel.

Watch Video Solution

69. Write properties / characteristics / advantages of following

Superconductors

Watch Video Solution

70. Safety precautions are to be taken while using electricity.

Watch Video Solution

71. Fuse used in electrical circuit can save electrical objects from damage.

Watch Video Solution

72. Bulbs arranged in parallel glow brighter than bulbs arranged in series

Watch Video Solution

73. The length of a conducting wire is 50 cm and its radius is 0.5 mm. If its resistance is 30Ω what is the resistivity of its material?

Watch Video Solution

74. Determine the current that will flow when a potential difference of 33 V is applied between two ends of an appliance having a resistance of 110Ω. If the same current is to flow through an appliance having a resistance of 500Ω, how much potential difference should be applied across its two ends?

Watch Video Solution

75. Determine the resistance of a copper wire having a length of 1 km and diameter of 0.5 mm

Watch Video Solution

76. The resistance of a 1m long nichrome wire is 6Ω. If we reduce the length of the wire to 70 cm, what will its resistance be?

Watch Video Solution

77. Solve:

Two resistors having resistance of 16 and 14 are connected in series, if a potential difference of 18 V is applied across them, calculate the current flowing through the circuit and the potential difference across each individual resistor

Watch Video Solution

78. If the resistors $5\Omega, 10\Omega$ and 30Ω are connected in parallel to battery of 12 V, find

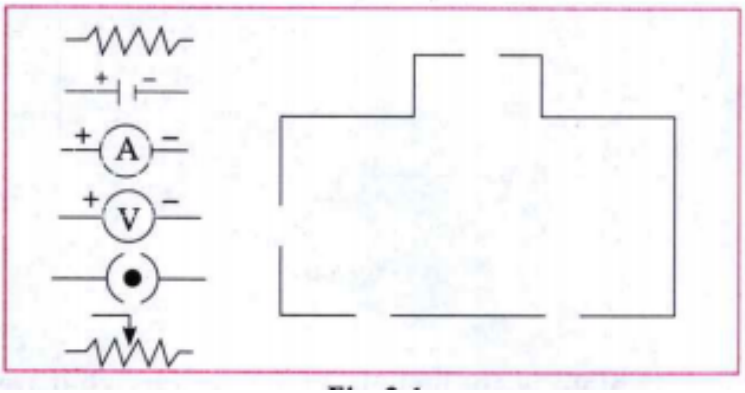
the effective resistance in the circuit. Calculate the total current and current in each resistor.

Watch Video Solution

79. When two resistors are connected in seriesthe total resistance is 80Ω and if the same resistors are connected in parallel the total resistance becomes 20Ω.Find the individual resistors.

Watch Video Solution

80. The following figure shows the symbols for components used in the accompanying electrical circuit.



Place them at proper places and complete the circuit

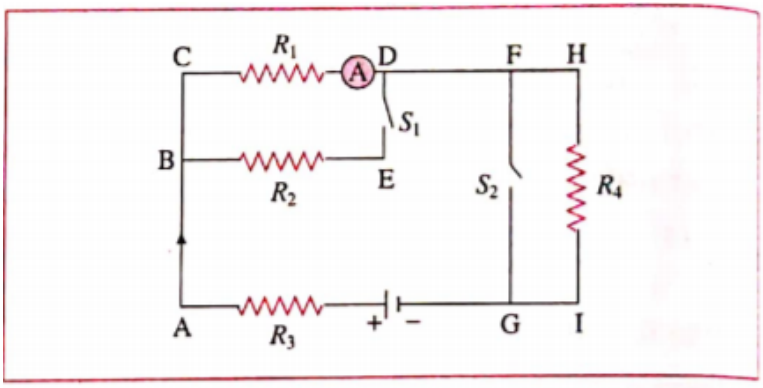
Which law can you proves with the helpof the above cirrcuit?

State expression of Ohm's law.

Watch Video Solution

81. Resistances R_1, R_2, R_3 and R_4, are connected as shown in the figure. S_1 and S_2 are two keys. Discuss the current flowing in the circuit in the following cases.

S_1 is closed but S_2 is open.



Watch Video Solution

82. Explain with the help of a diagram, what are free electrons andhow they move through the conductor?

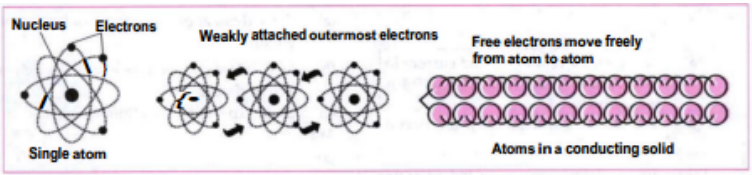


Fig. 3.7: Free Electrons

Watch Video Solution

83. Material: Copper and aluminium wires, glass rod,rubber. Make connection as shown in figure 3.8. First connect a copper wire

betweenpoints A and B and measure the currentinthe circuit.Thenin place of the copper wire, connect aluminium wire, glass rod, rubber, etc one at a time and measure the current each time. Compare the values of the current in different cases

values of the current in different cases.

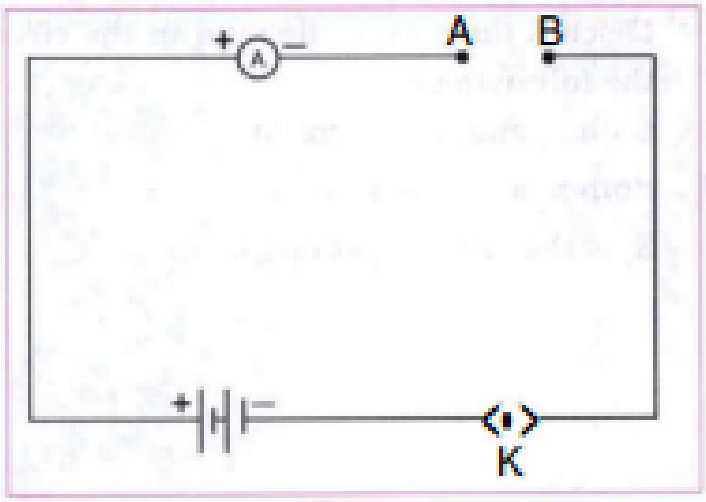


Fig. 3.8 Electric Circuit

Watch Video Solution

84. If resistors are connected in series.

Watch Video Solution

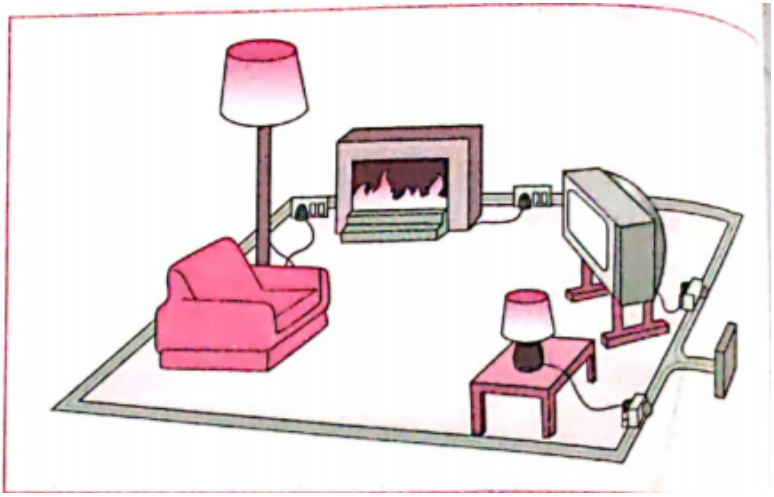
85. Answer the following question:

Obtain an expression for the effective resistance when a number of resistors are connected in parallel.

Watch Video Solution

86. Answer the following question:

The accompanying figure shows some electrical appliances connected in a circuit in a house.

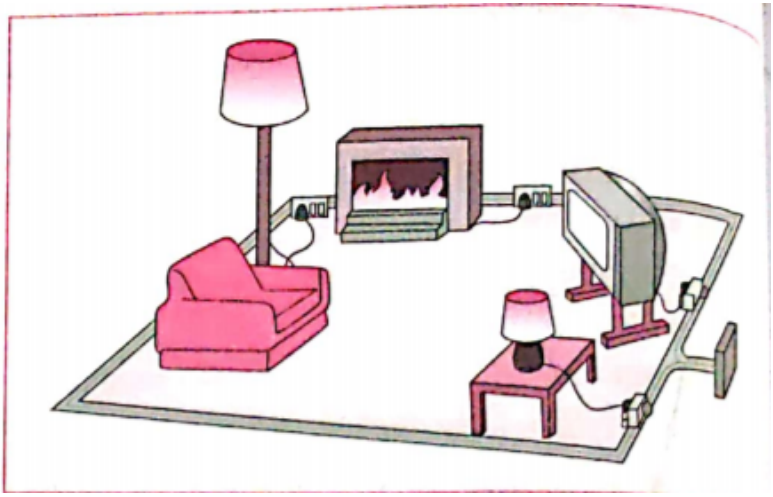


What must be the potential difference across individual appliances?

Watch Video Solution

87. Answer the following question:

The accompanying figure shows some electrical appliances connected in a circuit in a house.



why are the domestic appliances connected in this way?

Watch Video Solution

88. If the T.V. stops working, will the other appliances also stop working? Explain your answer.

Watch Video Solution

89. Does the water stop flowing ?why?

Watch Video Solution

90. What will you do to keep the water flowing for a longer duration?

Watch Video Solution

91. Point out the mistakes in the figure below:

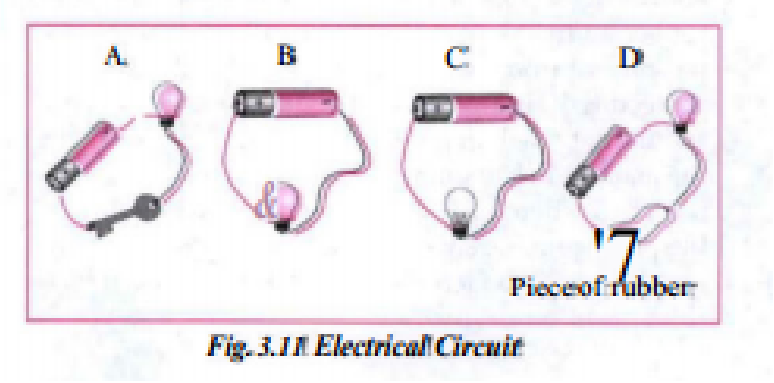
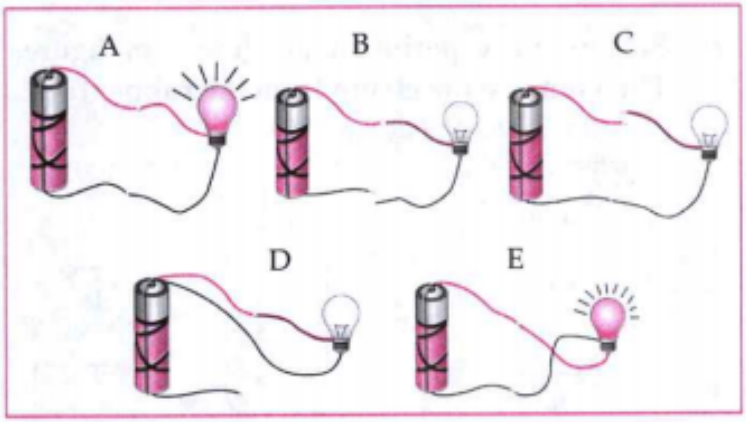


Fig. 3.11 Electrical Circuit

Watch Video Solution

92. Why are the bulbs in Figures B, C and D not lighting up?



Watch Video Solution

93. Why should a person wear footwear with rubber soles while handling electrical appliances.

Watch Video Solution

94. Saee is touching an electricla button socket with wet hands what will you advise her and why?

Watch Video Solution

Exercise

1. Fill in the blanks:

1mA=.....A.

A. 10^3

B. 10^{-3}

C. 10^6

D. 10^{-6}

Answer:

Watch Video Solution

2. Fill in the blanks:

To increase the effective resistance in a circuit, the resistors are conneted in .....

A. Series

B. Parallel

C. Both ways

D. None of these

Answer:

 Watch Video Solution

3. 1 kilowatt hr = ... joules.

A. $4.6 \times l0^6$

B. 3.6×10^6

C. 30.6×10^6

D. $3.6 \times l0^5$

Answer:

Watch Video Solution

4. The voltage difference in India between the live and neutral wiresis about ..... .

A. 110 V

B. 220 V

C. 440 V

D. 60 V

Answer:

Watch Video Solution

5. Resistivity is the specific property of a..... .

A. Area of crosssection

B. Temperature

C. Length

D. Material

Answer:

Watch Video Solution

6. If a P.D. of 12 V is applied across a 3ω resistor then the current passing through it is

A. 36 A

B. 4A

C. 0.25 A

D. 15 A

Answer:

 Watch Video Solution

7. In order to measure the electric current flowing through a circuit, we connect....with the circuit...

A. a voltmeter in parallel

B. a voltmeter in series

C. an ammeter in parallel

D. an ammeter in series

Answer:

Watch Video Solution

8. P and Q are two wires of same length and different cross sectional areas and made of same material. Name the property which is same for both the wires.

A. Resistivity

B. Resistance

C. Current

D. Both (a) and (b)

Answer:

 Watch Video Solution

9. Following is true for identical bulbs connected in parallel.

A. All bulbs glow with unequal brightness.

B. If one bulb is non-functional, all will stop working

C. All bulbs glow with equal brightness

D. Bulbs function for longer time.

Answer:

Watch Video Solution

10. The.....wire is either yellow or green in colour.

A. Live

B. Neutral

C. Earth

D. Fuse

Answer:

Watch Video Solution

11. A current flows through a circuit due to the differnce in .....between two points in the conductor.

A. Gravity

B. Potential

C. Resistance

D. Fuse

Answer:

Watch Video Solution

12. .....is the amount of charge flowing throught a particular cross section area in unit time.

A. Electric current

B. Ampere

C. Volt

D. Force

Answer:

Watch Video Solution

13. The flow of.....constitutes the eletric current in a wire

A. Protons

B. Neutrons

C. Electrons

D. Gravitons

Answer:

Watch Video Solution

14. The conventional direction of flow of current is from.....terminal to .....terminal

A. Negative to positive

B. Neutral to positive

C. Positive to negative

D. Positive to neutral

Answer:

Watch Video Solution

15. Resistances are connected in .....so as to pass the same current through them.

A. Series

B. Parallel

C. Reversed

D. Disconnect

Answer:

Watch Video Solution

16. To decrease the effective resistance in a circuit, the resistances are connected in ..... .

A. Series

B. Parallel

C. Reversed

D. Disconnect

Answer:

17. $1\mu V$ =....V

A. 10^2

B. 10^{-6}

C. 10^6

D. 10^3

Answer:

Watch Video Solution

18. Good conductors contain a large number of .....

A. Protons

B. Neutrons

C. Electrons

D. Gravitons

Answer:

 Watch Video Solution

19. Electrons flow .....terminal to .....terminal in a conductor when potential diffrerence is applied.

A. Negative to positive

B. Neutral to positive

C. Positive to negative

D. Positive to neutral

Answer:

Watch Video Solution

20. Sneha is getting an electrical shock what will you do the save her life?

Watch Video Solution

21. Derive the expression for resistances connected in series.

Watch Video Solution

22. Derive the expression for the resistances connected inparallel.

Watch Video Solution

23. Answer the following question:

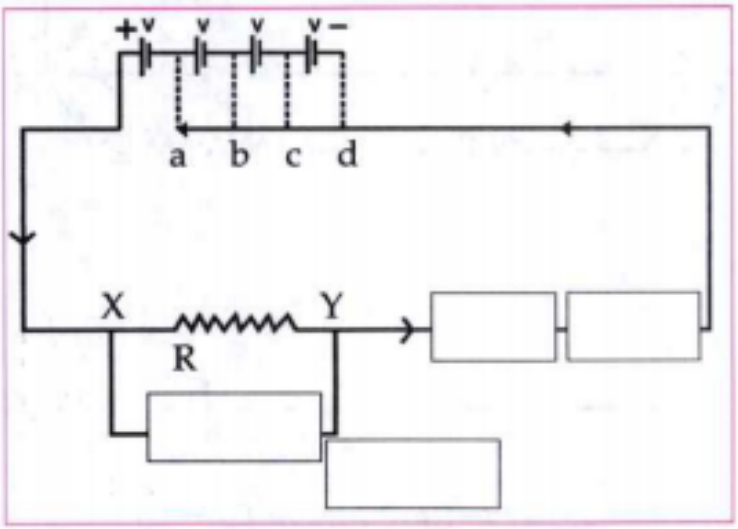
Find the expression for the resistivity of a material.

Watch Video Solution

24. Show motion of electrons in an circuit and explain precautions while using an electrical device.

Watch Video Solution

25. Complete the incomplete figure and give explanation:



Watch Video Solution

26. Fill in the blanks:

To increase the effective resistance in a circuit, the resistors are conneted in .....

A. Series

B. Parallel

C. Both ways

D. None of these

Answer:

Watch Video Solution

27. Resistivity is the specific property of a..... .

A. Area of crosssection

B. Temperature

C. Length

D. Material

Answer:

Watch Video Solution

28. Following is true for identical bulbs connected in parallel.

A. All bulbs glow with unequal brightness.

B. If one bulb is non-functional, all willstop worki

C. All bulbs glow with equal brightness

D. Bulbsfunction for longer time.

Answer:

Watch Video Solution

29. The.....wire is either yellow or green in colour.

A. Live

B. Neutral

C. Earth

D. Fuse

Answer:

Watch Video Solution

30. Find the odd one out:

Voltmeter, Ammeter, Galvanometer, Thermometer

Watch Video Solution

31. Write pairs. Electric resistance :Ohm ::.....volt.

Watch Video Solution

32. Which is the unit used to measure large voltages?

Watch Video Solution

33. Name the following

.Unit of resistivity

Watch Video Solution

34. A thick wire has a low resistance.

Watch Video Solution

35. Wood and glass are good insulators.

Watch Video Solution

36. Free electrons are required for conduction of electricity.

Watch Video Solution

37. Acurrent of 0.4Aflowsthrough a conductor for 5minutes. How much charge would have passed through the conductor?

Watch Video Solution

38. Find the amount of work done if 3 C of charge is moved through a potential difference of 9 V.

Watch Video Solution

39. The length of a conducting wire is 50 cm and its radius is 0.5 mm. If its resistance is 30Ω what is the resistivity of its material?

Watch Video Solution

40. Determine the current that will flow when a potential difference of 33 V is applied between two ends of an appliance having a resistance of 110Ω. If the same current is to flow through an appliance having a resistance of 500Ω, how much potential difference should be applied across its two ends?

Watch Video Solution

41. The resistance of a 1m long nichrome wire is 6Ω. If we reduce the length of the wire to 70 cm, what will its resistance be?

Watch Video Solution

42. When two resistors are connected in seriesthe total resistance is 80Ω and if the same resistors are connected in parallel the total resistance becomes 20Ω.Find the individual resistors.

Watch Video Solution

43. Derive the expression for the resistances connected inparallel.

Watch Video Solution

44. Draw an electrical circuit and explain working of a fuse.

Watch Video Solution