PHYSICS

BOOKS - BAL BHARTI

CURRENT ELECTRICITY

Example

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

2. The resistance of the filament in a light bulb is 1000Ω. If the bulb is fed by a current from a source of potential difference 230 V, how much current will flow through it?

3. 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?

4. 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?

5. 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?

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

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7. Three resistors having resistances of 15Ω, 3Ω and 4Ω are connected in series. What is the effective resistance in the circuit?

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8. 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

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9. Resistors having resistances of 15Ω, 20Ω and 10Ω are connected in parallel. What is the

effective resistance in the circuit?

10. Three resistors having resistances of 5Ω, 10Ω and 30Ω are connected in parallel and a potential difference of 12 V is applied across them. Obtain the current flowing through the circuit ang through individual resistors. What is the effective resistance in the circuit?
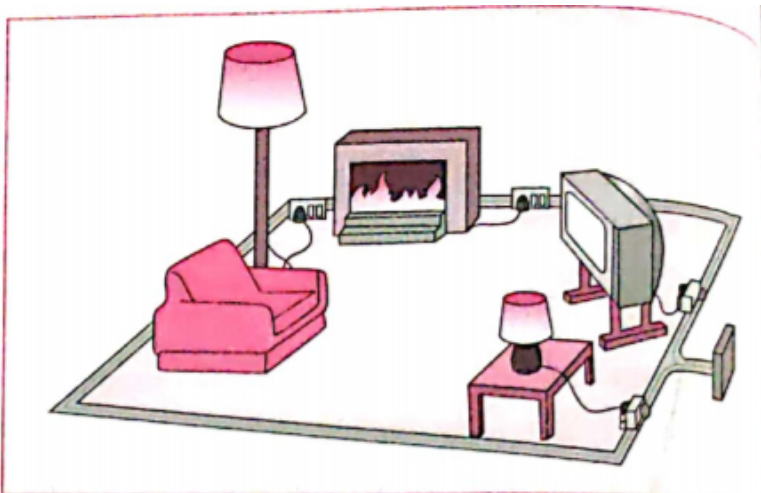
1. Answer the following question:

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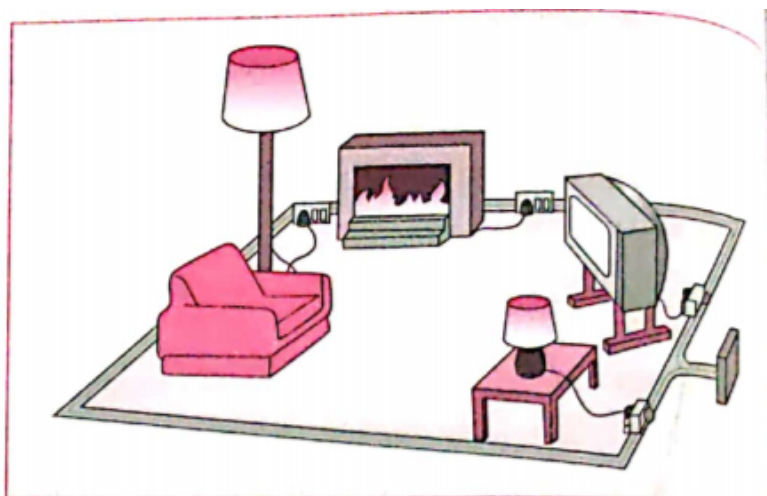

By which method are the appliances connected?

2. Answer the following question:

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

will the current passing through each appliances be the same ? Justify the answer.

3. Answer the following question:

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

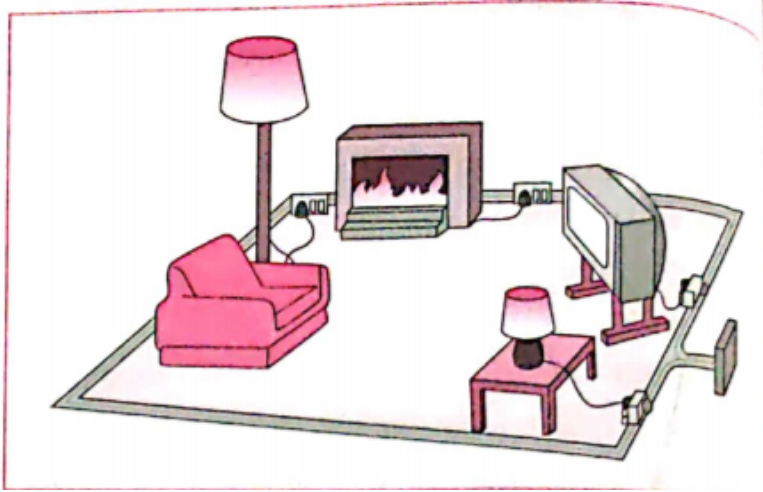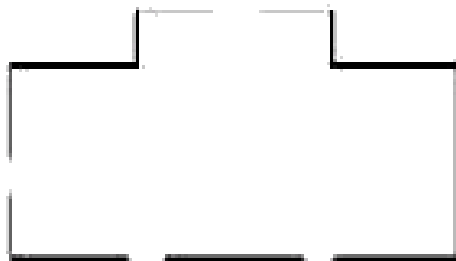why are the domestic appliances connected in this way?

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

5. 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 prove with the help of the above circuit?

6. Umesh has two bulbs having resistances of 15Ω and 30Ω. He wants to connect them in ,a circuit, but if he connects them one at a time the filament gets burnt. Answer the following.

What are the characteristics of this way of connecting the bulbs?

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7. Umesh has two bulbs having resistances of 15Ω and 30Ω. He wants to connect them in ,a circuit, but if he connects them one at a time the filament gets burnt. Answer the following. What are the characteristics of this way of connecting the bulbs?

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8. Umesh has two bulbs having resistances of 15Ω and 30Ω. He wants to connect them in ,a

circuit, but if he connects them one at a time the filament gets burnt. Answer the following.

What will be the effective resistane in the above circuit?

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9. Answer the following question:

The following table shows current in amperse and potential difference in Volts.

Find the average resistance.

V (Volts)	I (Amp)
4	9
5	11.25
6	13.5

10. Answer the following question:

The following table shows current in amperes and potential difference in Volts.

What will be the nature of the graph between the current and potential difference?(Do not

draw a graph).

V (Volts)	I (Amp)
4	9
5	11.25
6	13.5

11.

Sr. No.	Polynomial	Degree
(1)	$7y - y^3 + 5$	
(2)	$m^3n^7 - 3m^5n + mn$	
(3)	$\sqrt{2}m^{10} - 7$	
(4)	$xyz + xy - 2$	

12. Match the pairs

'A' Group	'B' Group
1. Free electrons	a. V/ R
2. Current	b. Increases the resistance in the circuit
3. Resistivity	c. Weakly attached
4. Resistances in series	d. VA/LI

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13. The resistance of a conductor of length x is
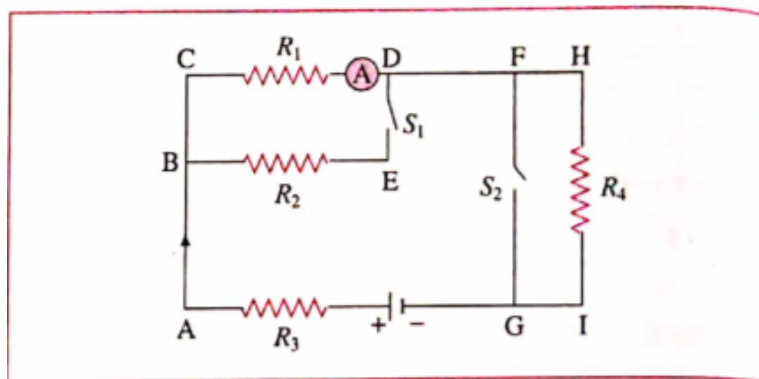
r. If its area of cross section is a, what is its

resistivity? What is its unit?

14. 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.

Both S_1 and S_2 are closed.

15. 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.
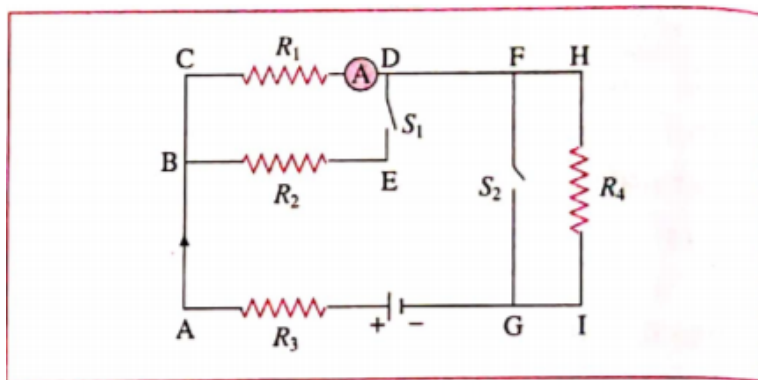
Both S_1 and S_2 are open.

16. 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.
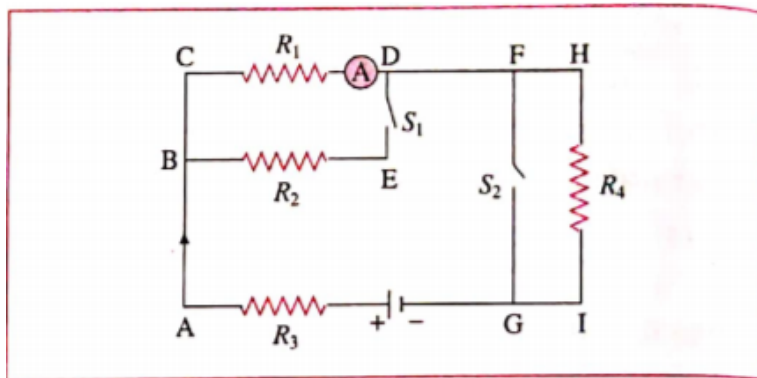
Both S_1 and S_2 are open.

17. Answer the following question:

Three resistances x_1, x_2 and x_3 are connected in series in a circuit . X is the effective resistance. The properties observed for these different ways of connecting x_1, x_2 and x_3 are given below. Write the way in which they are connected in each case.(I-current, V-potential difference, x-effective resistance)

Current I flows through x_1, x_2 and x_3.

18. Answer the following question:

Three resistances x_1, x_2 and x_3 are connected in a circuit in different ways. X is the effective resistance. The properties oberved for these different ways of connecting x_1, x_2 and x_3 are given below. Write the way in which they are connected in each case.(I-current, V-potential difference, x-effective resistacen)

x is larger than x_1, x_2 and x_3.

19. Answer the following question:

Three resistances x_1, x_2 and x_3 are connected in a circuit in different ways. X is the effective resistance. The properties oberved for these different ways of connecting x_1, x_2 and x_3 are given below. Write the way in which they are connected in each case.(I-current, V-potential difference, x-effective resistacen)

x is smaller than x_1, x_2 and x_3.

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20. Answer the following question:

Three resistances x_1, x_2 and x_3 are connected in a circuit in different ways. X is the effective resistance. The properties oberved for these different ways of connecting x_1, x_2 and x_3 are given below. Write the way in which they are connected in each case.(I-current, V-potential difference, x-effective resistacen)

The potential difference across x_1, x_2 and x_3 is the same .

21. Answer the following question:

Three resistances x_1, x_2 and x_3 are connected in a circuit in different ways. X is the effective resistance. The properties oberved for these different ways of connecting x_1, x_2 and x_3 are given below. Write the way in which they are connected in each case.(I-current, V-potential difference, x-effective resistacen)

$x = x_1 + x_2 + x_3.$

22. Answer the following question:

Three resistances x_1, x_2 and x_3 are connected in a circuit in different ways. X is the effective resistance. The properties oberved for these different ways of connecting x_1, x_2 and x_3 are given below. Write the way in which they are connected in each case.(I-current, V-potential difference, x-effective resistacen)

$$x = \frac{1}{\left(\frac{1}{x_1}\right) + \left(\frac{1}{x_2}\right) + \left(\frac{1}{x_2}\right)}$$

23. 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?

24. When two resistors are connected in series, their effective resistance is 80Ω. When : they are connected in parallel, their effective

resistance is 20Ω. What are the values of the two resistances?

25. 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?