

PHYSICS

BOOKS - VGS BRILLIANT PHYSICS (TELUGU ENGLISH)

ELECTRIC CURRENT

Review Of Your Previous Knowledge

1. What do you mean by electric current?



Watch Video Solution

2. What do you mean by electric current?



Watch Video Solution

3. which type of charge (Positive or negative) flows through an electric wire when it is connected in an electric circuit ?



4. Is there any evidence for the motion of charge in daily life situations?



Conceptual Understanding

1. Explain the lorentz - Drude theory.



2. Explain the lorentz - Drude theory.
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3. How does a battery work ? Explain.
Watch Video Solution
4. Write the difference between potential difference and emf.
View Text Solution
5. What do you mean by electric shock? Explain how it takes place.
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6. Derive $R = \frac{\rho l}{\Lambda}$.



7. Derive a formula that shows the relation between resistance length and area of cross section of a conductor.



8. What is the relationship between length of a conductor and its resistance? Write the experimental procedure to verify that relationship.



9. State Kirchhoff's law for an electrical network. Using these laws deduce the conditions for balance in a wheatstone bridge.



10. What is the of 1 KWH in joules?



11. What happens when this current (overloading) increases greatly to the household circuit ?



12. Deduce the expression for the equivalent resistance of there resistor connected in series.

- **13.** Derive $R = R_1 + R_2 + R_3$.
 - View Text Solution

14. Explain the expression for the equivalent resistance of three resistors which are connected in series.\



15. The second end of a first resistor is connected to first end of second resistor. Then how are the resistors connected? Derive the for the resultant resistance of this connection.



16. Derive an expression for the effective resistance when three resistors are connected in (i) series (ii) parallel.



17.
$$\operatorname{Derive} rac{1}{Rp} = rac{1}{R_1} + rac{1}{R_2} + rac{1}{R_3}$$
 (Resistors in parallel)



18. Derive an expression for the effective resistance when three resistors are connected in (i) series (ii) parallel.



19. Derive an expression for the effective resistance when three resistors are connected in (i) series (ii) parallel.



20. Silver is a better conductor of electricity than copper. Whey do we use copper wire for conduction of electricity?

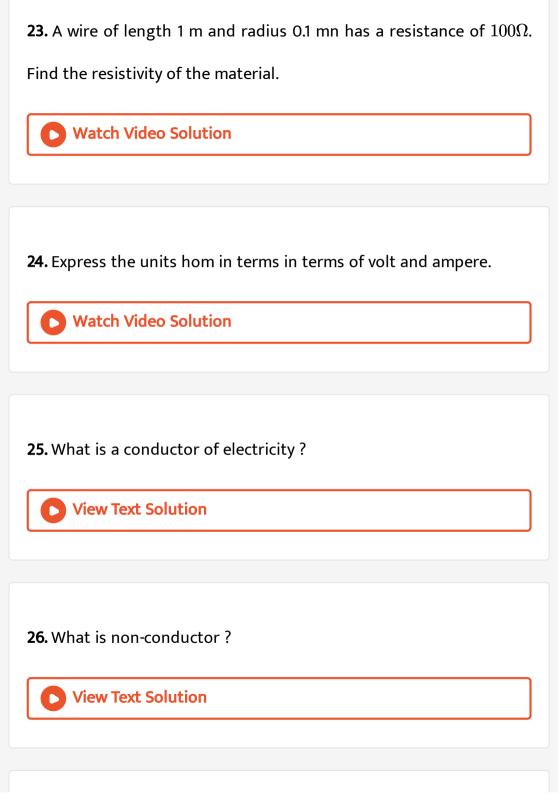


21. Two bulbs have ratings 100 W, 220 V and 60 W, 220 V. Which one has the greater resistance ?



22. Why don't we use series arrangement of electical appliances like bulb, television, fan and others in domestic circuits?





Watch Video Solution	
28. State Ohm's law.	
View Text Solution	
29. What are the limitations of Ohm's law?	
Watch Video Solution	
30. What is resistor ?	
30. What is resistor ?	
View Text Solution	

31. Define electric circuit.
View Text Solution
32. State Kirchhoff's Junction Law.
View Text Solution
33. State Kirchhoff's Loop law.
View Text Solution
34. Define electric power.
Watch Video Solution

35. What do you say that two or more resistance are connected in series?

Watch Video Solution

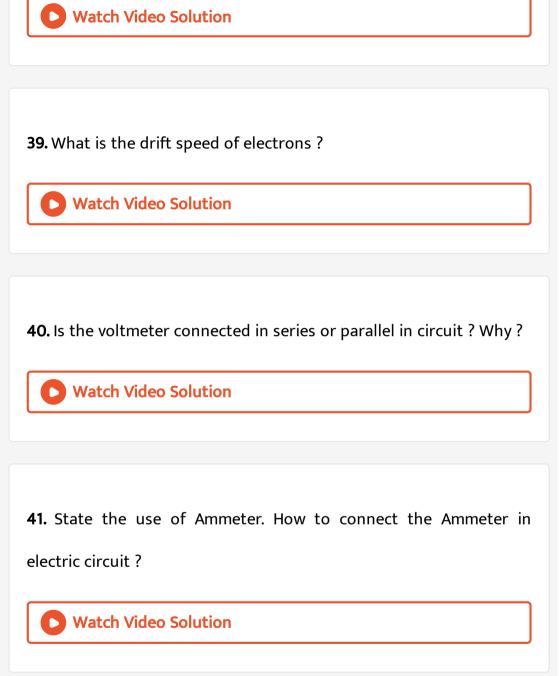
36. When do you say that two or more resistors are connected in series?

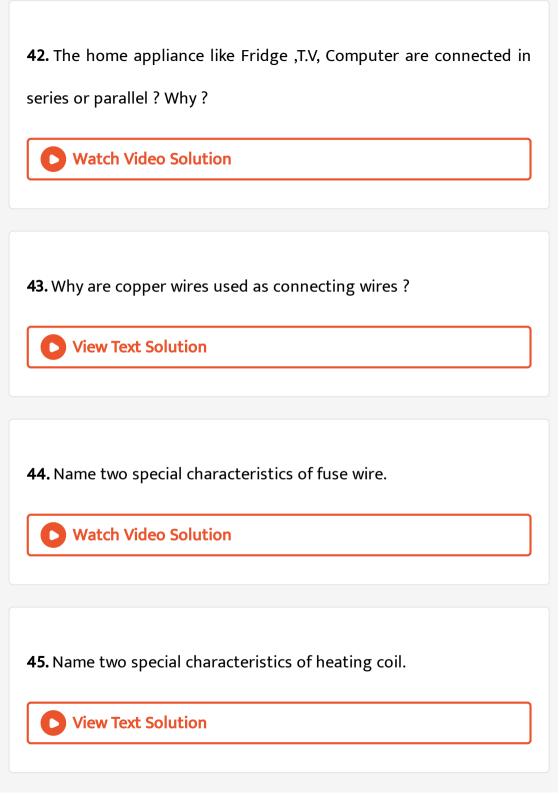


37. When do you say that two or more resistors are connected in parallel?



38. What is lattice?





46. What is Resistance ? What are the SI Units of Resistance ?
View Text Solution
47. When a potential difference 30V is applied across a resistors, it
draws a current of 3A. If 20V is applied across the same resistor,
what will be the current ?
Watch Video Solution
48. Is Ohm's law universally applicable for all condcuting elements? If not, give examples of elements which do not obey Ohm's law.
Watch Video Solution
49. Give reasons for using lead in making fuses.

View Text Solution
50. Define electric current and give an experssion to it.
View Text Solution
51. What is drift speed ?
View Text Solution
52. Define emf.
View Text Solution
53. What are the factors affecting the resistance of a material ?
Watch Video Solution

54. Calculate the drift speed of electrons in copper wire carrying a current of 1A and cross sectional area $10^{-6}m^2$.



55. How can we decide the direction of electric current in a conductor?



56. A student says "Potential difference and emf are same. Justify your answer.



57. Define Ohmic and non-ohmic conductors and give two examples each of them.



58. Derive an expression to find drift velocity of electrons.

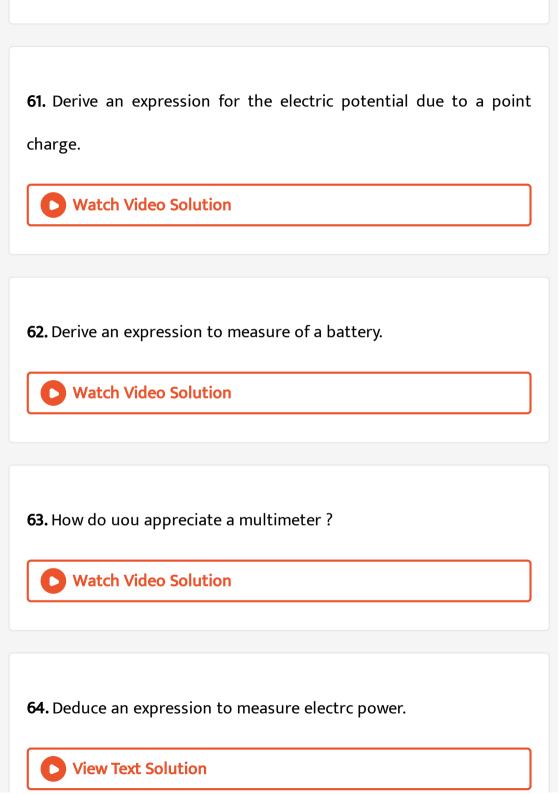


59. Derive
$$V_d = \frac{1}{nqA}$$
.



60. Derive an expression to find the work done by the electric force to move free charges in specified directions.





65. Derive $P = I^2 R$.



66. Find electric current draw (figure) from the battery of emf 12V.



Application To Daily Life Concern To Biodiversity

1. How can you appreciate the role of a small fuse in house wiring circuit in preventing damage to various electrical appliance connected in the circuit ?



2. We can save the household wiring and devices by using fuses.



3. Observe the circuit and answer the questions given below.

Write any four points by appreciating the role of fuse.

Are resistors C and D in series?





4. Observe the circuit and answer the questions given below.

Are resistors A and B inf series?





5. Observe the circuit and answer the questions given below. Is the battery in series with any resistors? **View Text Solution 6.** What is the potential drop across the resistors C? **View Text Solution** 7. Observe the circuit and answer the questions given below. What is the total emf in the circuit if the potential drop across resistor A is 6V?

View Text Solution

8. A house has three tube lights, two fans and a Television. Each tube light draws 40W. The fan draws 80W and the Television draws 60W. On the average all the tube lights are kept on for five hours, two fans for 12 hours and the television for five hours every day. Find the cost of electric energy used in 30 days at the of Rs. 3.00 per KWH.

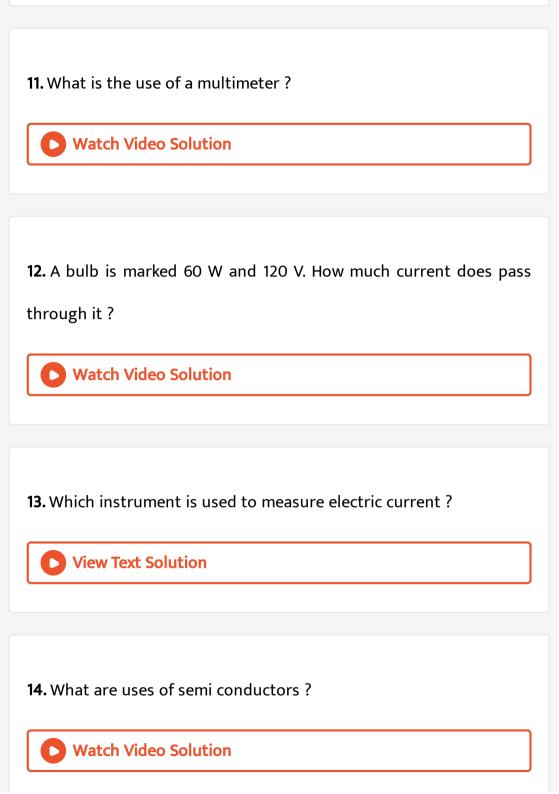


9. Which device is used to measure the current in your pump sets?



10. The current resistance of bodies of Karthik and Hemanth are $10,000\Omega$ and $1,00,000\Omega$ respectively. If they touch a current wire with 240 V, who may exerience more effect by an electrical shock?





15. Which instrument is used to measure potential difference or emf?



16. Shekhar was observed a bulb and asked some questions to you.

Those are

What is the material of the filament?



17. Shekhar was observed a bulb and asked some questions to you.

Those are

Why does it used as a filament?



18. 12 V, 9 V and 12 V bulbs are connected in series. What is the potential difference of their combination ?



19. 📝

What is the value of 'x'?



20. Jhansi has been using the given devices in her house. Calculate the current bill for one month $\,\circ\,5\,/\,-{
m per\ unit}.$

- 1. 100 W TV for 12 hrs.
- 2.80 W two fans for 10 hrs
- 3. 11 W four LED bulbs for 12 hrs.



21. Find the resistance of a bulb, on which 60W and 120 V is marked.

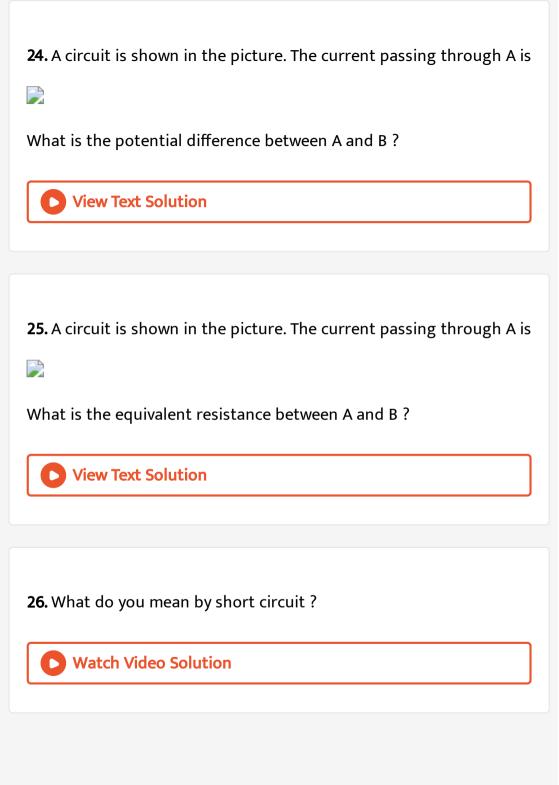


22. Two wires have equal area of cross section. One is copper and other is Aluminium have the same resistance. Find Which one is longer.



23. Find which has greater resistance, 1 KW heater or a 100 W tungsten bulb, both marked for 230 V.





- **27.** A householsd uses the following electric appliances.
- i. Refrigerator of rating 400 W each for ten hours each day.
- ii. Two electric fans of rating 80 W each for 12 hours each day.
- iii. Six electric tubes of rating 18 W each for 6 hours each day.

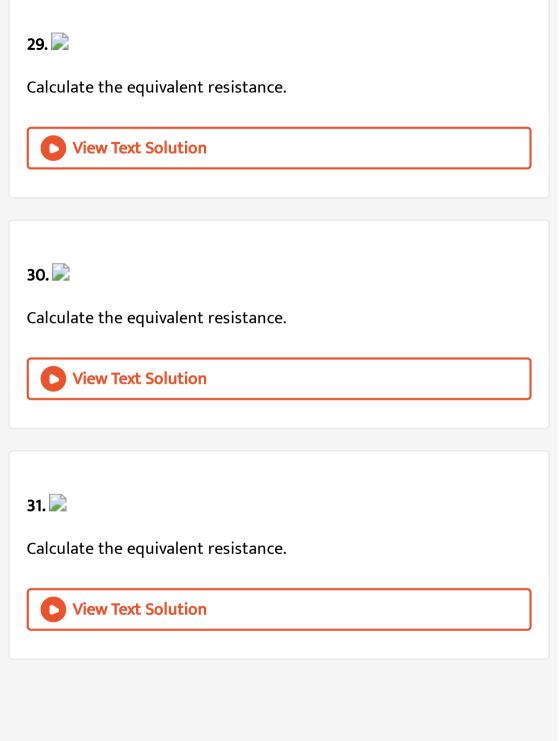
Calculate the electric bill of the of houselod in a month if the cost per unit electric energy is Rs 3.00.



- 28. From the adjacent figure
- i. Find the potential at D.
- ii. Find the current passes through AD, DB and DC.







32. How do you connect the resistance of $6\Omega,\,3\Omega$ and 1Ω to get $R_{eff}=3\Omega.$



33. some metals are given

Classify them into insulators and semi conductors.





34. some metals are given

What material do you observe in (i) a bulb, (ii) a soldering unit, (iii)

an iron box, (iv) a diode.





35. some metals are given

To protect from an electrical shock which material is generally used to cover over a tool ?





36. some metals are given

Which metals did you observe in your house electrical is wiring?





37. 0.5 amp current is passing through the 3 bulbs with $4\Omega,\,12\Omega$ and 8Ω resistances and they are connected in series ? Find the voltage of the combination.

View Text Solution
Fill In The Blanks
1. The kilowatt hour is the of
Watch Video Solution
2. A thick wire has Resistance than a thin wire.
Watch Video Solution
3. A unknown circuit drwas a current of 2 A from a 12 V battery. Its
equilatent resitance is

6. Three resistors of values $2\Omega, \, 4\Omega, \, 6\Omega$ are connected in series. The equivalent resistance of combination of resistors is



7. Three resistors of values $2\Omega,\,4\Omega,\,6\Omega$ are connected in parallel. The equivalent resistance of combination of resistors is



8. The power delivered by a battery of emf, 10 V is 10 W. Then current delivered by the battery is



Watch Video Solution

Multiple Choice Questions

1. A uniform wire of resistance 50Ω is cut into five equal parts. These parts are now connected in parallel in parallel. Then equivalent resistance of the combination is

A. 2Ω

B. 12Ω

 $\mathsf{C.}\ 250\Omega$

D. 6250Ω

Answer: A



2. A charge is moved from a pont A to a point B. The work done to move unit charge duuring this process is called

A. potential at A

B. potential at B

C. potential differece between A and B

D. current from A to B

Answer: C



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3. joule/coulomb is the same as

A. 1 - watt B. 1 - volt C. 1 - ampere D. 1 - ohm **Answer: B Watch Video Solution** 4. The current in the wire depends A. only on the potentia difference applied B. only on the resistance of the wire C. on potential difference and resistance D. none of them **Answer: C**

- **5.** A. In series connection, the same current flows through each element.
- B. In parallel connection, the same potential difference gets applied across each element.

Which is/are correct?

- A. both a and b are correct
- B. a is correct but b is wrong
- C. a is wrong but b is correct
- D. both a and b are wrong

Answer: A



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6. A. In series connection, the same current flows through each element.

B. In parallel connection, the same potential difference gets applied across each element.

Which is/are correct?

A. both a and b are correct

B. a is correct but b is wrong

C. a is wrong but b is correct

D. both a and b are wrong

Answer: A



Try These

1. Write an activity to show the relation between temperature and Resistance.



2. Why do wi use fuse in household circuit?



3. Suppose that you have three resistance each of value 30Ω . How many resistor can you obtain by various combinations of these three resistors? Draw diagrams in support of your predictions.



4. Draw a circuit diagram for a circuit in which two resistors A and B are connected in series with a battery and voltmeter is connected to measure the potential difference across the resistor A.



5. In the below figure, the potential at A is when the potential at B is zero.





6. If the resistance of your body is 100000Ω , what would be the current that flow in your body when you touch the terminals of a 12V battery ?



7. A uniform wire of resistance 100Ω is melted and recast into of length double that of the origina. What would be the resistance of the wire formed ?



Think And Discuss

1. What do you mean by short circuit?



2. Why does a short circuit damage electric wiring and devices connected to it ?



Questions Given In The Lesson 1 Mark Questions

1. Does motion of charge always lead to electric current?



2. Take a bulb, a battery, a switch and few insulated copper wires to the terminals of the battery through the bulb and switch. Now switch on the circuit and observe the bulb. What do you notice?



3. Can you predict the reson for the bulb not glowing in situations 2 and 3?

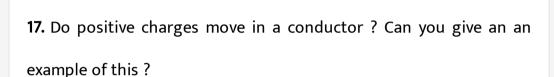


4. Why do all materials not act as conductors ?
Watch Video Solution
5. How does a conductor transfer energy from source to bulb ?
Watch Video Solution
6. What happens to the motions of electrons when the ends of the
conductor are connected to the battery ?
Watch Video Solution
7. Why do electrons move in specified direction ?
Watch Video Solution

8. In which direction do the electrons move ?	_
Watch Video Solution	
9. Do the electrons accelerate continuously?	
Watch Video Solution	٦
Watch Video Solution	
10. Do they move with a constant speed ?	
Watch Video Solution	
11. How can we decide the direction of electric current ?	
Watch Video Solution	

12. How can we measure electric current ?
View Text Solution
13. Wher do the elctrons get energy for their motion from ?
View Text Solution
14. Can you find the work done by the electric force ?
14. Can you find the work done by the electric force ? View Text Solution
View Text Solution

16. what is the direction of electric current in terms of potential difference ?





View Text Solution

18. How does a battery maintain a constant potential difference between its terminals ?

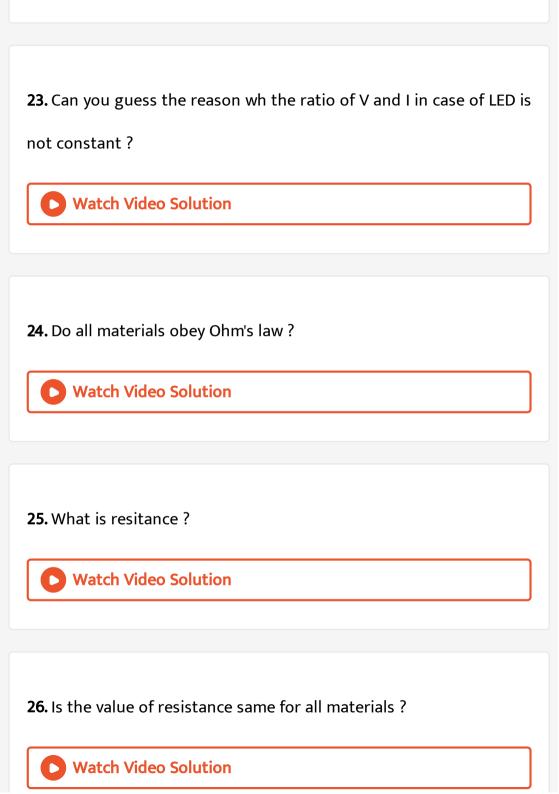


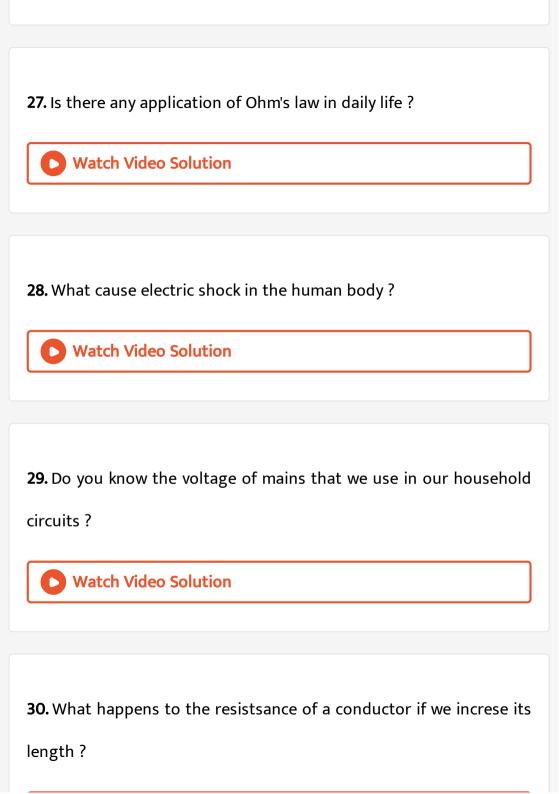
19. Why does the battery discharge when its positive and negative terminals are connected through a conductor? **Watch Video Solution 20.** What happens when the battery is conneted in a circuit? **View Text Solution 21.** How can we measure potential difference or emf?



22. Is there any relation between emf of battery and drift speed of electrons in the conductor connected to a battery?







View Text Solution
31. Does the thickness of a conductor influence its resitance ?
View Text Solution
32. How are electric devices connected in circuits ? Watch Video Solution
33. When bulbs are connected (resistors) in series, What do you
notice ?
Watch Video Solution

34. What do you notice when bulbs (resotors) are connected in series to the current? **Watch Video Solution 35.** What do you mean by equivalent resistance resitance? **Watch Video Solution** 36. What happens when the one of the resistor in series breaks down?





37. Can you guess in what way household wiring has been done?



38. How much current is drawn from the battery if the resistors are connected in parallel ? Is it equal to individual currents drawn by resistors ?

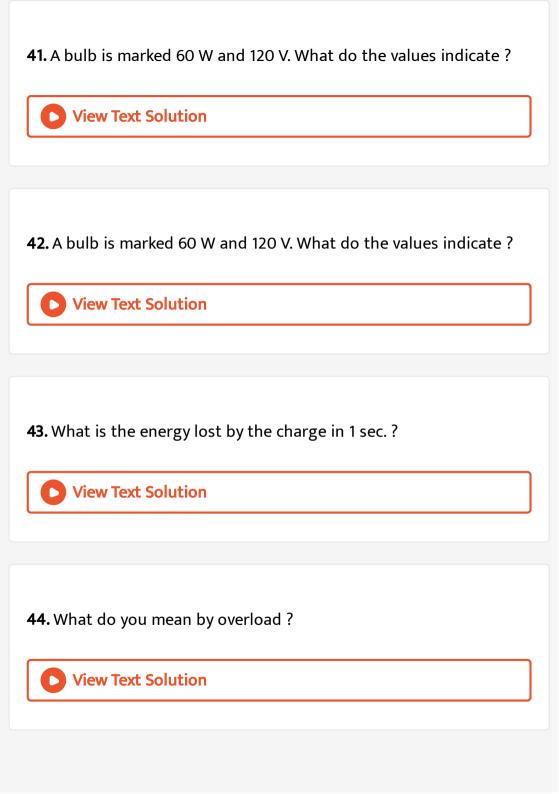


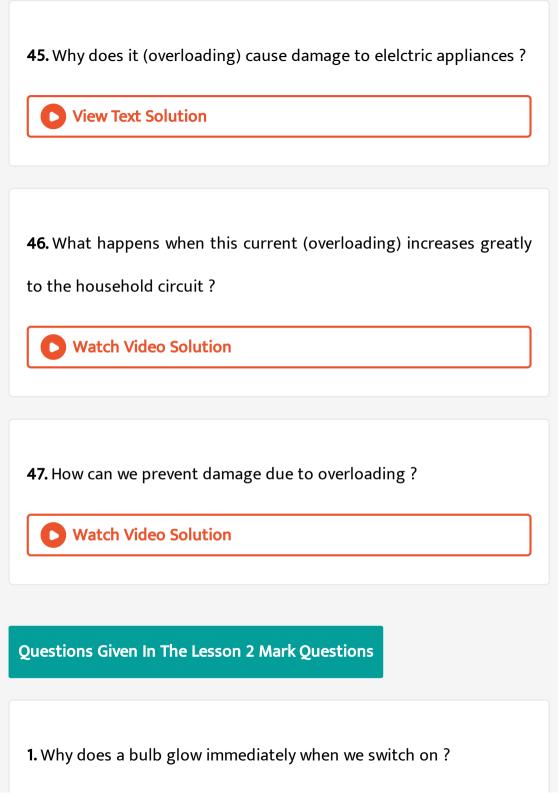
39. How could the sign convention be take?

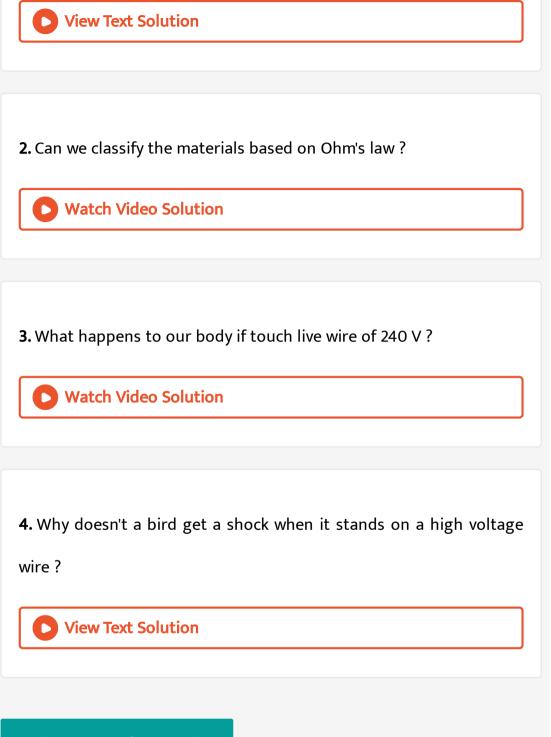


40. You might have heard the sentences like "this month we have consumed 100 units of current". What does 'unit' mean?

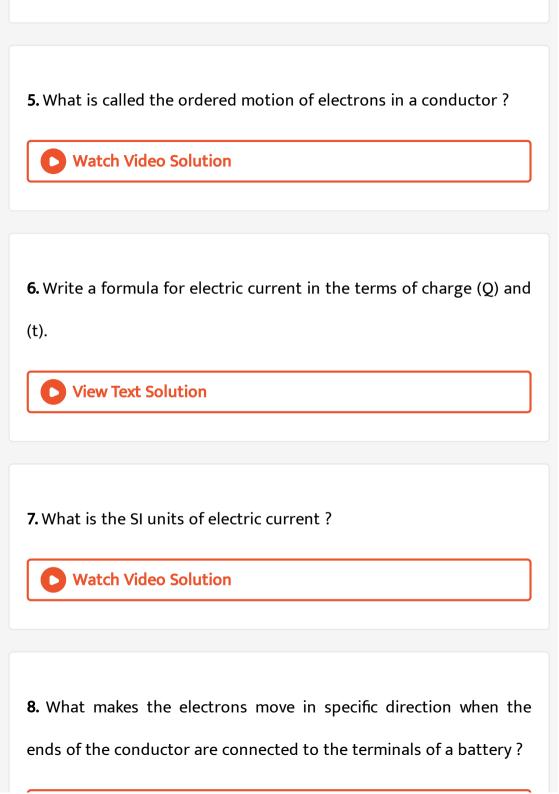








1. Which one has free electrons ?
View Text Solution
2. Who proposed that conductors like metals a large number of the
free electrons while the positive ions are fixed in their location ?
Watch Video Solution
3. What is the vaue of net charge moving along a conductor through
any cross section, when the conductor is in open circuit?
Watch Video Solution
4. Which are respsible for transfer of energy from battery to bulb?
Watch Video Solution





9. Which physical quantit is measured in amperes ?



10. How is the directions of electric field and moment of free electrons?



11. Write a formula for electric current in terms of drift speed of electrons.



12. What is the magnitude of electric charge?
View Text Solution
13. What is the drift speed of electrons ?
Watch Video Solution
14. Which apparatus do you use to measure current in your lab?
Watch Video Solution
15. State the use of Ammeter. How to connect the Ammeter in
electric circuit ?
Watch Video Solution

16. If Fe is force exerted by electric field on a free charge and 'l' is distance moved by the free charge, what is work done by the electric force on a free charge ?



17. What do you call the work done by the electric force on unit positive charge to move it ?



18. What is the dircetion of electrons in a circuit?



19. What are the parts of battery?



20. In battery, which one helps to move the ions in a specific direction ?



21. Match it.

- $1) Positively\ charged\ plate \quad (a) anode$
- 2) Negatively charged plate (b) cathode

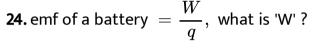


22. On which factor the amount of charge accumulated on the plate depends in a battery?



23. What do you called the work done by the chemical force to move unit positive charge from negative terminal to positive terminal of the battery?





25. How can you measure potential difference or emf /







26.

Potential difference \times Current : Electrical Power :: Power \times Time :?



27. What is the law, $\frac{V}{I} = \text{constant For a conductor ?}$



28. Which device do you use in lab to change electric current?



29. The algebraic sum of the increases and decreases in P.D across various components of closed circuit loop must be

a. one

b. zero

c. constant



30. Draw a graph to show the relation between current (I) and voltage (V) for conductors ?



31. How is $\frac{V}{I}$ for semi conductors ?



32.

Which type of electrical device is used in the experiment?



33. What is SI units of resistance of a metal?



Watch Video Solution
34. A device passes 1 ampere current at 1 volt of potential difference.
What is the resistance of the device ?
Watch Video Solution
Water video solution
35. Do all materials obey Ohm's law ?
•
Watch Video Solution
36. Give example to ohmic material.
Watch Video Solution
37. What type of material LED ?
37. What type of material LLD :

View Text Solution
38. According to Ohm's Law many types of materials are there?
View Text Solution
39. For what materials Ohm's law is not applicable ?
For what materials Onlins law is not applicable:
View Text Colution
View Text Solution
40. Which one obstructs the motion of electrons in a conductor?
Watch Video Solution
41. What is the property of a conductor which is defined as the
The virial is the property of a conductor which is defined as the
obstruction to the motion of the elections in a conductor ?

Watch Video Solution
42. How do we call the material which offers resistance?
42. How do we can the material which offers resistance:
View Text Solution
Text solution
42 M/hat is the way so of wasistay so of the huysay hady, son evally 2
43. What is the range of resistance of the human body, generally?
Watch Video Solution
Watch video solution
44 What will happen to resistance of a human hady when surrent
44. What will happen to resistance of a human body when current
flow for a longer time ?
Watch Video Solution
Watch video Solution
45. What cause electric shock in the human body ?
45. What cause electric shock in the human body ?

A. effect of current B. effect of potential difference C. effect of resistance of the body D. combaned effect of a, b, c Answer: d **Watch Video Solution** 46. Which device do you to measure current, voltage and resistance ? **View Text Solution** 47. Which of the following materials do you select to show that the resistance of a conductor depends on the material of the conductor

- 1. Manganin wires of different lengths with the same cross section areas.
- 2. Manganin wires of equal lengths but different cross sectional areas.
- 3. Different copper, nichrome, mangnin wires of the length and same cross sectional areas.



48. What is the relation between resistance (R), resistivity (ρ) , length(l) and area of cross section (A) of a conductor ?



49. What is SI unit of resistivity?



50. What is conductivity?



Watch Video Solution

51. Resistivity :rho::?:(σ)

Fill it by sutable word.



Watch Video Solution

52. A: Copper is used for making electric wires.

R: Metal with low resistivity behave as good conductors.

A. A' and 'R" are correct and 'R' to correct explanation of 'A'

B. A' and 'R' are but 'R' is not correct expplanation of 'A'

C. A' is correct but 'R' is inocorrect

D. A' is incorrent but 'R' is correct

Answer: a Watch Video Solution

53. Guess the material which is used in electrical devices and its resistivity and melting point are high.



54. What is the value of melting point of tungsten?



55. What is the range of resistance of insulators?



56. Give examples to Alloys.



View Text Solution

57. Name two heating elements.



View Text Solution

58. Material $-\rho(\Omega-m)$

 $A - 1.59 \times 10^{-8}$

 $B-4.60 imes 10^1$

 $C-1.00 imes 10^{13}$

Which material is used integrated ciucuits?



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 V_1, V_2, V_3 are voltades, what is resultant voltage (V)?



View Text Solution

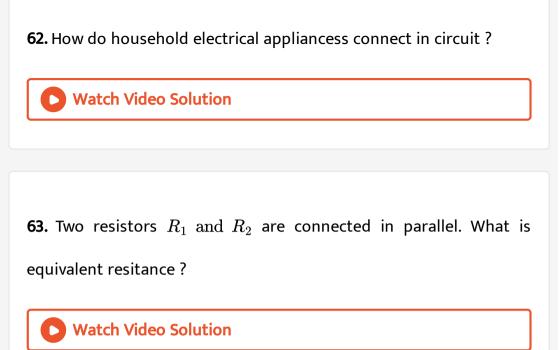
60. If you connect three resistor $R_1, R_2 \, \text{ and } \, R_3$ in series as shown in the figure, what is the resistance ?





61. "The sum of indiviual resistance is equal to their equivalent resistance". How is resistors are connected in the cicuit?





64. How is the resistance of a combination when compared to the resistance of each resistor ?



65. Write the kerchoffs laws.



66. Which law states that there is no accumulation of electric charges at any junction in a circuit ?



67. 📝

Find the resultant potential difference in the circuit?



68. Write a formula for electric power.





70. How much resistance can be offered by a bulb, which is marked 60W and 120V ?



71. What is a bigger unit of power?



72. We are using 'units's for measuring current. What does one unit equal ?



73. How many Joules are equal to one kilo Watt Hour (1KWH) ?
View Text Solution
74. How can we prevent damage due to overloading?
Watch Video Solution
75. 100W - 1 fan - 12 hours
9W - 5 LED bulbs - 10 hrs
Calculate power consumption.
Watch Video Solution
76. What are the units of household electrical energy?
View Text Solution

A. thick wire
B. thin wire
C. length wire
D. short wire
Answer: b and c View Text Solution
78. Find the equivalent resistance of a device which draw 2A of current at 12V.
View Text Solution

77. Which of the follwing has high resistance?

79. Three resistors of values $2\Omega, 4\Omega \, {
m and} \, 6\Omega$ are connected in series.

Find the equivalent resistance of combination.



80. Three resistors of values $2\Omega, 4\Omega$ and 6Ω are connected in parallel. Find the equivalent resistance of combination.



81. The power delivered by a battery of emf, 10 is 10W. Find the current delivered by the battery.



82. A uniform wire of resistance 50Ω is cut into five equal parts.

These parts now connected in parallel. Find the equivalent

resistance of the combination. **View Text Solution** 83. A. In series connection, the same current flows through each element. B. In parallel connection, the same potential difference gets applied across each element. Which is/are correct? **Watch Video Solution** Section Ii 1 Mark Questions 1. Find the quntity of current in the above circuit. **View Text Solution**

2.

Three resistance A, B and C are connected as shown in the figure.

Each of them dissipates energy to a maximum of 18 W. Find the maximum current that can flow throug the three resistors.



3. What happens if we use a fuse made up of same wire which is used to make the electric circuit ?



4. Draw the electric circuit with the help of a Battery, Voltmeter, Ammeter, Resistance and connecting wires.



5. Write any two differences between ohmic and non - ohmic conductors.



6. What happens, if the household electric appliance are connected in series ?



Asking Questions And Making Hypothesis

1. Why do we consider tungsten as a suitable material for making the filament of a bulb ?



2. Why do we consider tungsten as a suitable material for making the filament of a bulb ?



3. Are the headlights of a car connected in series or Parallel? Why?



4. Why should we connect electric appliances in parallel in a household circuit? What happens If they are connected in series?



5. What happens to the free electrons when the conductor are connected to the battery?

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6. The direction of electric current (I) is oppsite to flow ofcharge'. Guess the charge. Why?

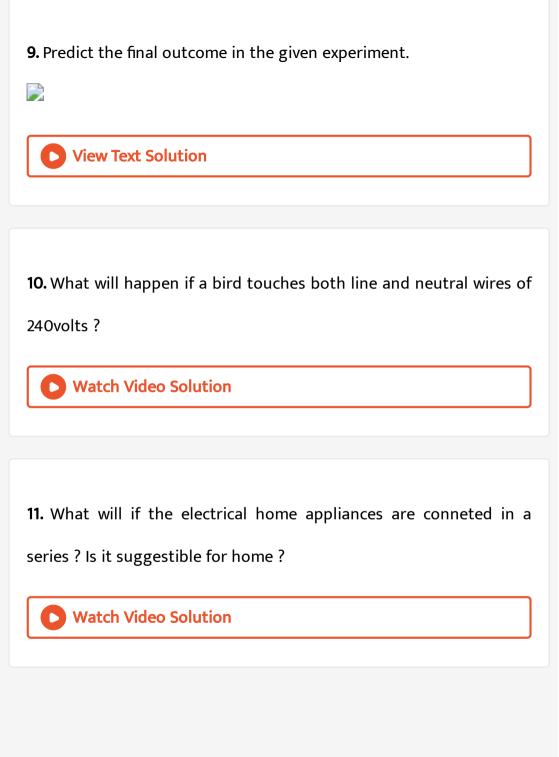


7. There is a force 'x' . Direction of 'x' is opposite to the direction of electrical force : predict x.



8. Predict the condition of a battery if $F_e=F_e$?





12. Guess the reason for the given situation, not glowing of D, E, F.



13. The equivalent resistance of three equal resistor is 1.5Ω . The resistance of a single resistor is more than 1.5Ω How would the resistors connected ? Guess without doing the sum.



14. What will happen if a fuse contains a wire with high melting point?



15. Goutham was switched a circuit with a bulb, battery, a switch and wire wire. But it did not glow. Predict the reasons.



16. What will happen if a uniform electric field is setup throughout the conductor ?



17. Rithvik does not understand the concep 'drift speed'. To make understand the concept prepare some questions.



18. In a lab activity to show ther V/I is constant, it was noticed that V/I is not constant. Guess the reasons.



19. Akshay saw the specification of a bulb as 60 W and 120 V, on the surface of the bulb. She got many doubts in her mind. What would be those double?



20. Sangeetha often confused the current and potential differences Ravi explained the terms by asking some questions. What would be those questions?



Experimentation And Investigation

1. State Ohm's law. Suggest an experiment to verify it and explain the procedure.

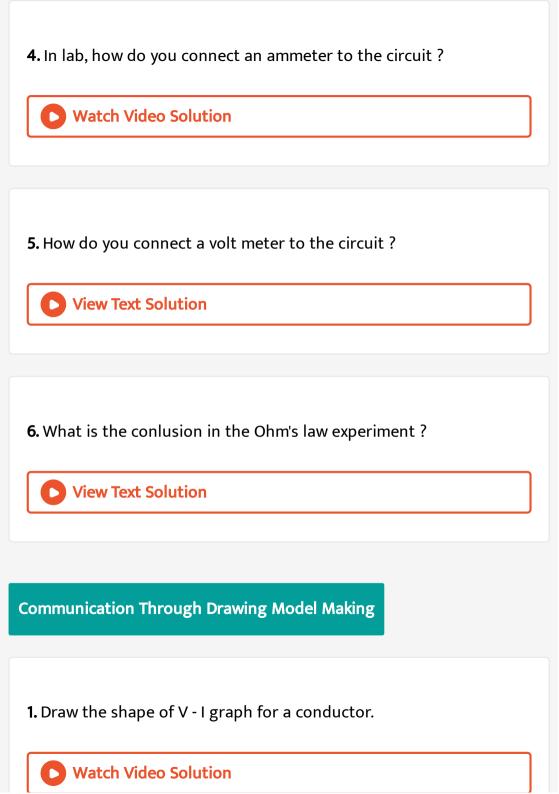


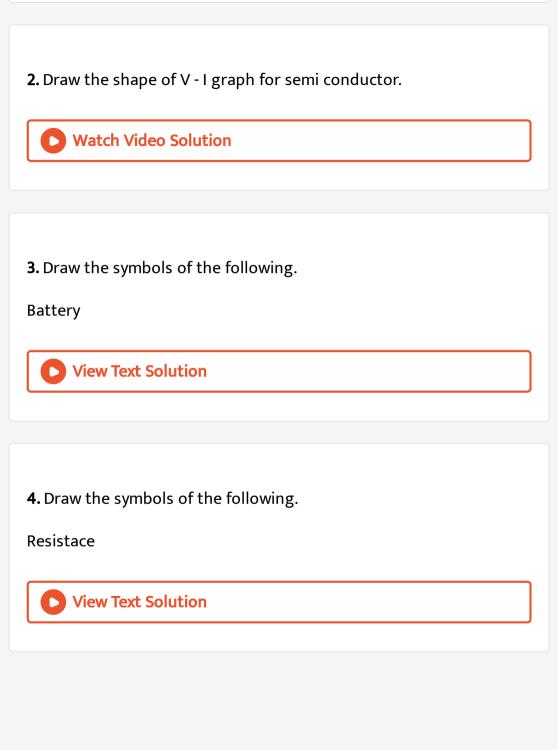
2. How do you prove experimentally the ratio $V \, / \, I$ is a constant for a given conductor ?



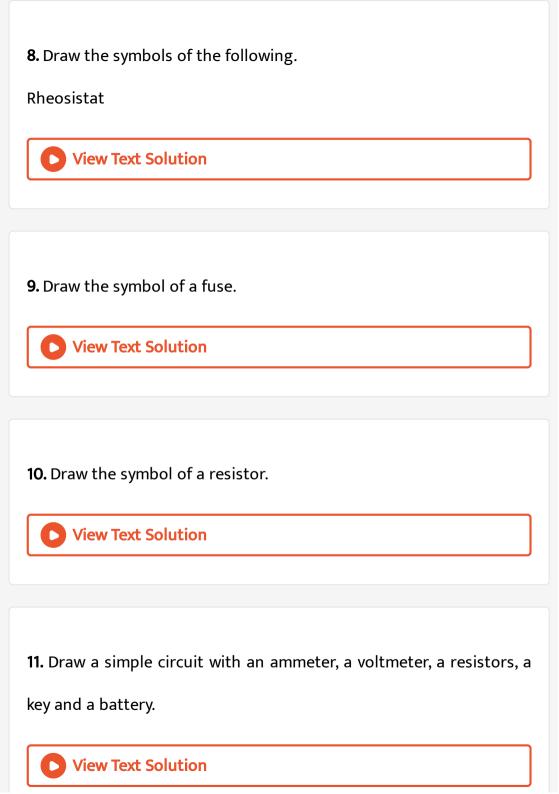
3. What are the material required to make a simple circuit?







5. Draw the symbols of the following.
Ammeter
View Text Solution
6. Draw the symbols of the following.
Voltmeter
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7. Draw the symbols of the following.
Key
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12. Draw a circuit diagram to verify the Ohm's Law.

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13. Draw V-I garaph of Ohmic and non-ohmic conductors.

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14. Draw a cicuit diagram with a cell, an electric bulb, an ammeter and plug key.



15. 属

Identify the wrongly connected device/s in the given figure.

16. Draw a simple junction with

 I_1 , I_4 and I_5 (into the junction) and I_2 , I(3) (leaving the junction).



17. Draw a circuit as mentioned below

i. Total number of resistance are 4. They are $5\Omega,\,2\Omega,\,4\Omega\,$ and $\,6\Omega\,$

ii. 5Ω and 6Ω are in parallel

iii. 4Ω and 6Ω are in parallel

iv. 5Ω and 2Ω are in series

v. 2Ω and 4Ω are in series



18. Draw a loop ACDBA as $-V_2+I_2R_1-I_1R_1+V_1=0$.



19. In an experiment to verify Ohm's Law from the values given below.

Draw a graph of 'I' versus 'V'. Show that the graph the graph conforms Ohm's Law and find the resistance of the resistor.





20. Identify the defects in the circuit. Redraw it.





21. R_1, R_2 and R_3 resistors are connected in parallel in a circuit with a battery voltmeters and ammeters.

Draw the circuit for the given situation.



- 22. Draw a parallel connection of the given devices.
- 1. Fan (4A)
- 2. Bulb (2A)
- 3. Fridge (8A)
- 4. TV (6A)
- 5. Fuse (fuse (20A)
- 6. Heater



1. Is there any application of Ohm's Law in daily life?
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2. Which one saves the electrical devices from overloading?
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3. How do uou appreciate a multimeter ?
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4. Write some of insulators and appreciate them.
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5. How do you appreciate the scientist Ohm for his contribution to electrical field ?



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Section Iii 2 Marks Questions

1. Observe the graph of potential difference (V) drawn between two ens of a conductor and current (I) passing through it. Answer the following questions:

Which law is used to explain the graph? State it.





2. Observe the graph of potential difference (V) drawn between two ens of a conductor and current (I) passing through it. Answer the following questions:

What is the resistance of the conductor?





3. Draw the experimental set-up to verify V/I is constant for a conductor.



4. A house has 3 tube-lights of 20 watts each. On the all the tube-light are kept on for five hours. Find the energy consumed in 30 days.



Experimentation And Field Investigation

1. What are the material required to show that the V/I is a constant for a conductor?



2. Describe the activity with the help of diagram to establish the relationship between Current (I) flowing in a conductor and potential difference (V) maintained across its ends.



3. Show that the semi conductor do not obey Ohm's Law.



Information Skills And Projects

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1. Take a battery and measure the potential difference. Make a circuit and measure the potential difference when the battery is connected in the dircuit. Is there any difference in potential difference of battery?



2. Measure the resistance of a bulb (filament) in open circuit with a multi-meter. Make a circuit with elements such as bulb, battry of 12V and key in siries. Close the key. Then again measure the resitance of the same bulb (filament) for every 30 seconds Record the observation in a proper table. What can you conclude from the above results?

3. $P=V^2/R$ is given. What the relation between 'P' and 'V' , P and

R ?



4. i. Water vapour, ii. Silicon, iii. Zinc, iv. Germanium.

Which of the above substances obey the Ohm's law?



5. i. Water vapour, ii. Silicon, iii. Zinc, iv. Germanium.

For which of the above $\operatorname{substance}/\operatorname{sthe}V/I$ graph is non-linear ?



When does occur loss of muscle control?



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7. 📝

What is the effect if a body with 24,000 Ω touches an electrical wire with 240 volts ?



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8. $R=rac{
ho l}{A}$

What is ρ ?





On what does the resitance of a metal depend?



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Where do you place aluminium in the above table?

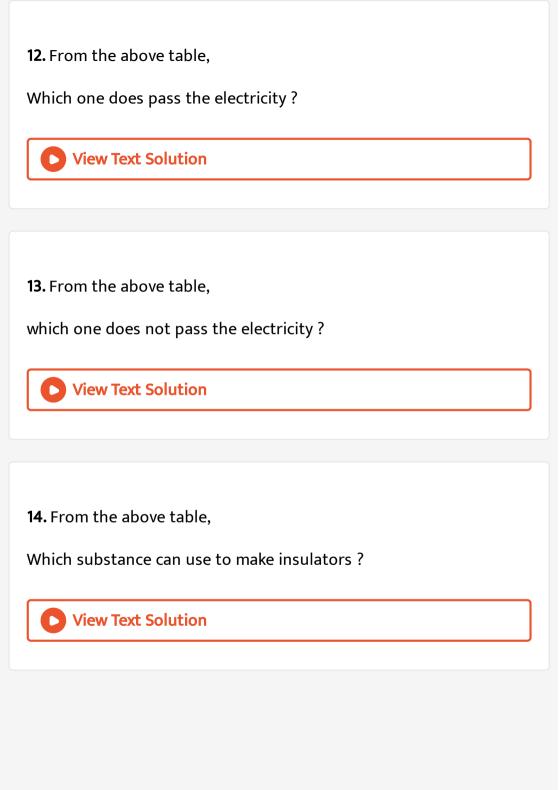


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What is the difference between germanium and glass?





15. From the above table,

Which material has high conductivity?



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16. Resistivity of some materials are given below.(Units = $\Omega - m$)



Write any two good solid insulators.



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17. Resistivity of some materials are given below. (Units $= \Omega - m$)



Write any two good solid conductors.



18. Resistivity of some materials are given below. $(\mathrm{Units} = \Omega - m)$



Which one has the low melting point among the given materials?



19. Resistivity of some materials are given below. $(\mathrm{Units} = \Omega - m)$



Silver and gold are not used in the household electrical wiring. Why



Section Iv 4 Marks Questions

1. State Kirchoff Loop Law and explain.



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2. State Kirchoff Loop Law and explain.



3. 12 V battery is connected in a circuit and to this 4W, 12W, resistors are connected in circuit from this information and the current in the circuit.



4. A house has four tube-lights, three fans and a television. Each tube-light draws 40 W. The fan draws 80 w and the television draws 100 W. On an average, all the tube-lights are kept on for 5 hours, all fans for 12 hour and the television for 6 hours everyday. Find the

cost of electric energy used in 30 days at the rate of Rs. 3.00 per

KWH.



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5. Observe the given circuit.

 R_1 and R_2 are two resistors and $R_1=R_2=4\Omega.$ Emf of the battery E is 10 V.

Answer the following questions.

How are the resistance R_1 and R_2 connected in the circuit?





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6. Observe the given circuit.

 R_1 and R_2 are two resistors and $R_1=R_2=4\Omega.$ Emf of the battery E is 10 V.

Answer the following questions.

What is the potential difference of the circuit?





7. Observe the given circuit.

 $R_1 \, ext{ and } \, R_2 \,$ are two resistors and $R_1 = R_2 = 4 \Omega.$ Emf of the battery E is 10 V.

Answer the following questions.

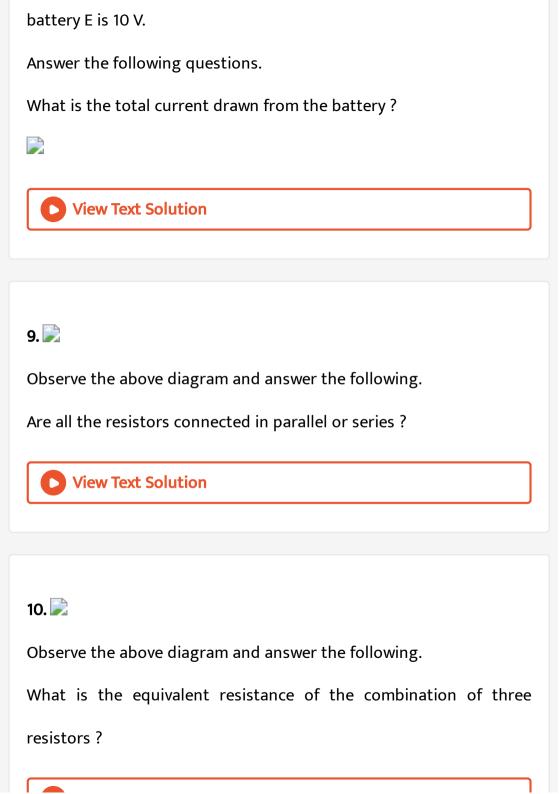
What is the effective resistance of the circuit?





8. Observe the given circuit.

 R_1 and R_2 are two resistors and $R_1=R_2=4\Omega.$ Emf of the





11.

Observe the above diagram and answer the following.

In this system, which physical quantity is constant?



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12.

Observe the above diagram and answer the following.

If $R_1=2\Omega, R_2=3\Omega, R_3=4\Omega$, find equivalent resistance.



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13. What is the relationship between length of a conductor and its resistance? Write the experimental procedure to verify that relationship.

14. What are factors affecting the resistance of an electric conductor



? Explain any two factors.

15. What is the relationship between length of a conductor and its resistance? Write the experimental procedure to verify that relationship.



16.

In a circuit ,60V battery, three resistance $R_1=10\Omega R_2=20\Omega$ and $R_3=x\Omega$ are connected in series. If 1 ampere current flows in the circuit, find the resistance in R_3 by using Kirchhoffs loop law.

