



PHYSICS

BOOKS - BAL BHARTI

EFFECTS OF ELECTRIC CURRENT

Solved Examples

1. A 6 m long wire made from an alloy, nichrome, is shaped into coil and given for producing heat. It has a resistance of 24

ohm. Can we get more heat if the wire is cut into half of its original length and shaped into a coil? For getting energy, the two ends of the wire are connected to a source with a potential difference of 220 V.



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2. A cell is connected to a 9 ohm resistance, because of which heat of 400 J is produced per second due to current following through

it. Obtain the potential difference applied across the resistance.



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3. An electrical iron uses a power of 1100 W when set to higher temperature. If set to lower temperature, it uses 330 W power. Find out the electric current and the respective resistances for the two settings. The iron is connected to a potential difference of 220 V.



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4. An electric tungsten bulb is connected into a home circuit. The home electric supply runs at 220 V potential difference. When switched on, a current of 0.45 A flows through the bulb. What must be power (wattage) of the bulb? if it is kept on for 10 hours, how many units of electricity will be consumed?



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Use Your Brain Power

1. In the above circuit, if the resistor is replaced by a motor, in which form will the energy given by the cell get transformed into?

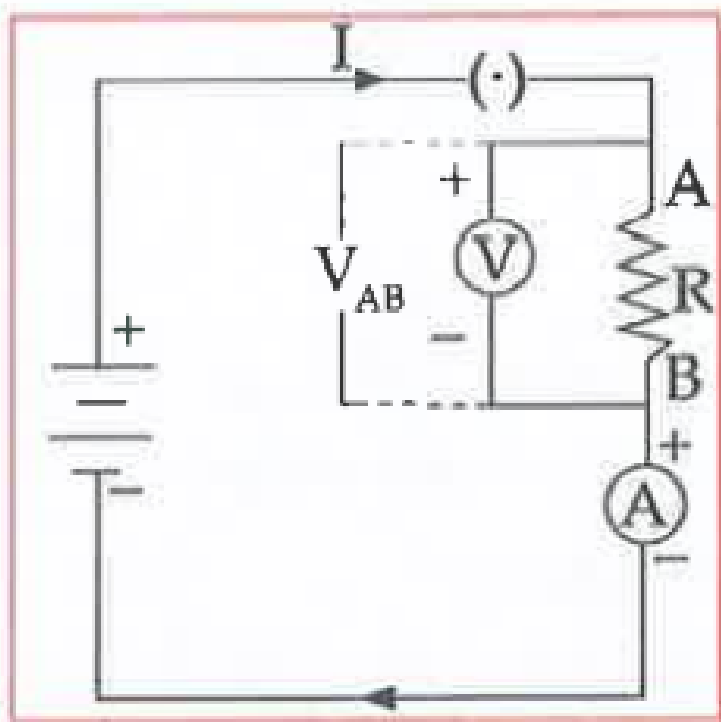


Fig 4.3



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2. Answer the following questions :

Draw the diagram of a DC generator . Then explain as to how the DC current is obtained.



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Find Out

1. Write the definitions/laws:

Maxwell's cork screw rule:



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2. Why are carbon brushes used? How do these work?



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Think About It

1. How can we write mechanical power in a manner similar to the electrical power?



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Exercise

1. Find the odd one out . give proper explanation:

Fusewire, bad conductor, rubber gloves, generator.



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2. Find the odd one out . give proper explanation:

Voltmeter, ammeter, galvanometer,
thermometer.



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3. Find the odd one out . give proper
explanation:

Loudspeaker, microphone, electric motor
,magnet



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4. Answer the following questions :

Explain the onstruction and working of an electric generator (AC) . Draw a neat diagram and label it.



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5. Distinguish between :

AC generator and DC generator.



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6. How does short circuit form?What is its effect ?



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7. Give Scientific reasons:

Tungsten metal is used to make a solenoid type coil in an electric bulb



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8. Give Scientific reasons:

In the electric equipment's producing heat e.g. iron, electric heater, boilers, toaster etc. and alloy such as Nichrome is used, not pure metal



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9. Give Scientific reasons:

For electric power transmission, copper or aluminium wire is used



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10. Give Scientific reasons:

In practice the unit KWh is used for the measurement of electrical energy rather than joule



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11. Which of the statements given below correctly describes the magnetic field near a long, straight current - carrying conductor ?

The magnetic lines of force are in a

plane, perpendicular to the conductor in the form of straight lines.



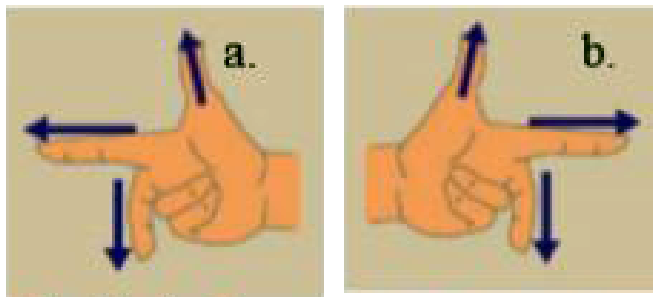
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12. What is Solenoid? Compare the magnetic field produced by a solenoid with the magnetic field of a bar magnet. Draw neat figure and name various components



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13. Name the following diagrams and explain the concept behind them.



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14. Name the following diagrams and explain the concept behind them.

Heat energy is being produced in a resistance

in a circuit at the rate of 100 W. The current of 3 A is flowing in the circuit. What must be the value of the resistance?



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15. Name the following diagrams and explain the concept behind them.

Two tungsten bulbs of wattage 100 W and 60 W power work on 220 V potential difference. If they are connected in parallel, how much current will flow in the main conductor?



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16. Name the following diagrams and explain the concept behind them.

Who will spend more electrical energy? 500 W TV Set in 30 mins, or 600 W heater in 20 mins?



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17. Name the following diagrams and explain the concept behind them.

An electric iron of 1100 W is operated for 2 hrs

daily. What will be the electrical consumption expenses for that in the month of April? (The electric company charges Rs 5 per unit of energy).



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