6) magnetic effect of electric current = the display of behavioural properties, similar to that of a magnet by a current carrying wire/coil

7) MCB = Miniature circuit breaker (an automatic switch), now often used as a replacement for an electric fuse.

8) ~~ni~~nichrome = an alloy of nickel and chromium; often used for making 'resistance coil'

9) overloading = connection of ~~more~~ more than one device/~~appliances~~ to a single socket.

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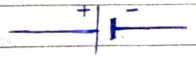
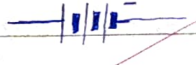
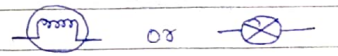
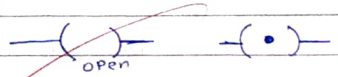
Name of the device or part of the electric circuit	Symbol
Cell	
Battery	
Connecting wire	
~~Bulb~~ bulb / Lamp	
Electric~~al~~ Switch	
Plug Key	
Ammeter	
Voltmetre	
Resistence wire	

Heating effect of electric current

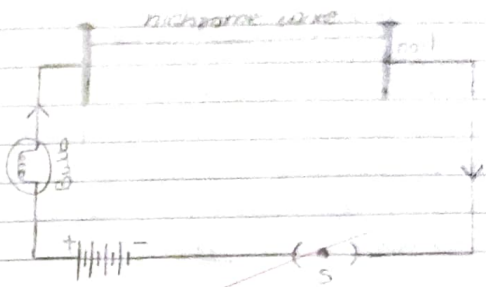
= Production of heat in a wire/coil due to the flow of an electric current.

* Heating effect depends in following factors:-

1) The strength of the current through the wire

2) The nature of the material and the length and thickness of the given wire

3) The time for which electric current flows through the given wire.



Disadvantages of heating effects

1) When electricity is transmitted from the generating station to the consumer, the heat produced in the transmitting wire get wasted as it is simply radiated into the atmosphere.

2) The heating effect of electric current is also capable of breaking the insulation of different wiring/device

Something to know

A Fill in the blanks :-

1) When current is switched on, an electric fan convert electric energy mainly into mechanical energy

2) When current is switched 'on' in a room heater, it converts electric energy into heat energy.

3) We prefer a wire of nichrome for making the 'heating element' in domestic appliances like the electric iron, electric heater and the electric toaster.

4) A safety device based on the heating effect of current is the electric fuse

5) Electromagnet should show rapid magnetism when the current is switched on

B) Write true or false

1) An electric current can produce a heating effect but not a magnetic effect

= False

2) The heating coils/element of different electrical appliances are usually made from copper or aluminium wires

= False

3) When the current through a fuse wire exceeds its specified value the fuse wire melts and breaks

= True

4) Connecting many device in a single socket is not likely to cause any problem in a circuit.

= False

5) The strength of an electromagnet can be increased by decreasing the no. of turn of its coil

= False

C) Tick (✓) the correct option

1) when electric current flows through a filament of electric bulb, the filament gives out—
= both heat and light energy.

2) A fuse wire is a wire of-
= high resistivity and low melting point.

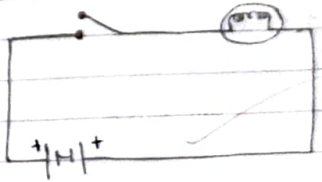
3) We are more likely to observe a strong magnetic effect with a-
= Current carrying circular coil of many turns wound on a soft iron core

4) A common household device, that uses an electromagnet in its working, is-
= the electric bell

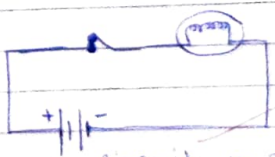
6) A good electromagnet would-
= act like a magnet when the current in ON but would not do so when the current is OFF

D) Answer the following question in brief

1) The bulb in the circuit shown in figure does not glow. Why? Redraw the circuit diagram by making the necessary changes in it, so that the bulb starts glowing.



=



Bulb of circuit shown in figure does not glow because the position of cells are not correct and switch is current is switched 'OFF'.

2) Name three ~~practical~~ practical devise on the heating effect of current.

= (i) ~~Rome~~ Room heater
(ii) Electric iron
(iii) immersion rod

3) write ~~two special~~ characteristics of wire ~~needs to be~~ needed for making the element of an electric heater.

= ~~It~~ Nichrome wire needed for making the element of an electric heater.

and their ~~*~~ characteristics are:-

① it has a high melting point
② it has a high resistivity

4) Give the meaning of the terms 'short circuiting and 'over loading' in an electric circuits?

= Short circuiting:-
= touching of the live and neutral wire, due to fault insulation.

= overloading:-
connecting of more than one device/ appliance to a single socket

5) Do you think an ~~ect~~ electromagnet can be used for ~~separating~~ plastic bags from a garbage heap? Explain.

= NO,
because plastic bag is non-metalic or ~~not~~ ~~magnetic~~ nor magnetic or magnets only attract metallic objects

6) State any three ~~appliances~~ application of an electromagnet.

= Home speaker,
Telephone,
Mobile crane

E) Answer the following question

1) The same ammount of current flows through the connecting wire and the bulb filament. However, it is only the filament that glows. Why?

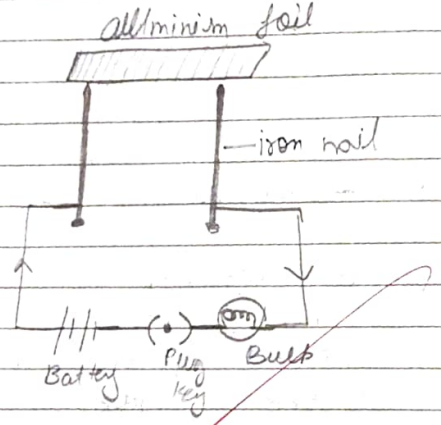
= ~~It is so because the resistance of~~ The metal filament of an electric bulb is tungsten wire, which has very high resistance therefore it become red hot and start glowing while connecting wire has low resistance thus it does not heated up.

2) The brightness of light, emitted by a bulb, is observed to decrease when an electric heater is connected in series with it. Suggest the likely reason for this observation.

= The brightness of light, emitted by a bulb is observed to decrease when an electric heater is connected in series with it because electric across the bulb decreases as compared to the previous

3) Suggest an experiment set up to illustrate the action of an electric fuse.

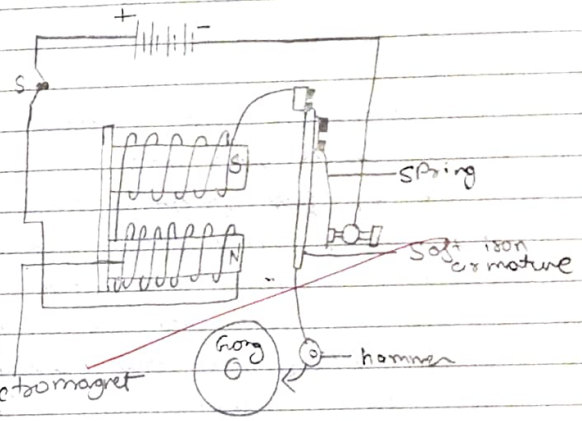
= Take two nails and connect them in the circuit shown in the diagram. Connect the top of nail with aluminium wire and then turn on the switch. As the current starts flowing in the circuit, the aluminium wire burns quicky. This is the way ; an electric fuse.



4) A novice electrician, while carrying out some repairs in Sumit's house, tried to put a piece of tungsten wire in a fuse. Sumit father, on noticing this, stopped him from doing so. Give reason as to why he did it that.

= Tungsten should not be used in the fuse because it has very high melting point. A fuse should have low melting point so that it can burn up when the current exceed the normal limit.

5) Draw a labelled diagram of an electric bell and explain its working.



= 1) When current flows through the electro-magnet it acquire magnetism and attract the armature.

2) As the armature bend towards the electromagnet, the gong is struck. But at the same time contact between armature and contact screw get broken and the circuit get switched off.

3) As the current flow stops (due to the break in the circuit), the electro-magnet (immediately) loses it magnetism. It, therefore, no longer attracts the armature.

4) The armature get pulled back to its original position by spring action. It, now, again comes in contact with the contact screw; the circuit get completed again. The cycle repeats itself and the gong get struck again. This, in turn, again break the circuit.

5) Due to the alternate making and breaking of the circuit (which takes place very rapidly) the electric bell goes on ringing continuously as long as the switch is kept pressed.

Value based Question

1) State any two of the value that the principal urged her student to develop in themselves.

= Caring and helpfulness

2) Write two factor that can be adjusted to increase the strength of an electromagnet.

= Two factors responsible to increase the strength of an electromagnet.
1) Increasing no of coils.
2) Using soft iron as base.

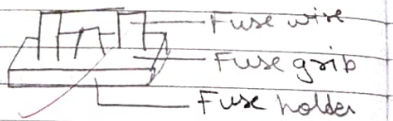
Extra Question

Q) Why tungsten is used as a metal filament in a electric bulb

= Because, It ~~have~~ has very high resistance and high melting point and it glow white - hot.

Q Draw and ~~write~~ the use of electric fuse.

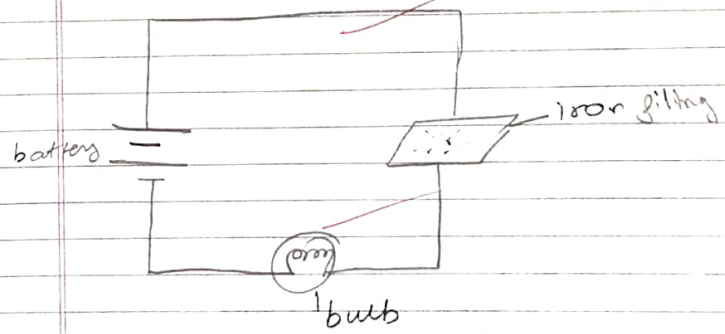
= Electric fuse is used to break the circuit when too much current flows through it



Q Activity to show magnetic effect of current

= Take a battery, wires and a bulb and some iron fillings we create a proper circuit using the battery, wire and bulb them we put iron fillings near the wires.

Observation:- We notice that the that the iron filling get attracted to wire



Q4) Write full form of MCB

= Miniature Circuit breaker.

Q5) Characteristics of electric fuse

= 1) It is use to break the circuit if over flow of electricity occurs

2) It is uses wires of tin and lead

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