

Sub: - PHYSICS

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Current Electricity =
Chapter-9

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Q: What is an Electric cell?

Ans An electric cell converts ~~elect~~ chemical energy into electrical energy. A cell consists of a vessel containing two conducting rods, called as electrodes, These electrodes are kept in a solution called the electrolyte

Q2:- State two kinds of cell. Give examples of each.

Ans ① Primary cell :→ These are use and throw type of cells and cannot be recharged
For example, simple voltaic cell, Daniel cell etc.

② Secondary cell :→ These can be ~~used~~ recharged after use. For e.g lead accumulator and Ni-Fe accumulator.

Q3:- What do you understand by the term Current? State and define its S.I unit?

Ans

Current is the rate of flow of charge across an area normal to the direction of flow of current.

S.I unit of Current is ampere or Coulomb per second.

one Ampere: $\rightarrow$ If the rate of flow of charge is 1 Coulomb per second then current is said to be one ampere.



Q4 What are conductors and Insulators of electricity? Give two examples of each?

Ans

Conductors: $\rightarrow$ These substances allow the current to pass through them easily.
For e.g. Copper, silver, aluminium etc.

Insulators: $\rightarrow$ These substances do not allow the current to pass through them.
For e.g. Cotton, rubber, plastic, wood etc.



Q5 $\rightarrow$ Give four differences between primary cell and secondary cell.

<u>Ans</u>	Primary cell	Secondary cell
①	Chemical reaction is irreversible.	① Chemical reaction is reversible.
②	It cannot be recharged	② It can be recharged
③	It can provide low current only.	③ It can provide low as well as high current.
④	It is light and cheap	④ It is heavy and costly

Q6 What are closed and open circuits?

Ans Closed circuit :→ The circuit which is complete. (Each components of it pass current through them). This circuit is conducting.

Open circuit :→ The circuit which is incomplete (broken) and current will not flow through it.

Q7:- What do you mean by a load in electric circuit?
Give some examples?

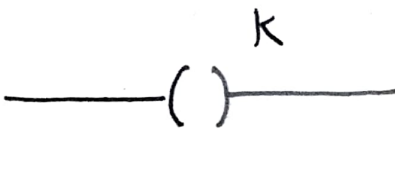
Ans:- Load:-> An appliance which is connected in a circuit is called a load. For e.g. bulb, heater, combination of different electrical components.

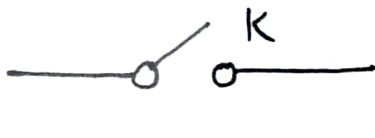
Q8:-> Which material is used to make wires for a resistance box? Why is this particular material used?

Ans:-> Wires of resistance box are generally made from an alloy, called mang' manganin. This particular material is used because this alloy has the property that its resistance does not vary much with the temperature.

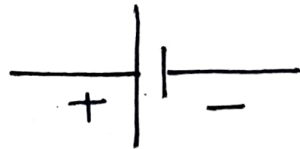
Q9:-> Write symbols and state the functions of each of the following components in an electric circuit:-> (a) Key (b) cell
(c) Rheostat (d) Ammeter
(e) Voltmeter

Ans:-> key:-> It is used to put the current ON and OFF in the circuit.

⇒ Plug Key 

⇒ Switch Key 

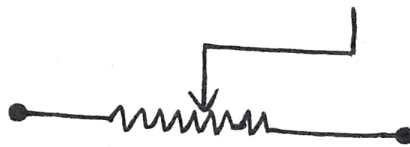
(b) Cell :→ It is a direct current source it supplies electric current in a circuit.



(Cell representation)

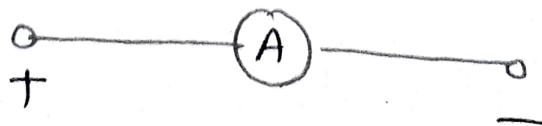
(c) Rheostat :→ It is a device used to vary resistance in a circuit continuously.

Symbol :→



(d) Ammeter :→ It is used to measure the magnitude of current in the circuit.

Symbol :→

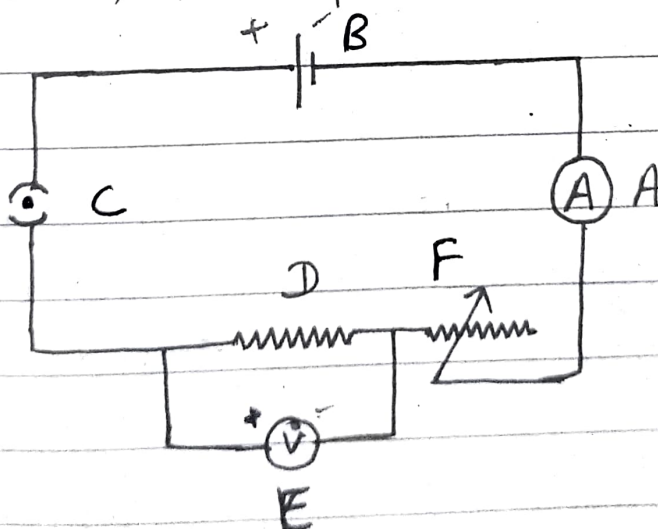


(Q) Voltmeter : $\rightarrow$ It is used to measure (Voltage) or potential difference between the two points of the circuit

Symbol : $\rightarrow$



Ques 10 : $\rightarrow$ In the electric circuit label the parts A, B, C, D, E and F. State the function of each part show in the diagram the direction of flow of current.



B - cell

C - ^{key} switch

D - fixed resistance

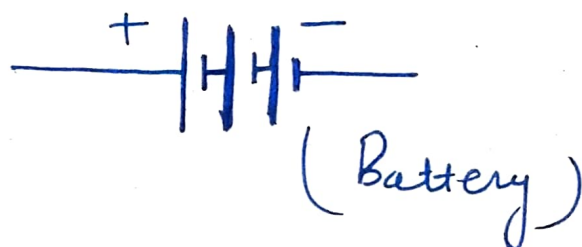
E - Voltmeter

A - Ammeter

F - Rheostat

Question 11 : → How will you obtain a source of large ^(cdc) direct current? show it with the help of diagram.

Ans : → When a source of strong direct current is needed we join a number of cells together in series to form a battery.



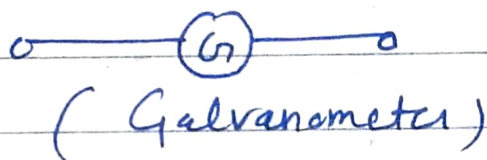
Qus 12 : → Distinguish between direct current and alternating current?

<u>Ans</u>	Direct Current (cdc)	Alternating Current (AC)
①	It is a current of constant magnitude and direction.	① It is a current for which both magnitude and direction change with time.
②	Sources of direct current are cell and a battery.	② alternating current source is mains in our house and a.c generator.

Q13 : → State function of galvanometer in an electric circuit? What is the symbol of galvanometer?

Ans : → It is used to detect very weak current in an electric circuit. It is always joined in a circuit in series.

Symbol : →



Q14 : → What is the direction of flow of current?

Ans : → Conventionally, the direction of current is from positive terminal to negative terminal of a current source (opposite to the direction of flow of electrons).

Numericals : →

① A charge of 0.5C passes through a cross-section of a conductor in 5s. Find the current.

Ans :
Charge (Q) = 0.5C
time (t) = 5sec.

$I = ?$

$$\text{As Current (I)} = \frac{\text{Charge}}{\text{time}} = \frac{Q}{t} = \frac{0.5 \text{ C}}{5}$$

$$= \frac{0.5}{10 \times 5} = \frac{1}{10} = 0.1$$

$$\boxed{I = 0.1 \text{ A}} \text{ Ans}$$

- ② A current of 1.5 A flows through a conductor for 2.0 sec. What amount of charge passes through the conductor?

Ans

$$I = 1.5 \text{ A}, Q = ?$$

$$t = 2 \text{ sec.}$$

$$I = \frac{Q}{t}; Q = It$$

$$Q = 1.5 \times 2 = \frac{15}{10} \times 2 = 3$$

$$\boxed{Q = 3 \text{ C}} \text{ Ans}$$

- ③ When a starter motor of a car is switched on for 0.8 sec, a charge 24 C passes through the coil of the motor. Calculate the current in the coil.

Ans

$$t = 0.8 \text{ sec}$$

$$Q = 24 \text{ C}$$

$$I = ?$$

$$I = \frac{Q}{t}$$

$$I = \frac{24}{0.8} = \frac{24 \times 10}{8} = 30 \text{ A}$$

$$\boxed{I = 30 \text{ A}} \text{ Ans}$$