# QB365 Question Bank Software Study Materials

## Electric Charge And Electric Current Important 2,3 & 5 Marks Questions With Answers (Book Back and Creative)

9th Standard

**Science**

Total Marks : 71

**2 Marks**

4 x 2 = 8

1) What are electric lines of force?

**Answer :** The lines representing the electric field are called electric lines of force

2) Define electric field.

**Answer :** Electric field is the region around a charged body within which its influence can be experienced (i.e) within which it can attract or repel another charged body.

3) Define electric current and give its unit.

**Answer :** The electric current is defined as the rate of flow of electric charge through any section of a conductor.

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

Its unit is $Cs^{-1}$

Its SI unit: ampere (A).

4) Rubbing a comb on hair makes the comb get – 0.4C.

(a) Find which material has lost electron and which one gained it.

(b) Find how many electrons are transferred in this process.

**Answer :** a. Comb gained electrons. Dry hair lost electron.

b. No. of electrons transferred = - 0.4 C

1 coulomb $6.25 \times 10^{18}$ electron

$-0.4\ C = 0.4 \times 6.25 \times 10^{18}$ electron

$= -2.5 \times 10^{18}$ electrons

**3 Marks**

16 x 3 = 48

5) On what factors does the electrostatic force between two charges depend?

**Answer :** The numerical value (magnitude) of electric force between two charges depend on the,

(i) value of charges on them,

(ii) distance between them and

(iii) nature of medium between them.

6) State Ohm's law.

**Answer :** Ohm's law states that electric potential difference across two points in an electrical circuit is directly proportional to the current passing through it that is

$V \propto I$

The proportionality constant is the resistance (R) offered between two points. Hence Ohms law is written as

V = RI (or) V = IR

7) Name any two appliances which work under the principle of heating effect of current.

**Answer :** The appliances which work under the principle of to after, heating effects are iron box, water heater, toaster etc.

8) What are electric lines of force?

**Answer :** Electric field is represented by lines and arrowheads indicating the direction of the electric field. The direction of electric field is the direction of the force that would act on a small positive charges. Therefore the lines representing the electric field are called electric lines of force

field are called electric lines of force.

9) Define electric field.

**Answer :** The region in which a charge experiences electric force forms the electric field around the charge.

10) Define electric current and give its unit.

**Answer :** Electric current is the rate at which charges flow past a point on a circuit. The standard SI unit of current is 'ampere' with a symbol 'A'.

11) How are the home appliances connected in general, in series or parallel. Give reasons.

**Answer :** In a parallel circuit the sum of the individual current in each of the parallel branches is equal to the main current flowing into or out of the parallel branches. Each component are operated separately. So parallel circuit is used in homes.

12) List the safety features while handling with electricity.

**Answer :** There are many safety features to be followed while handling electricity. They are

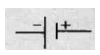
i) Ground connection

ii) Trip switches

iii) Fuse

13) How are the terminals drawn in the electric circuit?

**Answer :** In electrical circuits the positive terminal of cell is represented by a long line and the negative terminal as a short line.



14) Give the difference between fixed and variable resistors.

**Answer :**

| **S.No** | **Fixed resistor** | **Variable resistor** |
|---|---|---|
| 1. | Resistance is a fixed value | Resistance can be varied value |
| 2. | Ex.Carbon film resistor, wire wound resistor | Ex. rheostat |

15) List the main components of simple circuit.

**Answer :** The four main components of any circuit are

i) cell

ii) connecting wire

iii) switch

iv) resistor (or) bulb.

16) Differentiate parallel and series circuit?

**Answer :**

| **S.NO** | **Series circuit** | **Parallel circuit** |
|---|---|---|
| 1. | Components one connected one after another with one loop | Components are connected to e.m.f source in two or more loops |
| 2. | There is only one pathway for the electric charge to flow | There are more than one pathway for the electric charge to flow |
| 3. | The current at each point of circuit is same | Potential difference across separate parallel branches are same |

17) What is electrolysis?

**Answer :** The process of conduction of electric current through solutions is called electrolysis.

18) Give some electric device work on direct current.

**Answer :** Mobile phones, radio, electric keyboard and electric vehicles work on direct current.

19) Give the advantages of dc over ac.

**Answer :** Electroplating, Electrorefining, electrotyping can be done only using dc. Electricity can be stored only in the form of dc.

20) What are the metals used to make fuse wire? Why?

**Answer :** Fuse is a wire made up of nickel and chromium alloy which has a definite melting point.

**5 Marks** 3 x 5 = 15

21) List the safety features while handling with electricity.

**Answer :** **Ground connection:**

The metal bodies of all the electrical appliances are to be connected to the ground by means of a third wire apart from the two wires used for electrical connection.

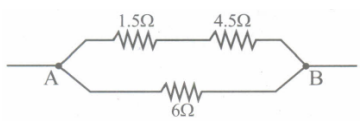
**Trip switch:**

It is an electromechanical device which does not allow a current beyond a particular value by automatically switching off the connection.

**Fuse:**

A fuse is another safety mechanism which works on joule heating principle.

22) Calculate the total resistance of the circuit as shown in figure




**Answer :** Resistance 1.5Ω and 4.5Ω are connected is series. Let $R_s$ be their combined resistance.

$R_s = R_1 + R_2$

$= 1.5\Omega + 4.5\Omega = 60$

Now, $R_s$ is connected is parallel to the resistor of 6Ω. If $R_p$- is the total resistance of this circuit, then,

$$\frac{1}{R_p} = \frac{1}{6} + \frac{1}{6} = \frac{2}{6} = \frac{1}{3}\Omega$$

$R_p = 3\Omega$

23) Give the dangers of electricity and precautions.

**Answer :** **Dangers of electricity and precautions to be taken:**

The following are the possible dangers as far as electric current is concerned.

1. Damaged insulation - Do not touch the bare wire, use safety gloves and stand on insulating stool or rubber slippers while handling electricity.
2. Overheating of cables - Use quality ISI certified cable wires for domestic wiring
3. Overload of power sockets - Do not connect too many electrical devices to a single electrical socket.
4. In appropriate use of electrical appliances - Always use the electrical appliances according to the power rating of the device like ac point, TV point, microwave oven point, etc.
5. Environment with moisture and dampness - Keep the place where there is electricity out of moisture and wetness as it will lead to leakage of electric current.