# PHYSICS

# BOOKS - ICSE

# ELECTRICITY

## Questions Name The Following

**1.** The standard household voltage for an Indian home

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**2.** Three insulated wires in a cable

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**3.** Name the material which is used as a fuse wire

Watch Video Solution

**4.** An automatic electrical switch that breaks the circuit when excess current passes through it

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## Questions Choose The Correct Option To Fill In The Blanks

**1.** ..... (Work/Power) is the amount of energy used in a certain amount of time.

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**2.** ..... (1 kWh/1 kW) of energy is 1000 watts of power used in 1 hour.

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**3.** When some appliances use a lot of energy per second, their power is very ..... (high/low).

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**4.** Use .....(renewable/non-renewable) sources of energy such as solar and wind energy to conserve electricity.

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**5.** When an object is charged, it is only the ..... (protons/electrons) that can move in or out of an atom.

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**6.** The process of charging an uncharged object by touching it to an electrically charged object is called charging by ..... (conduction/friction).

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**7.** When a glass rod is rubbed with silk, electrons flow from ..... (silk to glass rod/glass rod to the silk).

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**8.** Positively charged objects are considered to be at a ..... (lower/higher) potential, and negatively charged objects are at a ..... (lower/higher) potential.

Watch Video Solution

**9.** A gold leaf electroscope has two ..... (ebonite/gold) leaves hanging parallel to each other.

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**10.** To charge an electroscope positive, a .....(positively/negatively) charged glass rod is brought in contact with the uncharged electroscope.

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**11.** When an electroscope is charged by induction, it gets a charge ..... (same/ opposite) to that of the charged object.

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**12.** Lightning occurs because of ..... (chemical reaction/electric charge) flowing from a cloud to the ground.

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**13.** During lightning, ..... (do/do not) take shelter under a tree.

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**14.** A lightning conductor is a long, pointed metal rod fixed on .....(top of a tall building/buried deep inside the earth).

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## Questions Write T For True And F For False Correct The False Statements

**1.** When the number of protons exceeds the number of electrons, the object is said to be positively charged.

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**2.** Law which states that electric charges can neither be created nor be destroyed

Watch Video Solution

**3.** Like charges attract and unlike charges repel.

Watch Video Solution

**4.** Materials that have electrons that are free to move around in them are called bad conductors of electricity.

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**5.** Electrical conductors are used to cover materials that carry electricity.

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## Exercises Section I Name The Following

**1.** SI unit of voltage

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**2.** Concentration of electric charges (negative or positive) due to the imbalance of charges in an object

Watch Video Solution

**3.** Law which states that electric charges can neither be created nor be destroyed

Watch Video Solution

**4.** The process of charging an uncharged object by rubbing it against some other suitable material

Watch Video Solution

**5.** A device used for detecting the presence of very weak electric charges and determining whether that charge is positive or negative

Watch Video Solution

**6.** A conductor which helps protect the building from the harmful effects of lightning

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## Exercises Section I Choose The Correct Option

**1.** Which of the following is an example of a good conductors of electricity?

A. Rubber

B. Iron

C. Copper

D. Both b and c

**Answer:**

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**2.** The main fuse is connected to the .....

A. earth wire

B. live wire

C. neutral wire

D. All of these

**Answer:**

Watch Video Solution

**3.** Parts of electrical objects that need to let electricity pass through are always made of.....

A. insulator

B. metal

C. plastic

D. None of these

**Answer:**

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**4.** When a positively charged rod is kept in contact with an insulated metal, the electrons move from the .....

A. metal to the rod

B. rod to the metal

C. metal to the ground

D. ground to the metal

**Answer:**

Watch Video Solution

**5.** If a body touching the disc of an uncharged gold leaf electroscope makes its leaves ..... we can say that body is charged.

A. collapse

B. diverge

C. neither diverge or collapse

D. fall off

**Answer:**

Watch Video Solution

**6.** The lower end of the lightning conductor is connected to a metal plate and .....

A. to the building

B. deep inside the earth

C. to the cloud

D. to the ceiling

**Answer:**

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## Exercises Section I Write T For True And F For False Correct The False Statements

**1.** The earth wire is normally connected to the metal casings present in the appliances

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**2.** Dry air is a good conductor of electricity.

Watch Video Solution

**3.** The object which has gained electrons has surplus number of electrons and becomes negative.

Watch Video Solution

**4.** When an ebonite rod is rubbed with wool, the rod becomes negatively charged.

Watch Video Solution

**5.** When we charge a conductor, we are raising or lowering its potential.

Watch Video Solution

**6.** When a negatively charged ebonite rod is brought close to an uncharged electroscope, the leaves of the electroscope develop positive charge and diverge.

Watch Video Solution

## Exercises Section I Choose The Correct Option To Fill In The Blank

**1.** The potential difference is created in a cell ..... (due to chemical reaction/using a generator)

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**2.** The earth wire is made of ..... (plastic/copper).

Watch Video Solution

**3.** Any neutral body has ..... (maximum/zero) potential.

Watch Video Solution

**4.** The process of charging an uncharged object by bringing a charged object near it, but not in contact with it is called charging by ..... (conduction/induction).

Watch Video Solution

**5.** When an electroscope is charged by conduction, it gets a charge ..... (opposite/ identical) to that of the charged object.

Watch Video Solution

**6.** The electric ..... (current/discharge) between the clouds causes a large amount of energy to be produced in the form of heat and sound.

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**7.** Lightning conductor works on the principle of charging by ..... (induction/conduction)

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## Exercises Section Ii Give Reasons For The Following

**1.** What do you mean by earthing of an electric appliance ?

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**2.** Fuse is connected in an electric circuit.

Watch Video Solution

**3.** The plastic covering that surrounds wires is an electrical insulator.

Watch Video Solution

**4.** Only electrons can move in or out of atoms.

Watch Video Solution

**5.** When an ebonite rod is rubbed with wool, the rod becomes negatively charged.

Watch Video Solution

**6.** In charging a neutral object by induction, the side nearer to the positively charged

object acquires negative charge.

Watch Video Solution

**7.** The rod and the knob of an electroscope are made of metal.

Watch Video Solution

**8.** The lower end of the lightning conductor is connected to a metal plate, which is buried

deep inside the Earth with the help of a conducting wire.

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## Exercises Section Ii Distinguish Between The Following

**1.** Live and earth wire

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**2.** Fuse and circuit breaker

Watch Video Solution

**3.** Charging by conduction and charging by induction

Watch Video Solution

**4.** Power and energy

Watch Video Solution

**5.** Conductors and insulators

Watch Video Solution

**6.** Cell and battery

Watch Video Solution

## Exercises Section Ii Short Answer Questions

**1.** What is the advantage of having the earth wire?

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**2.** Define the law of conservation of charge.

Watch Video Solution

**3.** If a TV set is rated as 120 W,-220V, what does it mean?

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**4.** If a family has consumed 800 units of energy (kWh) in a month and if one unit cost Rs 5, what would be the cost of electricity?

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**5.** What are the three methods in which a body can be charged?

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**6.** How does lightning strike the ground?

Watch Video Solution

**7.** How does a lightning conductor protect buildings from lightning?

Watch Video Solution

**8.** Draw a circuit diagram when three bulbs are connected in series with a battery of cells, which are also connected in series.

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## Exercises Section Ii Long Answer Questions

**1.** Explain the law of conservation of charge with an example.

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**2.** How can you conserve electricity at home? Give four points.

Watch Video Solution

**3.** How do you charge an object by induction?

Watch Video Solution

**4.** How do you charge an object by conduction?

Watch Video Solution

**5.** How do you charge a gold leaf electroscope negatively by induction?

Watch Video Solution

**6.** What is an electroscope ? Draw a neat diagram of gold leaf electroscope .

Watch Video Solution

**7.** How do you identify nature of charge on a charged body using an electroscope?

Watch Video Solution

**8.** What are the safety measures you need to take during lightning?

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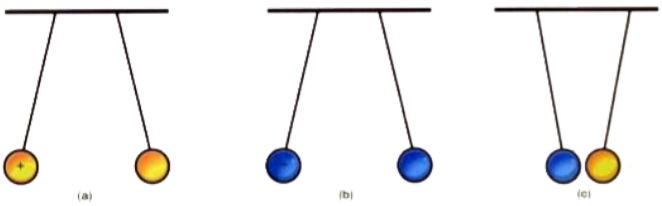
## Picture Study

**1.** Look at the attractive and repulsive forces given in Fig. A and find out what would be the

charge on the bobs.



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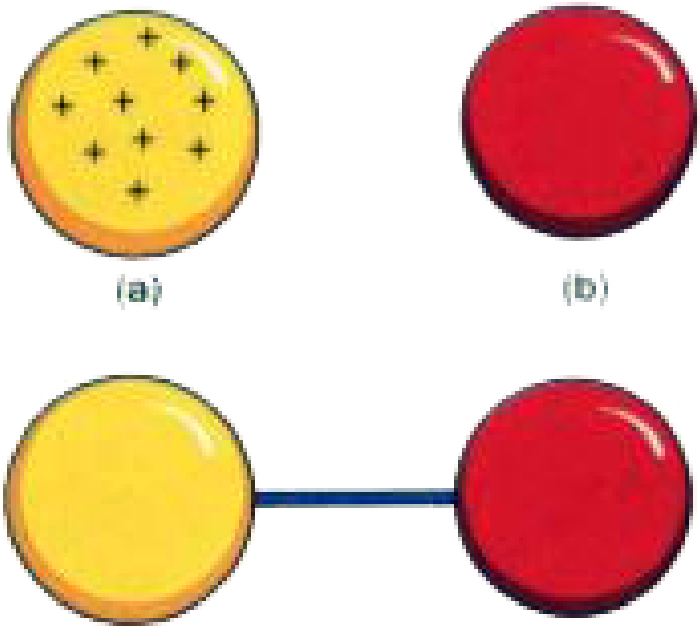
**2.** When a charged metal sphere of +10 charges is connected to a neutral body, what would be the charge on both the bodies after connecting (Fig. B)? Which principle helped you to come to the reasoning? In which direction would the charges flow? a to b or b

to a? Why?

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**3.** In Fig. C, what would be the charge on the rod and the sphere after touching. In which

direction would the charges flow: from the rod to the sphere or from the sphere to the rod? Why?


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**4.** Figure D shows two spheres that initially have +4 and +8 positive charge. After an interaction (which could simply be that they touch each other), the yellow sphere has +10 positive charge, and the red sphere has an unknown quantity of charge. Use the law of conservation of charge to find the final charge on the red sphere.

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**5.** In Figure E, look at the isolated charged spheres with distribution of negative charge. One is silver and the other is rubber. Identify each and explain your answer.


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## Exercise 8 1 Objective Type Questions Fill In The Blanks

**1.** A Cat's skin aquires _____ charge when rubbed with ebonite rod.

Watch Video Solution

**2.** Similar charges _____ each other whereas opposite charges _____ each other.

Watch Video Solution

**3.** It is the _____ electrons in the outermost shell of an atom, which are responsible for electeification .

Watch Video Solution

**4.** Electrons revolve around the nucleus in definite orbits called .....

Watch Video Solution

**5.** In an atom of an element, the number of electrons is equal to the number of _____

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## Exercise 8 1 Objective Type Questions Correct Or Incorrect

**1.** Glass wool is a good conductor of electricity .

Watch Video Solution

**2.** State True or False

Positive electrification is due to the excess of electrons.

Watch Video Solution

**3.** When the silk is rubbed with glass, the silk gets negatively charged.

Watch Video Solution

**4.** Can two similarly charged bodies attract each other?

Watch Video Solution

**5.** A substance with less number of free electrons is said to be good conductor.

Watch Video Solution

## Exercise 8 1 Objective Type Questions True Or False

**1.** The fur gets positively charged because of deficiency of electrons. _____

Watch Video Solution

**2.** Good conductors have excess of free electrons. _____

Watch Video Solution

**3.** Similar charges attract each other. _____


**4.** The sum total of the number of electrons in a system can change. _____

**5.** Alcohol and ether are conducting liquids.

_____

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## Exercise 8 1 Objective Type Questions

**1.** When an ebonite rod is rubbed with cat's skin, the cat's skin develops a charge which is :

A. Positive

B. negative

C. neutral

D. none of these

**Answer:**

Watch Video Solution

**2.** When a glass rod is rubbed with silk, the charge acquired by the silk is :

A. Positive

B. negative

C. neutral

D. none of these

**Answer:**

Watch Video Solution

**3.** If a material loses electrons from its outermost shell, the material acquires a :

A. negative charge

B. Positive charge

C. remains neutral

D. none of these

**Answer:**

 Watch Video Solution

**4.** When a negatively charged ebonite rod is brought near a negatively charged and freely suspended ball, then the ball :

A. gets repelled

B. gets attracted

C. in not affected

D. none of these

**Answer:**


**5.** Aluminium metal is :

A. magnetic substance

B. bad conductor of heat

C. good conductor of electricity

D. bad conductor of electricity

**Answer:**

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**6.** Match the statements in column A with those in column B

| Column A | Column B |
|---|---|
| 1. A charge produced on a body due to the deficiency of electrons. | (a) Negative charge |
| 2. A charge produced on a body due to excess of electrons. | (b) Free electrons |
| 3. Surest test for electrification. | (c) Silver |
| 4. The electrons in the outermost shell of an atom. | (d) Positive charge |
| 5. A material which is best conductor of electricity. | (e) Repulsion |

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## Exercise 8 1 Exercise Study Questions

**1.** What kind of charges are produced on the glass rod and the silk, when rubbed with each other.

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## Exercise 8 1 Study Questions

**1.** State the charges present on the ebonite rod and the cat's skin on rubbing with each other.

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**2.** Describe an experiment to show :

like charges repel each other.

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**3.** Describe an experiment to show :

Unlike charges attract each other.

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**4.** Briefly describe Rutherford's structure of atom.

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**5.** On the basis of electron transfer, explain, why a glass rod gets positively charged on rubbing with silk.

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**6.** On the basis of electron transfer, explain, why an ebonite rod gets negatively charged on rubbing with cat's skin.

Watch Video Solution

**7.** State (a) the mass (b) charge on :

electron

 Watch Video Solution

**8.** State (a) the mass (b) charge on :

proton

 Watch Video Solution

**9.** State (a) the mass (b) charge on :

neutron

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**10.** What are conductors ? Define on the basis of atomic model. Give four examples of different classes of conductors.

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**11.** What are insulators ? Define on the basis of atomic model. Name six insulators.

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## Exercise 8 2 Objective Type Questions Fill In The Blanks

**1.** When a negatively charged body is placed in contact with the negatively charged disc of G.L.E. Its leaves _____

Watch Video Solution

**2.** An uncharged insulator can be charged by _____ with another suitable body.

A. diverging

B. rubbing

C. induction

D. excess

**Answer: rubbing**

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**3.** An uncharged insulator can be charged by _____ with another suitable body.

Watch Video Solution

**4.** When the disc of GLE is touched with positively charged glass rod the charge on the leaves of GLE is :

Watch Video Solution

**5.** A negatively charged body has _____ of electrons.

A. rubbing

B. excess

C. positively

D. induction

**Answer: excess**

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## Exercise 8 2 Objective Type Questions Incorrect Or Correct

**1.** When an ebonite rod is rubbed with wool, the rod becomes negatively charged. How?

Watch Video Solution

**2.** An uncharged electroscope can tell the nature of charge on a charged body .

Watch Video Solution

**3.** Lightning is caused due to discharge between similarly charged clouds .

Watch Video Solution

**4.** Lightning strikes only on high - rise buildings

Watch Video Solution

**5.** The electric charge leaks from the fla surfaces.

Watch Video Solution

## Exercise 8 2 Objective Type Questions True Or False

**1.** An uncharged electroscope can be charged by holding a charged body near its cap. _____

Watch Video Solution

**2.** An uncharged electroscope can tell the nature of charge on a charged body .

Watch Video Solution

**3.** Lightning is caused due to discharge between similarly charged clouds .

Watch Video Solution

**4.** Lightning strikes only on high - rise buildings

Watch Video Solution

**5.** The electronic current flows opposite to the conventional current, true / false?

A. true

B. false

C. none

D. not clear

**Answer: A**

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## Exercise 8 2 Objective Type Questions

**1.** The process of charging an uncharged object by bringing a charged object near it, but not in contact with it is called charging by ..... (conduction/induction).

A. Conduction

B. indction

C. convection

D. none of these

**Answer:**

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**2.** When the disc of GLE is touched with positively charged glass rod the charge on the leaves of GLE is :

A. Positive

B. negative

C. neutral

D. none of these

**Answer:**

Watch Video Solution

**3.** When a negatively charged body is placed in contact with the negatively charged disc of G.L.E. Its leaves _____

A. remain uneffected

B. diverge more

C. collapse

D. none of these

**Answer:**


**4.** A charged body is held near the disc of positively charged GLE. It is found that leaves

of GLE diverge more. The nature of charge on the charged body is :

A. Positive

B. negative

C. Can be any of two

D. none of these

**Answer:**

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**5.** In case of electronic current the charge flows from negatively charged body to the Positively charged body. The body which is at higher potential is :

A. Negatively charged body

B. Positively charged body

C. both are at same potential

D. none of these

**Answer:**

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## Exercise 8 2 Objective Type Question

**1.** Match the statements in Column A, with those in Column B,

| Column A | Column B |
|---|---|
| 1. A device used for protecting a high-rise building from lightning. | (a) Conduction |
| 2. A device used for detecting static electric charge. | (b) Lightning |
| 3. A flash of light seen in the sky before the thunder of clouds. | (c) Induction |
| 4. Charging an uncharged body by touching it with a charged body. | (d) Lightning conductor |
| 5. Charging an uncharged body by holding a charged body close to it. | (e) GLE |

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## Exercise 8 2 Exercise Study Questions

**1.** What is an electroscope ? Draw a neat diagram of gold leaf electroscope .

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**2.** How can you charge gold leaf electroscope positively by conduction ?

Watch Video Solution

**3.** A negatively charged rod is held close to the disc of a neutral gold leaf electroscope. What kind of charge is produced on the

disc

gold leaves ?

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**4.** Name and define the phenomenon due to which disc and gold leaves acquire charge.

Watch Video Solution

**5.** An uncharged electroscope can tell the nature of charge on a charged body .

Watch Video Solution

**6.** How do you identify nature of charge on a charged body using an electroscope?

Watch Video Solution

**7.** What is lightning

(b) How do the clouds get electrically charged

?

(c) How does lightning strike a building ?

Watch Video Solution

**8.** What is lightning conductor ? How does it save high-rise buildings from lightning damage ?

Watch Video Solution

**9.** What is

(i) Conventional current

(ii) Electronic current ?

Watch Video Solution

**10.** State the direction of the above currents in a conductor, stating which end of the conductor is at high potential.

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## Exercise 8 3 Objective Type Questions Fill In The Blanks

**1.** Battery is a small _____ of electricity.

Watch Video Solution

**2.** In the series connection of cells, overall emf of the battery is algebraic _____ of all individual cells connected in series.

Watch Video Solution

**3.** Electric _____ Helps in disconnecting a faulty electric circuit and thus, prevents an electric fire.

Watch Video Solution

**4.** The earth can be regarded as an electric _____

Watch Video Solution

**5.** In order to distinguish, Which wire is live or neutral or of earth, the _____ is given a specific colour.

Watch Video Solution

## Exercise 8 3 Objective Type Questions Incorrect Or Correct

**1.** In series connection of cells, positive terminals of all cells are connected to one

point and negative terminals of all cells to other point.

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**2.** Electric fuse does not need replacement, whenever circuit gets overloaded, the components of fuse sense it and put the circuit in off position .

Watch Video Solution

**3.** After getting a large amount of electrons, the potential of the earth increases enormously.

Watch Video Solution

**4.** Inside the house earth wire is connected to the input terminal of KWh meter.

Watch Video Solution

**5.** In case of double insulated hair dryer there is great need of earth wire because the case of it is made of a conducting material .

Watch Video Solution

## Exercise 8 3 Objective Type Questions True Or False

**1.** cells can be connected in series ,in parallel and as well as combination of both the series and parallel .

Watch Video Solution

**2.** Electric fuse is the strongest point in an electric circuit,which melts but does not break the circuit in case of faulty electric circuit.

Watch Video Solution

**3.** The earth does not offer any resistance, when current flows into it.

Watch Video Solution

**4.** Conventional current flows from the negative terminal of the power source to the positive terminal.

Watch Video Solution

**5.** How is household consumption of electric energy calculated in kilowatt hour (KWh)

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## Exercise 8 3 Objective Type Questions

**1.** Battery is a collection of cells connected in

A. Series

B. Parallel

C. both (a) and (b)

D. all of these

**Answer:**

Watch Video Solution

**2.** In case of fluctuations of current or over loading, the weakest point in circuit which melts and breaks the circuit,is

A. circuit breaker

B. electic fuse

C. earthing

D. all of these

**Answer:**

Watch Video Solution

**3.** when an earthed electric appliance gets shor circuited, then the current from its metal body flows into the

A. eiectric fuse

B. live wire

C. neutral wire

D. earth

**Answer:**

Watch Video Solution

**4.** according to the new international convention ,the colour of insulation for live wire is

A. red

B. brown

C. green

D. blue

**Answer:**

Watch Video Solution

**5.** which of the following wires does connect the metal case of the device to the earth?

A. live wire

B. neutral wire

C. earth wire

D. any of these

**Answer:**

 Watch Video Solution

## Exercise 8 3 Objective Question

**1.** Match the statements in column A, with those in column B

| Column A | Column B |
|---|---|
| 1. A small source of electricity. | (a) Body of the kWh meter |
| 2. A safety device, which melts and breaks the circuit in an abnormal situation. | (b) Miniature circuit breaker |
| 3. A safety device, which sense overloading of the circuit and put the circuit in off position. | (c) Battery |
| 4. A safety device, which is protected the user from receiving an electric shock by touching the metal body of short circuited device. | (d) Electric fuse |
| 5. The terminal from which earth wire is connected inside the house. | (e) Earthing |

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## Exercise 8 3 Objective Question Study Questions

**1.** Define battery. How are overall emf of battery related to emf of the cells when connected in series ?

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**2.** How are internal resistance of individual cells related to internal resistance of the battery in case of series connection ?

Watch Video Solution

**3.** Define electric fuse. How is it acted as a safety device in an electric circuit ?

Watch Video Solution

**4.** What do you mean by miniature circuit breaker ? How is it used in an electric circuit to protect an electric appliance ?

Watch Video Solution

**5.** What do you mean by earthing of an electric appliance ?

Watch Video Solution

**6.** Describe identifcation and function of live wire, neutral wire and earth wire in an electric circuit .

Watch Video Solution

**7.** How is household consumption of electric energy calculated in kilowatt hour (KWh)

Watch Video Solution

**8.** Explain the dangers of electricity and the safety precautions required.

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## Theme Assignment Br Objective Type Questions A Fill In The Blank Spaces

**1.** The device used to detect the presence of static electric charges on a body is called (ammeter/gold leaf electroscope)

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**2.** A negatively charged ebonite rod is made to touch an insulated brass sphere. The brass sphere gets electrically charged by the process of Induction/ conduction

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**3.** When a glass rod is rubbed with silk, the charge acquired by the silk is :

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## Theme Assignment B Write True Or False For The Following Statements

**1.** Electric charges leak rapidly from the pointed edges of a conductor.

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**2.** Similar charges attract each other. _____

Watch Video Solution

**3.** Electrons revolve around the nucleus in definite orbits called .....

Watch Video Solution

## Theme Assignment C Tick √ The Most Appropriate Answer

**1.** When a glass rod is rubbed with silk, the charge acquired by the silk is :

A. negative

B. Positive

C. partly positive and partly negative

D. none of these

**Answer:**

Watch Video Solution

**2.** A positively charged body has :

A. excess of electrons

B. deficiency of electrons

C. no change in number of electrons

D. none of these

**Answer:**

Watch Video Solution

**3.** Copper metal is a :

A. good conductor of electricity

B. bad conductor of electricity

C. magnetic substnace

D. bad conductor of heat

**Answer:**

 Watch Video Solution

## Theme Assignment D Statements Given Below Are Incorrect Write The Correct Statements

**1.** Mica is a good conductor of electricity.

Watch Video Solution

**2.** Negative electrification is due to the deficiency of electrons.

Watch Video Solution

**3.** Electrons flow from a positively charged body to a negatively charged body when connected by a copper wire.

Watch Video Solution

**4.** Describe identifcation and function of live wire, neutral wire and earth wire in an electric circuit .

Watch Video Solution

**5.** How is household consumption of electric energy calculated in kilowatt hour (KWh)

Watch Video Solution

**6.** What do you mean by electric fuse ? State its working principle.

Watch Video Solution

**7.** An uncharged electroscope can tell the nature of charge on a charged body .

Watch Video Solution

**8.** What is lightning conductor ? How does it save high-rise buildings from lightning damage ?

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