Date ___ / ___ / ___

Charged Objects :-

= An objects is said to be ~~elect~~ electrically charged, if it has acquired the property of attracting light object

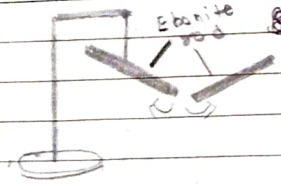
ex :-

When dry plastic comb is rub ~~Vigour~~ Vigorously through dry hair both get charged up and can attract bits of paper

Material	Metallic / Non metallic	Electrical property
plastic comb	Non mattalic	Get charged up on rubbing
Metal comb	Metallic	Does not get charged up on rubbing
drinking (plastic) straw	Non mattalic	Gets charged up on rubbing
Ebonite rod	Non mattalic	Get charged up on rubbing
Glass rod	Non mattalic	Get charged up on rubbing
metal pen	Metallic	Does not get charged up on rubbing

Conductor	Insultor
1) Substance/material which allow electric charges to pass through them with ease	1) Substance/material which do not allow electric charges to pass through them.
2) ex:- copper, wire, Iron, zinc etc	2) ex:- plastic, glass, ebonite rod etc.

ACTIVITY = 3 (Repel)



Suspend one ebonite rod which charged by rubbing the rod vigorously on flannel, bring the another charged ebonite rod near Suspendend rod, we will see that, they are repel each other as according to the diagram.

It says that both of ebonite charges are similar as they are repel each other

Kind of charges :-

= These are two kinds of charge in nature

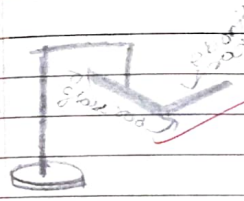
1) positive charge
2) Negetive charge

∴

Charges are always produced in pairs

1) Like (same) charge repel
2) Unlike (different) charge attract

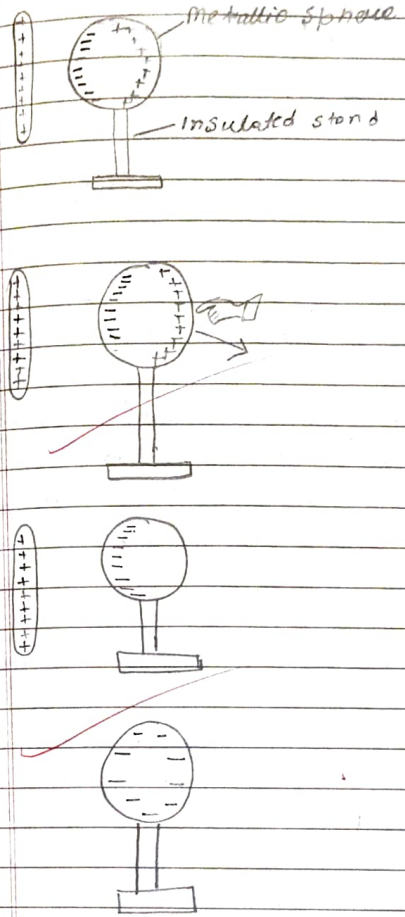
ACTIVITY = 3 (Attract)



Suspend one glass rod which is charged by rubbing the rod vigorously on silk cloth, then bring the charged ebonite rod near the Suspended glass rod, we will see that they are attracting each other as according to the diagram It says that glass rod and ebonite rod charges are different as they are attracting each other.

Method of charging an object :-

1) charging by rubbing or friction.
2) Charging by conductor or contact
   → Process of charging an uncharged object by direct physical contact with a charged object is called charging by conduction
3) Charging by Induction :- process of charging an uncharged object without actually touching it with charged object.



Something to know

A) Fill in the blanks.

1) There are two types of charges in natural.

2) Like charges repel each other and unlike charges attract each other.

3) The material that normally do not get charged on rubbing and allow electric current to flow through them with ease, are known as conductor

4) Lightning and thunder occur together.

5) The scientist, who proved that lightning is electrical in nature, was Benjamin franklin

B) Write true or false

1) The charges equire by a glass rod, and the silk cloth with which it is rubbed, are equal and of the same sign False

2) During charging by conduction, the charged object shares its charged with the uncharged object. True

3) A charged body loses it charges if we touch it with our hand True

4) Lightning is a natural electrical discharge phenomenon. True

5) We do not need any special device to protect tall building from lightning. False

C Tick (✓) the correct option.

1) A charge plastic comb (comb B) is brought near another similarly charged and suspended, plastic comb (comb A). Then comb A would -

= move away from comb B

2) A student is provided with 4 object.
A: A plastic comb B: A copper rod
C: A rubber ballon D: A ~~rod~~ woolen cloth

The object, that cannot be easily charged by rubbing, is the object labelled as-

= B

3) Two charged object, are brought close to each other. The 2 object would -

= either attract or repel each other

4) During charging, by induction it is -

= the charged object, as well as the earth, that share their ~~the~~ charges with the object to be charged.

5) During charging (i) by conduction, and (ii) by induction, the charges on the charging object -

= decrease in the 1st case but remains uncharged in the 2nd case.

6) During lightning, we can have an electric discharge.

= either between 2 opposite charged ~~cloud~~ cloud ~~and~~ or between a charged cloud and the ground

11/10/2022

D Answer the following question in brief.

1) A glass rod is rubbed against a silk cloth. Which object/s get/get charged in this process?

= ~~Both~~ when a glass rod is rubbed against a silk cloth both the object get charged up ~~[illegible]~~ Positive charged is produced on the glass rod, and negative charged is produced on silk cloth.

2) Name two object (a) that can be charged by rubbing (b) that do not get charged on rubbing.

= (i) that can be charged by rubbing are:-
(i) Plastic comb
(ii) Plastic scale etc

(ii) that can't be charged by rubbing are:-
(i) Metal wire
(ii) metal comb etc

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3) State the main difference between a conductors and an ~~insulator~~ insulators.

= conductors	Insulator
1) Substance/material which allows electric charges to pass through them with ease	1) Substance/material do not allows electric charges to pass through them.
2) ex:- copper, wire, Iron, Zinc etc	2) ex:- ~~plastic~~, glass, wood, ~~[illegible]~~ ~~rod~~ etc

4) Name the device used for protecting tall building from lightning strikes.
= Lightning conductor used for protecting tall building from lightning stricks.

5) Give the meaning of the term 'earthing'.
= the process of transfer of charge to ~~the~~ ~~earth~~. the earth

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6) List down two precautions that a person can take if he is caught outside in the open during a lightning strike.

= two precaution are:-

i) One is safer inside a car, or bus, provided the window and door are shut.

2) Avoid sheds and open areas.

E) Answer the following question

1) A charges drinking plastic straw is brought near another suspended plastic straw, that is (a) similarly charged (b) Uncharged. Explain what we would observe in each case and why.

= a) If a charged drinking plastic straw is brought near another suspended plastic straw that is similarly charged both will repel each other due to similar charges

(b) if a charged plastic straw is brought near another uncharged plastic straw, the plastic straw will first get attracted towards charges and get charged up and gets repelled away from it (due to similar charges)

2) Why do we say that 'charges are always produced in pair'?

= Charges are always produced in pair. when two object, they both get charged with equal and opposite amounts of charges. Therefore the combination behave like a uncharged object. The combination will not attract the bit of paper.

3) Describe a simple experiment to show that the total charge on pair of object that have been rubbed together is zero.

= If two charged objects (opposite charge) are simultaneously brought near tiny pieces of paper, the combination does not attract them. Therefore we can say that the total charge on a pair of object is zero.

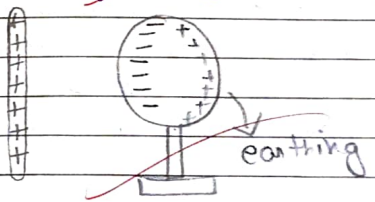
3) ~~Describe a simple experiment to show that the total charge on a pair of objects that have been rubbed together is~~

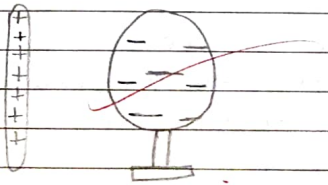
4) Why does a charged object lose its charge when touched?

= A charge object lose it charge when touched that the object is earthed. Therefore the earth acts as the source or sink that is responsible for charging an object by induction

5) Can we say that a charged object attracts an uncharged object by first charging it through induction? Explain your answer.

= We can say that a charged object attracts an uncharged object by first charging it through induction because if a charged object is brought near an uncharged object, it induces opposite charge in the uncharged object. (Charges get separated)





6) State the sign of the charge acquired by an object when it is charged by a positively charged rod, through (a) conduction (b) induction. Give the reason for your statement.

= a) When an uncharged object is brought in direct physical contact (conduction) with a positively charged rod, it get a similar charge (positive), since it shares ∴ it charges due to physical contact

b) In induction, if a positive charged rod is brought near an uncharged object, it gets opposite charges. This happens because the (+ve) positive charge induces (-ve) (negative) charges on it and the far end charges are sent to earth.

7) Is it important to have a very good contact between the lower end of a lightning conductor and the earth? If so, why?

= The thick metal structure of the lightning conductor provides a safe and easy passage to the flowing electric charges, as and when lightning does strike. The lightning charge, therefore, flow down, through it, deep down into the earth and not through the structure. The structure is, therefore saved from the damaging effect of lightning

Extra question

8) Write the advantages of lightning.

Advantages of lightning are:-

1) Lightning can also result in the formation of ozone from oxygen which protect us from ultra violet radiation of sun

2) Lightning convert nitrogen into its oxide which get dissolved in water come down with rain. This help plants to get their much need nitrogenous compound.

Q2) What is electroscope?

= ~~A simple device to detect charge on a body, is the go~~

= A simple device which detect charge and how much amount of charge is in object