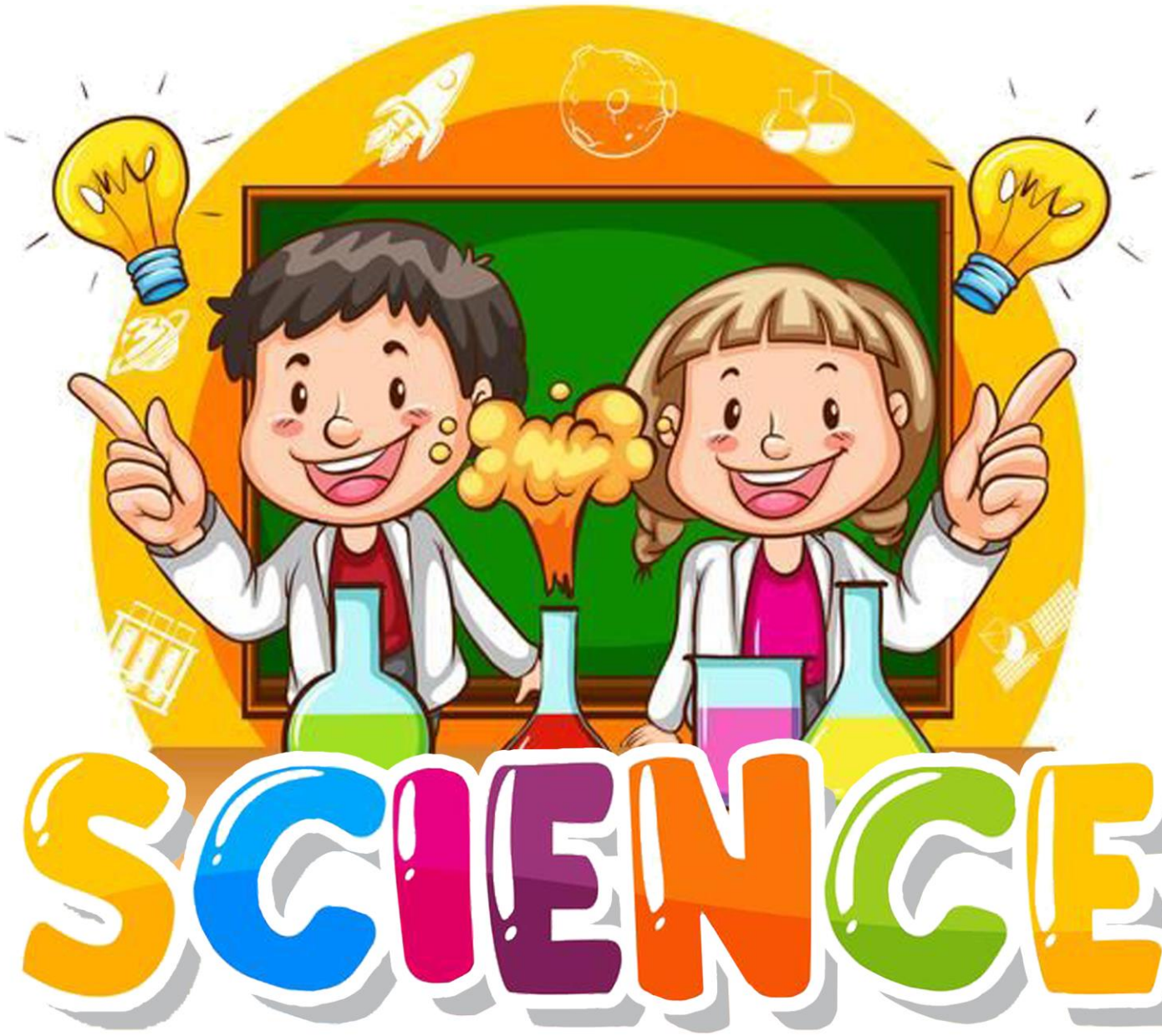
Grade 7



Subject : Science

Grade : 7

Term : 1st Term

Unit : Static electricity

Learning outcomes :

- State briefly the historic background of identifying static electric charges
- Construct activities to charge an object using rubbing method
- State that there are two types of electric charges namely positive and negative
- Design and conduct activities to show that there are two different types of electrical charges by attraction and repulsion
- State that the capacitor is a device used to store electro static charges temporarily
- Conduct an activity to show charging and discharging properties of a capacitor

Activity 1

Required materials: comb/pen, pieces of paper

- Rub a plastic pen/ cleaned comb against your dry hair.
- Then hold it closer to the pieces of paper.
- What can you observe?

……

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For your knowledge –

The scientist William Gilbert said that electric charges are generated on the surface of objects, when they are rubbed. So, light objects are attracted to them.

Activity 2

Required materials: Dry drinking straws, drawing pins, glass, a piece of polythene

1. Rub the drinking straw with the piece of polythene

2. Balance the charged drinking straw on an upturned glass using a drawing pin.

NB: all the drinking straws and polythene should be dry.

3. Move the rubbed polythene closer to the drinking straw.

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Record the observations.

……
……

When rubbed with polythene, drinking straw charge as negatively and polythene charged as positively. Therefore, you could observe that unlike charges attract.

4. Now, move another charged drinking straw near to it

Moving closer a charged drinking straw

Record the observations.

……
……

For your knowledge – Like charges get repel as both drinking straws are charged negatively.

Accordingly, it can be concluded that there are two static electric charges as negative and positive.

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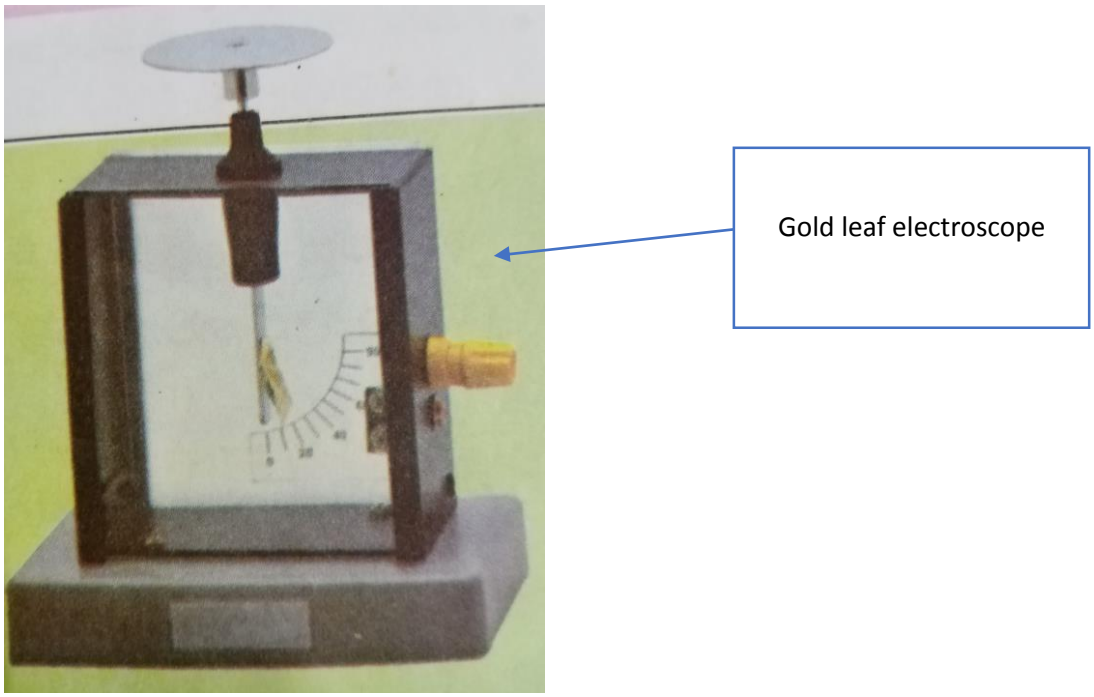
Gold leaf electroscope is used to identify static electric charges.



Activity 3

Required materials: two thin aluminium sheets, a polythene sheet bigger than the aluminium sheets, two wires, two dry cells, a neon bulb

Take a polythene and keep it in between the two aluminium sheets. Aluminium sheets should be tightly fixed but they shouldn't touch each other. Connect the free ends using wires. Connect the free ends of the wires to two dry cells and keep it for a while.

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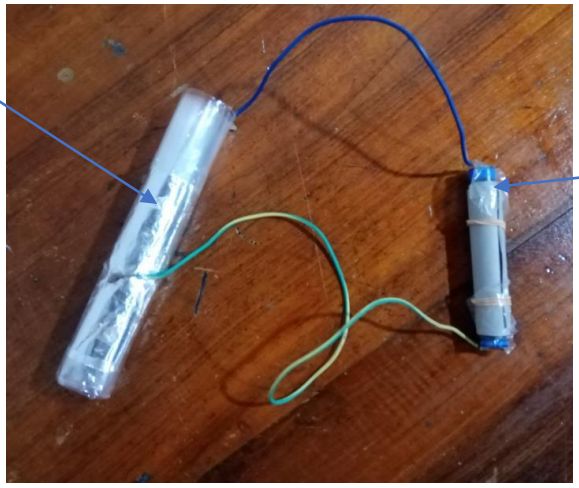
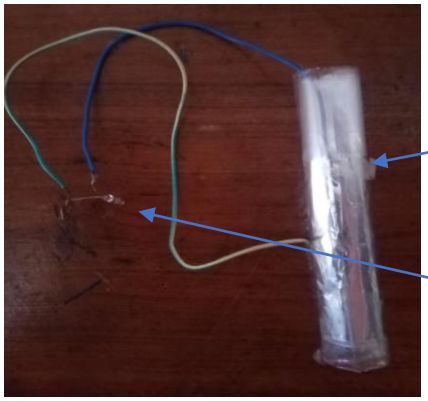
The capacitor made by rolling aluminium sheets keeping polythene sheet in between



Two dry cells

Then connect the free ends of wires to a neon bulb as soon as possible. (Disconnect from dry cells)



The capacitor made by rolling aluminium sheets keeping polythene sheet in between

Neon bulb

Record the observations.

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For your knowledge – Capacitor is an appliance which store static electric charges temporarily. Capacitors are charged when they are connected to dry cells and release charges when they are connected to the neon bulb. It is known as discharging.

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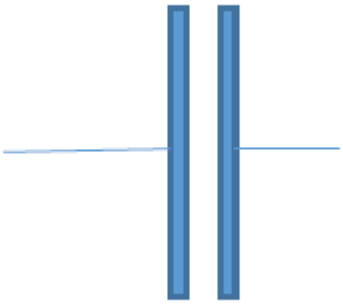
External view of a capacitor



Symbol of a capacitor

Activity 4

Following is a phenomenon associated with static electricity that can be experienced in our day-to-day life.

An instance where static electric charges are used.

A photocopy machine

Write down phenomena associated with static electric charges and instances where static electric charges are used.

……..

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Evaluation

1). Fill the blanks using suitable words.

(Capacitor, William Gilbert, repel, electrons, attract)

i. ……. is the scientist who showed first that light particles are attracted to rubbed objects.

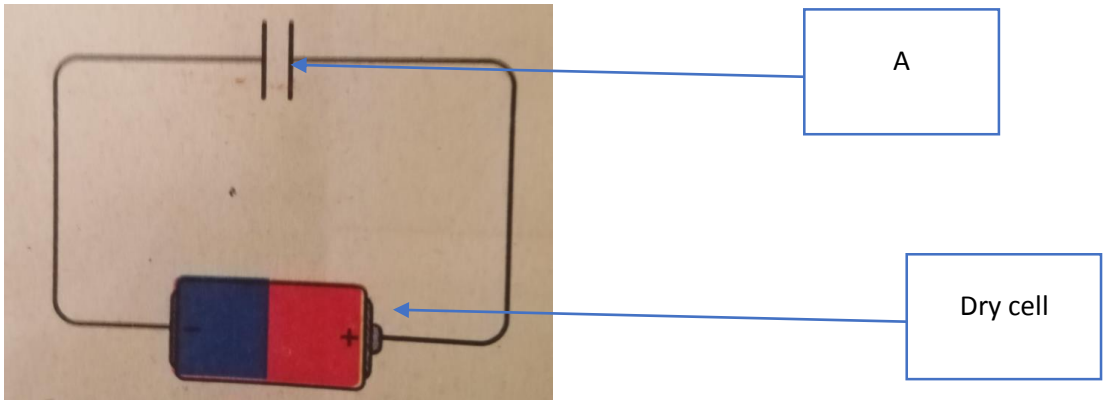
ii. When two objects are rubbed the negatively charged particles named …… transfer to the other.

iii. Like charges will ……

iv. When positive and negative charges are brought closer to each other they will ……

v. …… is an appliance that can store static electric charges.

2). Following figure denotes the supply of current from a dry cell to appliance A.



i. Name the appliance A.

……..

ii. What will happen when A is connected to the dry cells?

……..

iii. What can you observe when you connect the neon bulb replacing the dry cells?

……..

iv. What is the term used to define that process?

……..

v. Write two equipment that use appliance A.

……. …….

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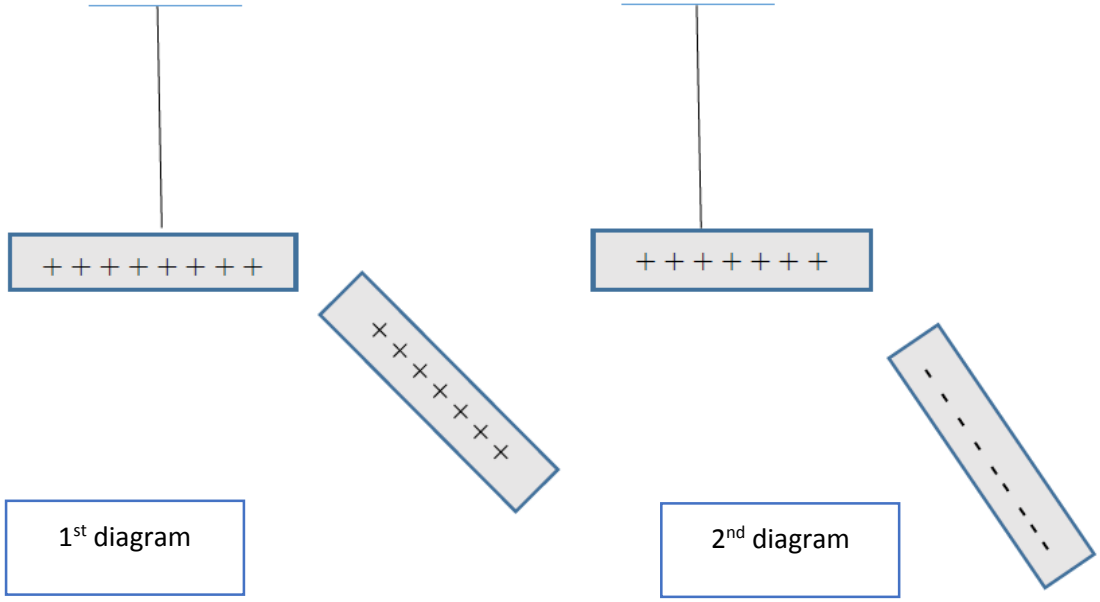
3).



i. What can you observe from the 1st diagram?

……

ii. What is the reason for getting such observations?

……

iii. What can you observe from the 2nd diagram?

……..

iv. What is the reason for getting such observations?

……

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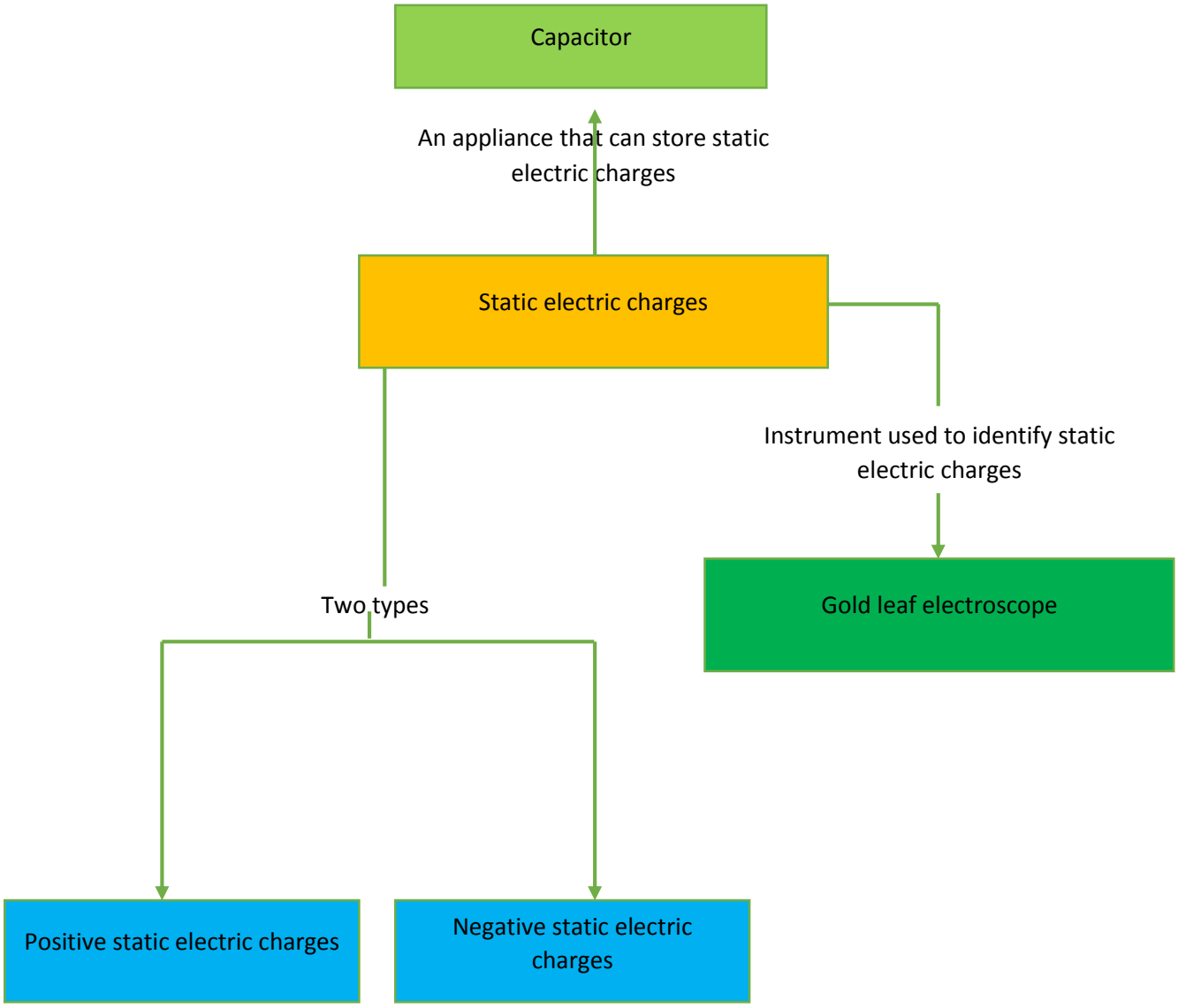
Summary



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