

Piyali Malde
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St. Lawrence High School

A JESUIT CHRISTIAN MINORITY INSTITUTION

THIRD TERM EXAMINATION-2019



CLASS VII

F.M:90

Subject- Physical Science

Duration :2hrs 30 mins

Date:28.11.19

SECTION-A(25 MARKS)

I. Choose the correct option:

(1x5=5)

- Which of the following is the best conductor of electricity-
a) silver **b) copper** c) aluminum d) iron
- Electric wires are always covered with insulators to make them-
a) colourful **b) safe** c) thick d) none of these
- Sounds of frequency less than 20 hertz are called -
a) supersonic sounds b) ultrasonic sounds c) sonic sounds **d) infrasonic sounds**
- Electric current cannot flow through -
a) silver **b) wood** c) copper d) none of these
- Which of the following methods can be used to separate mustard oil and water from a mixture of two-
a) magnetic separation **b) decantation** c) sublimation d) crystallization

II. Fill in the blanks: (1x10=10)

- Ammonium chloride can be sublimed.
- Electric current is the flow of electrons.
- Sound requires a medium to travel.
- Magnet has two poles- South and North.
- A magnet shows maximum attraction at its poles.
- An echo can be clearly heard by us only if the reflecting surface is at least ----
-----17 m----- away from us.
- In galvanizing a thin layer of ----zinc----- forms on the surface of a metal.
- A ----catalyst----- generally speeds up a reaction but itself remains unchanged.
- A mixture with the same composition and properties throughout is called-----
---homogeneous-----.
- A separating funnel is used to separate immiscible----- liquids.

III. MATCH THE FOLLOWING :

(1x5=5)

- | | |
|---------------------------------------|------------------------------------|
| 1.Sulphur | e. a yellow solid |
| 2.Aluminium | a. a good conductor of electricity |
| 3.Iron | d. rust |
| 4.Lead | b. used in storage batteries |
| 5.Sound of frequencies less than 20Hz | c. infrasonic sounds |

IV. WRITE TRUE OR FALSE AGAINST THE FOLLOWING STATEMENTS:

(1x5=5)

1. Electromagnet become weaker when the amount of current through the coil increases. FALSE
2. A switch can be touched with wet hands. FALSE
3. Snakes hiss by forcing air out of their mouths. TRUE
4. The unit of amplitude is second. FALSE
5. Conduction cannot happen in vacuum. TRUE

SECTION – B(25 MARKS)

V. VERY SHORT ANSWER QUESTIONS :

(2x5=10)

1. Define immiscible liquids. Give an example.

ANS- Liquids which do not mix with one another are called immiscible liquids.
E.g.water and oil.

2. What is a precipitate ? Give an example.

ANS-Aprecipitate is a substance that is formed in a chemical reaction.

e.gwhen lead acetate and potassium iodide reacts lead iodide as yellow ppt. forms.

3. What is frequency ? Give the mathematical relation between frequency and time period.

ANS- Frequency is the number of oscillation made by a wave per unit time.ths unit is Hertz.

Relation-Frequency = 1/ time

- 4.What is a circuit diagram? How is a closed circuit different from an open circuit?

ANS- It is a convinent way to show an electric circuit.

When current flows through a complete electric circuit is called closed circuit.Acircuit is said to be open when no electric current flows through it.The circuit in this case is broken.

5.State the two laws of electromagnetic induction.

First Law of Faraday's Electromagnetic Induction state that whenever a conductor are placed in a varying magnetic field emf are induced which is called induced ...

Faraday's Second Law

It states that the magnitude of induced current is directly proportional to the rate at which the magnetic lines of force associated with the coil changes.

VI.SHORT ANSWER QUESTIONS : (ANY FIVE) (3x5=15)

1. Write three uses of an electromagnet.

Ans-1.bullet train,2.seperation of iron ore and its impurities, 3. Audio and video tapes.

2. Describe three methods to prevent rusting.

Ans-Painting,greasing, galvanizing.

3. What are metalloids? Name any two of them.

Ans-Elements whose properties are intermediate between metals and non- metals. E.g. arsenic, antimony.

4. Describe how filtration is done to separate water from sand.

Ans- **Filtration** is a **method** for **separating** an insoluble solid from a liquid. When a mixture of **sand** and **water** is **filtered**: the **sand** stays behind in the **filter** paper (it becomes the residue) the **water** passes through the **filter** paper (it becomes the **filtrate**)

5.Mention any three physical characteristics of metals.

Ans-**Three properties of metals are:**

- Luster: Metals are shiny when cut, scratched, or polished.
- Malleability: Metals are strong but malleable, which means that they can be easily bent or shaped. ...
- Conductivity: Metals are excellent conductors of electricity and heat.

6.Write three differences between series circuit and parallel circuit.

Ans-

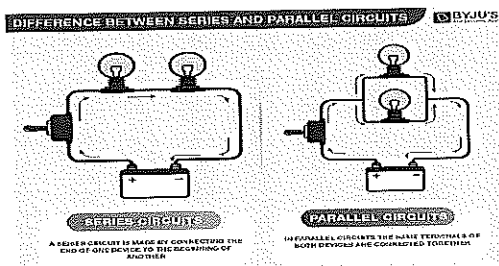
Difference Between Series and Parallel Circuits	
Series	Parallel
The same amount of current flows through all the components	The current flowing through each components combines to form the current flow through the source.
In an electrical circuit, components are arranged in a line	In an electrical circuit, components are arranged parallel with each other

When resistors are put in a circuit, the voltage across each resistor is different even though the current flow is the same through all of them.

If one component breaks down, the whole circuit will burn out.

When resistors are put in this circuit, the voltage across each of the resistors is the same. And even the polarities are the same

Other components will function even if one component breaks down, each has its own independent circuit



7. Why are solar panels used in artificial satellites?

Ans- **Solar panels** are **used in artificial satellites** because if a battery is fixed it will soon run out of **power** and it is impossible to use a wired switch for the **satellite**.

SECTION-C(40 MARKS)

VII. LONG ANSWER QUESTIONS: (ANY EIGHT) (5x8=40)

1. Write a short note on a dry cell and draw a well labelled diagram of a dry cell.

Ans- A **dry cell** is a type of electric battery, commonly used for portable electrical devices. It was developed in 1886 by the German scientist Carl Gassner, after development of wet zinc-carbon batteries by Georges Leclanché in 1866. The modern version was developed by Japanese Yai Sakizo in 1887.

A dry cell uses a paste electrolyte, with only enough moisture to allow current to flow. Unlike a wet cell, a dry cell can operate in any orientation without spilling, as it contains no free liquid, making it suitable for portable equipment. By comparison, the first wet cells were typically fragile glass containers with lead rods hanging from the open top and needed careful handling to avoid spillage. Lead-acid batteries did not achieve the safety and portability of the dry cell until the development of the gel battery. Wet cells have continued to be used for high-drain applications, such as starting internal combustion engines, because inhibiting the electrolyte flow tends to reduce the current capability.

A common dry cell is the zinc-carbon cell, sometimes called the dry Leclanché cell, with a nominal voltage of 1.5 volts, the same as the alkaline cell (since both use the same zinc-manganese dioxide combination).

A standard dry cell comprises a zinc anode, usually in the form of a cylindrical pot, with a carbon cathode in the form of a central rod. The electrolyte is ammonium chloride in the form of a paste next to the zinc anode. The remaining space between the electrolyte and carbon cathode is taken up by a second paste consisting of ammonium chloride and manganese dioxide, the latter acting as a depolariser. In some designs, often marketed as "heavy duty", the ammonium chloride is replaced with zinc chloride.

2. Prove with the help of an activity that sound travels better through liquids.

Ans- Materials- two stones, a bucket half filled with water.

Procedure- we take two stones and strike them together. now we submerge the stones in the bucket of water and again strike them.

Observation- we will observe that sound is heard even when stones striking inside water

Conclusion- sound can travel better through liquids.

3. State five precautions to be taken while using electricity.

Ans-

Safety precautions when using electricity

- Never touch bare or broken wires
- Never touch appliances/switches with wet hands
- Never overload a circuit
- Never use electric appliances in wet places
- Do not push anything into sockets
- Never put nails into walls near switches, sockets and wires
- Do not use electrical appliances with old or frayed wires

4. How do mixtures differ from compounds any (five differences)?

Ans-

Compounds	Mixtures
1. Compounds are formed as a result of chemical reactions between two or more elements or compounds.	1. Mixtures are formed by simply mixing two or more constituents. There are no chemical reactions between the constituents.
2. The components of a compound are always present in a definite ratio by mass.	2. The components of a mixture may be present in any ratio.
3. The properties of a compound are entirely different from its constituents.	3. The properties of a mixture are same as those of its constituents.
4. Compounds are always homogeneous in nature.	4. Mixtures are usually heterogeneous (except in solutions).
5. Compound formation is accompanied by absorption or evolution of light, heat or electrical energy.	5. Heat, light or electrical energy may not be evolved or absorbed during the formation of a mixture.
6. Melting and boiling points of a compound are usually sharp and fixed.	6. Melting and boiling points of a mixture are usually not sharp and fixed.
7. The constituents of a compound cannot be separated by physical or mechanical means. They can, however, be separated by chemical methods.	7. The components of a mixture can be easily separated by physical methods.

4. What are exothermic and endothermic reactions? Give an example for each.

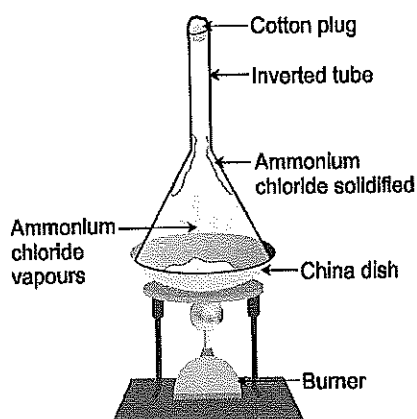
Ans-

Endothermic reaction	Exothermic reaction
Endo means "Absorb"	Exo means "Release"
It is a reaction that need to be supplied with energy	It take place when two substances are mixed together and generated heat
Heat is absorbed	Gives out heat
energy content of the reactants is fewer than the products	energy content of the products is more than the reactants
Energy of the reaction system increases relative to that of the surrounding,ie that is, the reaction system becomes hotter	Energy of the reaction system decreases relative to that of the surrounding,ie that is, the surrounding becomes hotter.
the change in enthalpy for an endothermic reaction is always positive	the change in enthalpy, ΔH , for an exothermic reaction will always be negative
Small positive free energy	Large Negative free energy
All endergonic reactions are exothermic.	All exergonic reactions are exothermic.
Example Photosynthesis , cooking an egg, Evaporation	Respiration, fireplace, Combustion



5. How can ammonium chloride be separated from sand? Write experimental details of it.

-we keep the mixture in a dish and cover the mixture with an inverted glass funnel which is close the opening with cotton. Now we heat the dish gently on wire gauge and observe that ammonium chloride will sublimes and when cools is collected in the funnel.



7. Write two uses of metals and two uses of nonmetals. Write the constituents of : brass and bronze.

Ans-

Uses of metals:

1. Metals such as copper and aluminium are used to make kitchen utensils, wires, statues etc.
2. Metals such as gold and silver are used to make jewellery and decorative items
3. Iron is use to make vehicles, machines, building materulal etc.
4. Tin Is used to make cans
5. Lead is use to make batteries
6. Zinc is used to make cells, galvanize articles.

Uses of non- metals:

1. Non-metals such chlorine is used as a disinfectant, bleaching agent etc.
2. Neon is used in making advertising lamps, electronic appliances etc.
3. Carbon in the form of diamond is used in making jewellery and cutting glass and stones.
4. Carbon in the form of graphite is used in making pencil lead, electrodes and lubrication.
5. Sulphur is used in vulcanizing rubber, detergents, paints, fertilizers etc.

8. Write a note on energy changes in a chemical reaction.

Ans-The energy change means many substances evolve heat whereas others absorb heat while dissolving in a solvent.

e.g-if we add bathroom acids to water heat is evolved.

Dissolution of glucose in water is an endothermic process.

Burning gives both heat and light so exothermic process .

Slaking of lime ,photosynthesis etc.

9. Describe a simple experiment to carry out distillation of water.

Ans-

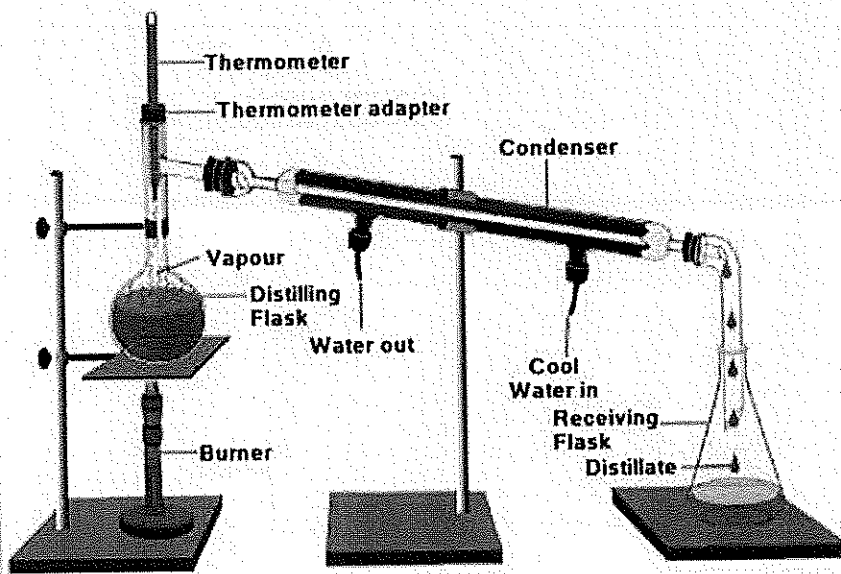
The aim of this experiment

This method is used to separate the mixture of two miscible liquids where difference between their boiling points is at least 25 °C.

Introduction:

Distillation is the separation of a mixture into its component parts, or fractions, separating chemical compounds by their boiling point by heating them to a temperature at which one or more fractions of the compound will vaporize. It uses distillation to fractionate. Generally the component parts have boiling points that differ by less than 25 °C from each other under a pressure of one atmosphere. If the difference in boiling points is greater than 25 °C, a simple distillation is typically used.

Distillation is an essential stride in making numerous items and offers an extra technique for water cleaning. The most widely recognized reason for straightforward refining is to cleanse drinking water of undesirable chemicals and minerals, for example, salt.



10. Why does pure water act as insulator? Name the sources of electricity.

Ans- Pure water does not contain any ions or electrolytes so does not conduct electricity.

Method	How it works?	Advantages	Disadvantages
Hydro-electric power (HEP)	If a dam is built across a fast-flowing river, a lake will form behind the dam. If the water in the lake is allowed to flow through turbines in the dam wall, electricity can be generated.	HEP is the best way of storing potential energy that can be turned into electricity.	Hydroelectric dams are expensive to build and can damage the habitat if they flood new areas of land and dry up others.
Tidal energy	Large volumes of seawater move as the earth spins and the moon attracts the water on the surface of the earth. This tidal movement of water contains a lot of energy and if the water is captured and allowed to flow through turbines, it can generate electricity.	Very reliable source of electricity providing sea levels don't change in the area.	Tidal barrages are expensive to build. Habitats are damaged on either side of the barrage. Wildlife like fish and birds can get sucked into the turbines.
Wave	Waves are moving water and each wave can turn a very small turbine. Electricity can be generated from floating lots of tiny turbine mechanisms on the surface of the sea to collect this energy.	Captures energy that would otherwise not be collected and can reduce rough seas.	Take up lots of space and difficult for shipping to move round.
Wind	Gusts of wind can blow the blade of a turbine, which then turns a generator to create electricity.	The Ireland is very windy and in theory wind turbines could produce a lot of electricity.	Not a reliable source of energy. Turbines can be noisy and some people find them ugly.
Geothermal energy	Water can be pumped underground where heat from underground rocks can turn water into steam, which can turn turbines.	Reliable source of alternative energy.	Not many places where the ground is hot enough to generate electricity like this.
Solar panels (hot water)	The sun gives out a lot of heat radiation. Water can collect some of this heat if it passes through black tubes exposed to sunlight.	Once the unit has been bought and set up, there is free warm water every day.	Water is not very hot. No hot water late at night and water is cooler on cloudy days.
Solar photovoltaic cells (electricity)	Solar cells (also called Photovoltaic or PV cells) generate electricity from sunlight.	Scientists are designing more and more clever and efficient versions.	They are quite expensive to make. Some use polluting chemicals in manufacture. They don't generate electricity if it isn't sunny.
Biofuels	fossil fuels to make them last longer: bioethanol (can be produced from any plant but sugar and wheat are currently used) and biodiesel (from oily crops such as sunflower and palm).	These fuels help take carbon dioxide out of the atmosphere.	Intensive cultivation, which can damage habitats. Biofuel crops prevent farmers growing food crops. When burnt the carbon goes back into the atmosphere.
Biomass	Biomass is any organic material e.g. wood, animal dung, waste food, non-edible parts of plants. These can be burnt as a fuel.	These fuels help take carbon dioxide out of the atmosphere.	When these are burnt they put carbon dioxide back into the environment and if they were transported, they used carbon in their lifetime.