GREENWOOD PUBLIC SCHOOL, ADITYAPURAM
OUR MOTTO-DEVELOPMENT WITH DELIGHT

CLASS-VII SUBJECT- SCIENCE

TERM-1 SYLLABUS

Chapter -3

Fibre to Fabric

Difficult words

: Retardant

: Biodegradable

: Allergenic

: Fleece

: Shearing

: Scouring

: Segregating

: Sorter's

: Filature

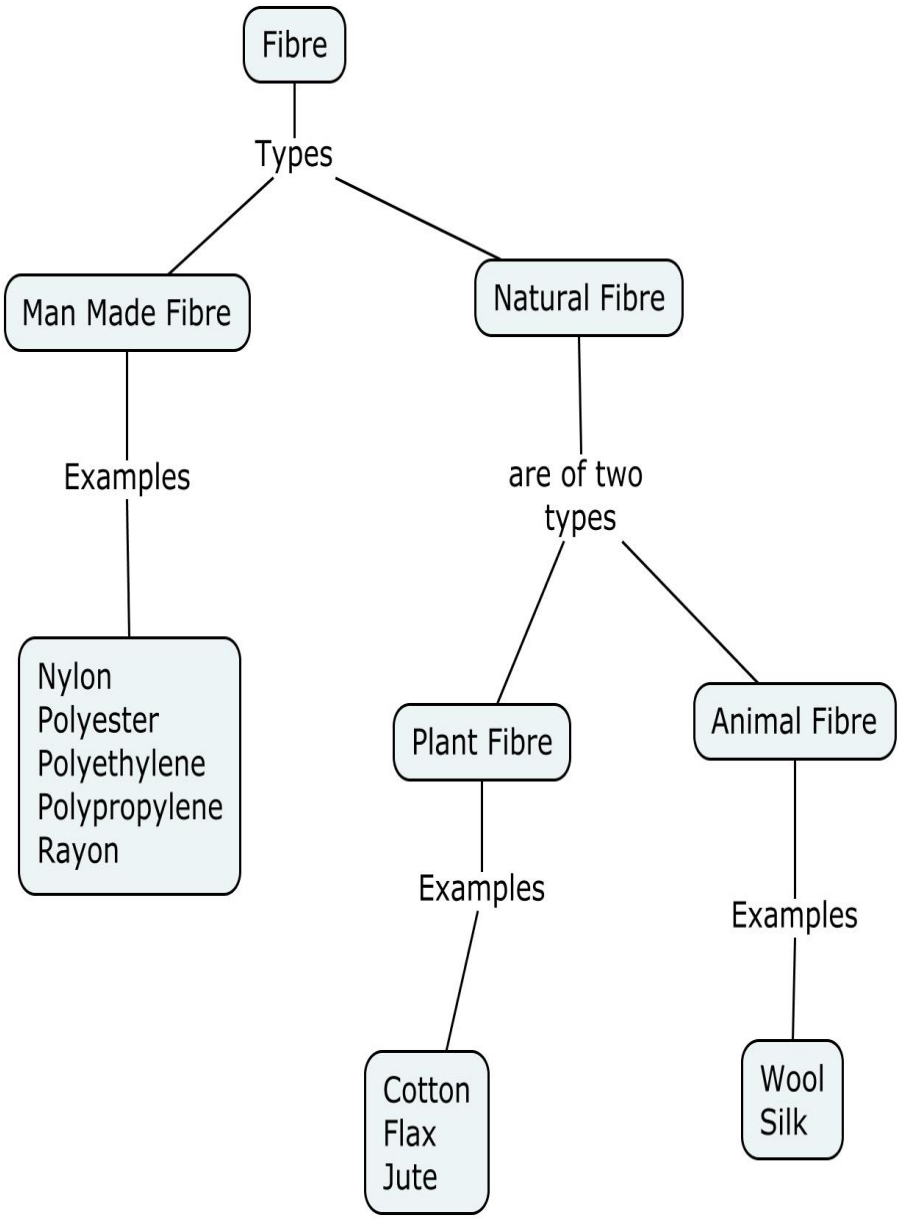
: Skeins

: Blistered

: Throwing

: Caterpillars

: Shepherds



Glossary:-

1) **Cocoon :-** A silly case by spun by the larva for forming the pupa .

2) **Sericulture :-** The process of rearing silk worms for obtaining silk.

3) **Fibres :-** Fine hair – like structures that are continuous filaments like thread .

4) **Sheaing :-** Removal of hair from body of sheep .

5) **Fleece :-** Hair or fur of sheep or yak .

6) **Reeling :-** The process of obtaining silk fibre cocoons.

7) **Woollen system :-** A system where woollen are spun from fibres which vary in length.

8) **Worsted system :-** A system in which yarn is spun from combed wool, removing the shorter fibres and arranging the long fibres in parallel.

Notes:-

Fibre -> Fibre is a long, strong and flexible thread like arrangement .

Types of Fibres -> Fibres are of 2- types **:-**

1. **Natural fibres** :- Fibres which are obtained from plants or animals are termed as natural fibres. Eg; Wool, silk etc.
2. **Synthetic fibres** :- Fibres which are man-made are known as synthetic fibres. Eg; Nylon, Rayon, polyestor etc.

Wool -> Wool is a natural fibre obtained from the fur of the animals like sheep goat , yak, rabbit, alpaca, camel and Llama . wool is a modified hair fibre.

Properties of wool :-

1. Wool has naturally high U.V. protection.
2. Wool fibre is durable and elastic.
3. Wool can be machine- washed and resist dirt and grease .
4. Wool fibres can be easily spun.
5. Wool absorbs moisture from the body and retains it inside and help us to hold body heat .

Uses of wool :-

1. Wool is used to make sweaters, shawls that keep us warm in winters.
2. It is used to make blankets , carpets etc.
3. It is used in sound proofing .

Rearing and Breeding of Sheep :-

Sheep Rearing indicates looking after sheep by providing food, shelter and health care.

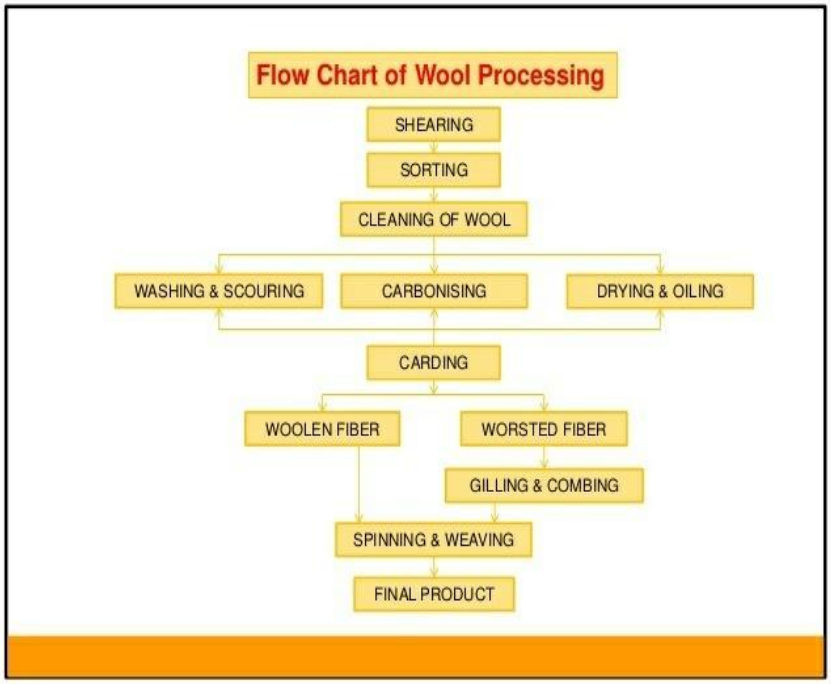
Breeding is mainly done to acquire animals with desired quality . The two sheep of desired quality are selected as parent and they are crossed to attain new breed of sheep having the best chosen quality of both parents.This type of breeding is known as selective breeding.

Processing of fibre into wool

A sheep or yak body has a thick coat of hare known as fleece .
The steps involved in wool production are as follows **:-**

1. **Shearing** :- The process of removing the fleece using special clippers is called shearing. Shearing is done manually with a razor or with the help of a shearing machine.
2. **Scouring** :- Scouring is the process of washing the fleece of sheep remove dust, dirt, grease or any unwanted particles .

3. **Sorting** :- Sorting is the process of segregating the long fine quality fleece from the less fine quality which are broken into small pieces .
4. **Dyeing** :- The natural fleece of sheep have white, black or brown colour. It can be dyed in different colours by the process known as dyeing.
5. **Combing and Spinning :-** The wool fibres are straightened , combed and then spun or twisted together into yarn.



Types of wool :-

1. **Woollen system :-** Woollen fibres are of mixed length and are combed and spun to form woollen yarn.
2. **Worsted system :-** Woollen fibres are combed , thus separating the long and short fibres. The long fibres are then formed into smooth compact strands which are spun to form woollen yarn.

Occupational Hazards in wool industry :-

1. People who works as sorters get infected by a bacterrem ' anthrax' , which cause a fatal blood disease called Sorter's disease .
2. Noise , inadequate lighting and the high temperature and humidity levels required for wool processing may have an adverse effect on general health .

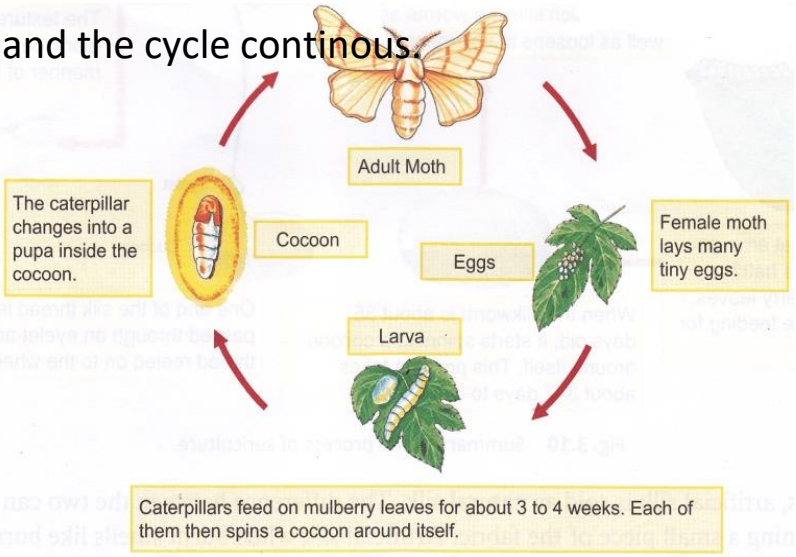
SILK :- Silk is a natural protein fibre . It is strong , soft, shinning and very fine fibre procured from cocoons of silkworm.

The rearing of silkworms for obtaining silk is known as sericulture .

LIFE HISTORY OF SILK MOTH

Silk moth is white insect . Here are the different stages in the life cycle of a silk moth.

1. **Egg -** It is the first stage of a silkworm's life cycle. The female moth lays its during the summer and hatches in spring.
2. **Larva -** The eggs hatch into larva or caterpillars, which feed on tender mulberry leaves. This stage lasts for about 27 days and larvae shed their skin, the process of shedding of skin known as moulting .
3. **Pupa -** The caterpillar spins fine silk filament around it in layers to form a cocoon. The silkworm takes 3 to 7 prepare cocoon. Silk threads are obtained from the cocoon.
4. **Silk moth -** The pupa changes into a moth, which comes out of the cocoon. The female adult lay eggs and the cycle continous.



Properties of silk :-

1. It has smooth and soft texture .
2. It is the strongest natural fibre .
3. It is cool to wear in summers and warm to wear in winters.
4. It absorbs moisture .

USES OF SILK :-

1. It is used to make clothes , scarves , sarees and dresses.
2. It is used in bullet-proof vests and in parachutes .
3. It is used as non-absorbable sutures in surgery .

Occupational Hazards in silk Industry:-

1. Working in cramped , poorly ventilated rooms during production of silk leads to breathing problems.
2. Dipping of cocoon in boiling water is done manually , this makes the worker skin raw and blistered .

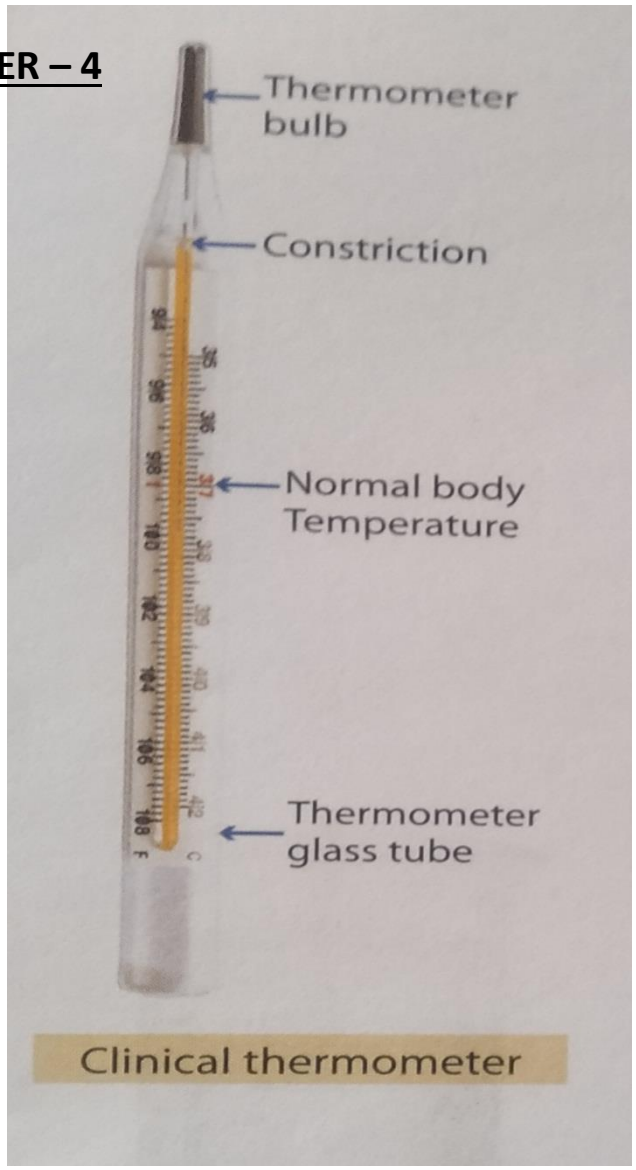
Activity:-

Aim:- The burning test for fibres

Procedure:Take a silk cloth and a woollen cloth.Pull out fibres from both of them.Hold the silk fibre near the flame until it starts burning. Note down your obsenations. take the wool fibre and place it near the flame until it starts burning. Note down observations.Let the ashes cool and then crush the ashes with your fingers. What do you observe?

Observations:You will observe that both silk and wool on burning have an odour of burning haw or feather.Wool does not burn as easily as silk. Silk burns into a hard black ball.The ashes of wool when crushed form black and brittle remnants.A silk ball always crushes totally to a black powder.

CHEPTER – 4



Clinical thermometer

Hard words :-

* Temperature
* Thermometer
* Celsius
* Laboratory
* Clinical
* Constriction
* Mercury
* Conduction
* Convection
* Radiation
* Coastal
* Breeze
* Vacuum-flask
* Radiator
* Insulator

Glossary →

1. **Conduction** :- Transfer of heat through a solid substance without actual movement of Molecules.
2. **Convention** :- Transfer of heat by upward movement of heated and less dense medium.
3. **Radiation** :- Direct transfer of heat with involving any medium .

4. **Thermometer** :- A device used to measure temperature .
5. **Insulator** :- Materials which do not allow the transfer of heat energy easily through them.
6. **Heat** :- A form of energy which transfer from a hotter object to colder object.
7. **Temperature** :- The degree of hotness or coldness of a given body.

Notes:-

Thermometer :- The instrument used to measure the temperature of the body is known as thermometer . The unit of temperature is degree Celsius (0c) or degree centigrade .

There are two types of thermometer :-

1. Laboratory thermometer
2. Clinical thermometer

Laboratory thermometer :-

1. This is liquid- in glass thermometer

2.This is uses in the expansion of a liquid to measure temperature accurately.

3.Mercury is used as the liquid inside the thermometer to give reading because of its following properties

1. It expands evenly as the temperature .
2. It is a good conductor of heat .
3. It is silvery white and can be seen from outside the glass.
4. It does not stick to glass.

- The scale of the laboratory thermometer is called Celsius scale
- This thermometer is able to measure a range of temperature from -10 oc to 110 oc .

Clinical Thermometer :- A clinical thermometer is used by a doctor or nurse to measure the temperature of our body .The average body temperature of

a healthy body is 37 oC to 98 oF. The thermometer reads a range of temperatures from 35 oC to 42 oC. The constriction prevent the flow of mercury back into the bulb of the thermometer .

Transfer of Heat :- Heat flows from a body at a higher temperature to a body at a lower temperature . This flows of heat continues till both the bodies' acquire the same temperature.

Modes of Transfer of heat → These are 3- modes of heat

1. Conduction
2. Convection
3. Radiation

Difference between Conduction , Convection and Radiation

Conduction	**Convection**	**Radiation**
1.Heat flows without the actual movement of particles from their position. 2. Medium is necessary. 3. It takes place in solids generally.	Heat flows by the movement of the molecules themselves. Medium is necessary. It takes place in liquids and gases.	Heat flows without involving the particles of the medium. Medium is not necessary. It takes place even in the absence of medium.

Vacuum flask :-

A thermos flask is a double walled glass bottle . In the space between the two walls,bothPieces of glass are coated with shiny bright silvering . The air is pumped out so that a vacuum forms Between the two walls . A vacuum is used because it stops heat transfer by stopping conduction and convection.Shing surfaces are poor radiators of heat . Radiation is reduced by silvering both walls on the vacuum side . The silvering on one glass wall reduces radiation of heat and the silvering on the other glass wall reflects back any heat that may have been radiated.

Precaution to be taken while reading a clinical thermometer:

1. Wash the thermometer with water or an antiseptic solution before and after use.
2. Before use the mercury level in the thermometer should be below 35 degree celsius. If it is not so, it can be got down by giving repeated jerks to the thermometer.
3. The reading in the thermometer should be taken by keeping the level of mercury along the line of sight.
4. Never hold the thermometer by the bulb while reading it.
5. Handle the thermometer with care, it can break if it against hard object.

Reason—Assertion Based Questions

1. **Assertion:-** The handles of cooking utensils are made of wood or plastic.

   Reason:- Because, the wood or plastic is a poor conduction of heat hence, we can hold the handle with bare hands and remove the utensils from the flame.

2. Slabs of ice are covered with sawdust or gunny bags to prevent them from melting.
   Reason:- sawdust or gunny bags contains large amount of air trapped in , which acts as an Insulator .
3. The freezer is at the top of a refrigerator .
   Reason :- Due to nature of convection , the warm air rises while cold air falls, so freezer at the top provides cold air for the other comparments at the bottom of the freezer.
4. **Assertion :-** It is more comfortable to wear white clothes in the hot summer than black clothes
   Reason Because , they absorb less radiant energy.
5. **Assertion:-** A light - coloured building stays cooled in summer .
   Reason :- It reflects most of the heat radiation from the sun. It is also a poor emitter of heat and stays warm in winter.
   Difference Between:-

Conductors	Insulators
The materials which allow the heat energy to transfer from one part to another easily are Known as good conductors of heat. Eg:-Copper , steel, iron , aluminium cork, bakelite mercury etc.	The material which do not allow the transfer of heat energy easily are known as bad conductors of heat. Eg:-Plastic, wood, glass,cotton, wool , elastic,etc.

Sea Breeze	Land Breeze
It is also known as on- shore winds. winds. It is formed at day time . It is more often experienced during spring and summer months. These are generally moist winds.	It is also known as Off-shore winds. It is formed at night It is often experienced during autumn and winter . These are generally dry winds.

Activity:-

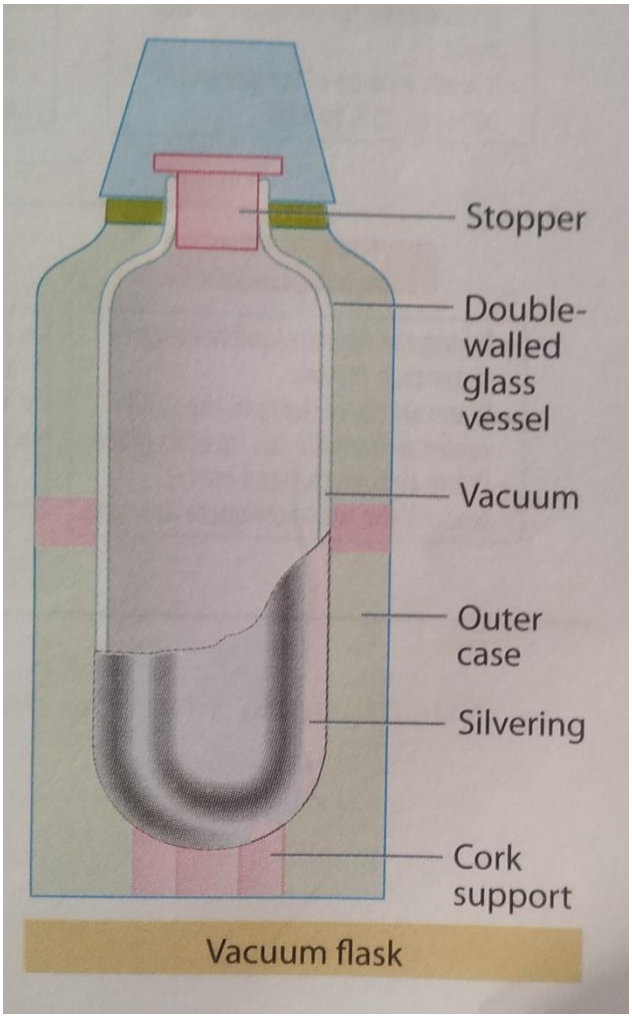
Aim:-Conduction of heat through solids

Method:-Take a knitting needle and six thumb pins. Fix the pins on the knitting needle at a regular distance with molten wax on the head of each pin.Fix the set-up of the experiment as shown in the figure. The pi e Heat one end of the knitting needle and note your observations.

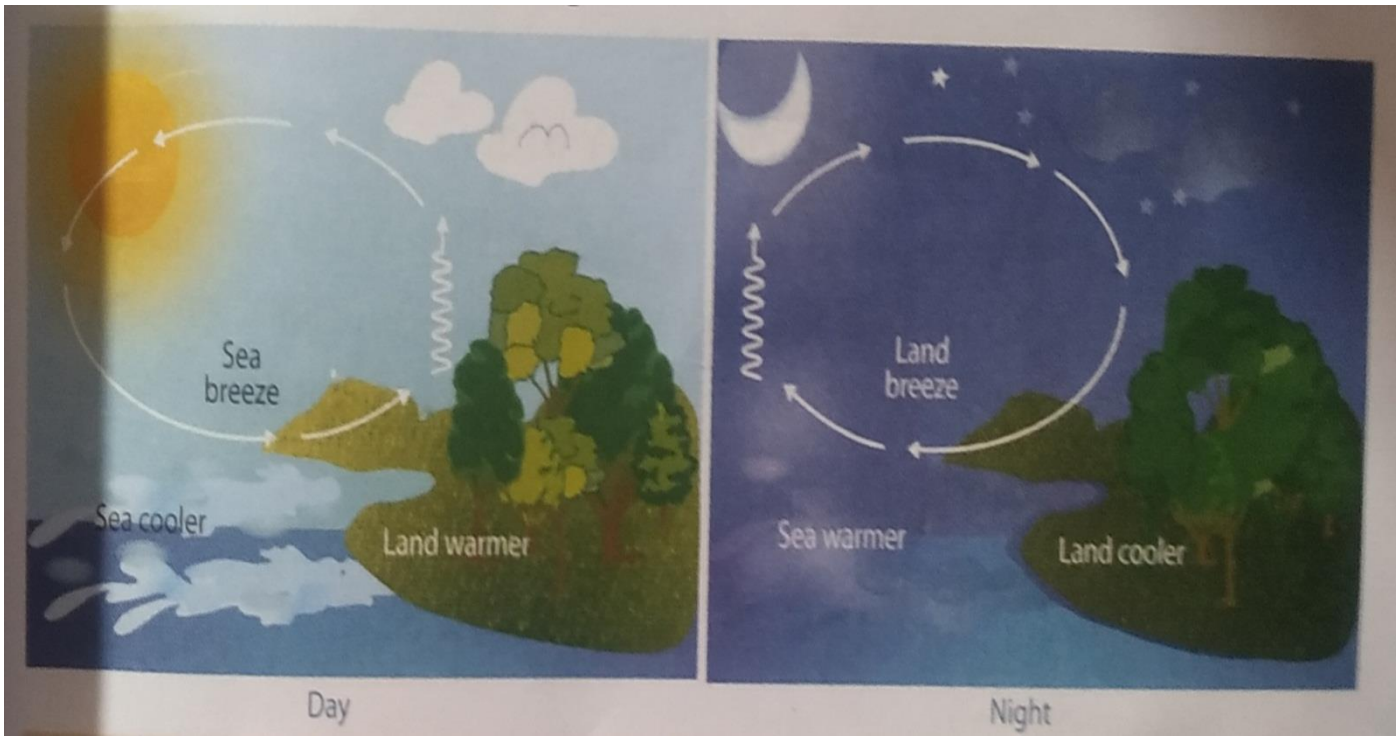
Observation:-You will notice that as soon as the knitting needle starts getting heated, the pins start falling one after the other. The first one to fall is the one closest to the flame and the last to fall is the one farthest from the flame. The transfer of heat from one end of the (solid) needle to another end is known as conduction.

Diagrams:-

The pin closest to the flame is the first to fall



Vacuum flask



Day Night

CHAPTER – 5
ACIDS/BASES AND SALTS

HARD WORDS

1. Indicators
2. Tamarind
3. Organic acid
4. Mineral acid
5. Alkalis
6. Litmus
7. Turmeric
8. Neutral
9. Methyl Orange
10. Phenolphthalein
11. Neutralisation
12. Methanoic acid
13. Hyperacidity
14. Fire extinguisher
15. Antacids

GLOSSARY -

1. Acids – A class of substances which neutralise bases and turn blue litmus red.
2. Bases – A class of substances which neutralise acids and turn red litmus blue.
3. Alkali – A class of substances which neutralise acids and turn red litmus blue.
4. Neutral – A solution that is neither acid nor alkaline.
5. Indicator – A special substance that changes colour in an acidic or alkaline solution.
6. Neutralisation – A reaction between an acid and bases to form salt and water.

Acids, Bases and Salts – Substances are mainly classified into three classes – acidic, basic, and neutral (salt).

6. **Acidic Substances** – The word 'acid' comes from latin word 'acere' meaning sour.Any substances that had a sour taste is called acid.

   Example – Vinegar, Sulphuric acid, nitric acid etc.

Classification of acids on the basis of sources:

1. Organic (Naturally Occuring) acids
2. Mineral Acid

Organic Acid		Mineral Acid	
1.	It is also known as natural acid.	1.	It is also known as inorganic acid.
2.	The acids found in plants and animals are known as natural acids.	2.	The acids prepared from minerals present in the earth's crust are known as mineral acids.
3.	These acids are formed in plants and animals.	3.	These acids are made in laboratory or industries by humans.
4.	The organic acids are weak acids.	4.	The inorganic acids are strong acids.
5.	They are now harmful to consume.	5.	They should never be tasted and should be handled with care.
6.	Example – Citric acid , Tartaric acid, Lactic acid, Uric acid	6.	Example- Hydrochloric acid (HCl), Nitric acid, (HNo_3), Sulphuric acid (H_2SO_4)

Strong Acids		Weak Acids	
1.	The acid which have high concentration of hydrogen ion (H^+).	1.	The acid which have low concentration of hydrogen ion (H^+)
2.	Example – Nitric acid, Hydrochloric acid, Sulphuric acid etc,.	2.	Example- Citric acid, Tartric acid, Malic acid

Concentrated Acids		Diluted Acids	
1.	When large amount of acids are added in small amount of water.	1.	When small amount of acids are added in large amount of water.

<u>Properties Acids –</u>

1. They have a sour taste.
2. They are corrosive in nature.
3. They are good conductors of electricity.
4. They are soluble in water.
5. They react with metals to form salt and hydrogen gas.

$$2\,HCl + Mg \longrightarrow Mg\,Cl_2 + \uparrow H_2$$

Hydrochloric acid Magnesium Magnesium Chloride

Hydrogen Gas

Basic Substances –

Substances that taste bitter and feel slippery to touch are called bases.

- Some bases are soluble in water are called alkalis. Eg; sodium hydroxide (NaoH), potassium hydroxide (KOH).
- Most other metal oxides and hydroxides are insoluble in water they are bases not alkalis. Thus, "all alkalis are bases but all bases are not alkali."

Strong Bases		Weak Bases	
1.	The more number of hydroxide (OH^-) ions a base produces on dissolving water.	1.	The less number of hydroxide ions produces in solution.
2.	Example – Caustic soda, Caustic Potash.	2.	Example- Magnesiun hydroxide, Ammonium hydroxide.

Properties of Bases →

1. They are soapy touch.
2. They taste bitter.
3. Strong bases like sodium hydroxide are corrosive in nature.
4. They react with acids to neutralise them and hence called antacid.

Indicators →

Indicator is a special substance that changes colour in the presence of an acid and a base.

Example – Litmus, turmeric, china rose petals (Gudhal), red cabbage etc. are natural indicators.

Phenolphthalein and methyl orange are synthetic or man-made indicators.

1. **Litmus: A Natural Dye**
   - This is the most commonly used indicator. It is extracted from plants called lichens.
   - It has purple colour in distilled water.
   - When this solution is added to an acid solution, it turns red and when added to a basic solution, it turns blue.
   - Litmus available in the form of strips of paper or in the form of a solution. Commonly, it is available as red and blue litmus papers.
2. **Turmeric as Indicator**
   - It is acidic in nature.
   - It remains yellow in neutral and acidic solution but turns red in alkaline solution.
3. **China Rose as Indicator**
   - It is basic in nature.

- It turns acidic solution to dark pink (Magenta) and basic solution to green.

Red Cabbage as Indicator

Red cabbage contains a pigment which makes it an indicator. On addition of red cabbage indicator, acidic solution turn red, basic solution turn greenish yellow and neutral solution turns purple.

Some other Indicators

Methyl Orange – It is synthetic indicator that gives pinkish colour with acidic solutions and yellow colour with bases.

Phenolphthalein – It is also synthetic indicator. It is colourless in acidic solutions but turns pink in alkaline solution.

Neutralisation

All bases react with acids to form salt and water this process is known as neutralisation. Acids and bases are chemical opposites. They react together and cancel each other out.

The reactions can be written as –

Acid + Base $\longrightarrow$ Salt + Water

Example –

- $HCl + NaOH \longrightarrow NaCl + H_2O$

Hydrochloric acid Sodium Hydroxide Sodium Chloride Water

- HNO_3 + NaOH $\longrightarrow$ $NaNO_3$ + H_2O

  Nitric acid Sodium Hydroxide Sodium Nitrate Water

- H_2SO_4 + 2 NaOH $\longrightarrow$ Na_2SO_4 + H_2O

  Sulphuric acid Sodium Hydroxide Sodium Sulphate Water

The salt obtained can be acidic, basic or neutral in nature.

Neutralisation in Everyday

The neutralisation reactions are very important in our daily life and are very helpful to us.

1.When we are stung by a neetle, the burning sensation on our skin, is caused by methanoic acid. We can neutralise the acid by rubbing a dock leaf on the wound. As we press the dack leaf against the wound, a base in the leaf juices reacts with the acid is the stings and neutralise it. So that the burning sensation stops.

2.A bee sting is acidic and may neutralised by soap which is an alkali. A wasp sting is alkaline and may be neutralised with vinegar which is a weak acid.

3.Sometimes, the stomach produces too much hydrochloric acid called hyperacidity, which causes indigestion. The acid is neutralised by taking a tablet (antacids) containing calcium carbonate, aluminium or sodium hydrogencarbonate.

4.The soda-acid fire extinguisher contains a bottle of sulphuric acid and a solution of sodium hydrogencarbonate. When extinguisher is turned upside down, the acid wires with sodium hydrogen carbonate solution and a

neutralisation reaction takes place. The pressure of carbondioxide produced in the reaction pushes the water out of the extinguisher and onto the fire.

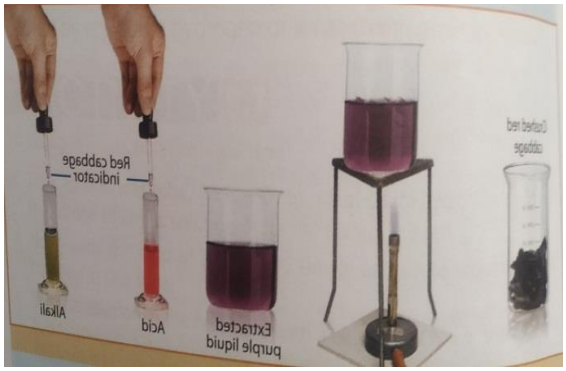
Activity:-

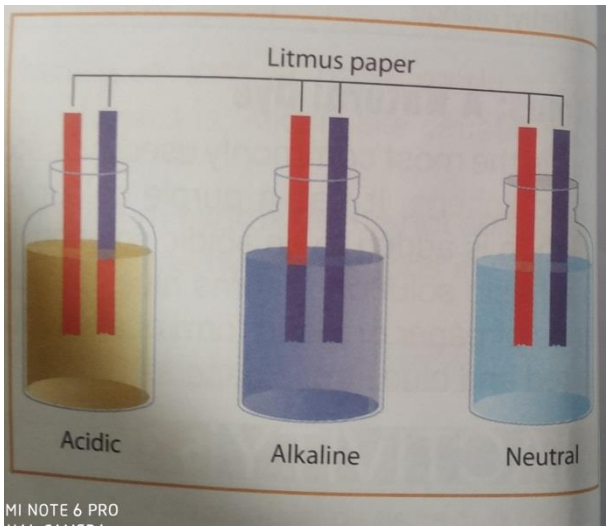
Aim:-Red cabbage as indicator .

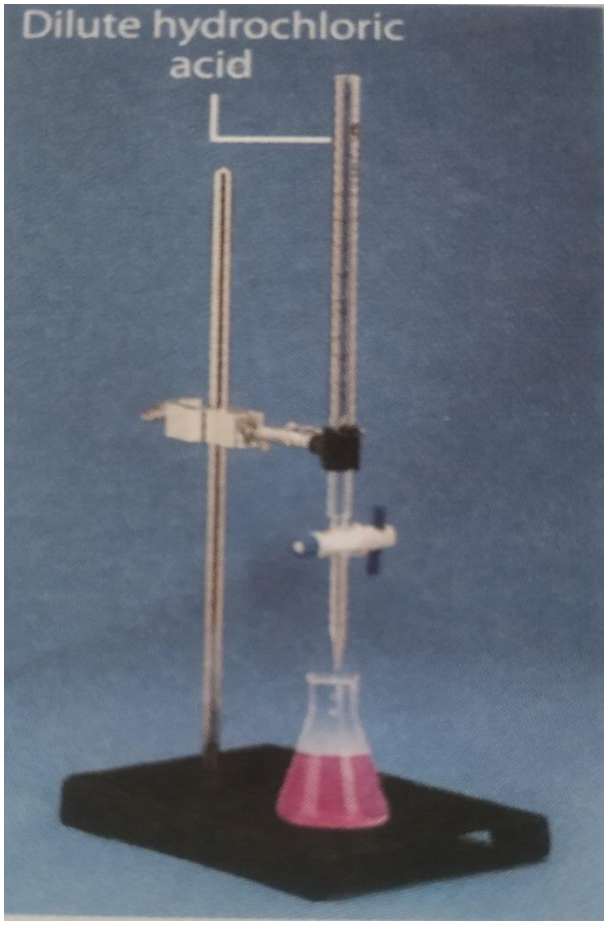
Method:-Take a red cabbage and crush it up finely.Add the crushed leaves to some water. Boil it and allow to cool slightly.Stir the cabbage and water until the water becomes purple with sap from the leaves.Filter the mixture and collect the purple liquid.

Your indicator is now ready. If this indicator is added to an acid, it will become red. If it is added to an alkali, it will become greenish-yellow.

Diagrams:-







CHAPTER – 6

Physical and chemical Changes

DIFFICULT WORDS

- Physical
- Chemical
- Evolution
- Rusting
- Galvanising
- Alloying
- Crytallisation
- Concentrated
- Crystal
- Purified
- Saturated
- Microorganism
- Zinc
- Oxidation
- Irreversible

GLOSSARY

1. **Galvanisation** – A coating of thin layer of zinc on iron.
2. **Rust** - A reddish or yellowish brown coating formed on iron or steel by oxidation.
3. **Decay** – Rot, decompose
4. **Physical Change** – A change that is temporary, reversible and does not form a new substance.
5. **Chemical Change** – A change that is permanent, irreversible and forms a new substance.
6. **Crystallisation** – The process of obtaining crystals from its hot saturated solution.

Change is universal phenomenon. Broadly, Changes are classified into two types

1. Physical Changes
2. Chemical Changes

Physical Changes

Changes in which no new substance is formed, but there is a change in the physical properties like shape, colour or state of the substances are called physical changes.

Example –

1.Melting of ice-cream at room temperature.

2.Dissolving salt in waters

3.Cutting of wood.

4.Physical changes are temporary and reversible.

Chemical Changes

1. A change in which the composition and chemical properties of the substance get changed is called a chemical change.
2. Chemical changes are permanent and irreversible because in these changes a new substance formed.
3. A chemical change is also called Chemical reaction.
4. In addition to new substances, the following may accompany a chemical change.

- ❖ Change in state
- ❖ Change in colours
- ❖ Change in temperature
- ❖ Evolution of a gas
- ❖ Sound may be produced
- ❖ Change in smell

Example –

1. Baking of cake.
2. Cooking of food.
3. Burning of paper.
4. Curdling of milk.
5. Ripening of fruits.

Chemical Reactions in Everyday Life

1. **Rusting of Iron** – It is a Chemical change. This process takes place when iron react with atmospheric oxygen in the presence of water to form different oxides of iron, having a brownish red colour known as rust.

   The process of rusting is represented as –

   $4Fe + 3O_2 + H2O \longrightarrow 2Fe2O3\ H2O$

   Iron + Oxygen + Water $\longrightarrow$ Iron oxide or rust

5. **Prevention of rusting** → Rusting of iron and steel can be prevented by following methods –

   (A) Painting (B) Plastic Coating

   (C) Oiling and greasing (D) Chromium Plating

6. **Galvanising (Zinc Plating)** → It is a method in which a coating of a more reactive metal (zinc) is deposited on iron. This prevents contact of iron with air and thus, prevents rusting.
7. **Alloying** – In this method, the properties of the metal are changed by mixing it with other metals so that it does not rust.

   For eg; Stainless steel is made by mixing iron with chromium, nickel and magnese.

2. **Decaying of organic substances**
3. **Cooking food**

Crystallisation – A crystal is a purest form of solid having a well-defined regular geometrical shape.

The concentration of the solute in the solution rises until the solution is saturated. If heat is removed at the same time and the saturated solution is left to cool slowly, crystals of the substance dissolved start separating. This process is called crytallisation.

It is used to obtain a substance in the pure form.

Obtaining salt from sea water – Salt is obtained from the sea by evaporating the water. Sea water is collected in tanks and allowed to evaporate slowing under the heat from the sun. Water slowly evaporates leaving behind white crystals of the salt which are then purified to obtain table salt. 100g of sea water contains about 3.5g of salt.

6. The food go decay. Why?

Reason – The food goes decays or bad due to chemical reactions brought about by microorganism like fungi, bacteria. These organisms produce enzymes which break down complex organic compounds into simpler substances.

7. How cooking of food takes place?

Reason – Cooking food is an example of chemical change. When we cook food, arrangements of the atoms change. The nutrients contained in raw food break down into smaller molecules when heated. Cooking food is an irreversible change.

Activity:-

Aim:-To obtain salt from a salt solution

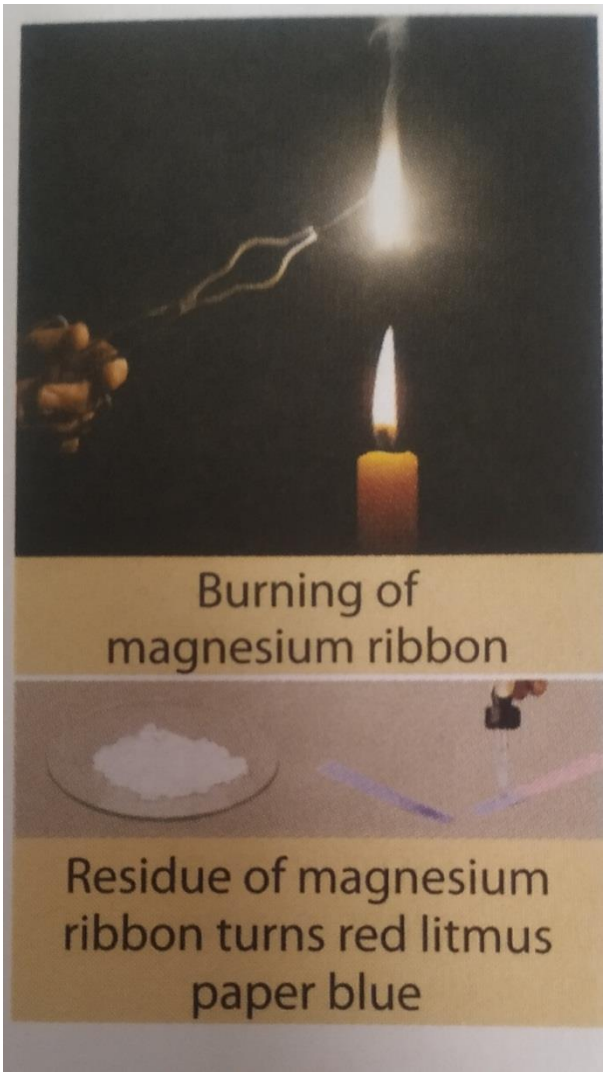
Method:-Pour a little quantity of salt solution into an evaporating dish. Set up the water bath as shown in figure.The dish is heated by the steam from the water in the beaker.What do you see inside the dish?The salt appears as a residue in the evaporating dish.

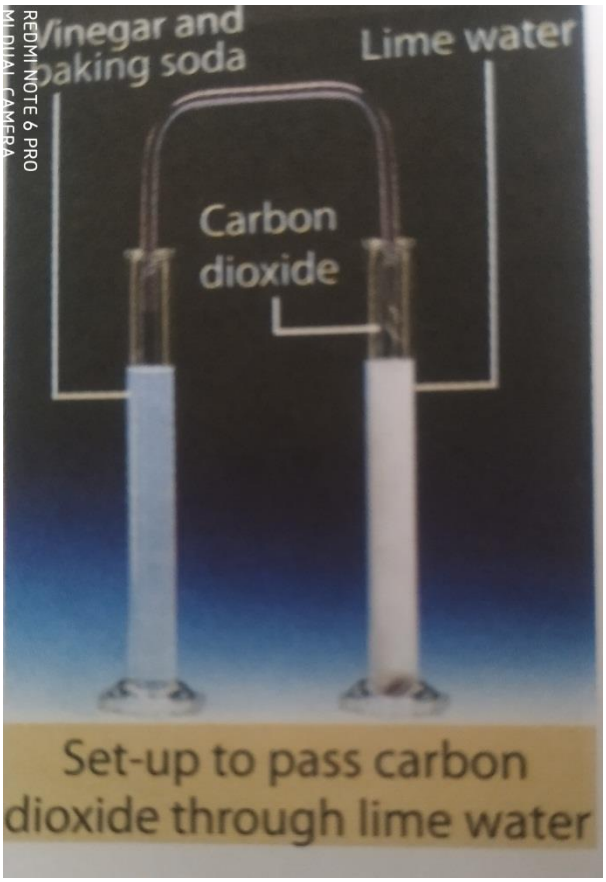
Conclusion: When we heat the solution, water evaporates and small crystals of the salt start to form. This is called the point of crystallisation.

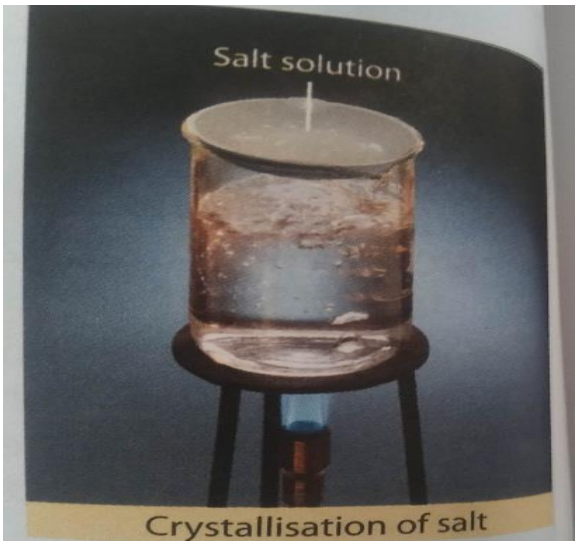
We now have a saturated solution in which no more salt can be dissolvdt As more water evaporates, the crystals of the salt grow bigger.

Diagrams:-


Rusted iron


Burning of magnesium ribbon
Residue of magnesium ribbon turns red litmus paper blue


Vinegar and baking soda
Lime water
Carbon dioxide
Set-up to pass carbon dioxide through lime water


Salt solution
Crystallisation of salt