



**BRIDGE COURSE**  
**Class:VI**  
**Sub:CHEMISTRY**

## **CHEMISTRY AND ITS IMPORTANCE**

### **In this chapter you will learn about**

- \* Various branches of chemistry
- \* Importance of chemistry
- \* General properties of materials
- \* Uses of metals
- \* Alloys
- \* Man made materials
- \* Some common chemistry laboratory apparatus

### **Real Life Applications:**

Chemistry is important in everyday life because Everything is made of chemicals. You are made of chemicals. So is your dog. So is your desk. So is the sun. Drugs are chemicals. Food is made from chemicals.

Many of the changes you observe in the world around you are caused by chemical reactions. Examples include changing colors of leaves, cooking food and getting clean.

To day people are living in luxurious society with more comfort. Invention of new things has been done by the development of science.

The word "science" is derived from a latin word "scientia" which means "knowledge"

### **Chemistry:**

The branch of science which deals with study of materials, especially about their composition, methods of preparation, properties and their reactions with other substances is called chemistry.

### **Various branches of chemistry :**

- |                         |                         |
|-------------------------|-------------------------|
| 1. Organic chemistry    | 6. Geochemistry         |
| 2. Inorganic chemistry  | 7. Marine chemistry     |
| 3. Physical chemistry   | 8. Medicinal chemistry  |
| 4. Analytical chemistry | 9. Industrial chemistry |
| 5. Bio chemistry        | 10. Nuclear chemistry   |

### **Importance of chemistry :**

Chemistry is of such a vital importance that practically there is no human activity, which is directly or indirectly not dependent on it.

**Agriculture :** Chemistry is being helpful in agriculture mainly in three types

i) Chemistry helped in the production of artificial fertilisers to increase the fertility of the soil, which increase food production.

Eg : Urea (first organic compound)

- ii) It helped in the production of fertile seeds(Hybrid seeds).
- iii) It helped in producing chemicals which kills insects, fungi and unwanted herbs.

**Mineral Prospecting :**

- i) Chemistry helps in the extraction of metals from their ores.
- ii) Chemistry shows the way of obtaining useful products, such as petrol, kerosene oil, diesel oil, wax, fuel oil etc.
- iii) It tells, how to manufacture cement.

**Industry :**

- i) Chemistry says about the preparation of alloys, ceramics, strong glasses etc. In industrial process.
- ii) For example steel is the backbone for industries and its invented by chemistry.

Steel is the purest form of carbon

Alloy : Alloy is a mixture of metals or mixture of metals and another elements

Eg : **Bronz** is the alloy of **Copper** and **Zinc**

*Industrial chemistry plays an important role in Consumer products :*

Plastic is invented by chemistry. And also fibres like rayon, nylon, and terylene invented chemistry

**Medicine :**

Bio chemistry plays important role in medicine. In olden days people mainly depended on the plants which have medicinal values in curing diseases

Chemistry has helped in discovering drugs like penicillin, tetracyclin and ampicillin etc. eg : penicillin is an antibiotic discovered by **Alexander Flemming**

**House hold :**

- i) Refrigerating process made by chemistry using CFC. LPG gas for cooking made by chemistry.
- ii) Stainless steel in your kitchens are also made by it.

**Cosmetic industry :**

- i) Powders, creams, nail polishes, lipsticks, cleaning soaps, detergents, etc. are the results done by the chemist.
- ii) Paints, vanishes, grease etc. are also made by chemistry.

**TEACHING TASK**

**I. MCQs with only one option is correct.**

1. The father of modern chemistry is  
A) Priestly                      B) Lavoisier                      C) Dalton                      D) Mendeleev
2. Identify the correct statement:  
The chemists:  
a) Perform experiments with the material under various conditions.  
b) Make careful observations regarding the experiments done  
c) Discover useful materials for the human life  
d) All the above

3. Chemistry is termed as  
A) material science B) Living science C) Both A & B D) None
4. Chemistry helps in the extraction of ..... from their ores.  
A) non metals B) Metals C) Metalloids D) None
5. The material added to the soil to make up the deficiency of essential nutrients are  
A)Herbicides B)pesticides C)Fertilisers D) none
6. The substance that is not used as drug is..  
A) pencillin B) potassium chloride C) tetracycline D) ampicillin

**II. Multi correct answer type:**

1. Which of the following is an example of alloy  
A)brass B) bronze C)stainless steel D) iron
2. Which of the following belong to cosmetic industry  
A)powders B) creams C)nail polishes D) paints
3. Chemistry helps in  
A)agriculture B)in medicine C) in cosmetic industry D)purification
4. Alloy is ....  
A) Mixture of non metals B) Mixture of metals  
C) Mixture of metals and another elements D) All of the above
5. Examples for drugs .....

**III. Find the odd one out. Give a reason for your answer.**

1. CFC, LPG, CNG, detergents.
2. Oil, wax, fuels, steel.
3. Pencillin, tetracyclin, ampicillin, Nylon
4. Bronz, copper, zinc, iron
5. Biochemistry, Organic chemistry, Geochemistry, Biotechnology

**IV. Correct the statements if it is wrong .**

1. Steel is the backbone for industry.
2. Rayon is natural fibre.
3. Urea is the first organic compound.
4. Pencillin is the Antifungal agent.
5. steel is the purest form of carbon.

**IV. Match the following :**

	<b>column - I</b>		<b>column - II</b>
6.	LPG	( )	A). Carbon
7.	Tetracyclin	( )	B). scientia
8.	Science	( )	C). Antibiotic
9.	Bronz	( )	D). Cooking gas
10.	Steel	( )	E). alloy

**LEARNER'S TASK**  
**Beginners (LEVEL-1)**

***I. MCQ with single correct answer:***

1. Name an alloy that is essential for all industries  
A) Gold                      B) Brass                      C) Steel                      D) Bronze
2. Chemistry had helped agriculture in the following ways.  
A) In the production of artificial fertilisers  
B) In the production of better seeds  
C) In the production of Insecticides and herbicides  
D) All the above
3. Artificial fibre from the following is  
A) Jute                      B) Rayon                      C) Cotton                      D) Silk
4. Pick out a medicine from the following  
A) Tetra cycline              B) Urea                      C) Petrol                      D) Terylene
5. Refrigerators use  
A) Petrol                      B) Ceramics                      C) Creams                      D) CFC
6. Man made consumer product is  
A) Wood                      B) Plastic                      C) Coal                      D) Cotton
7. Penicillin is a  
A) Cosmetic                      B) Mineral                      C) Medicine                      D) Paint
8. A cosmetic in the following  
A) Cement                      B) Varnish                      C) Lipstick                      D) Pesticide
9. Penicillin was discovered by  
A) Alexander Fleming      B) Ziegler and Natta      C) Walkman                      D) Abraham
10. The present day chemistry has provided man with more comforts for ..... life.  
A) healthier                      B) happier                      C) both A & B      D) None
11. Preparation of alloy, ceramics, strong gases are prepared by ..... process.  
A) biological                      B) industrial                      C) photo chemical                      D) None
12. The food supply to any society, entirely depends on  
A) Chemistry                      B) Industry                      C) Agriculture                      D) None

**Achievers (LEVEL-2)**

***II. MCQ with more than one correct answer***

1. In agriculture which is/are helpful to increase the food production  
A) Fertilizers                      B) Weeds                      C) Insecticides                      D) Hybrid seeds
2. Which of the following are combustible substances  
A) wood                      B) plastic                      C) fibre                      D) paper
3. Bad conductors of electricity  
A) rubber                      B) metal                      C) plastic                      D) glass
4. Which of the following are medicines  
A) wax                      B) Tetracyclin                      C) Ampicillin                      D) grease
5. Man made fibres from the following  
A) Rayon                      B) Nylon                      C) Terylene                      D) Cotton

6. Properties of alloys  
A) more hard than normal metal B) more resistance towards corrosive  
C) more malleable D) more tensile
7. Which of the following is made with only one kind of matter  
A) diamond B) gold C) silver D) steel
8. Which of the following is a opaque material  
A) wood B) metal C) rock D) glass
9. Which is the solmble substance is water  
A)oil B) salt C) sand D)sugar

**II. Find the odd one out. Give a reason for your answer.**

1. Pesticide, insecticide, mango seed , fertiliser
2. Cotton, jute silk ,Nylon
3. Tetra cycline, Ampicilline, Pencillin, Wax
4. wood, stone, flastic, pager

**III. Correct the statements if it is wrong .**

1. Herbicides are used to kill plant insects.
2. Excess use of artificial fertilizers causes water pollution.
3. Distilled water is a example of substance
4. Ceramic is a bad conductor of heat
5. Glass is a brittle material
6. Air is a good conductor of heat.

**IV. Match the following :**

**column - I**

1. a) Book
- b) Kinfe
- c) Shirt
- d) Shoes

**column - II**

- 1) Cotton fibre
- 2) Paper
- 3) Leather
- 4) Metal

**V. Comprehension type :**

The knowledge of chemistry provided us easy method to extract the chief constitu ent of medicines called drugs from plant and also to synthesis them in the laboratory

1. The drug reduces the fever is  
A)Antiseptic B)Antipyretic C)Antibiotic D)none
2. Antibiotics are also called as  
A)Antibacterials B)Antiviral C)Antiseptic D)none
3. drugs acting on central nervous system are also called as  
A)cardivascular drugsB)analgesic C)Antibiotic D)tranquilisers

### Explorers (LEVEL-3)

#### **Descriptive type questions**

1. How chemistry is being helpful in agriculture?
2. How the chemistry is useful in House hold, Medicine?
3. Define chemistry?

#### **Materials :**

A specific kind of matter which constitute one or more substance is called material

Ex: Iron,Steel,Wood,Plastic,Glass,water etc.

#### **Substance:**

The material which was made-up of only one kind of matter (either solids, liquids or gases) is called as substance.

Ex: Solid substance : All metals (except Mercury) glass,plastic

liquid substance : Water, oil, kerosen

Gaseous substance : Hydrogen, Oxygen, Air

#### **Metals :**

These are shiny in appearance, flexible, conductors of electricity and heat, hard and strong, malleable and ductile and sonorous.

Ex : Iron, Cobalt, calcium, mercury, copper

#### **Glass :**

Glass is shiny, smooth and hard, non flexible and brittle, nonconductors of electricity, conductors of heat, on heat can be moulded to any shape.

#### **Ceramic :**

Ceramic is made from dried clay and is polished. We cannot see through them. It is shiny, smooth, hard, breakable, poor conductor of electricity and good conductor of heat.

#### **Plastic :**

It is flexible, float on water, bad conductor of electricity, melts on heating, catches fire can be moulded into various shapes. These are transparent or translucent.

#### **Translucent :**

A small amount of light passes through a material is called translucent.

Ex: Oil on white paper

#### **Opaque :**

opaque materials do not allow light to pass through them.

eg: Wood, metal, rock and walls are opaque.

#### **4) Conductivity :**

i) Materials which allow electric current and heat to pass through them easily are called good conductors of electricity and heat.

Ex: Metals are good conductors. (Tungston is metal but it is a bad conductor of electricity)

iii) Material which do not allow electric current and heat to pass through them are called bad conductors of electricity and heat.

Ex: All Non metals ( except Graphite), Wood, rubber, plastic are example.

Air is a bad conductor of heat.

**5) Combustible substances :**

The materials which catch the fire on heating are called combustible substances.

Wood, plastic, fibre and paper are examples.

**6) Solubility :** When substances dissolve in water are called solubility

sugar, salt are said to be soluble in water and oil, sand, kerosene are said to be insoluble in water.

The grouping of matter on the basis of their properties or characters is called ' classification'.

**Uses of metals :**

i) Gold, silver, copper, iron, tin, lead, zinc, aluminium and mercury are some common metals.

ii) Gold used in jewelry, filling cavities in teeth, space satellites and in Ayurvedic medicines.

iii) Silver used in ornaments, water purifiers. Ayurvedic medicines [filling cavities in teeth and high quality mirror preparation] salts of silver used in photographic films, artificial raining.

iv) Copper used in electric transmission wire, making utensils, statues, transistors, televisions, making alloys and coins.

v) Iron is used in construction of sailing ships, building, automobiles, railway bridges, railway lines and making of alloys.

vi) Aluminium is used in high voltage electric transmission wires, packing of food materials and medicines in making alloys used for air craft frames.

vii) Mercury is used in thermometers and in filling cavities.

**Alloys :** A homogenous mixture of two or more molten metals is called alloys.

To improve the malleability, ductility, tensile, strength, hardness, resistance to corrosion etc, of metals alloys are formed.

**i) Alloyed gold :**

Gold is mixed with copper to make gold hard.

**ii) Brass :**

It is the alloy of zinc and copper. It is more malleable and ductile than copper.

**iii) Bronze :** It is a mixture of copper, zinc and tin.

It is used in status and medals.

**Man-made materials :**

→ Cement, glass, plastics, soaps and detergents, paints and medicine are man made.

**Cement:** It is dirty greenish-grey heavy powder, which when mixed with water sets to form hard like mass.

**Raw Materials:** The raw material required for the manufacture cement are

- i) Lime stone which provides calcium and
- ii) Clay which provides aluminium and silica,

**Uses:** 1) Pure cement is used for grouting. The spraying of dry cement evenly on a wet surface is called grouting. This gives a very smooth finishing on the plastered surface  
2) a mixture of 1 part of cement and four parts of sand is used to make a thick slurry, commonly called cement mortar which is used for joining bricks and plastering  
3) The mixture of cement and aggregate (stone chipping gravel) with water is called concrete. It is used for making floors of any kind of wellings.  
4) When the concrete is allowed to set around steel rods or mesh, the resulting structure is called re-inforced cement concrete. It is very strong and long lasting.

**Glass:** important of glass lies in it in home and industry due to the following properties 1) It is transparent and hence allows us to see through it .  
2) it is a bad conductor of heat and electricity  
3) it does not react with strong acid or bases  
4) it can be easily moulded into any desired shape.

**Different types of glasses are**

- 1) water glass
- 2) soft glass /soda glass
- 3) hard glass/potash lime glass
- 4) optical glass
- 5) pyrex glass/borosil glass
- 6) shatter proof glass /sandwich glass

Different types of glasses are used in window panes, glass bottles, laboratory apparatus, lenses for spectacles, telescopes, microscopes, and automobiles as wind shield.

**Plastic and polymers:** The word "Polymer" is from two Greek words "poly" means many and "meros" means parts of units. Hence a polymer is a macromolecule built up by the linking together of a large number of smaller molecules called monomers.

The process of conversion of monomers into polymer is called **Polymerisation**

Based on their source, polymers are classified into two types

1. Natural polymers (Starch, cellulose, proteins, natural rubber)
2. Synthetic polymers (Plastics, Poly vinyl chloride, polythylene, nylon, bakelite)

**Plastics :** These are polymers possess the property of plasticity (made into any desirable shape).

**characters of Plastics**

- 1) these are chemically resistant
- 2) weather resistant
- 3) light in weight
- 4) tough in nature
- 5) electrical insulators
- 6) good appearance



## Types of plastics

**1)Thermo plastics:** These plastics which are softened on heating and set again on cooling. Such plastics are useful because they can be remoulded

Ex: Polythene, PVC

**2)Thermo setting plastics** These plastics are rigid in nature and can be heated to mould only once into desired shape. Ex;Bakelite, Melamine

**Uses:**plastics are used in T.V. cabinets, water tanks, water pipes, electrical switches, cups, plates and dinner sets.

**Soap:** Soap is sodium or potassium salt of fatty acids. Oliv oil,cotton seed oil, rape seed oil, coconut oil etc are fatty acids.

The reaction which involves the formation of soap is known as **Saponification** reaction. It can be represented as

vegetable oil + sodium hydroxide  $\rightarrow$  Soap+glycerine

Glycerine is the bi-product obtained in the manufacture of soap

## Types of soaps:

- 1)washing soap    2)bathing soap    3)medicated soap    4)transparent soap  
5) Scouring soap    6) Soft soap/Liquid soap

**Uses:**  $\rightarrow$  Soaps and detergents are used in bathing and cleaning.

## TEACHING TASK

### **I MCQ with single correct answer:**

- A homogeneous mixture of two or more molten metals is  
A) Bronze                      B) Pure Gold                      C) Mercury                      D) Aluminium
- In gold ornaments; gold is mixed with  
A) Copper                      B) Gold                      C) Iron                      D) Aluminium
- The brilliant shine over the freshlycut surface of a metal is called  
A) Tensile strength                      B) Metallic lustre                      C)Ductility                      D) Malleability
- Sodium or potassium salts of higher fatty acids are called  
A) Soaps                      B) Sugars                      C) Detergents                      D) None
- The by product obtained in the manufacturing of soap is  
A) Fat                      B) Glycerine                      C) Water                      D) None
- The plastic which can be heated and moulded only once are called as  
A) Thermo setting plastics                      B) Thermo plastics  
C) Thermo fitting plastic                      D) Both A & B
- The reaction which involves the formation of soap  
A)saponification                      B) Emulsification                      C both                      D)none
- When a small amount of light passes through a material, it is called as  
A) Opaque                      B) Transparent                      C) Translucent                      D) Ceramic
- Example for transparent material  
A) Ceramics                      B) Wood                      C) Water                      D) Asbestos

10. The term used for a particular kind of matter; which is used for making things is called as  
 A) Substance                      B) Material                      C) Matter                      D) Metal
11. A bad conductor of heat is  
 A) Air                      B) Glass                      C) Silver                      D) Mercury
12. When we beat a malleable substances it  
 A) Breaks into pieces                      B) Is drawn into thin wires  
 C) Becomes soft                      D) Spreads into sheets
13. Ceramic is made from it  
 A) Glass                      B) Dried clay                      C) Rubber                      D) Plastic

**II. MCQS with more than one answer:**

1. what are the properties of plastic.  
 A) tough in nature      B) good appearance      C) chemical resistant      D) remoulded

**II. Odd one out:**

1. cups, plates, dinner sets, polythene.

**III. Correct the statements if it is wrong:**

1. soap contain glycerine.  
 2. PVC is an example of thermoplastic.

**LEARNER'S TASK**

**Beginners (LEVEL-1)**

**I. MCQ with single correct answer:**

1. Pure cement is used for  
 A) Plastering      B) Grouting      C) Constructing building      D) Making bricks
2. Alloy of Zinc and copper  
 A) Bronze      B) Steel      C) Brass      D) Gold Ornaments
3. Metal used in Ayurvedic medicines and in filling teeth cavities  
 A) Silver      B) Iron      C) Aluminium      D) Copper
4. The solution of a metal in mercury is called .  
 A) Alloy      B) Amalgam      C) Liquid non - metal      D) Metalloid
5. Identity the metal that does not rust even in moisture air.  
 A) Lead      B) Copper      C) iron      D) Tin
6. Gold amalgam and silver amalgam are used in dentistry for  
 A) Making artificial tooth                      B) Filling tooth cavities  
 C) Removing spoiled tooth                      D) Replacing worn tooth.
7. Which of the following plastic can be easily remoulded  
 A) PVC      B) Bakelite      C) Melamine      D) None
8. Smallest repeating unit of polymer is  
 A) Monomers      B) Rubber      C) Dimer      D) None

9. The greenish grey heavy powder among the following is  
A) Coal                      B) sand                      C) cement                      D) None
10. A substance which is nonconductor of electricity but a conductor of heat is  
A) Metal                      B) Plastic                      C) Glass                      D) Fibre
11. Property of a ceramic is  
A) Good conductor of electricity                      B) Transparent  
C) Catches fire                      D) Shiny and conducts heat
12. Hardest Material known to us  
A) Ceramic                      B) Gold                      C) Diamond                      D) Glass
13. Lustrous appearance is the property of  
A) Wood                      B) Rock                      C) Metal                      D) Rubber
14. The materials which catch fire on heating are called  
A) Malleable substances                      B) Combustible substances  
C) Ductile                      D) Brittle
15. The material which is insoluble in water is  
A) Sugar                      B) Salt                      C) Lemon juice                      D) Oil
16. Bad conductor of electricity among the following substances  
A) Wood                      B) Copper                      C) Aluminium                      D) Iron
17. The total amount of matter and ..... available in the universe is fixed.  
A) solid                      B) liquid                      C) gases                      D) energy
18. Plastic is ..... conductor of electricity.  
A) bad                      B) good                      C) semi                      D) None
19. The substance is flexible can be spun into threads catches fire is  
A) glass                      B) ceramic                      C) fibre                      D) plastic

**Achievers (LEVEL-2)**

**II. MCQ with more than one correct answer**

1. Which of the following is/are thermo setting plastics  
A) Bakelite    B) Melamine                      C) PVC                      D) Polythene
2. The substance that is responsible for hardening cement, when get in contact with water  
A) Calcium sillicate    B) calcium aluminate    C) gypsum    D) None
3. The man made fibres are  
A) Rayon                      B) Nylon                      C) Terylene                      D) Cotton
4. which of the following are combustibile substances  
A) wood                      B) plastic                      C) fibre                      D) paper
5. Properties of alloys  
A) more hard than normal metal                      B) more resistance towards corrosive  
C) more malleable                      D) more tensile
6. bad conductor of electricity  
A) rubber                      B) metal                      C) plastic                      D) glass

**III Find the odd one out. Give a reason for your answer.**

- 1) Brass, Bronze, Steel, Silver
2. Starch, Cellulose, Proteins, Plastics
3. cotton, jute, silk, nylon
4. Rayon, Nylon, Terylene, Cotton
5. Glass, Water, Plastic, Oily white paper
6. Wood, Metal, rock, glass

**IV. Correct the statements if it is wrong .**

1. Cement is a dirty greenish grey heavy powder
2. Sodium or potassium salts of higher fatty acids are called detergents
3. Plastics are non-biodegradable substances
4. Lustrous appearance is the property of metals
5. Oily white paper is opaque material
6. Plastic is good conductor of electricity

**V. Matching**

- |    |                       |         |                            |
|----|-----------------------|---------|----------------------------|
| 1. | A. Bakelite           | (     ) | 1. Thermo plastic          |
|    | B. Cellulose          | (     ) | 2. Thermo setting plastics |
|    | C. PVC                | (     ) | 3. Natural polymer         |
|    | D. Soap               | (     ) | 4. fatty acids             |
|    | A) a-2, b-3, c-1, d-4 |         | B) a-4, b-3, c-2, d-1      |
|    | C) a-2, b-1, c-4, d-3 |         | D) a-3, b-4, c-2, d-1      |
| 2. | a) Glass              | (     ) | 1) Translucent             |
|    | b) Oily white paper   | (     ) | 2) Transparent             |
|    | c) Wood               | (     ) | 3) Bad conductor of heat   |
|    | d) Air                | (     ) | 4) Opaque                  |
|    | A) a-1, b-2, c-3, d-4 |         | B) a-4, b-3, c-2, d-1      |
|    | C) a-2, b-1, c-4, d-3 |         | D) a-3, b-4, c-2, d-1      |

**Explorers (LEVEL-3)**

**VI. Descriptive type questions**

1. Write the uses of metals ?
2. What are soaps ? Name the by product of obtained in the manufacturing of soap?
3. Define alloys with examples?
4. Write the characteristics of plastics?
5. Explain types of plastics?
6. Define material ?
7. Define conductivity ?
8. Define malleability and ductility?
9. what is meant by combustible substances?

### **Some common chemistry laboratory apparatus :**

**a) Test tube :** i) The test tubes are of various sizes and are made from different types of glass. Small test tubes are used for salt analysis and big test tubes are used for boiling the solution ii) Boiling test tubes are made up of pyrex glass which is harder than normal glass. Hence these test tubes are called as hard glass test tubes or boiling test tubes.

**b) Test tube holder :** It is a kind of an iron tong provided with wooden or plastic handle. It is used for holding test tube, when a substance is being heated.

**c) Test tube stand or Test tube rack :** It is a plastic or wooden stand for keeping test tubes in position.

**d) Round bottomed flask :** It is a glass container with a spherical bulb and a narrow cylindrical neck. It is generally used to perform synthesis reactions which require heating.

**e) Flat bottomed flask :** It is glass container with a spherical bulb, which is flattened at the base and is provided with cylindrical neck. It is used for the mixing / storing chemicals in the form of liquids.

**f) Conical flask :** It is cone shaped flask with a flat base and provided with a cylindrical neck. It is used in volumetric analysis for carrying out titrations.

**g) Beaker :** It is an open glass container, cylindrical in shape and provided with a lip for pouring our liquids. The beakers are of different sizes such as 50cc, 100cc, 250cc, 500cc.

**h) Glass tubing :** It is a hollow glass tube, of 3mm diameter and open at both ends. It is generally used for shaping delivery tubes of various shapes by heating.

**i) Glass rod :** It is a solid glass tube of 3 mm diameter. It is generally used for stirring chemicals in the form of liquids.

**j) Funnel :** It is a conical vessel provided with long tapering neck and is made from glass or plastic. It is employed for pouring out liquids from one vessel to another without causing any spilling.

**k) China dish or evaporating dish :** It is made from porcelain. It is used for evaporating chemicals in the form of solutions by heating.

**l) Pipette :** It is a long narrow tube provided with a nozzle at one end a bulb in the middle. A circular mark is made in its neck which signifies the volume of liquid, it can measure. It is used for measuring fixed volume of liquid chemicals and then transferring it to another vessel.

**m) Burette :** It is a long graduated tube provided with a glass stopcock at its bottom end. It has a capacity of 50ml. It is used for pouring out a fixed volume of liquid (less than 50ml) chemicals.

**n) Measuring cylinder or graduated cylinder :** It is a cylindrical glass vessel provided with a flat base and a lip near the top. It is used for measuring a definite volume of a liquid and then pouring it out in another vessel.

**o) Iron stand :** It is used for holding glass apparatus (generally round bottomed flask or hard glass test tube) in a specific position.

**p) Tripod stand :** It is a triangular hollow frame provided with three legs, and is used for supporting glass apparatus, which needs heating.

**q) Asbestos wire gauge :** It is an iron wire mesh provided with a thin sheet of asbestos in the middle. It distributes heat from the burner evenly to the glass apparatus and hence prevents its cracking.

**r) Pestle and mortar :** It is made from glazed porcelain. The solid substances are placed in mortar and then gently hammered with pestle so as to powder them.

**s) Spirit lamp :** It is a flat cylindrical vessel made of glass or brass and provided with a brass neck through which passes a thick cotton wick. It is filled with methylated spirit. On ignition the spirit burns to produce a very hot flame, which is used for heating chemicals.

**t) Bunsen burner :** Modern chemistry laboratories use Bunsen burner, in place of spirit lamp for heating purposes.

### TEACHING TASK

#### **I. MCQ with single correct answer:**

- Which of the following is a glass container having a spherical bulb and a narrow cylindrical neck?  
A) Conical flask    B) Boiling test tube    C) Measuring cylinder    D) R.B flask
- Which of the following is used for heating chemicals and is having methylated spirit as fuel?  
A) Spirit lamp    B) Stove    C) Bunsen burner    D) None
- An apparatus used for evaporating chemicals in the form of solution by heating is  
A) Pestle and mortar    B) Spirit lamp    C) China dish    D) None
- Which of the following are used for measuring fixed volume of the liquids  
A) Pipette    B) Burette    C) Both A & B    D) None

#### **II. MCQ with more than one correct answer**

- The apparatus used in titration of chemicals  
A) Burette    B) Pipette    C) Conical flask    D) Mortar
- Which of the following apparatus having spherical bulb  
A) beaker    B) round bottom flask    C) flat bottom flask    D) pipette
- Which of the following are useful for boiling.  
A) test tube    B) boiling test tube    C) pipette    D) beaker

#### **III. Find the odd one out. Give a reason for your answer.**

1. pipette, beaker, spirit lamp, burette.
2. test tube, boiling tube, beaker, iron stand.

#### **IV. Correct the statements if it is wrong .**

1. burette capacity is 50ml
2. diameter of glass rod is 3mm.

## **LEARNER'S TASK**

### **Beginners (LEVEL-1)**

#### ***I. MCQ with single correct answer:***

1. Test tube is made up of  
A) pyrex glass      B) green glass      C) white glass      D) none
2. It is a glass container with a spherical bulb and narrow cylindrical neck  
A) boiling tube      B) round bottom flask  
C) flat bottom flask      D) Conical flask
3. Identify the apparatus with the hints given below ?  
i) It is a kind of an iron tong provided with wooden plastic handle  
ii) It is used for holding test tube, when a substance is being heated.  
A) Test tube stand      B) test tube rack      C) Test tube holder      D) None
4. Apparatus used to pour liquids from one vessel to another without causing spilling  
A) Glass rod      B) Beaker      C) Funnel      D) Conical flask
5. To measure and transfer fixed volumes of liquids, we use  
A) Glass tube      B) Pipette      C) China dish      D) Beaker
6. For keeping test tubes in position; we use  
A) Test tube holder      B) Test tube stand      C) Wire gauze      D) Iron stand
7. Pyrex glass is used to make  
A) Boiling test tube      B) Test tube      C) Beaker      D) Pipette
8. To make a powder of chemicals; laboratories use  
A) Grinder      B) Mixer      C) Mortar and Pestle      D) China dish
9. Capacity of a burette is  
A) 10ml      B) 20ml      C) 50ml      D) 60ml
10. stirring or mixing liquid chemicals, we use  
A) Glass rod      B) Glass tube  
C) Glass test tube      D) Glass beaker
11. Spirit lamp is filled with following fuel  
A) kerosene      B) Oil      C) Methylated spirit      D) Petrol
12. Minimum unit of Burette is  
A) litre      B) ml      C) 0.1ml      D) 0.1litre
13. It is made from glazed porcelain. The solid substance are hammered with an powder them.  
A) Spirit lamp      B) tripod stand      C) pestle      D) None
14. It is a cylindrical glass vessel provided with a flat base and lip near the top  
A) burette      B) graduated cylinder      C) Pipette      D) None
15. An apparatus used to spread heat evenly, under a glass apparatus is  
A) Tripod stand      B) Iron stand  
C) Wire gauze      D) Bunsen burner

16. An apparatus used for measuring small and fixed volume of a liquid is  
 A) Burette            B) Pipette            C) Measuring cylinder    D) Conical flask
17. China dish or evaporating dish is made from  
 A) cement            B) porcelain            C) glass                    D) plastic
18. Modern chemistry laboratories use ... in place of spirit lamp  
 A) LPG stove        B) Kersone lamp    C) Bunsenburner        D) None

**Achievers (LEVEL-2)**

**II. MCQ with more than one correct answer**

1. Which of the following can be used to measure the volume of the liquids  
 A) Conical flask        B) Pipette    C) Burette    D) Measuring cylinder
2. Which of the following equipments has a lip for pouring out liquids  
 A) Conical flask        B) Measuring cylinder  
 C) Beaker                D) Boilling test tube
3. Which of the following equipments are used for holding the glass apparatus when the substance is being heated  
 A) funnel        B) burette        C) iron stand    D) test tube holder
4. The apparatus used for mixing/ stirring chemical is/ are  
 A) Conical flask        B) china dish    C) pestle and mortar    D) flat bottomed flask

**III. Find the odd one out. Give a reason for your answer.**

1. Conical flask, pipette, Burette, Measuring cylinder  
 2. Measuring cylinder, Beaker, Boilling test tube

**IV. Correct the statements if it is wrong .**

1. Boiling test tubes are made up of pyrex glass  
 2. Modern chemistry laboratories are using spirit lamps  
 3. Asbestos wire guage distribute heat from the burner evenly

**V. Matching :**

- |                            |            |                            |
|----------------------------|------------|----------------------------|
| A. Test Tube holder        | (        ) | 1 Made from porcelain      |
| B. Glass tubing            | (        ) | 2 stirring chemicals       |
| C. Glass rod               | (        ) | 3 Pyrex glass              |
| D. China dish              | (        ) | 4 Wood or plastic handle   |
| E. Boiling test tube       | (        ) | 5 Shaping delivery tubes   |
| A) a-2, b-3, c-1, d-4, e-5 |            | B) a-4, b-5, c-2, d-1, e-3 |
| C) a-2, b-1, c-4, d-3, e-5 |            | D) a-5, b-4, c-2, d-1, e-3 |



**VI. comprehension type:**

The aim of chemical analysis is either to identify or to estimate the amount of chemical species present in a given sample. There are two types of chemical analysis 1) qualitative analysis 2) quantitative analysis

1. Identification of substances based on their physical and chemical properties  
A) qualitative analysis B) quantitative analysis c) Either A or B D) neither A or B
2. Analysis of amount of substance is called  
A) qualitative analysis B) quantitative analysis c) Either A or B D) neither A or B
3. Which helps in measuring the mass of a chemical substance more specifically  
A) Physical balance B) spring balance c) Common balance D) none

**VII. Descriptive type questions**

1. Write how the following are being useful in laboratory?  
A) Conical flask B) Funnel C) Pipette D) Beaker
2. Name any two apparatus which are used to measure volume of the liquids?
3. Write the importance of Borax glass used in the chemical laboratory?