

## **Std -6 Sub -Chemistry**

### **Ch -1 Introduction to chemistry**

#### **1.Chemistry-**

**.The branch of science that deals with the study of the behaviour and composition.**

**.Experiments with chemicals are conducted in well equipped laboratories called chemistry laboratories.**

#### **2.Apparatus used on chemistry lab-**

**Test tube, test tube holders, test tube rack, flask, funnel, beaker etc**

#### **3.Areas of science-**

**Physical science -physics , chemistry, geology, astronomy**

**Life science -Botany , zoology.**

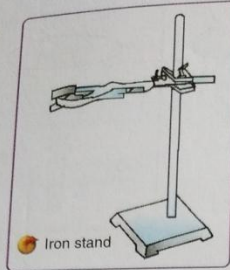
**4.Science - derived from latin word 'scientia ' which means 'knowledge'.**

#### **5.Experimental investigation (scientific method)-**

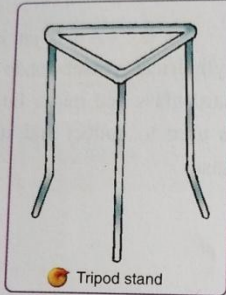
**.Identifying the problem.**

**.collecting information about the process.**

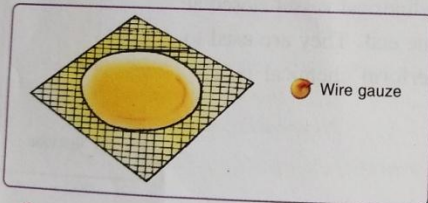
**Iron stand :** It consists of an iron platform with an iron rod and one or two clamp. It is used to suspend and hold apparatus.



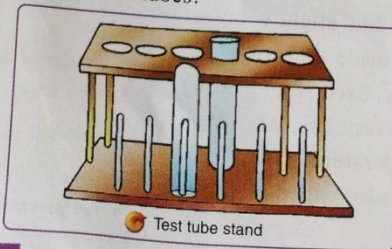
**Tripod stand :** It is a stand with three legs. It is used for keeping glassware like beaker, flask etc., for heating.



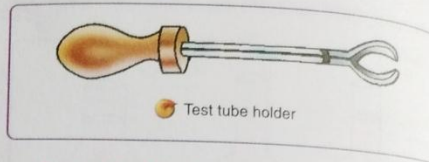
**Wire gauze :** It is a square iron net with asbestos gauze in the centre. It ensures uniform distribution of heat.



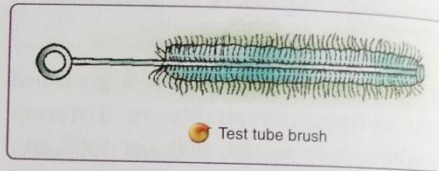
**Test tube stand :** Made of wood or plastic. A test tube stand is used for supporting test tubes.



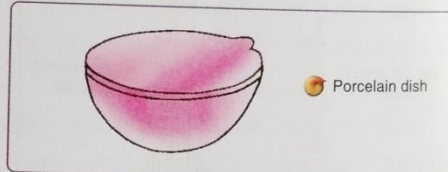
**Test tube holder :** A test tube holder is a metal strip with a wooden or plastic handle. It is used for holding the test tube while it is being heated.



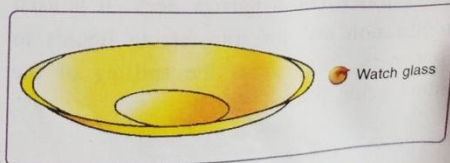
**Test tube brush :** It is a coiled iron wire with plastic bristles. It is used to clean test tubes and other glassware, such as flasks.



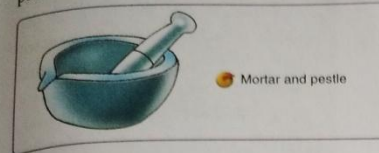
**Porcelain dish :** It is an open and shallow container made of porcelain. It is used for evaporating liquids or concentrating solutions. It can absorb a large amount of heat without breaking.



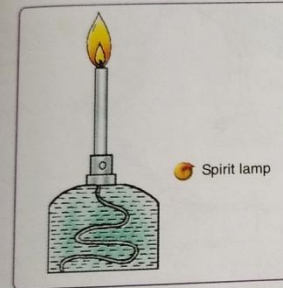
**Watch glass :** It is a saucer shaped small glass vessel used for holding small quantities of solutions or water or powdered substances for observation.



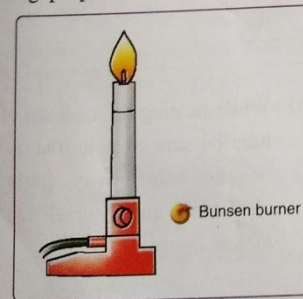
**Mortar and pestle :** Solid substances are ground into powder in a mortar with the help of a pestle. The mortar and pestle are made of porcelain.



**Spirit lamp :** It consists of a tank (made of glass or steel) containing spirit. It has a neck through which a cotton wick passes. The wick soaks up the spirit and burns when lighted. It is used for heating.



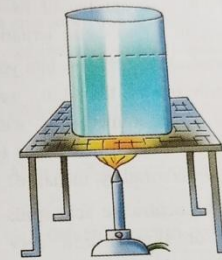
**Bunsen burner :** It is a burner which uses gas as a fuel to produce the flame. It is used for heating purposes.



## 1 Activity

Get ready for a simple experiment !

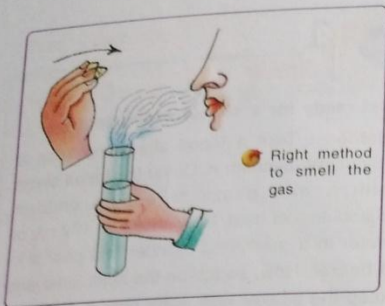
**Method :** Take a tripod stand and keep a spirit lamp beneath it. Cover the tripod stand with a wire gauze to ensure uniform distribution of heat. Now, measure 100 mL of water in a graduated cylinder and pour it in a beaker. Now, switch on the spirit lamp and keep the beaker with water over it. Note the time taken to evaporate 100 mL of water.



**Observation :** 1. The time taken to evaporate 100 mL of water is .....  
2. Count the number of laboratory apparatus used in the above paragraph.

## PRECAUTIONS TO BE TAKEN IN A CHEMISTRY LABORATORY

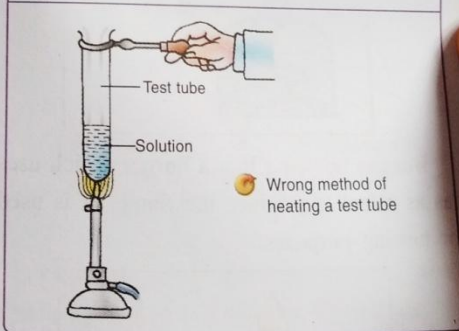
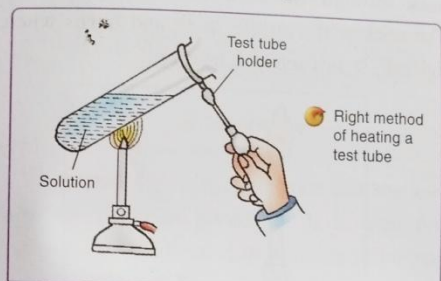
1. It is advisable to wear a laboratory coat or an apron to protect the clothings.
2. Never taste a chemical or inhale extensively its vapours until you are asked to do so by your teacher.



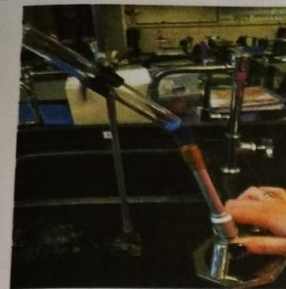
3. When a chemical is not in use, its container should be closed tightly to prevent it from spilling or its vapours diffusing in air to cause irritation.
4. If a chemical reagent gets into your eyes or mouth or on the skin, wash the affected areas immediately with cold water and report the incident to your teacher or laboratory incharge.
5. In order to neutralise acid spills on the clothing or skin, use a very dilute ammonia or sodium bicarbonate solution.
6. Keep inflammable chemicals like alcohol acetone etc., away from the burner.
7. Never add water to a concentrated acid like sulphuric acid. Such an addition generates a lot of heat which may break the glass container causing a dangerous spill. Always add acid to water slowly, stirring continuously.
8. Never throw a burning matchstick or a burning paper into a sink where it may ignite a discarded flammable liquid.
9. You are required to take extra precautions while heating a chemical or

mixture in a glass container. Some of these precautions are briefly described below :

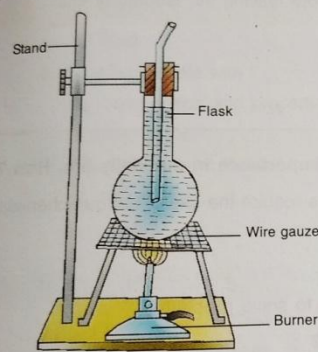
- (a) To heat a chemical substance in a test tube, apply the flame at the upper layer of the liquid as shown in the figure. Never apply the flame at the bottom of the test tube as it may cause the liquid to boil over. Moreover, the test tube should first be heated gently and then strongly at the outer part of the flame, with continuous shaking.



- (b) While heating the contents of a test tube be sure to point the open end of the tube away from your classmates and yourself as shown in the figure.



Right method of holding test tube while heating



Right method of heating the contents of a flask

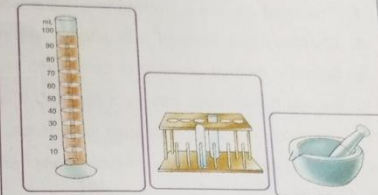
10. Chemicals can be absorbed through the skin. Thus, it is a good habit to wash your hands immediately after they come in contact with any chemical.



These rules of laboratory safety should not instill in a fear of chemicals. Their purpose is to create a healthy awareness of potential laboratory hazards and to improve your efficiency.

## Worksheet

### I. Name the following :



### II. Give one word for the following :

1. Apparatus used for filtration - FUNNEL, FILTER
2. Evaporating dishes are made-up of - PORCELAIN
3. A jar used to store gases - GAS-JAR
4. A substance used to produce heat - BEAKER
5. Solid substances are ground into powder in a - MORTAR

### III. Fill in the blanks with suitable words :

1. Measuring cylinder is a GRADUATED glass cylinder.
2. A glass tube used for heating substances at high temperature is known as HARD GLASS TUBE
3. Mortar and pestle are made of PORCELAIN
4. If chemical falls on your hand, wash it with COLD WATER
5. Keep INFLAMMABLE chemicals away from the burner.

## Objective Questions

### A. TICK (✓) THE MOST APPROPRIATE ANSWER :

- Chemistry is a topic, which is :  
 (a) Theoretical  
 (c) Totally theoretical  
 (b)  Practical  
 (d) None of these.
- A hypothesis can be regarded as :  
 (a) An absurd idea  
 (c) A theory  
 (b)  A tentative suggestion  
 (d) Practical work.
- CO<sub>2</sub> gas turns blue litmus paper :  
 (a) Blue  
 (c)  Red  
 (b) Green  
 (d) Colourless.
- Chemistry deals with :  
 (a)  Composition and properties of substances  
 (c) Animal life  
 (b) Plants  
 (d) None of these.
- Apparatus used for measuring large volume is :  
 (a) Beaker  
 (c) Burette  
 (b) Pipette  
 (d)  Graduated cylinder.

### B. FILL IN THE BLANKS :

- The word 'scientia' means knowledge.
- The fuel used in Bunsen burner is in the form of a gas.
- The hypothesis which is universally accepted is termed as theory.
- Scientific methods involve best possible way to solve a problem.
- The mortar and pestle are made of porcelain.

### C. WRITE TRUE OR FALSE FOR EACH STATEMENT. REWRITE THE FALSE STATEMENTS CORRECTLY :

- Organic chemistry is the study of organic compounds.  T
- Life sciences and earth sciences are jointly referred as natural sciences.  T
- Bunsen burner is used for cooking, heating chemicals.  F
- Observations are not important in chemistry.  F
- Wire gauze ensures uniform distribution of heat.  T

### D. FIND THE ODD ONE OUT GIVING REASON :

- Burette, flask, graduated cylinder, spirit lamp. *these are used for measuring & storage*
- Penicillin, tetracycline, ciprofloxacin, carbon dioxide. *others are antibiotics*
- Aim, diagram, observations, examination. *others are related to practical work*
- Bunsen burner, spirit lamp, flame, glass rod. " " " " *ignition & heating*
- Chemistry, chemicals, composition, physics. " " " " *Chemicals & chemistry*

### E. MATCH THE COLUMNS :

Column A	Column B
1. Chemistry	(a) Flame (2)
2. Bunsen burner	(b) Measuring cylinder (4)
3. Test tube is made-up of	(c) Evaporating liquids (5)
4. Definite volume is measured in	(d) Practical subject (1)
5. Porcelain dish is used for	(e) Soft glass (3)

### F. GIVE REASONS FOR THE FOLLOWING :

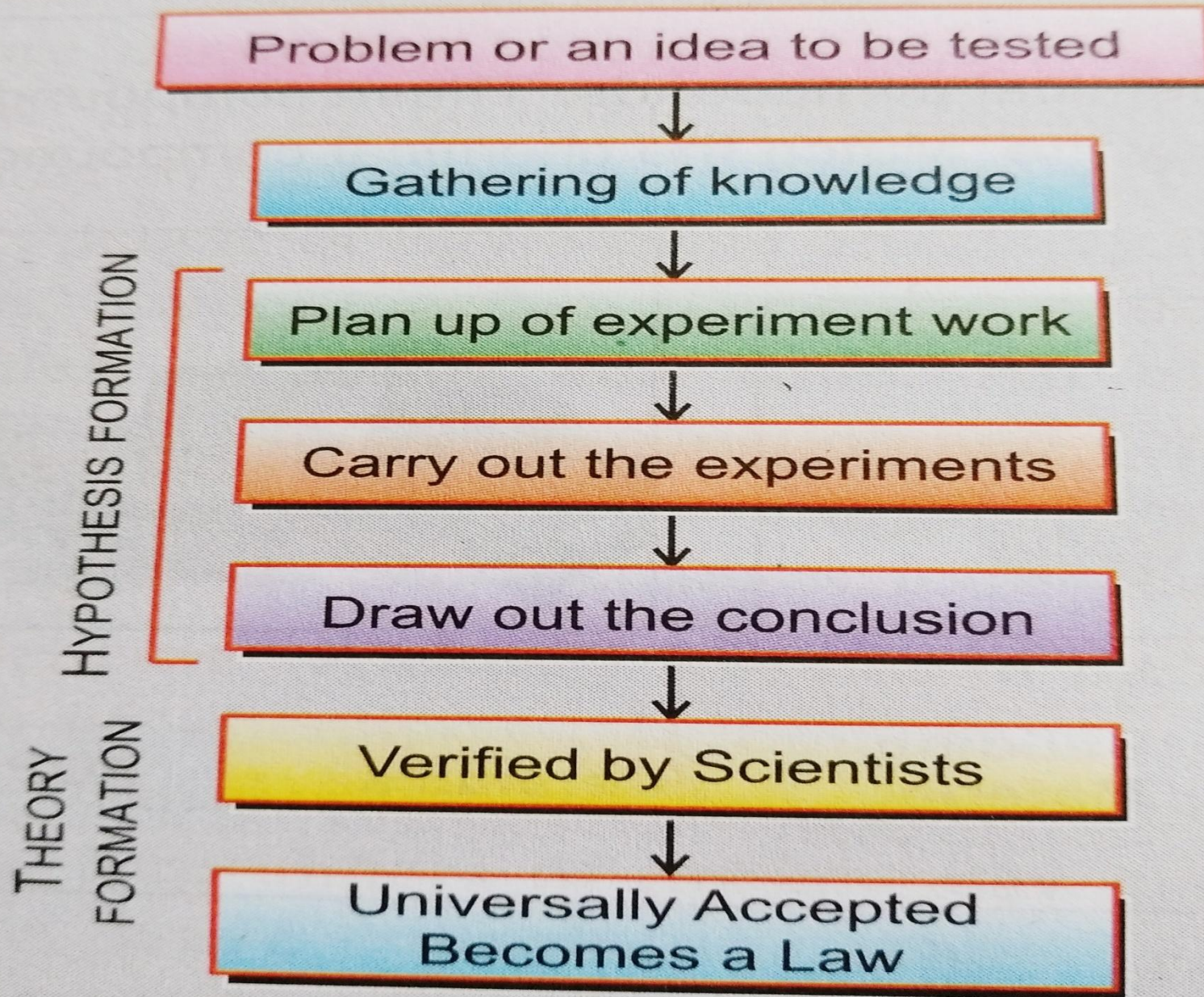
- Practicals are very important in chemistry.
- Chemistry is essential for human life.
- Dishes used for evaporating substances are made of porcelain.
- Test tubes are made of glass.

### G. DEFINE THE FOLLOWING TERMS :

- Science
- Hypothesis
- Scientific method
- Mortar and Pestle
- Bunsen burner.

### H. ANSWER THE FOLLOWING QUESTIONS :

- What is the need of chemistry ?
- Why do we use wire gauze, when a glass apparatus is heated ?
- Give differences between hard glass tube and test tube.
- Write a short note on (a) funnel (b) gas jar.



Ch-1 Introduction To Chemistry**F. Give reasons for the following:**

1. Practicals are very important in chemistry.

Ans: Practicals are very important in chemistry because conclusions are drawn on the basis of practical work.

2. Chemistry is essential for human life.

Ans: Chemistry is essential for human life because the progress in modern society is largely based on the advances in chemistry. The various chemical compounds like fertilizers, insecticides, antibiotics are all due to advancement of chemistry.

3. Dishes used for evaporating substances are made of porcelain.

Ans: Dishes used for evaporating substances are made of porcelain because it can absorb a large amount of heat without breaking.

4. Test tubes are made of glass.

Ans: Test tubes are made of glass because it can withstand high temperature and also does not react with various chemicals.

**G. Define the following terms:**

1. Science- Science is the term for the broad field of human knowledge concerned with facts that are explained logically by rules, patterns or principles.

2. Hypothesis- Hypothesis is the possible explanation for an event that has occurred.

3. Scientific Method- Scientific method is the method by which scientists work to find out the best possible way to identify and solve a problem.

4. Mortar and Pestle- Solid substances are ground into powder in a mortar with the help of a pestle. The mortar and pestle are made of porcelain.

**H. Answer the following questions:**

1. What is the need of chemistry?

Ans: The progress in modern society is largely based on the advances in chemistry. Thus, some of the most essential needs for the living of humans require the use of various chemical compounds that include fertilizers, insecticides, antibiotics, building material etc.

2. Why do we use wire gauze, when a glass apparatus is heated?

Ans: We use a wire gauze whenever a glass apparatus is heated because a wire gauge ensures a uniform distribution of heat.

3. Give differences between a hard glass tube and test tube.

Ans: The differences are as follows:

Hard glass tube	Test tube
i) This is a cylindrical test tube but slightly bigger and made of hard glass.	i) It is a cylindrical vessel closed at one end.
ii) It is used for heating substances at high temperature. Therefore, it is also called a boiling tube.	ii) It is used to perform chemical tests.

4. Write a short note on (a) funnel and (b) gas jar.

Ans: (a) Funnel: A funnel is a cone shaped wide glass vessel drawn into a narrow neck. It is used in filtration and for transferring liquids to containers. It prevents the spilling of the liquid being poured.

(b) Gas jar: A gas jar is a cylindrical vessel made of hard glass, and has a lid. It is used to collect and store gases..

### **Extra Questions:**

#### **I. Answer the following questions:**

1. What is alchemy?

Ans: Alchemy was one of the earliest forms of chemistry which combined science, magic, philosophy and religion. Alchemists are the forerunners of the present day chemists.

2. What are the various steps involved in scientific method?

Ans: the various steps are as follows:

- (i) Identifying the problem.
- (ii) Gathering all the known information.
- (iii) Forming a hypothesis on the basis of experimental facts.
- (iv) Verification by other scientists and formation of theory.
- (v) Universal acceptance in the form of law.

3. Give few precautions to be taken in a chemistry laboratory.

Ans: A few precautions are as follows:

- (i) A laboratory coat or an apron must be worn to protect the clothings.
- (ii) Chemicals must not be tasted and its vapours must not be inhaled, unless asked by the teacher.
- (iii) Inflammable chemicals like alcohol, acetone should be kept away from the burner.
- (iv) If a chemical reagent gets into the eyes, mouth or on the skin, the affected area should be washed with cold water and the incident must be reported to the teacher immediately.

### **Home Assignment**

You are to note down all the objective and subjective questions neatly in your notebook. The notebook will be checked once the school reopens. You also need to draw all the laboratory apparatus and label them in your copy.

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