

General Science Notes – Class 6

Chapter 1 – Science Skills

Q: State whether the statements are True or False.

1. Chemistry is the study of the physical world around us.

FALSE

2. As scientists get older they no longer have to bother about working safely.

FALSE

3. Your senses are of no use during a scientific investigation.

FALSE

4. A beaker is a cylindrical glass used for mixing, measuring, and pouring.

TRUE

5. A Hypothesis is always correct.

FALSE

Long Questions

Q: What is Science? Explain in detail.

Ans: Science is both, a body of knowledge and a process. It is about obtaining knowledge by observation and experimentation, and using that knowledge to describe and explain natural things. Science helps us to understand the world around us, solve problems, and to train our minds to think logically and systematically.



Science is split into three main areas of study.

1. Biology
2. Chemistry
3. Physics

Biology: It is the study of the living world around us.

Chemistry: It covers the physical properties and the reactions of all the elements and compounds we find on Earth and throughout the universe.

Physics: It covers everything from the nature of the tiny particles that make up atoms, to the laws that control the galaxies.

Q: How can we keep ourselves safe while working in a laboratory?

Ans: Whenever we are working in a science laboratory, it is vital that we work safely, both for our own sake and that of everyone else in our class. For this following safety rules should be followed:



- always wear proper laboratory attire i.e
1. Closed toe shoes 2. Lab coat 3. Safety goggles
- always tie your hair at the back
- do not run in the lab
- handle the chemicals carefully under your teacher's observation
- do not eat or drink in the lab
- clean the lab equipment before and after using it
- always be careful with fire
- always wash your hands before and after using the laboratory

Short Questions

Q: Briefly explain what is Biology?

Ans: Biology is the science of life. Its name is derived from the Greek words "bios" means life and "logos" means study. Biologists study the structure, function, growth, origin, evolution, and distribution of living organisms. Living organisms include Humans, animals, plants, and micro-organisms.

Q: What is Physics?

Ans: Physics is the natural science. Its name is derived from Greek word "physike" means 'knowledge of nature'. Physics is a natural science that studies matter, its motion and behavior through space and time, and the related entities of energy and force. Its main goal is to understand how the universe behaves.

Q: What is Chemistry?

Ans: Chemistry is the study of matter, its properties, how and why substances combine or separate to form other substances, and how substances interact with energy. Chemistry is

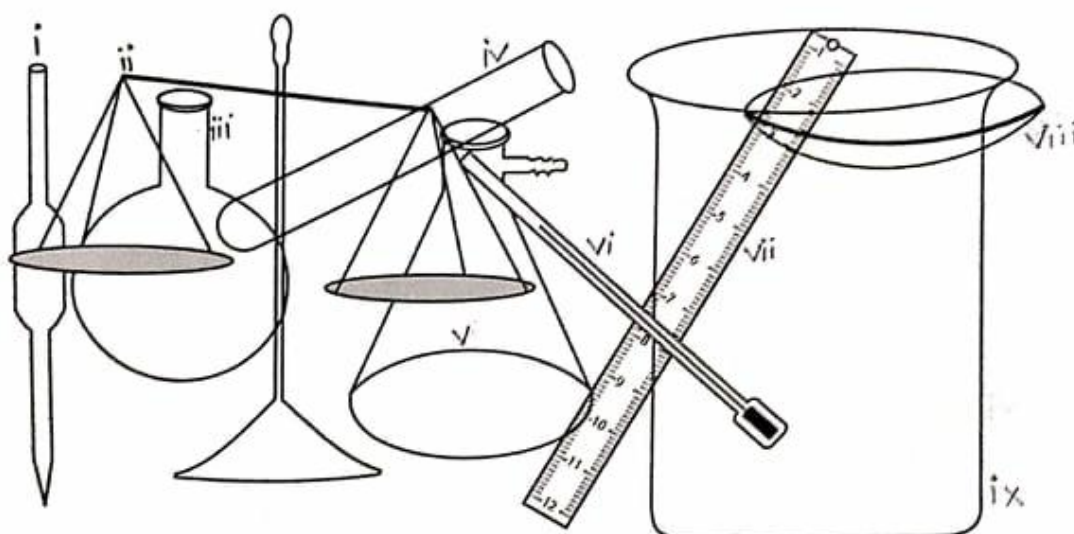
involved in everything we do, from cooking food to launching a space shuttle. Chemistry is one of the physical sciences that help us to describe and explain our world.

Workbook

Pg # 3

Chapter 1 | Science skills

3 The diagram shows ten pieces of laboratory equipment jumbled up.



Name them.

- i. Volumetric Pipette
- ii. Weighing scale
- iii. Round-bottomed flask
- iv. Test tube
- v. Buchner flask

- vi. Stirring Rod
- vii. Scale
- viii. China dish
- ix. Beaker
- x. _____

Chapter 2 – Life and Living Things

Q: Multiple choice questions

1. The number of different kinds of animals in Earth is roughly _____.
a. 15,000 b. 150,000 c. 1,500,000
2. When using a microscope, which of the following combinations of lenses gives the highest magnification? _____.
a. X5 and X10 b. X10 and X10 c. X10 and X5
3. Which of the following is not present in an animal cell? _____.
a. Chloroplast b. Cytoplasm c. nucleus
4. Which of these parts controls what goes on inside a plant cell? _____.
a. Cytoplasm b. Nucleus c. Vacuole
5. Which of the following is not a part of life processes? _____.
a. Movement b. Grow c. Sight

Long Q/A

Q: What do you mean by Life Processes?

Ans: All the living organisms may look different but they all have one significant thing in common; they are all alive. All the living things have seven characteristics or life processes.

Movement: Living organisms move by using their legs, wings, or fins. Plants move by growing towards or away from something.

Respiration: Living things need energy to grow, to move, and to enable the body to work properly. Energy is released from food in a process called respiration.

Sensitivity: Living organisms use sense organs such as eyes and ears to respond to what is going around them. Plants do not have sense organs (with a few exceptions) but can still react by growing towards light and water.

Grow: Living organisms grow until they reach a certain height or age. Plants, however, grow continuously throughout their lives.

Reproduction: Living things must reproduce to replace those that die. A characteristic necessary for continuity of the species.

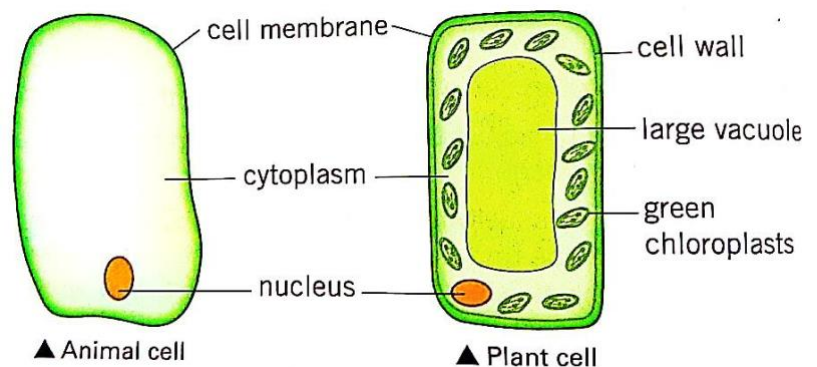
Excretion: The removal of waste from the body is called excretion. All living organisms produce waste such as carbon dioxide and water.

Nutrition: Living organisms feed to produce energy and to grow. They eat other living things. Plants make their own food through the process of photosynthesis.

Q: What do you know about Animal Cells and Plant cells?

Ans: Animals and plant cells have almost similar jobs to do. They take in food, release energy, get rid of waste, grow, and reproduce. Their structures, however, are not the same.

Here are the common characteristics of animal and plant cells;



1. **Nucleus** is the control center of the cell. It contains all the information about the cell.
2. **Cytoplasm** is all the living matter inside a cell except for nucleus.
3. **Cell membrane** is a thin skin around the cell. It keeps everything intact and prevents any foreign object to enter the cell.

Plant cells have three other important features.

- I. **Cell wall** is a rigid covering outside the cell membrane. It provides shape and protection to the plant cell.
- II. **Chloroplasts** contain chlorophyll which helps the plant to produce food through photosynthesis.
- III. **Vacuole** is a large space in the middle of the cell, filled with a fluid called cell sap.

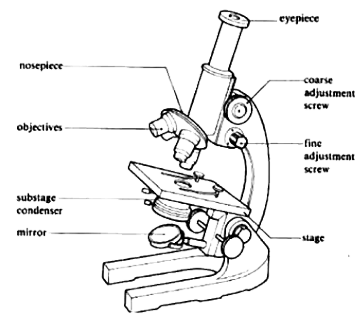
Short Q/A

Q: What is a cell?

Ans: A cell is the smallest unit of life. It is the basic structural, functional unit of all known organisms. All the organisms are made up of either one cell (**unicellular**) or many cells (**multi-cellular**).

Q: How can you see an object through a microscope?

Ans: The object is placed on a glass microscope slide on the stage with the help stage clips. The hole in the stage allows the light to pass. Now, when the light passes from objective lens, through the eyepiece lens the object is visible into your eye. Diaphragm mirror can be used to adjust the light.



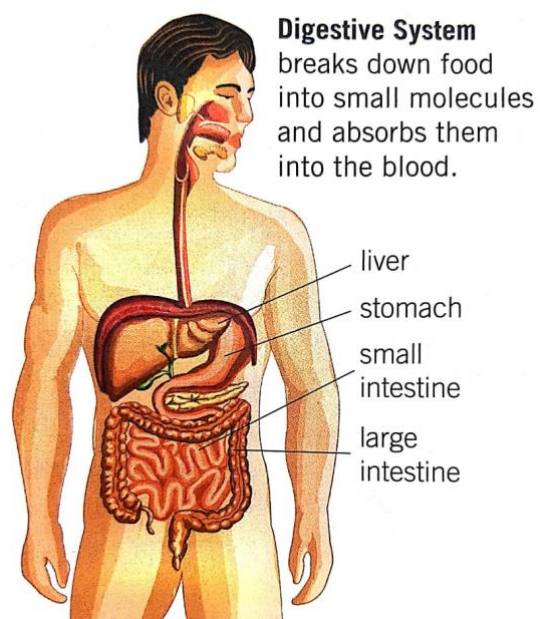
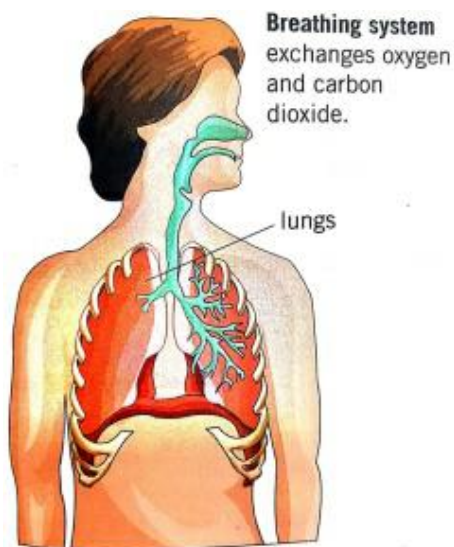
Q: What are tissues and organs?

Ans: A group of similar cells doing the same job is called tissue. For example; nerve tissue, muscle tissue, and blood tissue. Different tissues combine to make an organ. For example; the stomach is the organ that digests food. Blood tissue, nerve tissue, and muscle tissue are some of the types of tissue that make up the stomach.

Q: What are organ systems?

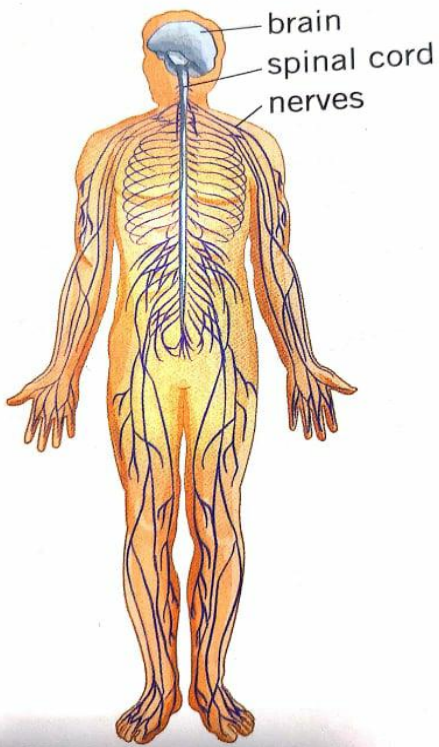
Ans: Organs work together in groups called organ systems. Organ systems carry out much larger jobs than a single organ is able to do. Some of the main organ systems of the human body are written below:

- Breathing system
- Digestive system
- Nervous system
- Excretory system
- Circulatory system



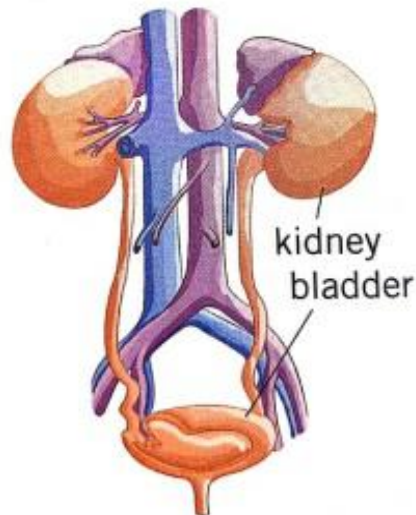
Nervous System

carries messages around the body.



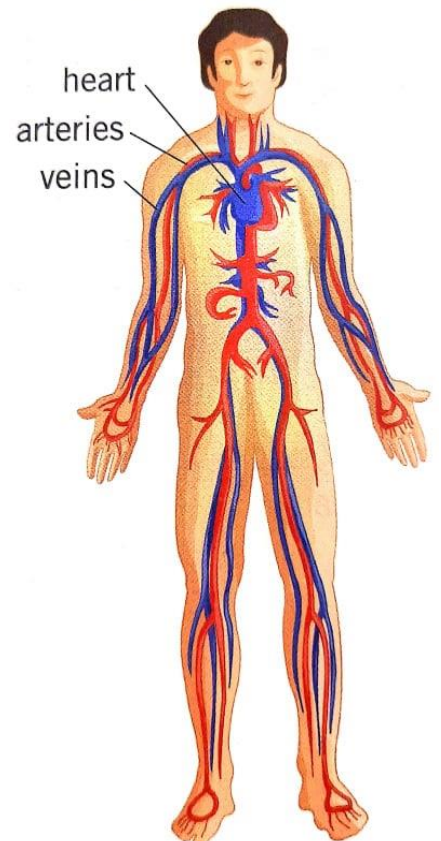
Excretory System

gets rid of poisonous substances from the blood and controls water levels in the body.



Circulatory System

transports substances to all parts of the body.



3 Draw a line between the life process and its meaning.

Respiration



Growing



Reproduction



Movement



Excretion



Response



Feeding



taking in nutrients

getting rid of waste

getting bigger

reacting to something

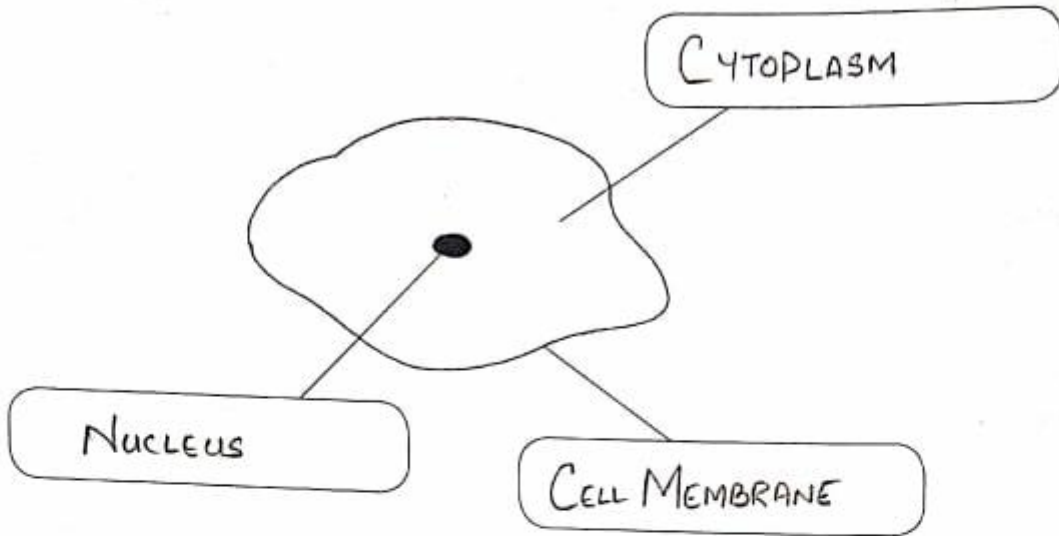
getting energy out of food

making more of the same kind

going from one place to another

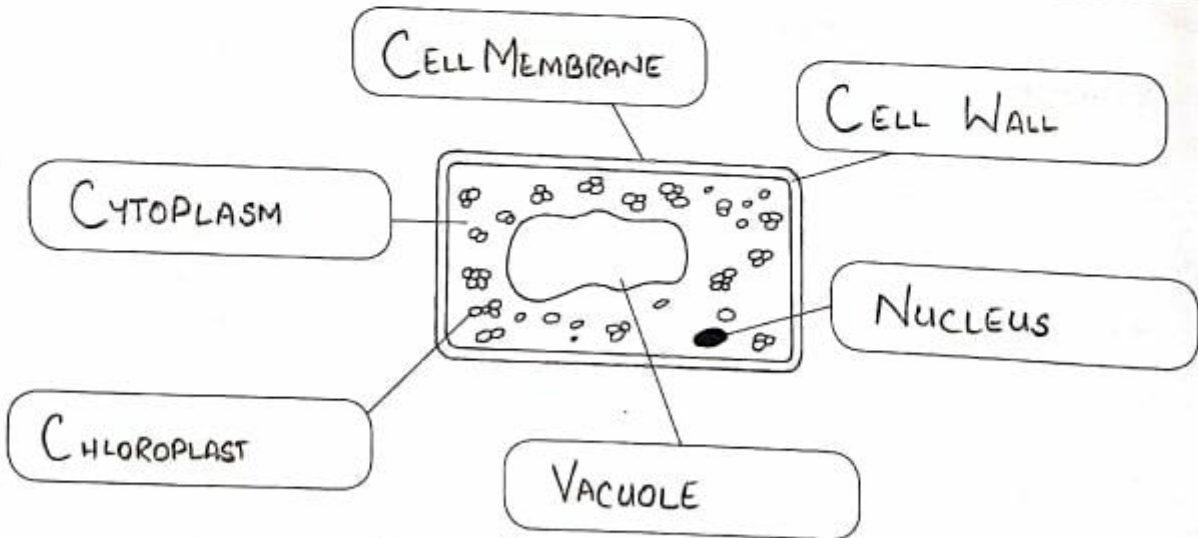
4 i. Label this diagram of an animal cell. Use these words:

nucleus cytoplasm cell membrane



ii. Label this diagram of a plant cell. Use these words:

vacuole chloroplast cytoplasm
cell membrane nucleus cell wall



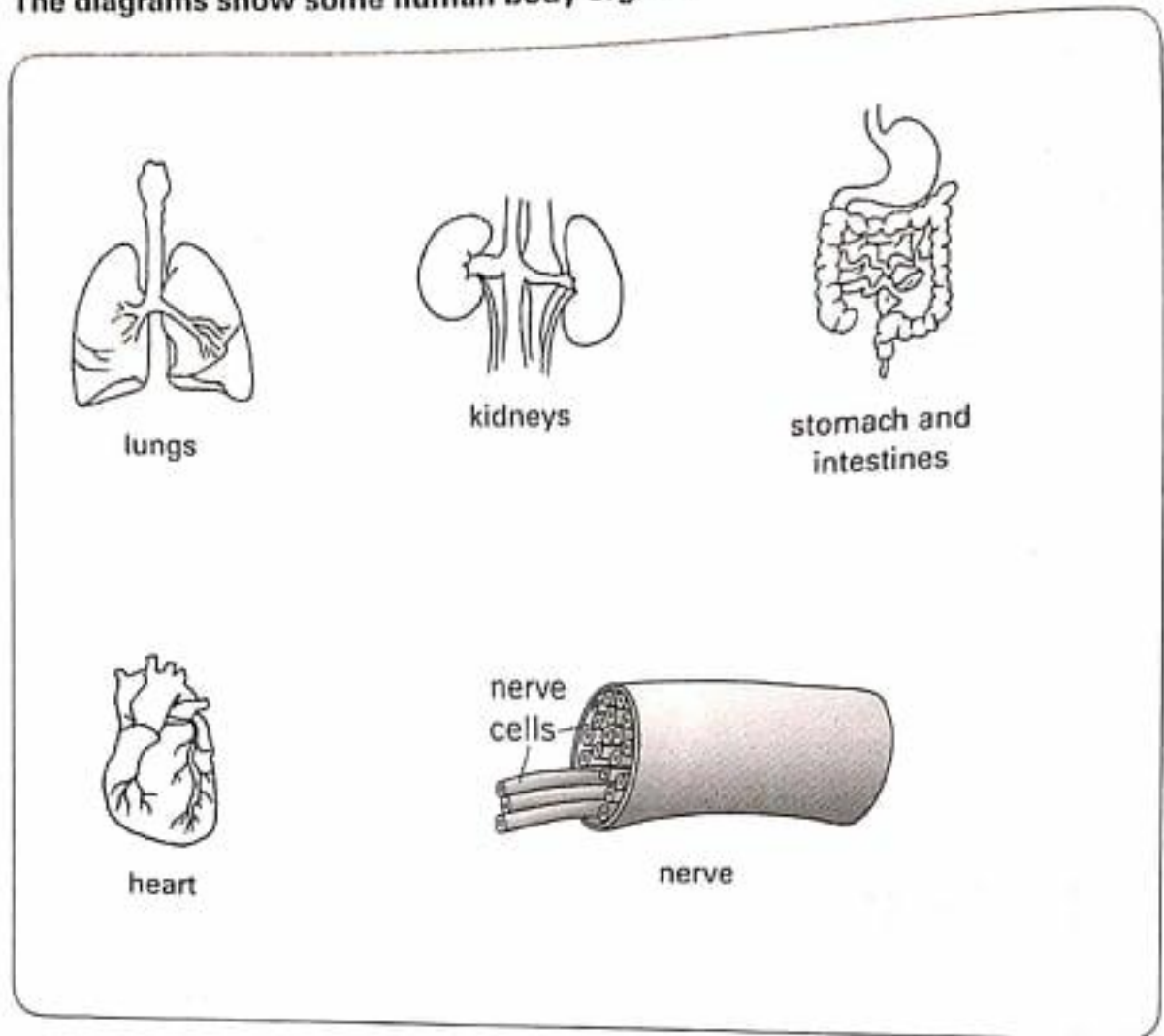
iii. Write down three differences between plant and animal cells.

a. Cell wall

b. Chloroplast

c. Vacuole

6 The diagrams show some human body organs.



Briefly state the function of each organ.

lungs helps in exchange of gases between the environment and the body.

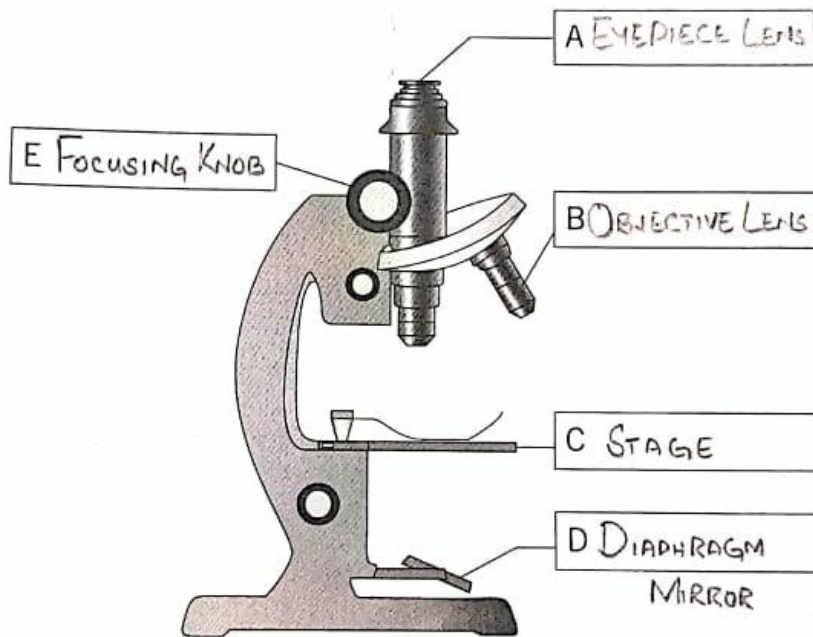
kidneys Removal of waste products from the body.

stomach and intestines helps in digestion and giving nutrition to the body.

heart pumps blood to the body.

nerve carry messages throughout the body.

- 7 The diagram shows a microscope.



- i. Label this diagram using these words.

eyepiece lens focus knob mirror objective lens stage

- ii. What are parts A and B for? To view the object.

What is part C for? To place the slide.

What is part D for? To adjust the light.

What is part E for? Rotating the objective lens.

Chapter 3 – Elements, Compounds and Mixtures

Q: Multiple choice questions

1. How many different types of atoms can there be in a compound?

a. 1

b. 2

c. 2 or more than 2

2. H₂O is the chemical formula of water. How many atoms are there in one water molecule?

a. 1

b. 2

c. 3

3. A compound is made up of _____.

a. Only one type of atom chemically combined

b. Two or more types of atom chemically combined

c. Only one type of atom physically combined

4. Which of these is a chemical change?

a. Freezing water into ice

b. Rusting of iron

c. Mixing salt into water

5. The Chemical symbol of Iron is _____.

a. Ir

b. Ag

c. Fe

Q: Fill in the blanks.

1. Elements contain only one kind of atom.

True

2. All non-metals conduct electricity.

False

3. Carbon is the only metal that does not conduct electricity.

False

4. A chemical change can produce a new substance.

True

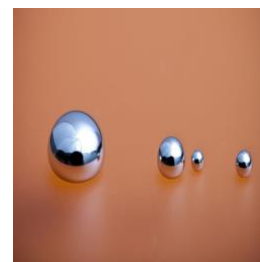
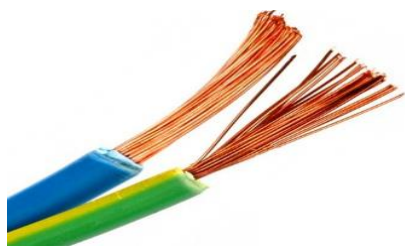
5. Mixtures are examples of physical change.

True

Short Q/A

Q: What is an element?

Ans: An element is a chemical substance that is made up of only one type of atom. About 90 elements have been found in nature; the others have been created. Each of the elements has their own Chemical symbol. For example; natural elements are silver **Ag**, mercury **Hg**, carbon **C**, copper **Cu**, sodium **Na**.



Q: What are molecules?

Ans: Atoms join together to make molecules. A molecule is made up of two or more atoms chemically combined together. Molecules of elements are made up of two or more atoms of the same type.



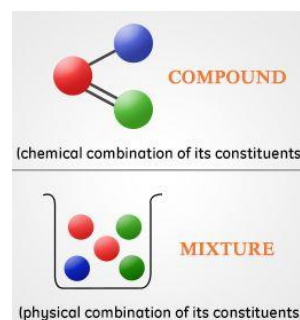
Long Q/A

Q: Explain Compounds and Mixtures.

Ans: Elements are made up of one kind of atom only. When two or more elements are mixed but not chemically combined it is said to be a mixture. For example; a mixture of iron and sulphur can be separated by using a magnet to attract the iron particles.

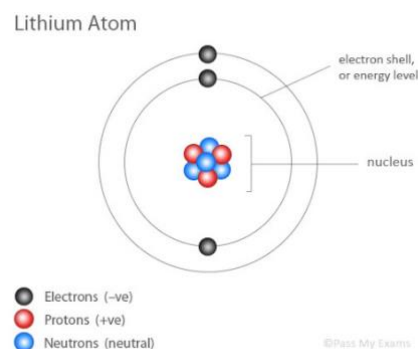
When atoms of different elements chemically combine together, they form a compound. When a mixture of iron and sulphur is heated, each iron atom joins up with a sulphur atom to form a molecule of iron sulphide.

Mixtures are examples of physical change, where no new substances are made and the change is easy to reverse. Whereas, compounds are examples of a chemical change, where new substances are made and the change is usually difficult to reverse.



Q: What is an Atom?

Ans: The word Atom comes from a Greek word “*atomos*”, meaning indivisible. An atom is the smallest part of an element that can exist and take part in a chemical reaction. They are extremely small to be seen with an ordinary microscope. An atom is composed of two regions: the **nucleus**, which is in the center of the atom and contains **protons** and **neutrons**. The outer region of the atom, which holds its **electrons** in the orbit around the nucleus.



- Protons → positively charged
- Neutrons → no charge - neutral
- Electrons → negatively charged

Each atom always has the same number of protons and electrons, making it electrically neutral. However, the number of neutrons may vary.

Q: What are metals and non-metals? Explain the difference between them.

Ans: The simplest way of classifying elements is by dividing them into metals and non-metals. The main differences between metals and non-metals are shown in the table below:

Metals	Non-metals
hard solid	usually gases or solids which melt easily
dense and feel heavy	not very dense and feel light
shiny appearance when polished	dull appearance
high boiling point	low boiling point
difficult to melt	melt easily
malleable (can be easily bent)	brittle and powdery
good conductors of heat	Poor heat conductors/good heat insulators
good conductors of electricity	Poor electrical conductors/good electrical insulators
sonorous (make a ringing sound when hit)	Non-sonorous

Workbook

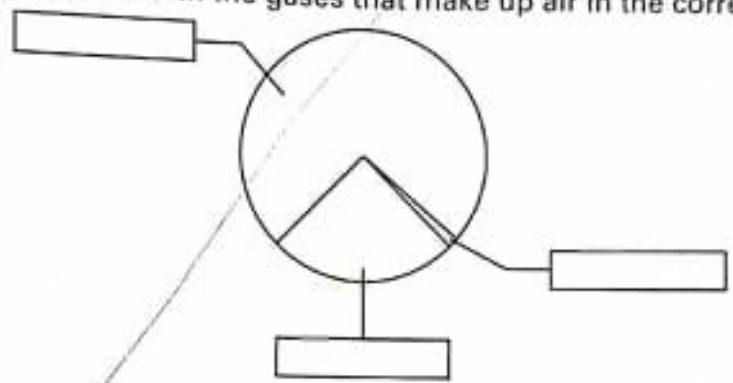
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3 This question is about the gases in the air.

i. Use these words to fill the gaps in the sentences:

argon carbon dioxide hydrogen nitrogen oxygen

- a. In air, the gas present in the largest amount is _____.
 - b. A gas not normally found in air is _____.
 - c. _____ is a noble gas.
 - d. The gas produced by green plants during photosynthesis is _____.
 - e. When carbon burns in air, _____ gas is produced.
- ii. Label the pie chart with the gases that make up air in the correct proportions.



iii. Describe a way of separating the gases in the air.

4 Properties of metals and non-metals are given below in the box. Write them under the relevant headings.

difficult to melt brittle or powdery dull appearance hard solids
high melting point make a noise when hit many are gases melt easily
poor conductors of heat shiny when polished

Metals

difficult to melt _____

hard solid _____

high melting point _____

shiny when polished _____

make noise when hit _____

Non-metals

brittle or powdery _____

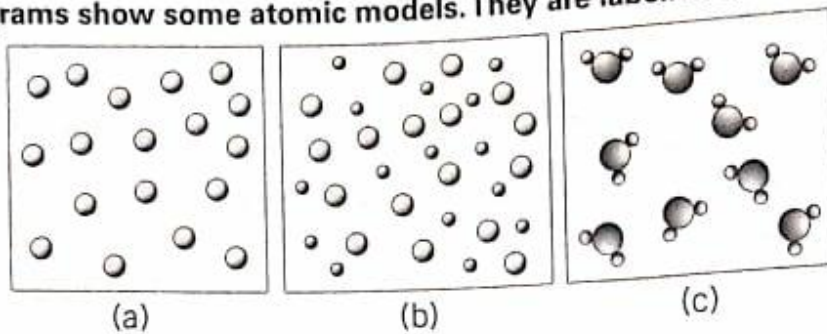
dull appearance _____

melt easily _____

poor heat conductors _____

many are gases _____

5 The diagrams show some atomic models. They are labelled a, b, and c.



i. Which model represents

- a. an element? Model A
 b. a mixture? Model B
 c. a compound? Model C

ii. What is an element?

Chemical substance made up of only one type of atom.

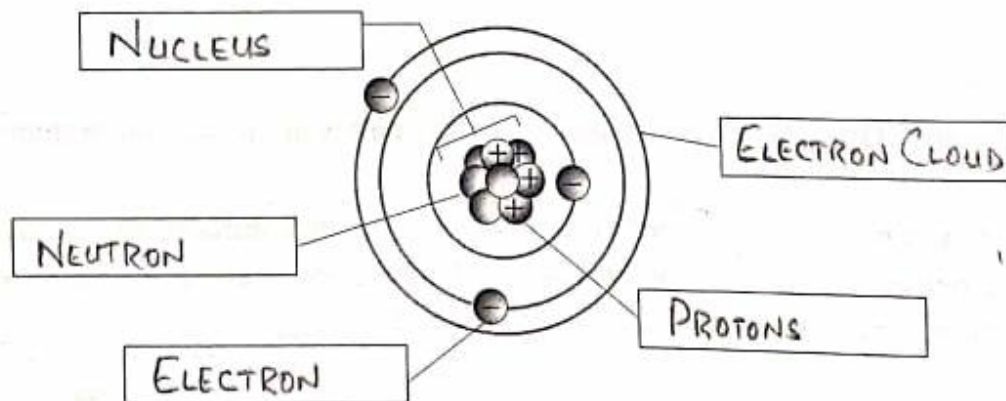
iii. Explain the difference between a mixture and a compound.

When two or more elements physically combined is called a mixture.
 When atoms of different elements chemically combined to form a compound.

6 The diagram represents the structure of an atom.

i. Use these words to label the diagram.

electron electron cloud nucleus neutron proton



ii. Explain the difference between an electron and a proton.

Electrons are negatively charged, while Protons are positively charged.

iii. Neutrons are neutral. What does this mean?

This mean that they do not have any charge.

iv. Which parts of an atom move very fast?

Electron moves very fast.

7 Below is a list of elements. Alongside is a list of uses for these elements. Draw lines between each element and its use.

- | | |
|-----------|-----------------|
| aluminium | electric wires |
| americium | computer chips |
| copper | car headlights |
| chromium | smoke alarms |
| mercury | cooking foil |
| silicon | shiny car parts |
| xenon | thermometers |

8 Draw a line between each of the compounds and its use.

