

DISTRICT PUBLIC SCHOOL & COLLEGE, KASUR



NOTES/HOME TASK/WORK SHEET FOR

CLASS: 7th

SUBJECT: G. SCIENCE

2nd TERM SYLLABUS: UNIT(6,7,8,9)

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Unit # 6 Water

Answers to Exercises in Unit 6

1. (a) What is the composition of water? Write its chemical formula.

Ans. Water is a compound of oxygen and hydrogen. Its chemical formula is H₂O.

(b) Why can fish and other water animals and plants breathe in water?

Ans. Fish and other water animals can breathe in water because it contains dissolved air.

(c) what is the properties of pure water?

Ans. Pure water boils at 100°C and freezes at 0°C at normal atmospheric pressure. Pure water turns white copper sulphate powder blue.

(d) What is hard water?

Ans. Hard water does not form lather with soap easily.

(e) what causes the hardness of water?

Ans. Hardness of water is due to some chemicals that get dissolved in rainwater when it falls on rocks.

(f) What are the properties of pure water?

Ans. Properties of pure water: (i) It has no colour, taste, or smell. (ii) It freezes at 0°C.
(iii) It boils at 100°C. (iv) It is a bad conductor of electricity. (v) It is a very good solvent.
(vi) It reacts with many metals and non-metals.

(g) What are some of the common impurities in water?

Ans. The common impurities in water are: bacteria, mud, sand, mineral salts, and the remains of dead plants and animals.

(h) How can water nbe purified in the laboratory?

Ans. Water can be purified in the laboratory by distillation in an apparatus called a Liebig condenser.

(i) Describe three ways in which water becomes polluted.

Ans. Water becomes polluted by: (i) dirty water from our houses and farms
(ii) liquid wastes from factories (iii) oil spills from oil tankers in the seas

2. Fill in the blanks to complete the following statements.

Ans. (a) 3/4 (b) H₂O (c) taste, smell (d) filtration
(e) Chlorine (f) Soft (g) chemicals (h) boiling

3 Make a list of the ways that water pollution can be harmful to living creatures.

Ans. Unwanted and harmful substances in the water cause water pollution. Dirty water from our houses and farms contains germs that can cause diseases in humans and animals. If this water drains into a river, the river water becomes polluted. Waste liquid from factories is dumped into rivers. It contains dangerous chemical substances which may not kill fish but are stored in their bodies. They can poison humans if they eat them. Oil pollution is caused by oil spills from oil tankers at sea. It kills seabirds by poisoning them and by clogging up their wings, so that they cannot fly to find food. Oil also kills all forms of life on rocks, in the mud, and on beaches.

Unit # 7

Composition of matter

Answers to Exercises in Unit 7

1. (a) Describe the structure of an atom.

Ans. An atom is made up of tiny particles called electrons, protons, and neutrons. Electrons are negatively charged particles that revolve around the nucleus in a specific path called an orbit. Protons are positively charged particles found in the nucleus of an atom. Neutrons are neutral particles which are also present in the nucleus. The mass of a neutron is equal to the mass of a proton.

(b) (i) What is an element?

Ans. An element is a substance that is made up of the same kinds of atoms. For example, the element carbon is made up of carbon atoms only.

- (ii) Write the symbols of the following elements. Carbon, nitrogen, **hydrogen, oxygen, sulphur, phosphorus, calcium, chlorine.**

Ans. C, N, H, O, S, P, Ca, Cl.

- (iii) Define valency. What does the valency of an element depend upon?

Ans. Scientists sometimes call the valency the 'combining power' of an element. Depending on the arrangement of electrons around a nucleus, atoms of different elements may tend to 'lose' or 'gain' electrons. If this tendency is strong, then the element is reactive or unstable. If it is weak, the element is unreactive or stable. The valency of an element depends on the number of electrons the element has in its outermost shell. If an element has four or fewer electrons in its outer shell, then the number of electrons is the same as the valency. If the element has more than four electrons, its valency is eight minus the number of electrons.

- (c) **What is a compound?**

Ans. When two or more atoms combine chemically, they form a compound. For example, hydrogen and oxygen combine chemically to form water.

2. Answer the following questions.

- Ans. (a) Ionic bond
(b) Covalent bond

3. fill in the blanks.

- Ans. (a) atoms (b) Protons (c) electron (d) atomic number
(e) mass number (f) 2 (g) 8 (h) chemical bond
(i) positive

4. (a) **Explain the difference between the following terms.**

Proton and electron

Ans. **Proton:** The proton is a positively charged particle which is present in the nucleus of an atom.
An electron is a negatively charged particle which revolves around the nucleus of an atom in a specific path called an orbit.

- (b) **symbol and formula**

Ans. **Symbol:** The chemical names of elements written in abbreviated form are called symbols; usually the first letter or the first two letters of the name of the element are used. Sometimes the first or the first two letters of the Latin or Greek names of elements are used.

Formula: The molecule of a substance written in symbols is called a chemical formula.

- (c) **Atomic number and mass number**

Ans. **Atomic number:** The number of protons in an atom is called is atomic number. The oxygen atom has 8 protons so its atomic number is 8.

Mass number: The sum of the number of protons and neutrons in an atom is called its mass number or atomic mass. A carbon atom has 6 neutrons and 6 protons, so its mass number is 12.

- (d) **Atom and molecule.**

Ans. **An atom** is a tiny indivisible particle of which all matter is composed. It is made up protons, neutrons, and electrons.

A molecule is made up of two or more than two atoms which are held together by chemical bonds. The atoms in a molecule may be of the same or of different elements joined together.

- e) **Element and compound.**

ans. **An element** is a substance that is made of only one kind of atom. Sodium is made of sodium atoms only so it is an element. Carbon, mercury, iron, copper, etc. are all elements. Altogether 117 different elements are known. Of these, 90 have been obtained from the Earth's crust and atmosphere, and 23 have been artificially made by scientists. Every element has a name and a symbol.

A compound is formed when two or more atoms join together in a chemical reaction. The atoms from the elements are held together by forces which scientists call chemical bonds. Water is a compound. It is made up of water molecules. In the same way sodium chloride (common salt) is formed by the joining up of sodium and chloride ions.

- (f) **Ionic bond and covalent bond.**

Ans. **In an ionic bond**, the electrons are either given to or received from atoms. The atoms become charged particles called ions. When an atom gives away electrons it becomes a positive ion. When an atom receives electrons it becomes a negative ion. Ions are held together by electrostatic forces. **Covalent bond.** When two atoms react together and both of them need to gain electrons in order to reach the number of electrons to complete their outer shells, they do so by sharing electrons between them. Because the atoms share electrons, there is a strong force of attraction between them. This force is called a covalent bond. The bonded atoms form a molecule.

(g) Refer to (b)

(h) **Element and isotope.**

Ans. **An element** is a substance that is made of only one kind of atom. Sodium is made of sodium atoms only so it is an element. Carbon, mercury, iron, copper, etc. are all elements. Altogether 117 different elements are known. Of these, 90 have been obtained from the Earth's crust and atmosphere, and 23 have been artificially made by scientists. Atoms of one element all have the same number of protons and electrons but they do not necessarily have the same number of neutrons.

Isotope: Atoms of the same element, with the same number of protons but different numbers of neutrons are called 'isotopes' of that element. They behave in an unusual way that has nothing to do with their electrons. Most elements have more than one isotope, chlorine has two, carbon has three isotopes.

5. Individual work

6. **Which isotope of carbon is radioactive? Explain why carbon dating can be used to find the age of an ancient wooden object.**

Ans. Plants absorb some carbon-14 atoms from the carbon dioxide in the air during the process of photosynthesis. When a plant or animal dies it takes in no more carbon atoms. The carbon-14 atoms in it slowly decay. By measuring the radiation from them, the age of the dead remains can be worked out.

10. **Find out the Latin names and symbols of the following elements**

Ans. Elements	Latin names	Symbols
Copper	Cuprum	Cu
Silver	Argentum	Ag
Gold	Aurum	Au
Mercury	Hydrargyrum	Hg
Iron	Ferrum	Fe
Potassium	Kalium	K
Sodium	Natrium	Na
Lead	Plumbum	Pb
Tin	Stannum	Sn

Unit # 8

Changes in matter

Answers to Exercises in Unit 8

1. (a) **Explain why crude oil is called a fossil fuel.**

Ans. When no new chemical substance is formed, a change is called a physical change. Physical changes are easy to reverse. When iron rusts, or a candle burns, new chemical compounds are made. It may be impossible to reverse the process. These types of changes are called chemical changes or chemical reactions.

(b) **How do we know that a chemical change has taken place?**

Ans. In a chemical reaction the following things happen: • A new substance is made • Energy is either given out or taken in • The change is almost impossible to reverse Although the atoms of each element combine in different ways, the same atoms that were present at the start are there at the end of the reaction. Because of this, the total mass of the substances remains the same.

(c) **What is a reversible reaction? Give an example.**

Ans. There are some reactions which can be reversed. A simple example is the physical change when ice is heated to form water. The water can be changed back into ice. Another reversible change is the

heating of blue copper sulphate. It decomposes to give white copper sulphate powder and water vapour.

(d) What are fertilizers? What are the qualities of a good fertilizer?

Ans. A fertilizer is a combination of elements that a plant needs in order to grow strong and healthy. A good fertilizer contains the elements needed to promote healthy growth in plants. It must also be cheap to produce and soluble in water.

(e) How is the fertilizer, ammonium nitrate manufactured?

Ans. In industry, ammonium nitrate is made by reacting ammonia with nitric acid.

(f) What are plastics? Write the names of the plastic that is used for making plastic bags, ballpoint pens, hosepipes, rope, clothing, saucepan handles, rulers, electrical fittings.

Ans. A plastic is a synthetic material which can easily be shaped. Plastics are usually tough and versatile. They are very good electrical insulators. They can be spun into fibres to make clothes and carpets, or moulded to make objects such as cups or chairs.

Plastics are polymers. Polymers contain very large molecules that are made by adding together many small molecules called monomers. Some familiar polymers are polyethene, polystyrene, and poly vinyl chloride (PVC). Nylon, Perspex, and Terylene are the common names of some other important plastics.

Polyethene	plastic bags
polystyrene	ball-point pens
PVC	hose pipes
Nylon	rope, clothing
Terylene	clothing
(polyester)	phenolic resins saucepan handles
Perspex	rulers
Bakelite	electrical fittings

(g) Explain why crude oil is called a fossil fuel.

Ans. Crude oil is called a fossil fuel because it was made from fossils of animals that lived in the sea millions of years ago. Hundreds of millions of years ago, while ancient forests were starting to form coal on the land, other fossil fuels were being made under the sea. We use them now as oil and natural gas.

(h) Name two fuels produced by fractional distillation.

Ans. petrol, kerosene

(i) Name two solid fuels, two liquid fuels, and two gaseous fuels.

Ans. solid fuels wood, coal liquid fuels petrol, kerosene gaseous fuels methane, butane

(j) Describe the process by which fats and plant oils are turned into valuable foods such as margarine.

Ans. Some of the fats and plant oils can be turned into valuable food such as margarine. The oil for making margarine comes from the seeds of plants such as sunflowers. The sunflower seeds are crushed and squeezed to extract oil. The oil is refined by heating with sodium hydroxide. The impurities in the oil react to form a sort of soap. The purified oil is separated and then washed. Hydrogenation of the unsaturated acids in the oil takes place when the oil is heated with hydrogen under pressure over a nickel catalyst (the catalyst speeds up the reaction which would otherwise be slow). The fat is then heated and steam is blown over it to take away the unpleasant smell. Colouring, flavouring, and salt may be added. Vitamins are also added to make it healthier to eat.

(k) what is the difference between soap and detergent?

Ans. Detergents are chemicals which, when dissolved in water, can remove dirt and grease from cloth, metal, ceramics, and of course, human skin. Soap is a detergent made from animal fats or plant oils.

(l) How was crude oil formed?

Ans. Crude oil was made from the microscopic plants and animals which lived in the sea. As they died, their bodies collected at the bottom of the ocean. Here they were covered by mud and sand. Over thousands of years the layers of mud and sand became very thick. High temperature and pressure changed them into thick black liquid called crude oil.

(m) List the fraction obtained from crude oil.

Ans. gas, petrol, kerosene, diesel oil, lubricating oil, fuel oil, paraffin waxes, bitumen

1. Write whether the following changes are physical or chemical

- | | | |
|------|-----------------------------|-----------|
| Ans. | 1. Burning of paper | chemical, |
| | 2. Dissolving sugar in tea | physical, |
| 2. | A mixture of salt and sand. | physical, |
| 3. | Boiling an egg | chemical, |
| 4. | Burning a candle | chemical, |
| 5. | Glowing of an electric bulb | physical, |
| 6. | Melting of ice | physical, |
| 7. | Freezing water into ice | physical, |
| 8. | Burning coal | chemical |
| 9. | Exploding a firecracker | chemical |

Unit # 9

Heat and energy

Answers to Exercises in Unit 9

1. (a) what is heat?

Ans. Heat is a type of energy found in an object that has a higher temperature than its surroundings.

(b) How does heat travel from one end of an object to the other?

Ans. When an object is heated, its molecules gain energy and start moving faster. As they vibrate, they bump into each other at a faster rate and push the particles in front of them. As this movement continues, heat travels from one end of the object to the other.

(c) (i) what is an insulator?

Ans. Materials, like rubber, wood, and plastic that do not allow heat to travel through them are called bad conductors of heat. Materials, like wool, fur, and feathers that do not conduct heat or electricity easily are called insulators.

(i) How are insulators useful?

Ans. Insulators are substances that are poor conductors of heat and electricity. The handles of pots and pans are made of wood or plastic, so that heat is not conducted from the pan to the handle and we do not burn our hands. Firefighters wear clothes made of an insulating material called fiberglass. Air is a good insulator. We wear woollen clothes in winter to keep warm because wool traps air between its fibres.

(d) What are the methods of heat transfer?

Ans. **Conduction.** Heat can travel through solids by conduction. If one end of a metal spoon is dipped in hot water, the other end heats up after a short while. This happens because the molecules at the dipped end gain energy from the hot water, start vibrating, and push the molecules in front of them. On gaining energy, these molecules also start vibrating, and in this way a chain reaction is set up by which the other end of the spoon heats up.

Convection. Convection occurs when heat is transferred from one part of a fluid to another by the movement of the fluid itself. The ventilation of a room and heating water in a pan are examples of convection.

Radiation. Radiation is a particular way in which energy travels. This energy need not be carried by a medium such as a solid, liquid, or gas. It can travel in space because it is not carried by moving particles which need a medium to travel in. Earth is heated by the heat radiation of the Sun. This heat travels through space and reaches the Earth.

(e) **What is conductivity? How can the conductivity of different materials be compared experimentally.**

Ans. Conductivity is the ability of a material to conduct heat. To compare the conductivity of different materials take some rods which are of the same length and thickness but are made of different materials, such as wood, iron, copper, aluminium, etc. Dip them in wax and allow them to cool, then pass them through a specially made metallic box which has holes in its sides. Pour hot water in the box. After a few minutes, remove the rods. You will observe that the wax melts to a different distance on each rod.

(f) **Prove by an experiment that water is a bad conductor of heat.**

Ans. To prove that water is a bad conductor of heat wrap a cube of ice in a piece of gauze and drop it into a test tube full of water. Hold the top of the tube close to a Bunsen flame. You will observe that although the water at the top boils, the ice at the bottom of the tube does not melt.

(g) **How do convection currents move in a liquid?**

Ans. To demonstrate convection in liquids fill a conical flask with tap water and drop a large crystal of potassium permanganate into it. Heat the flask. An upward current of coloured water will rise and spread outwards. It will then move down the sides of the flask, showing that a convection current has been set up.

(h) **Explain what causes land and sea breezes?**

Ans. During the daytime, the land heats up quickly by the heat of the Sun. As a result, the air above it becomes hot. As this air expands and rises, the cooler air above the sea blows in to take its place. This is called a sea breeze. At night, the sea water, which has absorbed heat during the day, remains hot for a longer time than the land, and so the air above the sea warms up. It expands and rises and in this way the convection current is reversed. The breeze now blows from the cooler land to the sea and is called a land breeze.

(i) **Explain the radiation of heat.**

Ans. Radiation is a particular way in which energy travels. This energy need not be carried by a medium such as a solid, liquid, or gas. It can travel in space because it is not carried by moving particles which need a medium to travel in. The Earth is heated by the heat radiation of the Sun. This heat travels through space and reaches the Earth.

(j) **How does the temperature of a liquid in a thermos flask remain the same for a long time?**

Ans. A thermos flask consists of a double-walled glass bottle which has a vacuum between the two walls. The inner sides of the walls are shiny. The mouth of the bottle is closed with a cork or plastic stopper. The glass bottle is fitted into a metallic or plastic container. Heat cannot enter or leave the flask due to the vacuum which checks conduction and convection. The shiny surface reflects the heat waves. Anything inside the flask will remain hot or cold for a long time.

(k) **What is temperature? What does the temperature of a body depend on?**

Ans. The degree of hotness or coldness of a body is called its temperature. Temperature depends on the internal kinetic energy of the molecules of a substance. When a body is cold, its molecules move slowly. When it is heated, its molecules begin to move faster. As these molecules move, they begin to vibrate and bump into each other. In doing so, they push each other apart and that is how the change of state in a substance occurs (from solid to liquid and liquid to gas). This also explains the expansion of solids, liquids, and gases on heating.

(l) **How is temperature measured?**

Ans. We cannot rely on our sense of touch to measure the temperature of a body. If you keep your hands in cold water and then dip them in warm water, the water will feel very hot. If you keep your hands in hot water, and then dip them in warm water, the water will feel cold. In order to find out the exact temperature of a body an instrument called a thermometer is used.

(m) **Describe the various types of thermometers.**

Ans. Mercury thermometer

A mercury thermometer contains mercury, which expands and contracts with the rise and fall of temperature. The clinical thermometer is a mercury thermometer, and is used to measure the

Amazing Science 7th

temperature of the human body. It cannot be used to measure temperatures below -39°C because mercury solidifies at temperatures below this.

An Alcohol thermometer

An alcohol thermometer contains alcohol. It is cheap and easy to use. It can measure very low temperatures because alcohol does not solidify even at -115°C .

Maximum and minimum thermometer

A maximum and minimum thermometer is used to record the maximum and minimum temperatures of a place every 24 hours.

Digital thermometers

Digital thermometers are electronic thermometers. They are compact and inexpensive and are used for measuring and displaying temperature in numeric values with great precision.

Electrical thermometers

Electrical thermometers are easy to read because they have a digital display. The scale is placed well away from the temperature detector. Temperature readings can be read by a computer, and the temperature range is from -200 to 1600 degrees centigrade or more.

2 Correct the following statements.

- Ans.**
- (a) When an object is heated its molecules gain energy.
 - (b) Rubber and wood are bad conductors of electricity.
 - (c) The ability to conduct heat is called conductivity.
 - (d) Water is a bad conductor of heat.
 - (e) The flow of heat through a liquid is called convection.
 - (f) Monsoon winds are convection current winds.
 - (g) During the daytime, land gets heated up more quickly than water.
 - (h) Radiation does not need a medium to travel in.
 - (i) When a substance is hot its molecules move more quickly.
 - (j) Absolute zero is equal to -273°C .

Unit # 6 MCQs

- (a) The boiling point of pure water in degrees Centigrade is .
0 50 100 [100]
- (b) Green plants need water for .
digestion respiration photosynthesis [*photosynthesis*]
- (c) Water becomes hard due to the presence of dissolved .
Sand rock chemicals [*chemicals*]
- (d) Chlorine is added to water in a water purification plant to .
kill germs remove hardness filter it [*kill germs*]
- (e) What percentage of water covers the Earth? .
50% 75 % 100 % [75%]
- (f) The purest form of water is .
drain water sea water rain water [*rain water*]
- (g) Unwanted and harmful substances in the water cause .
air pollution water pollution land pollution [*water pollution*]
- (h) Which kind of pollution is harmful for marine life in the sea? .
Oil pollution Air pollution Land pollution [*Oil pollution*]
- (i) The movement of water between the sea, the land, and the atmosphere is called .
hydrogen cycle oxygen cycle water cycle [*water cycle*]
- (j) Water can be purified in the laboratory by a process called .
Filtration distillation evaporation [*distillation*]

Unit # 7 MCQs

- (a) The nucleus of an atom contains .
electrons and neutrons protons and electrons protons and neutrons [*protons and neutrons*]
- (b) Electrons in an atom have .
a positive charge negative charge no charge [*negative charge*]
- (c) The number of protons in an atom is called .
atomic number mass number electronic number [*atomic number*]
- (d) The number of electrons in an atom is the number of protons.
greater than equal to less than [*equal to*]
- (e) A molecule is composed of two or more .
electrons protons atoms [*atoms*]
- (f) A compound is formed when two or more atoms are combined .
physically chemically electronically [*chemically*]
- (g) Isotopes are atoms of the same element.
Heavier lighter equal [*heavier*]
- (h) is the combining power of an atom.
Tendency Valency Accuracy [*Valency*]
- (i) The name of a chemical compound written in symbols is called .
chemical equation chemical reaction chemical formula [*chemical formula*]
- (j) We can find out the of a compound by the number of atoms and their ratios.
formula name valency [*formula*]

Unit # 8 MCQs

- (a) A change in which no new chemical substance is formed is called .
physical change chemical change ion exchange [*physical change*]
- (b) A change can be easily reversed.
Chemical physical ionic [*physical*]
- (c) A change is a permanent change.
Physical chemical reversible [*chemical*]

Amazing Science 7th

(d) A reaction can easily be changed back.

Reversible irreversible chemical [*reversible*]

(e) Chemicals which are needed by plants for their proper growth are called .

nutrients food fertilizers [*fertilizers*]

(f) A synthetic material made from polymers is called. .

Rubber wood plastic [*plastic*]

(g) Crude oil and natural gas are called .

Fossil fuels natural fuels synthetic fuels [*fossil fuels*]

(h) Fossil fuels have been made from the that were on the Earth millions of years ago.

bodies of plants and animals rocks and soil water and mud [*bodies of plants and animals*]

(i) are organic compounds made up of carbon, hydrogen, and oxygen.

Fats Plastics Glass [*Fats*]

(j) Electrical fittings are made of a plastic called .

Melamine nylon bakelite [*bakelite*]

unit # 9

MCQ

(a) The transfer of heat energy by the vibration of particles is called .			
Conduction	Convection	Radiation	Conduction
(b) The particles in the hotter region move to the colder region when heat energy travels by			
conduction	convection	radiation	[<i>convection</i>]
(c) are better conductors than fluids.			
Solids	Liquids	Gases	[<i>Solids</i>]
(d) Which one of the following is the best conductor of heat?			
Copper	Glass	Air	[<i>Copper</i>]
(e) Heat travels from one end of an iron rod to the other end by .			
conduction	convection	radiation	[<i>conduction</i>]
(f) Water is a conductor of heat.			
good conductor	bad conductor	bad insulator	[<i>bad conductor</i>]
(g) Liquids and gases are of heat.			
good conductors	poor conductors	bad insulators	[<i>poor conductors</i>]
(h) Hot air moves .			
downwards	upwards	forwards	[<i>upwards</i>]
(i) Which one of the following statements is wrong?			
Convection can take place in a liquid.	Convection can take place in a vacuum.	A convection current can be present in gas	[<i>Convection can take place in a vacuum.</i>]
(j) The sun heats up the Earth by .			
Conduction	Convection	Radiation	[<i>radiation</i>]

Name: _____

Date: _____

Q. Underline the correct word(s) in the sentences below.

- a. Water is a chemical / physical substance which is found in abundance on the Earth.
- b. Two-thirds / three-quarters of the Earth's surface is covered with water.
- c. Water is a combination of hydrogen and oxygen / hydrogen and nitrogen.
- d. Rainwater is the dirtiest / purest form of natural water.
- e. When water falls through the atmosphere many gases / solids are dissolved in it.
- f. As rainwater sinks into the ground, it dissolves many minerals / gases.
- g. Sea water / River water contains a lot of suspended and dissolved impurities and is therefore unfit for drinking.
- h. Fresh water contains dissolved air / dust particles, which are used by water plants and animals for breathing.

Name: _____

Date: _____

1. Explain how water is used:

a. by animals and plants _____

b. by human beings _____

c. in industry _____

d. in agriculture _____

e. for generating electricity _____

f. for travel and transport _____

2. List five ways in which water becomes polluted.

Name: _____

Date: _____

1. Write the valency of each of the following elements.

Element	Valency
hydrogen	
calcium	
aluminium	
carbon	
sodium	
oxygen	
nitrogen	
chlorine	
magnesium	

2. Use the valencies to write the chemical formulae of the following compounds:

Compound	Valencies of elements in the compound	Formula
sodium chloride		
carbon dioxide		
aluminium chloride		
nitrogen oxide		
carbon monoxide		
magnesium chloride		

Name: _____

Date: _____

Write the names of the elements represented by the following symbols:

Cu _____

Pt _____

K _____

Ag _____

Hg _____

Na _____

Au _____

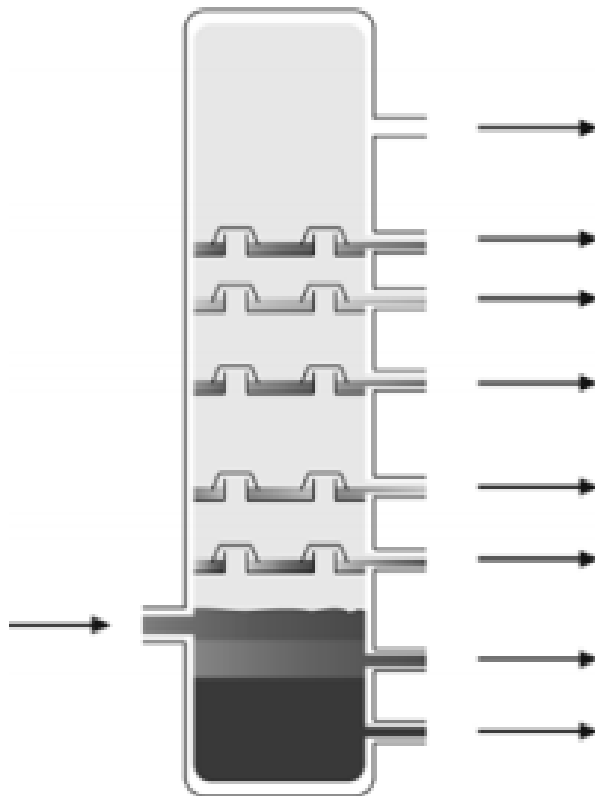
Fe _____

Pb _____

Name: _____

Date: _____

1. Label the diagram of the fractional distillation of crude oil:



2. Complete the table below.

Name of the fraction	Use
bitumen	
paraffin wax	
fuel oil	
lubricating oil	
diesel oil	
kerosene	
petrol	
gas	

Name: _____

Date: _____

1. Write the stages in the production of margarine in the correct order:

- a. Vitamins are added to make it healthier to eat.
- b. Sunflower seeds are crushed and squeezed to extract oil.
- c. The impurities in oil react to form a sort of soap.
- d. The purified oil is separated and then washed.
- e. The oil is refined by heating with sodium hydroxide.
- f. Colour, flavouring, and salt may be added.
- g. The fat is heated and steam blown over it to take away the unpleasant smell.
- h. Oil is heated under pressure over a nickel catalyst, with hydrogen, for the hydrogenation of the unsaturated acids in the oil, to make fats.

2. Explain the difference between a soap and a detergent.

3. What are the harmful effects of using too much chemical fertilizer?

Test paper 2

Time: 3 hours

Total marks: 100

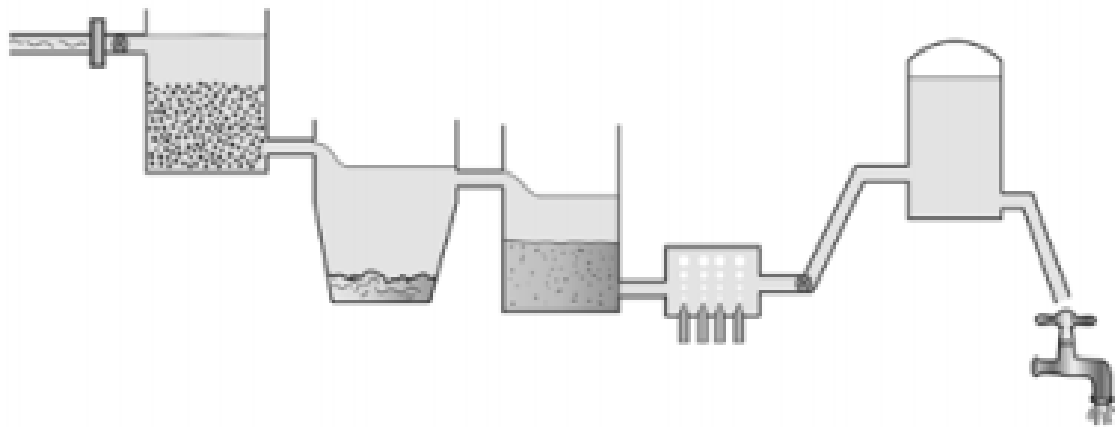
1. Attempt any five questions. (All questions carry equal marks.) [50]
- (a) What is hard water? What causes the hardness of water?
How can hard water be made soft?
- (b) Describe the structure of an atom.
What is the atomic number and mass number of an atom?
- (c) (i) What is an element?
(ii) Write the symbols of the following elements:
carbon, nitrogen, hydrogen, oxygen, sulphur, iodine, phosphorus,
calcium, chlorine, zinc.
- (d) What is a compound?
Write the formulae for the following compounds:
sodium chloride, sodium hydroxide, potassium hydroxide, carbon
dioxide, water, sugar, glucose, copper oxide, copper sulphate, ammonia.
- (e) Explain the difference between the following:
(i) proton and electron
(ii) symbol and formula
(iii) atom and molecule
(iv) ionic bond and covalent bond
(v) element and compound
- (f) Explain the difference between a physical and a chemical change.
How do we know that a chemical change has taken place?
- (g) What is a fertilizer? What are some of the harmful effects of the improper use of fertilizer?
- (h) What are plastics? Write the names of the plastic that is used for making:
plastic bags, ballpoint pens, hose pipes, rope, clothing, saucepan handles, rulers, electrical
fittings.
2. Draw a diagram to show what happens when a sodium atom reacts with a chlorine atom. [5]
3. Draw diagrams to show the bonding in a molecule of water, ammonia, methane. [5]
4. How can soap be made in the laboratory? [10]
5. Draw a fractionating column and write the names of the different fractions being separated in it. [10]
6. Fill in the blanks to describe how margarine is made.
Some of the fats and plant oils can be turned into valuable food such as _____
The oil for making margarine comes from the _____ of plants such as sunflowers.

The sunflower seeds are _____ and squeezed to extract oil. The oil is refined by heating with _____. The _____ in the oil react to form a sort of soap. The purified oil is separated and then _____ of the unsaturated acids in the oil takes place when the oil is heated with hydrogen under pressure over a nickel catalyst (the catalyst speeds up the reaction which would otherwise be slow). The fat is then heated and _____ is blown over it to take away the unpleasant smell. Colouring, _____, and salt may be added. _____ are also added to make it healthier to eat.

[10]

7. Label this diagram of a filtration plant.

[10]



Name: _____

Date: _____

1. Fill in the blanks to complete the text below.

Heat is a degree of _____. In scientific terms, heat is a type of energy found in a body that has a _____ temperature than its surroundings.

When an object is heated, its molecules _____ energy and they start moving _____. As they _____, they bump into each other at a _____ rate, and push the _____ in front of them. As this movement continues, _____ travels from one end of the object to the other.

2. Complete the table below by writing the correct temperatures.

Temperature scales	Fahrenheit	Celsius	Kelvin
Melting point of ice			
Boiling point of water			
Human body temperature			

Name: _____

Date: _____

Q. Underline the correct word(s) in the sentences below.

1. Radiation is a particular way in which energy / electricity travels.
2. Radiation needs / does not need a medium to be carried.
3. Radiation can travel through solids / space.
4. The Earth is heated by the radiation from the Sun / Moon.
5. Clouds / Stars cut down some of the heat radiation reaching the Earth.
6. A white surface absorbs / reflects more heat.
7. A black surface absorbs / reflects more heat.
8. Good absorbers of heat radiation are good / bad emitters.
9. Dull black surfaces are the best emitters / absorbers of radiation.
10. Shiny silvery surfaces are the best / worst absorbers of radiation.
11. Dull black surfaces are the best / worst emitters of radiation.
12. Shiny, silvery surfaces are the best / worst emitters of radiation.

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