

Amazing Science 6th

DISTRICT PUBLIC SCHOOL & COLLEGE, KASUR



NOTES/HOME TASK/WORK SHEET FOR

CLASS: 6th

SUBJECT: G. SCIENCE

2nd TERM SYLLABUS: UNIT ()

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Unit # 5

Air

Answers to Exercises in Unit 5:

1. (a) What is the atmosphere?

Ans. The Earth is surrounded by a layer of air, which extends hundreds of kilometres above the surface of the Earth. This ocean of air is called atmosphere.

(b) What is the percentage of the different gases found in the atmosphere?

Ans. One-fifth of the air is oxygen, four-fifth is nitrogen. Other gases, like carbon dioxide and argon, are in very small amounts.

(c) Name the layers of the atmosphere. Which layer is the most important for living things?

Ans. The layers of air are: troposphere, tropopause, stratosphere, ionosphere. The troposphere is the layer nearest to the Earth. It has oxygen gas which is very important for all living things.

(d) What is atmospheric pressure?

Ans. The weight of the atmosphere is called atmospheric pressure.

(e) Describe a barometer.

Ans. A simple barometer consists of a long glass tube which is sealed at one end. It is filled with mercury and inverted in a dish containing mercury. The height of the column of mercury in the tube measures the atmospheric pressure, which is equal to 60 mm of mercury at sea level.

(f) How will you prove by an experiment that air exerts pressure?

Ans. Take an empty tin can and heat it to remove all the air inside it. Now screw on the cap tightly. The can will collapse due to the air pressure outside.

(g) How is weather affected by changes in air pressure?

Ans. Changes in air pressure cause changes in weather. As warm air rises it produces an area of low pressure near the ground. Cooler air moves down to take its place. Rain clouds are formed in low pressure areas. Low pressure causes strong dust storms and hurricanes because air rushes from regions of high pressure to regions of low pressure. When there is high pressure the weather is often sunny and fine.

2. (a) hundreds of kilometers (b) pressure (c) 760 mm of mercury (d) Barometer
(e) Low air pressure

(g) air pressure	(h) high	(f) decreases (i) altimeter	(j) barometer
3. Choose the correct answer:			
(a) 1 kg	(b) high pressure to low pressure	(c) storms (e) temperature	(f) altimeter (j) high altitudes
(d) lower to higher altitudes			
(g) 760 mm	(h) pilot	(i)	air

4. (a) low	(b) low	(c) high	(g) high
(d) high	(e) low	(f) low	

5. (a) nitrogen (b) oxygen (c) argon

(d) sulphur dioxide	(e) carbon monoxide	(f)	soot
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6. (a) carbon dioxide, nitrogen, oxygen	(b) carbon dioxide, nitrogen, oxygen			
(c) oxygen (f) oxygen	(d) carbon dioxide (g) carbon dioxide	(e)	carbon dioxide	carbon dioxide
(h) oxygen	(i)			

Unit # 6

Elements, mixtures, and compounds

Answers to Exercises in Unit 6:

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.

(i) Write the symbols of the following elements: carbon, nitrogen, hydrogen, oxygen, sulphur, iodine, phosphorus, calcium, chlorine, zinc.

Ans.

Element	Symbol
Carbon	C
Nitrogen	N
Hydrogen	H
Oxygen	O
Sulphur	S
Iodine	I
Phosphorous	P
Calcium	Ca
Chlorine	Cl
Zinc	Zn

(ii) Write the Latin names and symbols of the following elements: copper, silver, gold, mercury, iron, potassium, sodium, lead, tin.

Ans.

Latin names	Symbol
Cuprum	Cu
Argentums	Ag
Aurum	Au
Hydrargyrum	Hg
Ferrum	Fe
Kalium	K
Natrium	Na
Plumbum	Pb
Stannum	Sn

(c) Write the formulae of the following compounds: sodium chloride, sodium hydroxide, potassium hydroxide, carbon dioxide, water, sugar, glucose, copper oxide, copper sulphate, ammonia.

Ans.

Compound	Formula
sodium chloride	NaCl
sodium hydroxide	NaOH
potassium hydroxide	KOH
carbon dioxide	CO ₂
water	H ₂ O
sugar	C ₁₂ H ₂₂ O ₁₁
glucose	C ₆ H ₁₂ O ₆
copper oxide	CuO
copper sulphate	CuSO ₄
ammonia	NH ₃

(d) What are the differences between metals and non-metals? What is a metallic bond?

Ans.

Metals

good conductors
shiny
solids
high melting and boiling points
can be drawn into wires and beaten into foil and plates

Non-metals

bad conductors
dull
Solid, liquids, gases
low melting and boiling points
cannot be drawn into wires or beaten into foil and plates

In metals, the atoms are so tightly packed that the electrons overlap one another forming metallic bonds.

(e) What is mixture?

Ans. A mixture is not a pure substance. It is made of two or more substances which are not chemically combined. For example, a mixture of sugar and salt.

(f) Describe the different type of solutions.

Ans. An aqueous solution is a mixture of water and any substance that is solvent in it. For example, a solution of water and common salt or sugar.
A dilute solution is one in which a smaller amount of solute is dissolved in the solvent. A concentrated solution is one in which a lot of solute is dissolved in the solvent. For example, one tablespoon of salt in two cups of water is more dilute than three tablespoons of salt in two cups of water. Concentrated solutions can be mixed with solvents to make dilute solutions, e.g. fruit juice concentrates can be mixed with water to dilute them.

(g) How would you separate a mixture of salt and sand?

Ans. A mixture of salt and sand can be separated by adding water and then filtering the solution. Sand will be left on the filter paper. The filtered solution is heated; the water evaporates and pure salt is left behind.

(h) 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.

(i) **What kind of a bond formed by a sodium atom and a chlorine atom?**

Ans. ionic bond

(j) **What kind of a bond exists between two oxygen atoms?**

Ans. covalent bond

k) Ans.

Properties	Ionic compounds	Covalent compounds
(i) physical state	solid	solid, liquid, gas
(ii) melting point	high	low
(iii) conductor	good	bad
(iv) solubility	in water	in covalent solvents
(v) type of bond between atoms	ionic	covalent between atoms

(l) Ans.

A solution which cannot dissolve any more solute at a fixed temperature.

2. Fill in the blanks

Ans.

(a) atoms	(b) Proton	(c) electron	(j) covalent
(d) atomic number	(e) mass number	(f) two	
(g) eight	(h) chemical bond	(i) positively	

3. Ans.

Symbol	Protons	Neutrons	Electrons	Atomic No.	Mass No.	
(a) hydrogen	H	1	–	1	1	1
(b) carbon	C	6	6	6	6	12
(c) sodium	Na	11	12	11	11	23
(d) chlorine	Cl	17	18	17	17	35
(e) oxygen	O	8	8	8	8	16

4. Choose the correct answer.

Ans. (a) an element (b) is a bad conductor of heat and electricity (c) various gases (d) solute (e) an emulsion (f) filtration (g) metals (h) metal

5. Match the statements.

- (a) is a pure substance
- (b) is formed by a chemical reaction.
- (c) contains particles that are not chemically combined.
- (d) is passing a mixture through a filter paper.
- (e) is formed when oil and water are mixed.
- (f) is dissolved in a solvent.
- (g) is a layer formed by settling of particles at the bottom.
- (h) are good conductors of heat and electricity.

Unit # 7

Energy

Answers to Exercises in Unit 7:

1. (a) What is energy?

Ans. Energy is the ability to do work. All things need energy to move and work.

(b) Where does all the energy on Earth come from?

Ans. All energy on the Earth comes from the Sun. It is called solar energy.

(c) What are fossil fuels?

Ans. Millions of years ago plants and animals got energy from the Sun. When they died their bodies slowly changed into oil and coal which are called fossil fuels.

(d) What is the difference between potential and kinetic energy?

Ans. Kinetic energy is the energy in a body which is due to its moving atoms.
Potential energy is the stored energy in a body which is due to its position.

(e) What is chemical energy?

Ans. Chemical energy is the energy which is stored in chemical substances. It may be released in the form of kinetic energy or heat.

(f) How does sound energy move?

Ans. Sound energy moves in the form of sound waves which are produced by vibrating bodies.

(g) What is nuclear fission?

Ans. The breaking apart of the nucleus of an atom is called nuclear fission. It releases huge amounts of heat energy.

(h) How is solar energy produced?

Ans. Solar energy is produced by the Sun due to fusion of hydrogen atoms which crash into each other making larger atoms of helium gas.

(i) Can energy be made?

Ans. Energy cannot be made out of anything and neither can it be destroyed. But it can change its form.

2. Ans.s

- | | | | |
|------------------|----------------|---------------|-------------|
| (a) energy | (b) solar | (c) heat | (d) Petrol |
| (e) kinetic | (f) chemical | (g) digested | (h) fission |
| (i) fusion | (j) biogas | | |
| 3. (a) potential | (b) electrical | (c) chemical | (d) nuclear |
| (e) sound | (f) chemical | (g) potential | (h) kinetic |
| (i) electrical | | | |

Unit # 7

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MCQs

(a) The energy of the Sun is called .			
lunar energy	solar energy	electrical energy	[<i>solar energy</i>]
(b) Oil and coal are called .			
petrol fuels	diesel fuels	fossil fuels	[<i>fossil fuels</i>]
(c) Moving atoms have energy.			
potential	kinetic	sound	[<i>kinetic</i>]
(d) energy is the stored energy of a body due to its position.			
Potential	Kinetic	Electrical	[<i>Potential</i>]
(e) The vibrations produced by a vibrating body travel in air as waves.			
light	heat	sound	[<i>sound</i>]
(f) Fireworks have energy which is released in the form of sound, heat, and light.			
electrical	chemical	physical	[<i>chemical</i>]
(g) The splitting of atoms is called .			
fusion	fission	synthesis	[<i>fission</i>]
(h) Fats and carbohydrates produce energy for our bodies.			
heat	light	sound	[<i>heat</i>]
(i) When biogas mixes with carbon dioxide gas gas is produced.			
chlorine	ammonia	methane	[<i>methane</i>]
(j) Energy from the ground is called .			
mechanical energy	kinetic energy	geothermal energy	[<i>geothermal energy</i>]

Name: _____

Date: _____

1. Identify the following gases:

Description	Gas
a. Colourless, heavier than air, soluble in water, does not help in burning	_____
b. Colourless, combines with oxygen to form oxides, combines with hydrogen to form ammonia	_____
c. Colourless, slightly soluble in water, combines with many elements to form their oxides	_____

2. Write the name of the gas which is used for:

- a. breathing and burning _____
- b. cutting and welding _____
- c. making fertilizers _____
- d. freezing food _____
- e. putting out fires _____
- f. making fizzy drinks _____

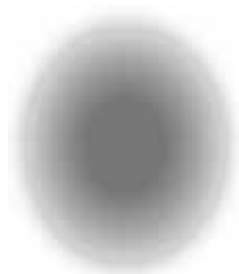
Name: _____

Date: _____

1. Write the names of the layers of the atmosphere.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

2. Draw arrows from the text in the boxes to show how the atmosphere protects the Earth from becoming too hot:



Sun



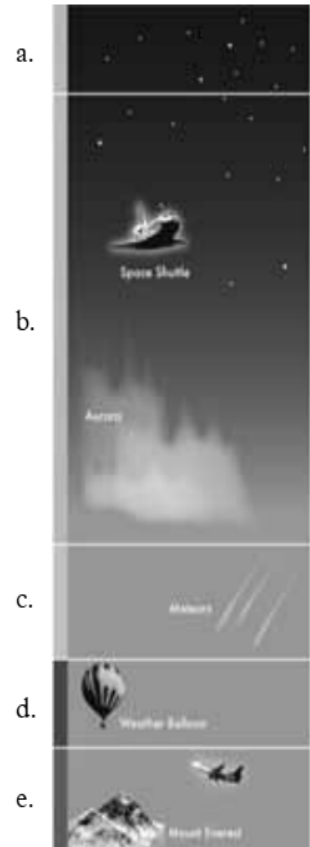
Earth

heat from the sun

Some heat escapes into space.

some heat absorbed by the clouds and dust particles

Heat warms the Earth.



Name: _____

Date: _____

1. Complete the table to differentiate between metals and non-metals.

Properties	Metals	Non-metals
shiny		
conductors of heat and electricity		
melting points		
states found in		
produce sound on being beaten		
can be drawn into wires		
can be beaten into plates		

2. Write the properties of ionic and covalent compounds in the correct boxes below.

Ionic compounds	Covalent compounds

Properties: hard solids, do not conduct electricity, high melting and boiling points, good conductors of electricity, soluble in water, soluble in covalent compounds, do not conduct electricity, low melting and boiling points, found in all three states

Name: _____

Date: _____

1. Draw the following atoms and write their names:

- a. atomic mass 12, atomic number 6
- b. atomic mass 23, atomic number 11
- c. atomic mass 35, atomic number 17

2. Which two atoms would make an ionic compound? _____ and

3. Write the name of the compound. _____

Name: _____

Date: _____

1. Starting from the Sun, draw a diagram to show how energy is transferred in an environment.

2. Fill in the blanks to complete the paragraph below.

_____ gas is a valuable and cheap source of energy. When plants and animals _____, they give off this gas. When animal waste and manure mix with _____ gas, a gas called _____ gas is formed. It can be collected and used as _____, for cooking _____ and for boiling _____.

Name: _____

Date: _____

1. Fill in the table to show the energy input and output of some useful energy converters:

Converter	Energy input	Energy output
radio		
television		
electric drill		
washing machine		
calculator		
iron		
light bulb		
telephone		

2. a. Write the names of four new energy sources.

i. _____ ii. _____

iii. _____ iv. _____

b. Which one would it be useful, as well as economical, to produce in your part of the country?

c. Explain your answer. _____

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