MATTER

It is common knowledge that matter may **exist** in three physical states (solid, liquid and gas). It is usually possible to change matter from one state to the other by changing its temperature. For instance, a piece of ice is called a solid; it may melt and form a liquid; as it **evaporates**, liquid water changes into a vapour, i. e. into the **gaseous state**.

Many kinds of matter, like water, can be obtained in each of the three states; for some, however, extraordinary means have to be used in order to produce one, or even two of the states; and for others, only two states are known or can be produced.

Common salt, for example, exists normally as a **solid**; at a temperature of several hundred degrees, it can be liquefied; and at still higher temperature it is converted into vapour. Carbon, a solid under normal **conditions**, can be vaporized, but it has never been liquefied.

Solids have both a definite volume and **a definite shape**. Liquids, too, have a definite volume, but they take the shape of their containers.

Gases have neither a definite shape nor a definite volume. A chemist must have a thorough knowledge of the states of matter and of physical laws that **govern the behaviour** of matter in various states.

It is known to everybody that all matter is **composed of** molecules. The question which must be answered, then, is: if all matter is composed of molecules, what is the essential difference between the states of matter? The answer to this question is that the **essential difference** between these states is the relative quantities of energy molecules possess in different states.

4. Match the highlighted words and phrases to their definitions.

a) to change from one physical state to a vapour;

b) a form of something;

c) important distinctive feature;

d) to be, to live;

e) to influence the way a person acts;

f) hard and not a gas or liquid;

g) to form, to consist of;

h) to be of the form of gas;

i) a way of living, existing.

5. Choose five highlighted words from the text and make up your own sentences.

6. According to the text, what…

1. three physical states do you know?
2. is called a solid?
3. can be changed into the gaseous state?
4. matter can be obtained in three states? Give examples.
5. matter has a definite volume?
6. takes on the size of containers?
7. is the distinctive characteristic of gases?
8. is the matter composed of?

7. Complete the sentences by putting the correct form of the word in brackets into each gap.

1. ... matter is also known as vapour. (GAS)
2. ... natural gas is usually warmed for making natural gas and used in cooking.(LIQUID)
3. Scientists think that liquid can keep its volume when it changes a ... .(CONTAIN)
4. Boiling water leads to its ... .(VAPORIZE)
5. The Austrian-Swedish ... , Lise Meitner, discovered the element protactinium. (MATH)
6. There are two main types of matter properties: physical and ... .(CHEMISTRY)
7. Transfer of one or more species from the gas phase to a liquid solvent is also called gas ... or gas scrubbing. (ABSORB)
8. There are two main types of biochemical ...: reduction and oxidation. (REACT)

8. Work in pairs. Rearrange the words to make the sentences.

1. Heat /destroy/ a / system / can /biochemical.

2. In liquids, /move /around /each other /and /the molecules/ slide /past.

3. Plasma /atoms /exists /when /are/ in /an excited state.

4. Thermal / solids,/ can be /energy /transferred /through /liquids and gases.

5. The solids / and / particles:/ atoms, /consist of/ ions /molecules.

6. Liquid / do not have /such/ strong /molecules / restoring force /as solids.

7. Gas /behave /like /molecules / are /independent of one / they /another.

8. When/ it /ice /melts, /a piece of/ forms / a liquid.

9. Salt /as a solid,/ exists / can / but it also / be / liquefied.

10. The/ in/ molecules/ move /randomly/ a material

Exercise 1. Combine the words in brackets with suitable SUFFIXES to complete the sentences. Choose from the following suffixes:

-er, -or, -ing, -ion, -ness, -ity

1. A ..... (boil) is a closed vessel in which water or other fluid is heated.
2. ..... (compress) is the reduction in size of data in order to save space or transmission time.
3. In chemistry, the ..... (dense) of many substances is compared to the ..... (dense) of water.
4. ..... (transmit) is the act of passing something on.
5. Combustion process is also called ..... (heat).
6. ..... (hard) is the characteristic of a solid material expressing its resistance to permanent deformation.

-ful, -less, -ous, -al, -ive

1. It can be..... (use) to write a summary of your argument first.
2. Metals containing iron are called ..... (ferrum).
3. You can ask him if you want to but it's ..... (use). He doesn't want to talk about it.
4. Hydrogen and oxygen are ..... (chemistry) elements.
5. If any material is ..... (conduct), it means it conducts electric current.

-ify, -ise/-ize

1. I think this plan is too complicated. You should _____ (simple) it.

2. There used to be some disputes between the 2 countries but recently they have managed to _____ (normal) their relations.

3. I hope you _____ (real) that you are wrong.

4. When a liquid substance becomes solid, it _____ (solid).

Exercise 5. Find in a dictionary words of different parts of speech with the same root:

Verb *Adjectives* *Noun* *Adverb*

to digest – digest _ _ _, _ _ digest_ _ _ _, digest_ _ _;

to taste – tast_, tast_ _ _ _, _ _ _ _ _, taste_;

to saturate – saturate_, _ _ _ _ _saturate_;

to connect – connect_ _ _, connect_ _ _;

to act – act_ _ _, act_ _ _ _ _, act_ _ _, act_ _ _ _ _;

to create – creat _ _ _, creat _ _, creat _ _ _ _ _;

to differ – differ_ _ _.