**Перекласти тексти, виконати вправи. Всі завдання повинні бути виконані письмово.**

## Text Chemistry

Chemistry is the science which deals with materials, their properties and the transformations they undergo. So chemistry is the study of the composition and properties of matter, their changes, the conditions under which such changes take place, and the energy changes which accompany them.

Chemistry is concerned with the nature of fire and the structure of water, it deals with colours, catalysis and crystal structure, with physical properties and chemical reactivity.

Chemistry is one of the fundamental sciences. It plays an important part in the development of biochemistry, physics, geology, and many other fields of science. Chemistry's origin goes back to ancient times, with the manufacture of bronze, iron, ceramics, glass.

At the end of the sixteenth century sufficient facts, entirely free of magic which surrounded the work of the alchemists appeared.

In the seventeenth century modern chemistry began with the work of Robert Boyle. He was the first one who studied quantitatively the relationship between the volume of a gas and the external pressure upon it. Later A. Lavoisier introduced the concept of the chemical elements.

In the 19th century A. Avogadro introduced the formulation of molecules. He stated that equal volumes of gases under the same conditions of temperature and pressure contain the same number of molecules.

F. A. Kekule and A. M. Butlerov introduced the structural theory of organic chemistry.

In 1869 D. I. Mendeleyev discovered regularities in the properties of the elements. D. I. Mendeleyev's discovery was the greatest one in chemistry.

Many great scientists devoted their life to the development of chemistry among them Bohr whose theory of the hydrogen atom was very important, the Curies who in 1934 announced the preparation of artificial radio-active elements, Marie Curie who discovered radium, and the element polonium.

Many great Russian chemists made a great contribution to world science. Among them, the outstanding Russian chemists M. V. Lomonosov, D. I. Mendeleyev, A. M. Butlerov, Academician N. N. Semenov, and many others.

Everyone now understands the importance of chemistry. The future of chemistry is practically unlimited. Rapid development of chemical industry will make it possible to create many new goods, machines, plastics, polymers, it will help to understand many new phenomena.

### Ex. 1Answer the following questions:

1. What do you know about chemistry? 2. What does chemistry study? 3. What does chemistry deal with? 4. Why is chemistry one of the fundamental sciences? 5.

When did sufficient facts about chemistry appear? 6. When did modern chemistry begin? 7. Who was the first to study quantitatively the relationship between the volume of a gas and the external pressure upon it? 8. What did Lavoisier introduce? 9. Who discovered regularities in the properties of the elements? 10. What can you tell about the future of chemistry?

**Ex. 2 Match the word and its explanation.**

| | | | |
|---|---|---|---|
| 1 | concept | A | space occupied by a gas or liquid |
| 2 | goods | B | apparatus for applying mechanical power, having several interrelated parts |
| 3 | machine | C | general notion; abstract idea |
| 4 | plastic | D | compound of one or more large molecules formed from repeated units of smaller molecules |
| 5 | polymer | E | synthetic resinous substance that can be given any shape |
| 6 | volume | F | a movable property |

**Ex. 3 Find the paragraphs that correspond to the following names.**

1. Great scientists of the 19$^{th}$century.
2. The great chemist Robert Boyle and his theory.
3. The definition of chemistry.
4. D.I. Mendeleyev' s Periodic Law.
5. The relation of chemistry to other fields of science.
6. The future of chemistry.
7. The origin of chemistry.
8. A. Avogadro's formulation of molecules.

**Ex. 4 Translate the following sentences into English.**

1. Наука хімія включає в себе вивчення властивостей, складу та структури речовини, зміни у структурі та композиції, що зазнає речовина, а також зміни енергії, що їх супроводжують.
2. Хімія має тісний зв'язок з іншими науками: геологією, біохімією, фізикою тощо.
3. Цей матеріал дуже важливий для промисловості країни, тому що він має надзвичайні властивості.
4. Зараз хіміки працюють над проблемою виробництва цієї речовини.
5. За звичайних умов молекула водню не є дуже активною.

**Text Fields Of Chemistry**

The field of chemistry is now a very large one. There are more than 30 different branches of chemistry. Some of them are inorganic chemistry, organic chemistry, physical chemistry, analytical chemistry, pharmaceutical chemistry, nuclear chemistry, industrial chemistry, colloidal chemistry, electrochemistry, magnetochemistry, and biochemistry.

*Inorganic chemistry.* It was originally considered that the field of inorganic chemistry consists of the study of materials not derived from living organisms. However, it now includes all substances except the hydrocarbons and their derivatives.

*Organic chemistry.* At one time it was thought that all substances found in plants and animals could be made only by using part of a living plant or animal. The study of these substances, most of which contain carbon, was therefore called organic chemistry. It is now known that this idea is quite wrong. In 1828 Fr. Wohler, a German scientist, made an "organic" substance using a simple laboratory process. Organic chemistry now merely means the chemistry of carbon compounds.

*Physical chemistry.* This field of chemistry is concerned with those parts of chemistry which are closely linked with physics as, for instance, the behaviour of substances when a current of electricity is passed through them.

*Electrochemistry* is concerned with the relation between electrical energy and chemical change. Electrolysis is the process whereby electrical energy causes a chemical change in the conducting medium, which usually is a solution or a molten substance. The process is generally used as a method of deposition metals from a solution.

*Magnetochemistry* is the study of behaviour of a chemical substance in the presence of a magnetic field. A paramagnetic substance, i.e. a substance having unpaired electrons, is drawn into a magnetic field. Diamagnetic substances, i.e. substances having no unpaired electrons, are repelled by a magnetic field.

*Biochemistry.* Just as the physical chemist works on the boundaries between physics and chemistry, so the biochemist works on the boundaries between biology and chemistry. Much of the work of the biochemist is connected with food-stuffs and medicines. The medicines known as antibiotics, of which penicillin is an early example, were prepared by biochemists.

**Ex. 1. Answer the following questions.**

1. How many different branches of chemistry are there? 2. Which are the better known fields of chemistry? 3. What does inorganic chemistry deal with? 4. Give an example of an inorganic compound. 5. How many elements does water consist of? 6. What is the subject of electrochemistry? 7. What is the study of behaviour of chemical substances in the presence of a magnetic field called? 8. What is the difference between paramagnetic and diamagnetic substances? 9. By whom were the medicines known as antibiotics prepared?

**Ex. 2. Fill in the blanks using appropriate words from the text.**

1. Inorganic chemistry now _____ all substances except the _____ and their _____. 2. Once scientists thought that all substances found in _____ and _____ were organic. 3. _____ chemist studies the _____ of substances when a current of _____ is passed through them. 4._____ is generally used as a method of deposition metals from their _____. 5. _____ such as _____ are prepared by biochemists.

**Ex. 3. Decide what word or word combination is being defined in these sentences.**

1. a subdivision of a family, knowledge, etc.
2. a thing got from some particular source
3. the way of acting upon something under particular conditions
4. the ordered movement of electrically charged particles
5. a physical environment etc. of a living organism
6. a conversion of a solid or gas into a liquid by mixture with a liquid
7. the area of force around a magnet
8. the limits of an area
9. a substance used as food
10. a substance that can inhibit or destroy susceptible micro-organisms

**Ex. 4. Translate the following sentences into English.**

1. Потрібно бути обережним з вибуховими речовинами. 2. Де Ви вчора були? – Вчора ми виконували експеримент у лабораторії протягом 8 годин. 3. Ця стаття описує експеримент з аналітичної хімії. 4. Зараз біохіміки працюють над новими антибіотиками проти цієї небезпечної інфекції. 5. Синтетичний пластик займе місце металів у машинобудуванні. 6. Метали є добрим провідником тепла, в той час як дерево – поганим. 7. Вивчення вуглеводнів і їх похідних відноситься до органічної хімії. 8. Предмети з натуральних матеріалів не мають усіх потрібних властивостей. 9. У майбутньому типічними матеріалами будуть продукти органічного синтезу, а саме полімери. 10. Над чим Ви зараз працюєте? – Ми розробляємо матеріали з такою електричною провідністю та магнітними властивостями, які стануть важливими у електроніці та допоможуть створити нові типи транзисторів.