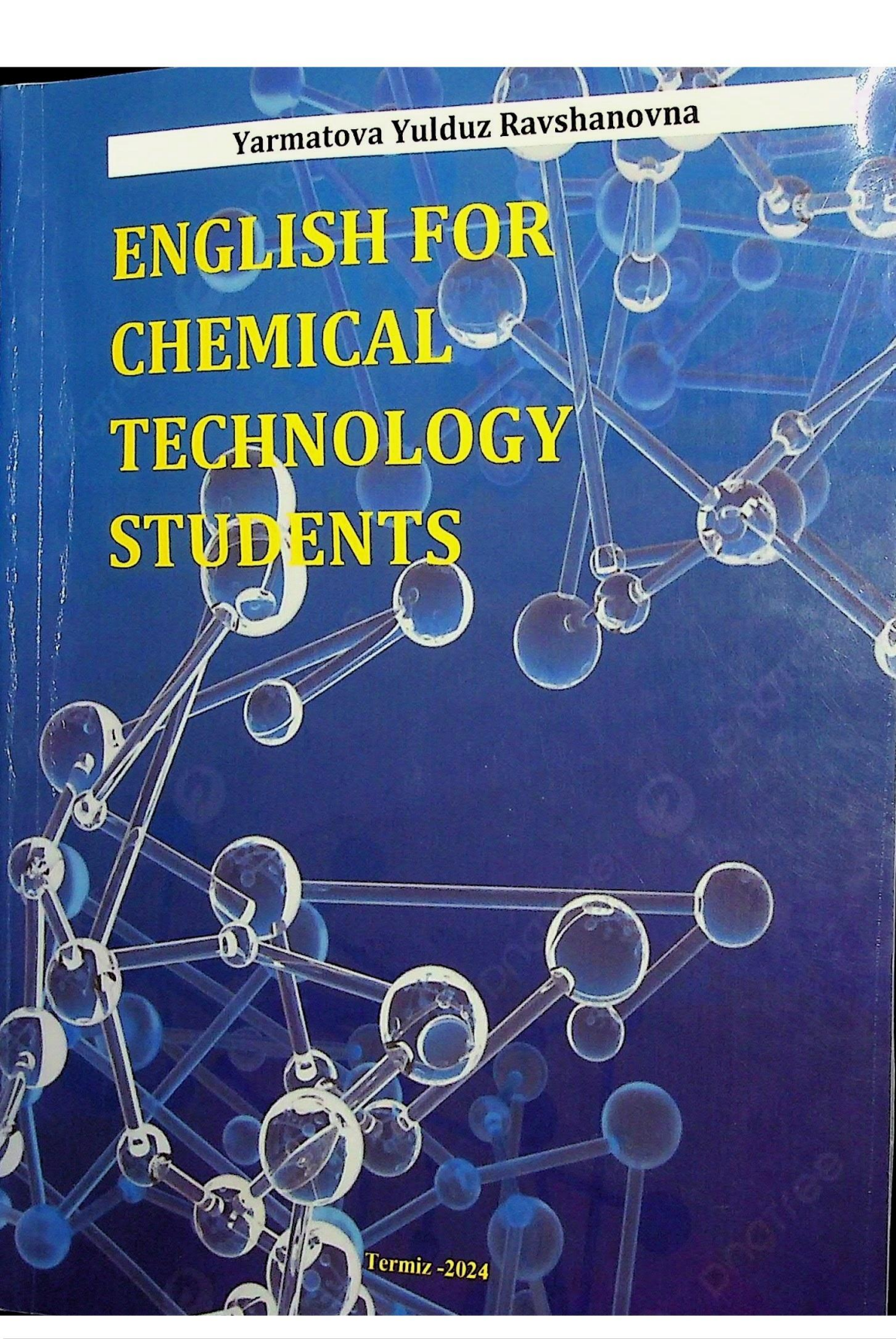


The background of the cover is a deep blue with a complex, three-dimensional molecular structure. It features numerous white and light blue spheres of varying sizes, connected by thin, translucent lines that represent chemical bonds. The structure is dense and interconnected, creating a sense of depth and scientific complexity.

Yarmatova Yulduz Ravshanovna

ENGLISH FOR CHEMICAL TECHNOLOGY STUDENTS

Termiz -2024

КИТОБ БУ ЕРДА КЎРСАТИЛГАН
МУДДАТДАН КЕЧИКТИРИЛМАЙ
ҚАЙТАРИЛИШИ КЕРАК.

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**O'ZBEKISTON RESPUBLIKASI
OLIY TA'LIM, FAN VA INNOVATSIYALAR VAZIRLIGI
TERMIZ MUHANDISLIK- TEXNOLOGIYA INSTITUTI
O'ZBEK TILI VA ADABIYOTI KAFEDRASI**

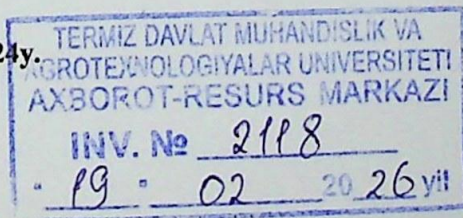
YARMATOVA YULDUZ RAVSHANOVNA

ENGLISH FOR CHEMICAL TECHNOLOGY STUDENTS

**60710100- Kimyoviy texnologiya yo`nalishi birinchi kurs
talabalari uchun xorijiy (ingliz) tili fanidan**

O'QUV QO'LLANMA

Termiz 2024y.



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Ushbu o'quv qo'llanma O'zbekiston Respublikasi Oliy ta'lim, fan va innovatsiyalar vazirligining 2024 yil 7-maydagi 149-sonli buyrug'iga asosan nashrga tavsiya etilgan.

Y.R.Yarmatova

"English for Chemical Technology Students"

("Kimyoviy texnologiya ta'lim yo'nalishi talabalari uchun Ingliz tili").

O'quv qo'llanma: 2024. 100-bet

Ushbu o'quv qo'llanma "Xorijiy til" (Ingliz tili) fanidan ishchi dasturida ko'zda tutilgan zamonaviy ped – texnologiyalar asosida yoritilgan bir qator maxsus mavzular, grammatika bo'yicha materiallar va mavzu materiallarini ishlab chiqish va mustahkamlash uhn mashqlar, mustaqil o'qish va tinglash uchun matnlardir. Lug'atlar, so'rovnomalar, shungdek, talabalarning ingliz tilida og'zaki, yozma, tinglab tushunish va gapirish salohiyatlarini rivojlantrish bo'yicha topshiriqlar mutaxassislik bo'yicha matnlar va to'plamlarga xos bo'lgan materiallar ilova qilindi. Qo'llanmaning muhim elementi matnlar uchun vazifalardir. Aqliy hujum, Bahs -Munozara, BBB, Insert, Klaster, debat, hamkorlikda izlanish va argumentlangan esse yozish kabi innovatsion texnologiyalardan foydalanildi.

O'quv qo'llanma ona tilida ta'lim oladigan talabalar uchun mo'ljallangan.

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KIRISH

Bugungi kunda Xorijiy tillar ayniqsa Ingliz tilini o'rganishga katta e'tibor qaratilmoqda. Prezident Shavkat Mirziyoyev raisligida 2021 yil 6 may kun Chet tillarini o'qitish tizimini takomillashtirish chora-tadbirlari yuzasidan videoselektor yig'ilishi o'tkazildi. 2021 yil 19 mayda O'zbekiston Respublikasi Vazirlar Mahkamasining № 312 sonli "Xorijiy tillarni o'rganishni ommalashtirishni samarali tashkil etish chora tadbirlari to'g'risida"gi qarori tasdiqlandi.

Ushbu qarorning ijrosi yuzasidan Kimyoviy texnologiya yo'nalishi talabalarning Xorijiy tillarni egallash darajasini oshirish maqsadida mazkur o'quv qo'llanma ishlab chiqildi. Ushbu qo'llanma 16 ta mavzuni, yani mutaxassislikka oid matnlar, grammatik va leksik materiallarni o'z ichiga olgan bir nechta qiziqarli topshiriqlarni qamrab olgan bo'lib, barcha integrallashgan til ko'nikmalarini rivojlantirishga qaratilgan va asosiy maqsad birinchi kurs talabalarning o'z sohasiga tegishli bo'lgan kimyo texnologiyalariga oid terminlar ustida ishlashni takomillashtirishga qaratilgan. Mazkur qo'llanma mutaxassisligi chet tili bo'lmagan Oliy va O'rta Maxsus ta'lim muassasalari uchun mo'ljallangan. "English for Chemical Technology Students" qo'llanmasi og'zaki nutqni rivojlantirishga qaratilgan. Ushbu qo'llanma o'z ichiga soddalikdan murakkablikka qarab yo'naltirilgan grammatik takrorlash kursi, og'zaki muloqotga kirishish (ma'ruza qilish; taqdimot o'tkazish, baxs-munozara va debatlarida ishtirok etish kabilar) bo'yicha yo'riqnomalar, talaffuz me'yorlari qoidalari, yo'nalishiga mos keluvchi leksik minimum, hamda kimyo texnologiyasiga doir atamalarning ingliz tilidagi izohli lug'atini qamrab olgan alohida bo'limlar ishlab chiqilgan. Bu o'z o'rnida talabalarning o'z mutaxassisliklari doirasida ingliz tilini yanada chuqurroq o'rganishlari uchun xizmat qiladi. Bu orqali til o'rganuvchilar ilmiy va kasbga oid sohalarda faoliyat olib borish uchun ingliz tilida kommunikativ kompetentsiyasini shakllantirishiga yordam beradi. Shu bilan birga ushbu qo'llanmada mustahkamlash uchun mashqlar, dialoglar, eslatmalarni ham o'z ichiga olgan.

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Lesson 1. Education and the role of foreign languages.

Why learn a foreign language?

You live a new life for every new language you speak.

(Czech proverb)

1. Why is learning a foreign language important? Read the quotes about learning languages. Choose 2 of them you like best, and comment on them:

"If you talk to a man in a language he understands, that goes to his head. If you talk to him in his own language, that goes to his heart"

Nelson Mandela

"Language is the road map of a culture. It tells you where its people come from and where they are going "

Rita Mae Brown

"Knowledge of language is the doorway to wisdom"

Roger Bacon

"No man should travel until he has learned the language of the country he visits. Otherwise he voluntarily makes himself a great baby – so helpless and so ridiculous "

Ralph Waldo Emerson

"Learn everything you can, anytime you can, from anyone you can, there will always come a time when you will be grateful you did"

Sarah Caldwell

"A different language is a different vision of life"

Federico Fellini



English	Definition	Uzbek
dedicate	devote (time, effort, or oneself) to a particular task or purpose	bag'ishlamoq
differ	be unlike or dissimilar	farq qilmoq
help	make easier/ better	yordam bermoq
speak	say something in order to convey information, an opinion or feeling	gapirmoq, gaplashmoq
know	be aware of through observation, inquiry, or information	bilmoq, xabardor bo'lmoq
promote	To move somebody to a higher rank or more senior job	martabasini ko'tarmoq
sea	the expanse of salt water that covers most of the earth's surface and surrounds its landmasses	dengiz
teaching	training, education	ta'lim berish, o'qitish
success	achievement	muvaffaqiyat, omad
interest	The state of wanting to know or learn about something or someone	qiziqish
prepare	make ready for use or consideration	tayyorlamoq

like	be fond of	yoqtirmoq
advance	move forward in a purposeful way	oldinga harakat qilmoq
direct	straight, straightforward	bevosita, to'g'ri
poet	a person who writes poems	shoir
connect	Bring together or into contact so that a real or notional link is established	biriktirmoq, bog'lamoq

2. Read the text to find some more ideas. Fill in the gaps using the word given in capitals in the box to form a word that fits in the space in the same line.

Sentences 1-3: DEDICATE, DIFFER, HELP

Sentences 4-9: SPEAK, KNOW, PROMOTE, SEA, TECHING, SUCCESS

Sentence 10: INTEREST

Sentence 11: PREPARE

Sentence 12: LIKE

Sentence 13: ADVANCE

Sentence 14: DIRECT

Sentence 15-16: POET, CONNECT

There is an example at the beginning (1):

Learning a foreign language takes time and (1) *dedication*, but still millions of people do this every day. And it is no wonder, for there so many (2) _____ spheres and situations where a foreign language can be (3) _____.

Work and Career

More and more businesses need workers who can communicate in different languages and understand other cultures. If your work involves regular contact with (4) _____ of foreign languages, being able to talk to them in their own language will help you build direct relationships with them (5) _____ of foreign languages may also increase your chances of finding a new job, getting a (6) _____ or a transfer (7) _____, or of going on foreign business trips.

No matter what career you choose, if you have learned a second language, you will have a real advantage. A (8) _____ who knows Russian or German, the head of a company who knows Japanese or Spanish, or a salesperson who knows French or Chinese can work (9) _____ with many more people and in many more places than someone who knows only one language.

Study or research

You may find that information about subjects you are (10) _____ in is published mainly in a foreign language. Learning that language will give you access to the international and enable you to communicate with colleagues.

Studying abroad

If you plan to study at a foreign university, college or school, you will need a good knowledge of the local language. Your institution will probably provide (11) _____ courses to improve your language skills and continuing support throughout your main course.

Emigration

When you move to a different country or region, learning the local language will help you to communicate and integrate with the local community.

Travel

Perhaps you are planning to go on holiday abroad. If so, knowledge of the language(s) you are (12) _____ to meet will be useful. It is always a good idea to learn some basic language phrases to help you to get by, i.e. to order food and drink, find your way around, buy tickets, etc. If you have a more (13) _____ knowledge of the language, you can have real conversation with the local people, which can be interesting and will add a new dimension to your holiday.

Family and friends

If your partner, in laws, relatives or friends speak a different language, learning that language will help you to communicate with them (14) _____. It is also the most effective way you will learn about and appreciate their culture.

Culture

Maybe you are interested in the literature, (15) _____, films, TV programs, music or some other aspect of another culture? Studying another language, allows you to have an insider's view, thus to feel closer and more (16) _____ to other cultures.

Whatever the reason, learning a language opens up doors to many opportunities and benefits.

2. Complete the table with the words from the text.

Noun	Verb	Adjective
Improvement	Improve	Improving
		Different
	Communicate	
Information		
Interest		
	Increase	

		preparatory
--	--	-------------

GRAMMAR:

PRONOUNS

Person	Number	Subjective Pronoun	Objective Pronoun	Possessive Adjective	Possessive Pronoun	Reflexive Pronoun
1 st Person	Singular	I	Me	My	Mine	Myself
	Plural	We	Us	Our	Ours	Ourselves
2 nd Person	Singular	You	You	Your	Yours	Yourself
	Plural	You	You	Your	Yours	Yourselves
3 rd Person	Singular	He	Him	His	His	Himself
		She	Her	Her	Hers	Herself
		It	It	Its	Its	Itself
	Plural	They	Them	Their	Theirs	Themselves

3. Say *he, she, it, we, you or they*.

- Tom
- mice
- car
- Kate
- Bob and I
- dogs.....
- man
- pens
- Kamola and you
- woman
- Mr and Mrs Miltons
- books
- Helen
- Students
- bear
- tooth

4. Finish the sentences with objective pronouns.

- I don't know those boys. Do you know **them**?
- I don't know that girl. Do you know?
- I don't know these people. Do you know?
- I don't know tom's sister. Do you know?
- I don't her friends. Do you know?

6. I don't know the girl in the red dress. Do you know?

7. I don't know Mr. Jackson. Do you know?

8. I don't know those students. Do you know?

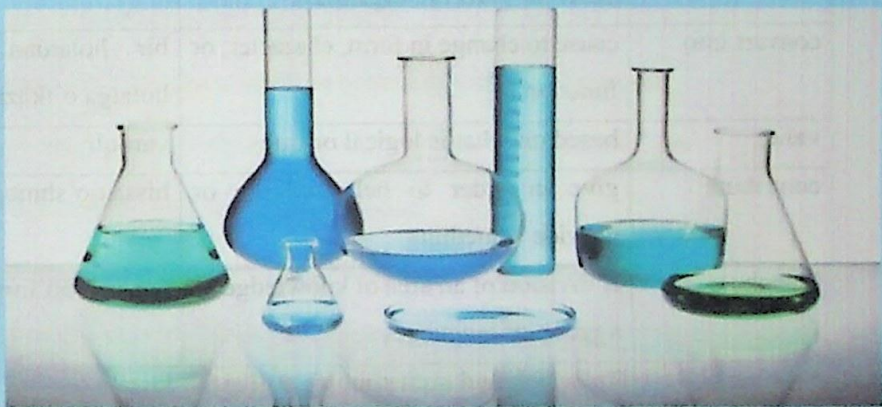


6 Amazing things that happen when you learn a new language:

1. Your brain will grow.
2. You'll never, ever grow old!
3. More learning = more happiness.
4. You'll think faster and grow more rationally.
5. Your reality will be different.
6. You'll realize that it's never too late.

Lesson 2. Introduction to Chemistry.

Intro to Chemistry



Get ready! Before you read the text, try to answer these questions.

1. What is chemistry?
2. What is the most important single factor in the development of the chemistry?
3. What branches of chemistry do you know?



English	Definition	Uzbek
space	a continuous area or expanse which is free, available, or unoccupied	bo'sh joy
matter	physical substance in general that everything in the world consists of	fizik modda, narsa
property	an attribute, quality, or characteristic of something	xususiyat
substance	a particular kind of matter with uniform properties	modda, materiya
composition	the different parts which something is made of; the way in which the different parts are organized	tarkibi
convert into	cause to change in form, character, or function	bir holatdan ikkinchi holatga o'tkazmoq
valid	based on what is logical or true	yaroqli
contribute	give in order to help achieve or provide something	hissa qo'shmoq
branch	A division of an area of knowledge or a group of languages	tarmoq, bo'lim, soha
observe	To watch and sometimes also listen carefully	kuzatmoq
enormous	very large in size, quantity, or extent	ulkan, juda katta

1. Match the words or phrases (1-10) with the definitions (A-J)

1) space

2) matter

3) property

4) substance

7) valid

8) contribute

9) branch

10) observe

5) composition

11) enormous

6) convert into

A) the way in which something is put together or arranged: the combination of parts or elements that make up something.

B) an amount of an area or of a place that is empty or that is available for use.

C) a special quality or characteristic of something.

D) physics: the thing that forms physical objects and occupies space.

E) a type of solid, liquid or gas that has particular qualities.

F) to change or make something change from one form, purpose, system, etc. to another.

G) to help to cause something to happen.

H) based on what is logical or true .

I) a particular branch of study or sphere of activity or interest.

J) to watch sb/sth carefully, especially to learn more about them.

K) very large in size, quantity, or extent.

Reading!

2. Read the text about chemistry as a science below. Explain the meaning of the words and phrases in bold.

What is chemistry? All definitions of chemistry include the study of matter. Matter is defined as anything that has mass and occupies **space**. All matter is arranged or organized. The way it is arranged is called its structure. The path of the structure and the ratio in which they are organized are called its composition. In addition, all **matter** has characteristics or **properties**. That is, each **substance** has a set of properties that are characteristic of that substance and give it a unique or special identity. These physical or chemical properties are the “personality traits” of

that substance. In brief, chemists study the properties, **the composition**, and the structure of matter. They also study changes in the composition and the structure as well as the reactions of matter, especially of atomic and molecular systems.

Basically, chemistry is a science that deals with the composition and properties of substances and with the reactions by which substances are produced from, or **converted into**, other substances.

People have practiced chemistry since ancient times. The Egyptian, Arabic, Greek, Roman cultures each contributed significant developments to chemistry. These early developments were empirical. That is, they were achieved by trial and error and were not based on any **valid** theory of matter. The chemists (500-1600 A.D) whose practical goal was to change base metals into gold and to prolong life, also **contributed to** the development of chemistry. However, it was not until the 17th and 18th centuries that modern chemistry began to develop through systematic experimentation called the scientific method is usually credited with being the most important single factor in the development of chemistry and its application to technology.

Chemistry is related to physics, another basic **branch** of science. It is also related to biology, the science of life, because life itself is basically a complicated system of interrelated chemical processes.

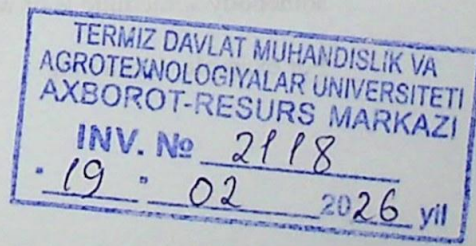
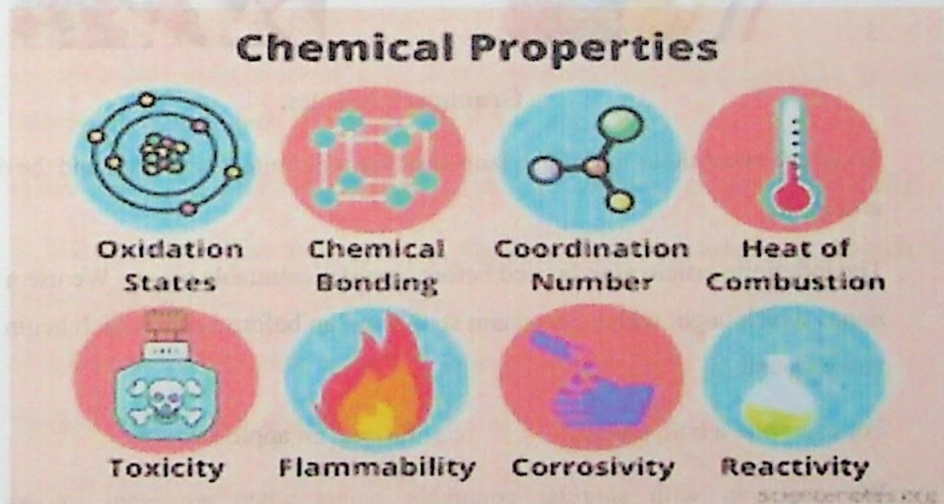
The range or scope of chemistry is very wide. In fact, it includes the whole universe and every animate(living) and inanimate(nonliving) thing in it. Chemistry may be broadly classified into two main branches: organic chemistry (the chemistry of living things) and inorganic chemistry (the chemistry of nonliving things). Through the study of chemistry we try to learn and understand the principles and laws that control the activity of all matter.

Chemists may try to **observe** and to explain natural situations, or phenomena or they may invent experiments that will show the composition and structure of complex substances that are unknown in nature.

Even though the total of chemical knowledge is so **enormous** that no one could learn all of it in one's lifetime, the basic concepts are not difficult. In fact these fundamental concepts in chemistry have become part of the education required for many professionals in a wide variety of fields and they have contributed to the rapid growth of technology.

3. Read the text. Then, mark the following statements as true (T) or false (F).

- 1) Chemists survey the properties, the composition, and the structure of matter.
- 2) They don't learn changes in the composition and the structure as well as the reactions of matter, especially of atomic and molecular systems.
- 3) People didn't practice chemistry in ancient times.
- 4) Chemistry is related to history, another basic branch of science.
- 5) Chemistry may be broadly classified into two main branches: organic chemistry (the chemistry of living things) and inorganic chemistry (the chemistry of nonliving things).



4. Match the words in with the picture

Vitamins, cleaners, fire, paints, baking, synthetic fabrics, drugs, bug spray, cosmetics



Grammar: Articles.

There are two articles in English language: the indefinite article **a/an** and the definite article **the**.

The indefinite article **a/an** is used before singular countable nouns. We use **a** before nouns which begin with a consonant sound and **an** before nouns which begin with a vowel sound.

For example: a ball, a book

an egg, an apple

We use **a/an** with singular countable nouns when we want to say what somebody/something is or what someone's job is.

For example: It is a mug.

He is a teacher.

We don't use indefinite article:

1) with uncountable or plural nouns. We use *some* instead.

For example: *some water, some sugar, some apples.*

2) in front there is no noun after it. But when there is a noun after the adjective, we use indefinite article.

For example: It is a car. It is **fast**. It is **a fast car**.

The definite article **the** is used with singular or plural nouns. *e.g. the bag, the flowers.*

We use definite article:

1) with nouns when we are talking about something specific, for example when the noun is mentioned for a second time or is already known. In other words, when we can answer the question "Who?" or "Which?" *e.g.*

I can see a car. **The** car is red. (Which car? The specific car which we see in the picture)

2) with nouns which are unique. *e.g. the sun, the earth, the moon.*

3) before the names of rivers, seas/oceans, mountain ranges, deserts and groups of islands. *e.g. the Atlantic Ocean, the Black Sea, the Alps.*

4) before the names of musical instruments. *e.g. the piano, the guitar, the violin.*

5) before nationalities and names of families. *e.g. the English, the French, the Italians, the Browns.*

6) before the words morning, afternoon, evening.

We don't use definite article:

1) with plural nouns when we talk about them in general. *e.g. Elephants are big animals.* (Which elephants? All elephants in general)

2) before proper names.

3) before names of meals (breakfast, lunch, dinner etc.) and games/sports (football, tennis, chess)

4) with the words this/that/ these/those

Exercise 5. Complete the sentences with **a/an** or **the** where necessary.

Tom is from 1) _____ England. He has got 2) _____ two brothers and 3) _____ sister. They live with their mother and father in 4) _____ big house in 5) _____ countryside. Simon has lots of hobbies. He like 6) _____ football and he plays 7) _____ guitar. He has 8) _____ red bicycle. Every day he takes his dog for 9) _____ walk in 10) _____ park. His dog's name is 11) _____ Rex.

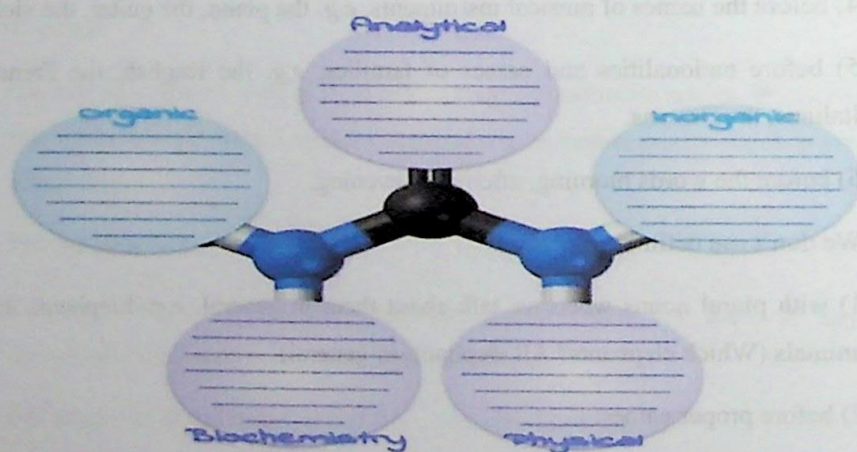
Ann lives in 12) _____ London. She is a 13) _____ secretary. She works in 14) _____ office. She goes to work in 15) _____ morning. She starts work at 9.00 and she goes home at 5.00 in 16) _____ evening.

Lesson 3. Branches of Chemistry.

Warming up:

What are the branches?

Can you distinguish the five primary branches of chemistry from each other? Test your abilities by completing the activity below. Briefly discuss each branch of chemistry.





English	Definition	Uzbek
production	the process of making or growing something for sale or use	ishlab chiqarish, mahsulot
compound	to form (something) by combining separate things	aralashma, birikma, tarkib
repel	if one thing repels another, or if 2 things repel each other, an electrical or magnetic force pushes them apart	qaytarmoq, itarmoq, haydamoq
enable	make (a device or system) operational; activate	yoqmoq, imkoniyat bermoq, yengillashtirmoq
unpaired	not arranged in pairs	juft bo'lib joylashmagan
chain	a sequence of items of the same type forming a line	zanjir
solution		eritma
foodstuffs	a substance suitable for consumption as food	oziq-ovqat mahsulotlari
electrolysis	Chemical decomposition produced by passing an electric current through a liquid or solution containing ions	elektroliz, elektr toki vositasida yo'q qilish

1.Translate the word from English into Uzbek.

Analytical-

Oxygen-

Organic-

Molecules-

Inorganic-

Atoms-

Biochemistry-

Proton-

Physical-

Neutron-

Electron-

Forensics-

Matter-

Metallurgy-

2. Fill in the blanks with the correct word above.

1. The practice of _____, which involves the separation of metals their ores, saw significant development.
2. _____ chemistry is employed in the manufacture of a wide range of products, including paint, fertilizer, and sunblock.
3. The _____ is subatomic particle that carries an electrical charge of positive one.
4. Chemists who work in _____ examine the non- biological trace evidence that might be found at crime scenes to determine the identity of unknown compounds.
5. The third constituent of an atom is called an _____ and it has a charge of negative one.
6. Chemistry is the study of _____, which can be described as anything that has mass and takes up space.
7. Lavoisier developed an experimentally based theory of the chemical reactivity of _____ and co-authored the modern system for naming chemical substances.

Reading!

Primary branches of chemistry

The 5 main branches of chemistry are organic, inorganic, analytical, and physical chemistry and biochemistry. Of course, many other branches also exist.

The five main branches of chemistry are organic, inorganic, analytical, physical chemistry and biochemistry. But there are many important sub-branches and types of chemistry shared with other disciplines. Here are the definitions and descriptions of the major branches, with a list of several other areas of study.

Organic Chemistry. Organic chemistry is the study of life and organic carbon compounds. This discipline focuses on compounds that contain C-H bonds.

Inorganic Chemistry. Inorganic chemistry studies inorganic compounds, including metals, ceramics, and minerals. Some carbon compounds are included, but they don't contain C-H bonds.

Analytical Chemistry. Analytical chemistry characterizes matter and develops tool to measure it. Analytical techniques include both **qualitative** and **quantitative** analysis.

Physical Chemistry. As its implies, physical chemistry shares close ties with the scene of physics, particularly the discipline of thermodynamics. Physical science applies thermodynamics and mechanics to chemistry.

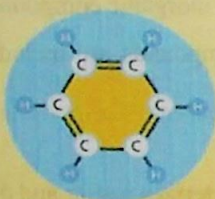
Biochemistry. Biochemistry is the study of chemical reactions that occur in living organisms. The field focuses on nucleic acids, lipids, carbohydrates, and proteins. Some people consider the 4 branches of chemistry to be organic, inorganic, analytical, and physical chemistry. Under this classification system, biochemistry is a sub-discipline of organic chemistry. But, biochemistry is often considered the fifth branch of chemistry.

3.Complete the table by filling in the appropriate subdivision of chemistry.

	Investigating a way to make stronger plastic grocery bags
--	---

	Developing a better insulin-delivery system for diabetics
	Determining the minerals present in a soil sample.
	Using an acid to etch metal
	Creating a cleaner burning heating fuel

Branches of Chemistry



Organic



Inorganic



Analytical



Biochemistry



Physical

4. Read and retell the summary of the given text using vocabulary:

The field of chemistry is now large one. There are more than 30 different branches of chemistry. Some of the better known fields are inorganic chemistry, organic chemistry, physical chemistry, analytical chemistry, biological chemistry, pharmaceutical chemistry, nuclear chemistry, industrial chemistry, colloidal chemistry, and electrochemistry.

Inorganic chemistry. It is 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 other than hydrocarbons and their derivatives.

Organic chemistry. At one time it was thought that all substances found in plants and animals could be made by only using part of 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, for in 1828 F. Wohler made an "organic " substance using a simple laboratory process. Organic chemistry now merely means the chemistry of carbon compounds.

Physical chemistry is concerned with those parts of chemistry which are closely linked with physics as, for instance, the behavior 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.

Magneto chemistry is the study of behavior of a chemical substance in the presence of a magnetic field. A paramagnetic substance, i.e. one having unpaired electrons is drawn into a magnetic field.

Diamagnetic substances, i.e. those 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 concerned foodstuffs and, medicines. The medicines known as antibiotics, of which penicillin is an early example, were prepared by biochemists.

5. Read the text again and find out if the sentences are true or false.

1. According to the text there are approximately thirty five branches of chemistry. **T/F**
2. According to the text organic chemistry investigates living organisms. **T/F**

3. According to the text electrochemistry deals with the ties between electricity and changes in chemistry. **T/F**
4. According to the text specialists on the sphere of biochemistry are responsible for the creation of well-known penicillium. **T/F**

6. Answer the questions.

- 1) Which branch of chemistry deals with the study of materials not derived from living organisms?
- 2) Which branch of chemistry studies the behavior of a chemical substance in the presence of a magnetic field?
- 3) What is the study of substances containing carbon called?
- 4) What other branches of chemistry do you know?
- 5) By whom were antibiotics prepared?

7. Fill in the gaps with suitable words given below.

production	repelled	unpaired	solution	foodstuffs
compounds	enabled	chain	branches	electrolysis

- 1) Diamagnetic substances are by a magnetic field.
- 2) Much of the work of the biochemist is concerned with and medicines.
- 3) is the process whereby electrical energy causes a chemical change in the conducting medium.
- 4) Electrolysis is generally used as a method of deposition of metals from
- 5) The theory of reactions is a major discovery of our time.
- 6) The close links between the science and industry the chemical industry to make great progress.
- 7) Zelinsky's works formed the basis for the synthesizing of a large number of new chemical
- 8) Scientists are making a major contribution to of aniline dyes.
- 9) There are more than 30 different of chemistry.
- 10) Diamagnetic substances have no electrons.

Lesson 4. The substance of the universe.

Warming up: The passage you are going to read starts by saying, "Everything that has mass and takes up space is matter; however, there are some things that do not consist of matter". In groups, decide whether the following things are 'matter' or 'non-matter'. Write **M** for matter and **NM** for non-matter.

- | | | |
|-------------|-----------------|-----------------|
| 1. air – | 7. iron- | 11. rainbow- |
| 2. clouds- | 8. love- | 12. reflection- |
| 3. energy- | 9. Mars- | 13. a rock- |
| 4. gravity- | 10. microwaves- | 14. sound- |
| 5. heat- | 11. a person- | 15. a spider- |
| 6. the Sun- | 12. sunlight- | 18. time- |



English	Definition (English)	Uzbek
to break down	to separate	buzilmoq, ajralmoq
building block	constituent	tarkibi, tarkibiy qism
fixed	definite	belgilangan
increasing	growing	oshayotgan, o'sayotgan
kinetic	dynamic	faol
man-made	synthetic	sun'iy
mean	method, manner	uslub, usul
packed together	compact	zich, ixcham
referred to as	called	..deb nomlangan, atalgan
to spread out	to extend	kengaytirmoq
to take up	to occupy	egallamoq, bosib olmoq

tightly	closely, strongly	mahkam
---------	-------------------	--------

Everything that has mass and **takes up** space is **matter**; however, there are some things that do not consist of matter. All substances consist of matter but any type of energy or any abstract concept is something that is not matter.

The basic chemical **building blocks** of matter are **elements**. A chemical element is a material which cannot be **broken down** or changed into another substance using chemical **means**.

Four states of matter can be observed in everyday life: solid, liquid, gas and plasma. Each of these states is also known as a phase. The different states of matter have different physical properties.

A **solid** has a rigid shape and **fixed** volume. The particles of a solid cannot move and are already so **tightly packed together** that **increasing** pressure will not compress the solid to a smaller volume.

A **liquid** has a fixed volume but no rigid shape and it takes the shape of its container. Its particles are close together and can move. Liquids, like solids, cannot be compressed. They diffuse quite easily but not as easily as a gas. Another property common to liquids is surface tension, a force of attraction that keeps molecules together causing tension.

A **gas** is a form of matter that has no definite volume or shape. Its volume is very sensitive to temperature and pressure. Gases have low density and diffuse easily. If unconfined, the particles of a gas will **spread out** indefinitely; if confined the gas will expand to fill its container. The characteristics of **plasmas** are significantly different from those of ordinary gases, so that plasmas are considered a distinct fourth state of matter. Plasma consists of highly charged particles with extremely high **kinetic** energy. While plasma is not a common state of matter on Earth (but may be the most common state of matter in the universe), man-made plasmas are everywhere.

Many other states of matter are known to exist only in extreme environments – such as BEC (Bose-Einstein Condensates), **referred to as ‘the fifth state of matter’** – and scientists will probably discover more states as they continue to explore the Universe.

When specific physical conditions – such as temperature, pressure, and other physical forces – change, matter can move from one phase to another.

- . solids may melt into liquids (fusion / melting)
- . solids may sublime into gases (sublimation)
- . liquids may vaporize into gases (vaporization / boiling)
- . liquids may freeze into solids (freezing)
- . gases may condense into liquids (condensation)
- . gases may deposit into solids (deposition).

Exercise 1. Choose the suitable subject to complete the phrases below, then join them together and give a short oral report of the reading passage.

Chemical elements, Each phase of matter, Gases, Liquids, Matter, Natural plasmas, Solids, The phases of matter.

1. is everything that you can touch, see, feel or smell.
2. make up all matter.
3. has its own chemical and physical properties.
4. are solids, liquids, gases, and plasmas.
5. have a definite shape and volume. They maintain their shape.
6. have a definite volume, but no defined shape. They take the shape of any container they are in.
7. don't have a definite shape or volume.
8. are not found very often.

Exercise 2. Underline the correct alternative.

1. A solid has a *a) definite b) indefinite* shape and volume.
2. A liquid has a definite volume, *but a) can b) cannot* change the shape.
3. The shape and volume of gas *a) can b) cannot* change.
4. Depending on temperature and pressure, matter *a) can b) cannot* transit from one state to another.
5. Melting occurs when substance changes from a *a) liquid b) solid* to a *a) liquid b) solid*.
6. Boiling happens when a substance changes from a *a) gas b) liquid* to a *a) gas b) liquid*.
7. Condensation takes place when a gas changes to *a) solid b) liquid*.
8. Freezing occurs when a liquid changes to a *a) solid b) liquid*.

Exercise 3. Which phase of matter are these substances? Write them in the appropriate column then compare your choice with your partner's.

Air, auroras, blood, butter, comet tails, dry ice, gasoline, gold, helium, lightening, milk, oil, oxygen, ozone, sand, stars, the Sun, water vapour, wine, wood.

SOLIDS	LIQUIDS	GASES	PLASMAS



1. You have all three states of matter inside of you.
2. You can drink any liquid.
3. Anything you eat is matter.
4. The molecules of gas work in the same way hot liquid does.
5. The molecules of a solid work in the same way cold water does.

Lesson 5. Matter.

Why do you think it is important to study Chemistry? Here are some suggestions to choose from or add more of your own.

It is important to study chemistry to ...

- . know about the stuff which makes up the world we live in.
- . produce more food.
- . create products that improve our standard of living.
- . help people to live longer.
- . give the basis for the study of biological sciences.
- . Other:



English	Definition (English)	Uzbek
added	inserted	qo'shilgan, kiritilgan
as	since, because	chunki
to be made up	to be formed	tuzilmoq, shakillantirilmoq
drop	small round mass of liquid	tomchi
kind	type	turi, xili, navi
main	principal	asosiy
to melt	to become liquid	erimoq
no matter	it makes no difference	ahamiyatsiz, farqi yo'q
pot	container	qozon, idish
ratio	proportion	nisbat
sensitive to	influenced by	-ga sezgir, - dan ta'sirlangan

Exercise 1. Read the passage and give each paragraph a title by putting the correct number in the box.

a. Composition of atoms

d. Properties of matter

b. Definition of matter

e. States of matter

c. Phase changes

Par. 1:

Everything on Earth is made up of matter, that is, of elements and of the compounds, they form. Matter is everything *that* you can touch/ see/ feel or smell. Chemistry is the *study* of matter and the *changes* that take place within *that* matter.

Par. 2 :

There are three main states of matter: solids, liquids and gases. Each of these states is also known as a phase. A solid is matter with a rigid shape and fixed volume that does not change much with temperature. A liquid has a fixed volume but not a fixed shape and it takes the shape of its container. Its volume may alter with changes in temperature and pressure. A gas has neither fixed volume nor shape, as it expands to fill its container completely. Its volume is very sensitive to temperature and pressure.

Par. 3 :

Matter is composed of different kinds of atoms. An atom is made up of electrons, protons and neutrons. Protons and neutrons are in the nucleus, the center of the atom. Electrons spin very quickly around the nucleus. Electrons have a negative charge, protons have a positive charge and neutrons have no charge. The number of protons always equals the number of electrons in an atom, so the atom is neutral. If some electrons are added or removed, the atom becomes charged and is then an ion. A molecule is a particle containing two or more atoms chemically bonded together.

Par. 4 :

Matter has physical and chemical properties. Physical properties include density, melting point, boiling point, freezing point, colour or *smell*. An example of chemical properties is the way elements combine with each other in reactions. An element is a matter that consists of only one kind of atom. A compound is a substance

consisting of two or more chemically bonded elements, with a fixed ratio determining the composition.

Par. 5 :

Elements and compounds can move from one phase to another when special physical *forces* are present. One example of those forces is temperature. When temperature *changes*, the phase can change. You can see water vapour *over* a boiling pot of water. That vapour (or gas) can condense and become a drop of water. If you put that drop in the freezer, it becomes a solid. No matter what phase it is in, it is still water. It still has the same chemical properties.



Solid iodine
 $I_2(s)$



Liquid bromine
 $Br_2(l)$



Gaseous chlorine
 $Cl_2(g)$

States of matter

Exercise 2. Student A: use *how*, *how many*, *what*, *which* to complete the questions and then ask them to Student B. **Student B:** answer Student A's questions. Then try to give a short talk on the main ideas expressed in the passage you have read.

- is matter?
- can matter exist?
- of the three states of matter have a fixed shape?
- of them have no fixed volume?
- are atoms made up of?
- of the constituents of an atom are outside the nucleus?
- are the properties of matter classified?
- kinds of atoms are there in an element?

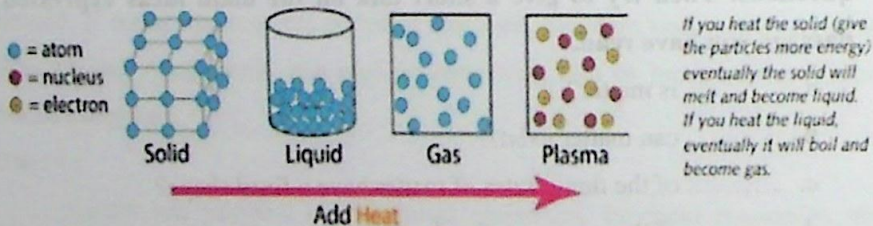
Exercise 3. What am I? Choose from: election, ion, neutron, nucleus, proton.

- I'm the centre of the atom, I contain protons and neutrons. I'm the
- I move around nucleus. I'm a
- I'm positively charged. I'm a
- I have no charge. I'm a
- I'm an electrically charged atom. I'm an

Exercise 4. Read the passage again and decide which part of speech the words in *italics* belong to. Then compare your choices with your partner's. Remember that recognizing grammatical classes is very important particularly when you need to look the word up in a dictionary under the correct entry.

- | | | |
|------------|-----------|------------------|
| a. that | adjective | relative pronoun |
| b. study | noun | verb |
| c. changes | noun | verb |
| d. that | adjective | pronoun |
| e. smell | noun | verb |
| f. forces | noun | verb |
| g. changes | noun | verb |
| h. over | adjective | preposition |

States of Matter



Lesson 6. The Periodic Table.

Everything around you is made of matter. Matter is made of at least one element. An element is made of atoms that are all the same kind. It is a pure form of

matter. Elements join together with other elements to make the different materials that we see and use every day.

Some common elements that you might have heard about are oxygen, carbon, helium, gold and silver. If you have a lump of silver, all of the atoms that make up that lump of silver are the same. We know there are more than 100 different elements.

The list of elements is arranged on a scientific chart. The chart is called **the periodic table**. Each element is grouped with other similar elements. Elements can be metals, nonmetals, or semimetals. Semimetals have some of the characteristics of metals, and some of the characteristics of nonmetals. Metals, nonmetals, and semimetals each have their own section on the table. Each group is coded with different colors.

Each element has its own box on the chart. The box shows the element's name, symbol and atomic number. The atomic number tells us how many positively charged protons are in each atom of the element. It also shows their properties. Properties are how an element looks and acts in different situations.



English	Definition	Uzbek
calcium	a soft gray metal	kaltsiy
carbon	a nonmetal which has two main forms	uglerod
chlorine	a toxic, irritant, pale green gas	xlor
copper	a red-brown metal	mis
fluorine	a poisonous pale yellow gas of the halogen series.	flor
gold	a yellow precious metal	oltin
hydrogen	a colorless, odorless, highly flammable gas.	vodorod
iron	a strong, hard- magnetic silvery-gray metal.	temir

mercury	a heavy silvery-white metal which is liquid at ordinary temperatures	simob
nitrogen	a colorless, odorless unreactive gas that forms about 78% of the earth's atmosphere	azot
oxygen	a colorless, odorless reactive gas and the life- supporting component of the air	kislород
potassium	a soft silvery-white reactive metal of the alkali metal group	kaliy
silver	a precious shiny grayish-white metal	kumush
sodium	A soft silver-white reactive metal of the alkali metal group	natriy
sulphur	A yellow combustible nonmetal	oltingugurt

Exercise 1. Answer the following question based on the reading passage. Do not forget to go back to the passage whenever necessary to find or confirm your answers.

- 1) Which is larger, an atom or an element? Explain.
- 2) What is the purpose of the periodic table?
- 3) How many different elements do we know about?
- 4) What is included in the box for each element?
- 5) What is semimetal like?

Exercise 2. Class challenge. See who is the quickest at matching these elements with the symbols below and then at putting the symbols back into their correct position in the periodic table: calcium, carbon, chlorine, copper, fluorine, gold, hydrogen, iron, lead, mercury, nitrogen, oxygen, potassium, silver, sodium, sulphur.

- | | | | |
|-----------|-----------|-----------|-----------|
| a. Ag ... | e. Cl ... | i. H ... | m. Na ... |
| b. Au ... | f. Cu ... | j. Hg ... | n. O ... |
| c. C ... | g. F ... | k. K ... | o. Pb ... |
| d. Ca ... | h. Fe ... | l. N ... | p. S ... |

Alkali metals												7A		8A			
1A	Alkaline earth metals											3A	4A	5A	6A	7A	8A
1	2											3	4	5	6	7	8
Li	Be											B	C	N	O	F	Ne
11	12											13	14	15	16	17	18
												Al	Si	P	S	Cl	Ar
19	20	39	40	59	60	79	80	99	100	119	120	139	140	159	160	179	180
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
37	38	57	58	74	75	92	93	101	102	111	112	121	122	133	134	151	152
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
55	56	71	72	89	90	106	107	115	116	123	124	131	132	143	144	163	164
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
87	88	103	104	121	122	138	139	146	147	153	154	161	162	173	174	183	184
Fr	Ra	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr	

Metals
Metalloids
Non-metals

Main group metals

Transition metals

*Lanthanide series

*Actinide series

The periodic table contains a *wealth* of information about each element, including its name, chemical symbol, mass number and atomic number. The top number in each box is the mass number: the total number of protons and neutrons the atom contains. The bottom number in each box is the atomic number: it is the number of protons, which is equal to the number of electrons.

Isotopes are varieties of an element that have the same atomic number but different mass numbers.

The periodic table is organized like a big *grid* in which the elements are arranged in *order* of increasing atomic number.

Elements having similar chemical and physical properties *lie* in vertical columns called groups. For example, the elements in Group 1 are all reactive metals and the elements in Group 7 are all reactive non-metals.

The horizontal *rows* of the table are called *periods* and they are numbered beginning with 1 for the period containing only H and He. Hydrogen is special. It can have the *talents* and electrons of two groups, one and seven. It is sometimes missing an electron and sometimes it has an *extra*. Helium is another exception.

The position of an element in the periodic table is linked to the electronic structure (the way electrons are arranged) of its atoms. The number of electrons in the outer *shells* is the same as the element's group number.

Besides columns and rows, there are also other groups of elements that you can find *all over* the table. Scientists group these families of elements by their chemical properties and how the elements react with the outside world. Under the periodic table, there are two rows: the Lanthanide series and the Actinide series. All the elements of the Actinide series are radioactive, some are not found in nature and some of those with higher atomic numbers have only been made labs sometime over the past decades.

Exercise 3. Choose the correct meaning for these words as they are used in the passage, then compare your choices with your partner's.

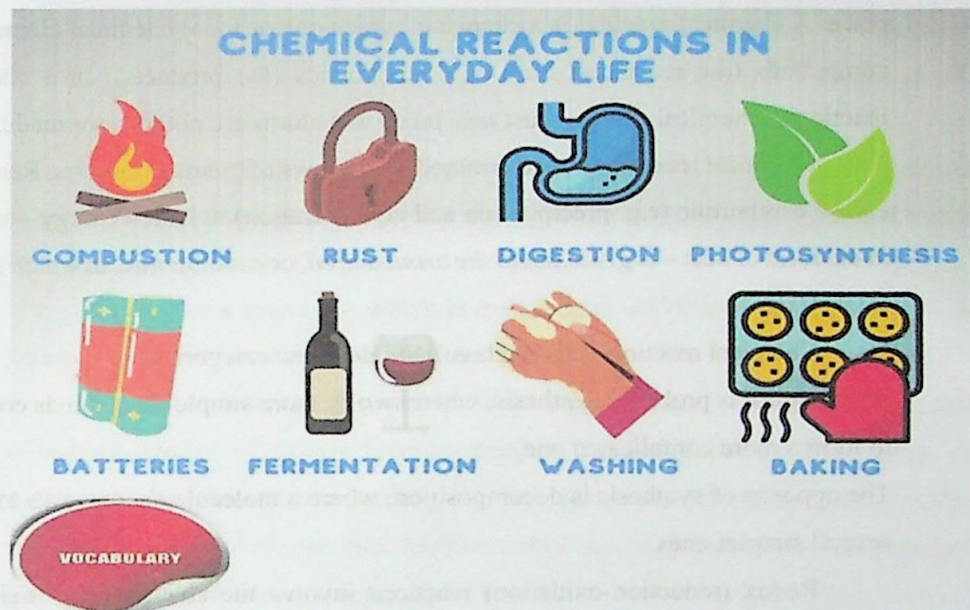
- | | | |
|-------------|-----------------------------------|---------------------------------------|
| a. wealth | 1. large amount | 2. riches |
| b. grid | 1. starting positions for F1 cars | 2. system of numbered squares |
| c. order | 1. command | 2. sequence |
| d. lie | 1. to be in a particular position | 2. to tell something that is not true |
| e. row | 1. angry argument | 2. line |
| f. period | 1. full stop | 2. horizontal line |
| g. talent | 1. characteristic | 2. natural skill |
| h. extra | 1. especially | 2. more |
| i. shells | 1. bullets | 2. structures |
| j. all over | 1. everywhere | 2. once more |

Exercise 4. Use the following words to complete the definitions below: atomic number, chemical property, electron, groups, periods, physical property.

- The horizontal rows of the periodic table are called
- The vertical rows of the periodic table are called
- An is the negatively charged subatomic particle found in the space about the nucleus.
- The is the number of protons in the nucleus of an atom of an element.
- A is a characteristic which can be recognized without changing a substance chemically.

- f. A is a characteristic depending on the way a substance reacts with other substances.

Lesson 7. Chemical reactions.



English	Definition	Uzbek
to decompose	to break down	buzilish, ishdan chiqish, parchalanmoq
to obtain	to gain	erishmoq
to take place	to occur	sodir bo'lmoq
the around area	surroundings	atrof – muhit, tevarak-atrof
whenever	every time	doim, qachon bo'lmasin
influenced	affected	ta'sirlangan, ta'sir qilgan
quantity	amount	miqdori, soni
to dispose of	to eliminate	bartaraf qilmoq, tugatmoq
to happen	to take place, to occur	sodir bo'lmoq
litmus	blue vegetable dye	ko'k rangli o'simlik bo'yog'i
to lower	to reduce	pasaytirmoq, kamaytirmoq

main	principal	asosiy
------	-----------	--------

Whenever elements combine to form a compound, a chemical reaction takes place. A chemical reaction is a change in which one or more chemical elements or compounds (the reactants) form new compounds (the products). In a chemical reaction, a chemical change must *take place*, but atoms are not lost nor made.

Chemical reactions are determined by the laws of thermodynamics. Reactions can be exothermic (e.g. precipitation and crystallization) in which energy – usually in the form of heat – is given out to *the around area*, or endothermic, in which energy is taken in.

Chemical reactions can be classified into a few categories. The simplest is probably synthesis, where two or more simple compounds combine to form a more complicated one.

The opposite of synthesis is decomposition, where a molecule *decomposes* to make several simpler ones.

Redox (reduction-oxidation) reactions involve the change of an oxidation number, or transfer of electrons among the reacting substances. Reduction is the removal of oxygen from a substance. Oxidation is the gain of oxygen by a substance. The reducing agent – the compound that loses electrons – is said to be oxidized; the oxidizing agent – the compound that *obtains* electrons – is said to be reduced. An important class of redox reactions are the electrochemical reactions.

Acid – base reactions involve the transfer of protons from an acid (donor) to a base (acceptor). Acids and bases are encountered frequently both in chemistry and in everyday living. Certain fruits contain citric or ascorbic acid (vitamin C), carbonated beverages contain carbonic acid and vinegar contains acetic acid. Soap and detergents, household ammonia, and lye (caustic soda) are common bases. Acids and bases have opposite properties and have the ability to cancel or neutralize each other producing water and a salt (neutralization reaction).

Amphoteric substances can act as either acids or bases (water).

Litmus paper is one of the oldest methods used to test the acidity or basicity of a solution. Blue *litmus* paper turns red when put in an acidic solution. Red *litmus* paper turns blue when put in a basic solution. Scientists use the pH scale (pH stands for “potential of hydrogen”) to measure how acidic or basic a liquid is. The scale goes from 0 to 14. Neutral substances (e.g. distilled water) have pH7, acids have pH between 0 and 7, bases from 7 to 14.

The *main* example of photochemical reactions is photosynthesis, a chemical process in which most plants use solar energy to convert carbon dioxide and water into glucose, *disposing of* oxygen as a side-product.

The rate of a reaction – which is the speed at which a reaction happens – is *influenced* by concentration, temperature and pressure.

Reactions need a specific *quantity* of energy to *occur*. The minimum amount of energy needed to make a reaction happen is called the activation energy. A catalyst *lowers* the activation energy so that a reaction can happen more easily. Enzymes are biological catalysts. Inhibitors slow the rate of reaction and sometimes they can stop the reaction completely.

Exercise 1. Make up questions using the prompts below and answer them.

1. What/ chemical reaction/ be?
2. When/ a chemical reaction / take place?
3. What/ reactants/ be?
4. What/ the products/ be /
5. What/ the redox reactions/ be?
6. Which/ the reducing agent/ be?
7. Which/ the oxidizing agent/ be?
8. What/ in acid-base reactions/ happen?
9. What/ photosynthesis/ be?
10. What / the rate of a reaction/ be affected by?
11. What/ activation energy/ be?
12. How/ catalysts and inhibitors/ affect reaction rates?

Exercise 2. Refer to the reading passage and what you know about acids and bases and decide which of these properties is being talked about. Write A (for acids) or B (for bases).

- are electrolytes (their aqueous solution conducts electric current) -
- feel slippery -
- react with carbonates or bicarbonates to produce carbon dioxide gas -
- react with metals to produce hydrogen gas -
- taste bitter -
- taste sour -
- turn litmus paper blue -
- turn litmus paper red -

Exercise 3. Matter can undergo physical and chemical changes. Can you say if the following are physical or chemical changes. Write P for physical change and C for chemical changes.

Burning of paper	P/C
Digestion of food	P/C
Evaporation of alcohol	P/C
Freezing of liquids	P/C
Melting of butter	P/C
Melting of ice	P/C
Souring of milk	P/C
Rusting of iron	P/C
Tarnishing of jewellery	P/C
Water turning into water vapour	P/C

Lesson 8. In the Chemical Lab. Safety in the chemical laboratory.



English	Definition	Uzbek
bench	a long, sturdy work table	uzun, mustahkam ish stoli
container	an object that can hold something	Biror narsa saqlanadigan idish
drag	pull, haul	tortmoq, sudramoq
dip	dunk	botirmoq, cho'ktimoq
explosion	blowing up, burst	portlamoq
flame	fire	olov, alanga
flammable	easily set on fire	yong'in jihatidan xavfli
goggles	Close fitting eyeglasses with side shields, for protecting the eyes from glare, dust, water, etc.	himoya ko'zoynagi
gown	robe, overalls	xalat
hazard	a danger	xavf, xavf-xatar
jewelry	jewels, bijouterie	taqinchoq, zeb-ziynat
loose	baggy	keng, erkin, shalviragan
low-heeled	(of shoes) having low heels	past poshnoli
non-slip soles	designed to prevent slipping	sirpanmaydigan tagliklar
precautions	safety measure	ehtiyot choralari, ogohlantirish
protect	keep safe from harm or injury	himoya/muhofaza qilmoq
poisonous	toxic, fatal	zaharli
safety	security	xavfsizlik
spillage	the action of spilling a liquid	to'kilishi
splatter	swing, careen	chayqalmoq
valuable	costly, precious	qimmatli, qadrli

The chemistry laboratory with its equipment, glassware, and chemicals, has the potential for accidents. Everyone doing experimental work must be aware of and follow established safety rules.

Safety is a prime trouble in the chemistry laboratory. All the activities must be done exactly as described in the laboratory instructions and other safety rules.



Personal safety precautions.

1. Wear a laboratory gown to protect your clothes against explosions, splattering chemicals and spillage.
2. Wear safety goggles to protect your eyes at all times. Fashion contact lenses should not be worn.
3. Tie back long hair. Long hair can accidentally fall into flames or chemicals. Many hair sprays, gels, mousses, etc. are flammable! Loose, long hair can also block your vision, which can lead to accidents.
4. Don't wear clothing which is loose enough to knock over containers on the work bench or drag or dip into flames or chemicals.
5. Wear clothing (shirt, blouse, or dress) which covers and protects your chest, belly, sides, back, shoulders and upper arms. No shorts or mid-length skirts are allowed.

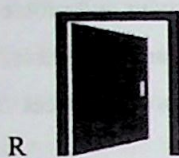
6. Wear comfortable shoes which cover and protect your feet completely. Low-heeled shoes with non-slip soles are preferable. Three hours of walking and standing on a hard tile floor can leave your feet very tired and sore if you wear uncomfortable shoes.
7. Don't wear valuable jewelry while working in the laboratory. Chemicals which are harmless to your body may be capable of damaging jewelry. Take your jewelry off and store it in your purse or bag before beginning any experiment.
8. No mobile phones, audio or video equipment is allowed in the laboratory.

Common safety symbols.

The common safety symbols are internationally excepted (Global Harmonized system of classification and Labelling of Chemicals, United Nations New York and Geneva, 2005)

Exercise 1. Match safety symbols (A-T) with the definitions (1-20).





- | | |
|-------------------------------|-----------------------------|
| 1. Biohazard – | 11. Safety shower – |
| 2. Fire alarm – | 12. Radioactive – |
| 3. Door – | 13. Oxidizer – |
| 4. No eating or drinking – | 14. Low level hazard – |
| 5. Electrical hazard – | 15. Severe chronic hazard – |
| 6. Eye protective required – | 16. Environmental hazard – |
| 7. Eye wash – | 17. Explosive – |
| 8. Hot surface – | 18. Poisonous – |
| 9. Dangerously – | 19. Corrosive – |
| 10. Compressed gas reactive – | 20. Flammable – |

Lab Safety Quiz

1. Eyeglasses and sunglasses are as protective as:

A. safety glasses B. fume hood shield C. chemical goggles D. none of the above
2. If a fire starts in the laboratory

A. open all the windows B. notify the instructor C. throw water on it D. run to the fire extinguisher
3. Before using glassware:

A. inspect it for damage B. wash and dry it C. Know how to use it. D. all of the above
4. If acid splashes onto your skin, immediately apply:

A. oil or lotion B. soap C. a strong base D. lots of water

5. If you break a test tube and spill a chemical:

- A. use a paper towel to mop of the spill and collect the glass and throw the mess away
- B. use paper towel to clean up, but be sure to throw away the glass in the sharps bin
- C. collect the glass and throw it in the sharps bin and let the spill air-dry
- D. warn others of the spill and go tell the instructor

6. When heating substances:

- A. never heat sealed containers
- B. use tongs and insulated gloves
- C. point the opening away from the people
- D. all of the above

7. If you get injured in lab:

- A. apply the first aid to yourself
- B. notify the instructor at once
- C. get treated after class

8. If you wear contact lenses:

- A. keep it to yourself
- B. inform your instructor
- C. you don't have to wear safety goggles
- D. take them out before lab

9. To pick up hot glassware:

- A. first cool it with cold water
- B. use a paper towel for insulation
- C. use tongs
- D. pick it up by the part that looks cool

10. To insert fire polished glass tubing into a stopper:

- A. Lubricate the glass with glycerin or water.
- B. Protect your hands with gloves or a towel
- C. Carefully twist the tubing and stopper
- D. All of the above



DID YOU KNOW?

Chemistry is a fascinating science, full of unusual trivia, facts, and stats. Here is a list of a few for your reference.

1. Unlike many substances, water expands as it freezes. An ice cube takes up about 9% more volume than the water used to make it.
2. Dynamite contains peanuts as a part of its ingredient.
3. If you pour a handful of salt into a full glass of water, the water level will actually go down rather than overflowing the glass.
4. Air turns liquid about -190°C .
5. If you mix half a liter of alcohol and half a liter of water, the total volume of the liquid will be less than one liter.
6. The chemical name of water (H_2O) is Dihydrogen Monoxide.
7. There is about 250g of table salt (Sodium Chloride) in an average human body.
8. Gallium is a metal that can melt on the palms of your hand. Its melting point is 29.76°C .
9. Dry ice is the solid form of carbon dioxide.
10. Helium balloons float because helium is lighter than air.
11. Bee stings are acidic while wasp stings are alkaline.
12. Liquid air has a pale bluish tint, almost exactly like water.

Important Lab Safety Rules

Know the location of safety equipment

Follow the instructions

Don't play mad scientist

Dress appropriately

Leave experiments at the lab

Know what to do in case of an accident

Don't taste or sniff chemicals

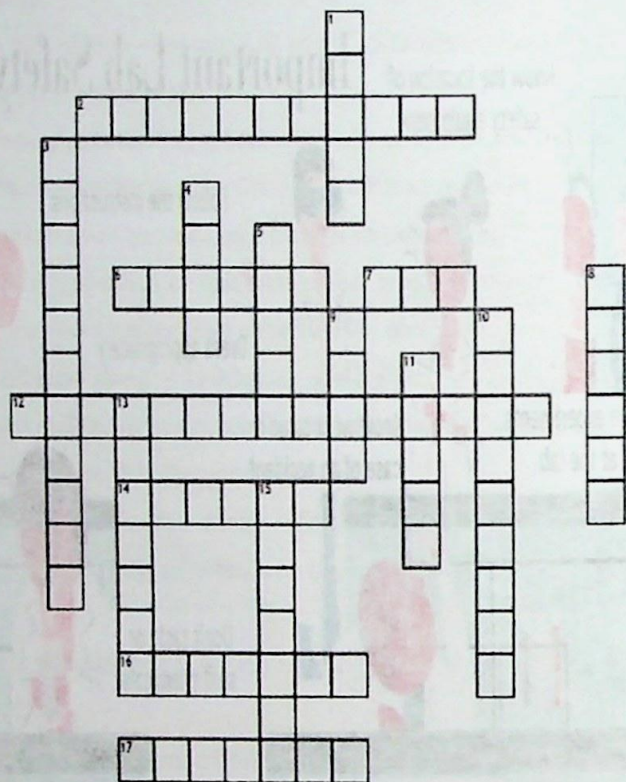
Don't eat or drink in lab

Don't experiment on yourself

Dispose of waste properly



Safety in the Chemical Laboratory



Across

2. To put out a fire on a person use a _____.
6. The appropriate time to read lab instructions is _____ beginning any lab work.
7. Cold glass looks the same as _____ glass.
12. Inappropriate item of attire: _____.
14. Protect your hands using _____.
16. Unacceptable footwear in the lab _____.

17. If you have an accident or spill something the first person you should call is your _____.

Down

1. Always wash your _____ with soap and water before you leave the lab.
3. Spills should be cleaned up _____.
4. The correct way to smell chemicals _____.
5. You should not put chemicals back into their original containers because you could mistakenly put them in the _____ container.

8. Chemicals in the lab should never be _____.

9. Long hair must be _____ back.

10. A quick way to be asked to leave the laboratory and go to the principal's office _____.

11. Chemicals should _____ be taken out of the lab.

13. Eye protection worn in the lab _____.

15. If you get a chemical in your eye you should use the _____.

Word Bank

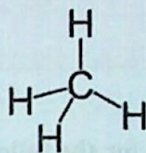
Goggles	Sandals	Wrong	Horseplay	hands
Dangling jewelry	Immediately	Waft	Teacher	Hot
Before	Gloves	Tied	Tasted	eyewash
fireblanket	Never			

What Is a Molecule?

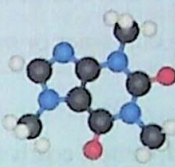
A MOLECULE IS AN ELECTRICALLY NEUTRAL GROUP OF ATOMS JOINED TOGETHER BY CHEMICAL BONDS



Oxygen



Methane



Caffeine



DNA

A molecule may consist of two atoms of the same element or many atoms of different elements.



English	Definition	Uzbek
aggregate	a whole formed by combining several elements	agregat (ot), bir joyga to'plamoq (fe'l)
arise	emerge; become apparent	turmoq, ko'tarilmoq, paydo bo'lmoq
commonly	usually	odatda, odatga ko'ra
constitute	be (a part) of a whole	tashkil qilmoq, hosil qilmoq, belgilamoq
definition	a statement of the exact meaning of a word, especially in a dictionary	ta'rif, izoh, tavsif
density	the degree of compactness of a substance	zichlik, tizlik

distribute	give shares of, deal out	taqsimlamoq, tarqatmoq
helium	an inert gas which is the lightest member of the noble gas series.	geliy
at least	minimum	kamida
neutral	Objective, unselfish	neytral, xolis, betaraf
pack	Cram a large number of things into (a container or space)	joylamoq, to'daga birlashtirmoq

Exercise 1. Find Uzbek equivalents for the following:

enter into chemical reaction, be different from each other, occur, definite relationships, undergo rearrangement, chemical unions, become bonded together, form definite aggregates, be exemplified by, give a full account of, account for chemical properties, a single molecule, exhibit a property, arise within the molecule itself, density, depend on the mass, pack the molecules together, be of great practical importance, contain two or more atoms, exist as diatomic molecules.

Read the text and retell the summary.

To the modern chemist, the atom is the smallest particle of an element that can enter into a chemical reaction. Thus, each element has atoms that are peculiar to itself and different from those of each of the other element. Chemical reactions occur when atoms of different kinds unite to form groups in which they bear definite relationships to each other or when these groups undergo disruption or rearrangement. Chemical unions are of two general types.

In one type of union, atoms become bonded together to form definite aggregates that exist as independent, electrically neutral particles and are known as molecules (Latin "little mass"). Some elements have atoms that unite with others of their own kind to form molecules. These are known as elemental molecules and are exemplified by the chlorine molecule which is made up of two chlorine atoms. Compound molecules are composed of two or more kinds of atoms and are

exemplified by the water molecule, which contains two atoms of hydrogen and one of oxygen.

To give a short definition of a molecule is not to give a more or less full account of properties. Molecules are regarded as the smallest particles or elementary substance that can have independent existence. They account for the chemical properties and at least some of the physical properties of the substance they constitute. A single molecule does not exhibit in full the physical properties commonly associated with its particular variety of matter. These properties arise both within the molecule itself and within the aggregates of like molecules that constitute a sample of the given substance. The density of water depends not only on the mass and volume of individual molecules but also on the manner in which the molecules are packed together. Since the chemist works with the aggregates, their properties are of great practical importance. A molecule of a compound contains, of necessity, at least two different atoms. An element molecule may contain only one atom, or it may contain two or more. Helium has monoatomic molecules; chlorine and hydrogen each exist as diatomic molecules; and Sulphur molecules contain eight atoms. During reactions the atoms of elemental molecules usually are separated and individually redistributed in new combinations.

Exercise 2. Fill in the blanks with prepositions where necessary.

1. The smallest particle of an element that can enter a chemical reaction is an atom.
2. The lecture has already begun, don't enter the classroom.
3. Elements differ each other.
4. Atoms different kinds can unite and form a molecule a compound.
5. Elemental molecules are composed the atoms the same kind.
6. Chlorine molecule is made two chlorine atoms.
7. This definition does not give a full account the properties of a molecule.
8. The density a substance can be easily calculated, it depends its mass and volume.

The water molecule.



All matter is made from the same basic materials. For example, water is one of the most important compounds on Earth. Water **molecules** are made up of two elements: hydrogen and oxygen. There are two hydrogen **atoms** and one oxygen atom in every water molecule.

The atomic number is the total number of protons of an atom. Hydrogen's **atomic number** is one. This means it has one **proton** and one **electron**. If an electron were absent, it would be an ion. The **mass number** includes the number of **neutrons** as well as protons. Oxygen atoms have eight protons and eight electrons, therefore its atomic number is eight.

Exercises 3. Read the textbook chapter. Then, mark the following statements as true (T) or false (F).

1. - Hydrogen atoms have more electrons than oxygen atoms.
2. - The mass number of oxygen is eight.
3. - There are two oxygen atoms and one hydrogen atom in a water molecule.

Exercise 4. Match the definitions (1-8) with the words (A-H).

1. - a neutral particle in an atom.
2. - a positively or negatively charged atom.
3. - a combination of two or more elements.
4. - the smallest piece of matter that can exist by itself.
5. - anything that contains material and takes up space.

6. – a negatively charged particle in an atom.
7. – a basic substance made up of one type of atom.
8. – a positively charged particle in an atom.

a) matter b) atom c) ion d) element e) compound f) proton
g) neutron h) electron

Exercise 5. Fill in the blanks with the words or phrases from the table.

atomic number, molecule, ion, mass number, element, matter

1. The _____ measures how many protons and neutrons are in an element.
2. _____ is anything that occupies space and has mass.
3. If an atom has become electrically charged, we call it a(n) _____.
4. The _____ tells how many protons are in an atom.
5. If something is a(n) _____ it can be found on the periodic table.
6. A(n) _____ can have more than one type of atom in it.

Exercise 6.

Student A: you are a professor. Talk to Student B about:

- . the structure of water molecule
- . a mistake he or she makes
- . what to work on

Student B: you are a student. Talk to a Student A about the structure of a water molecule.

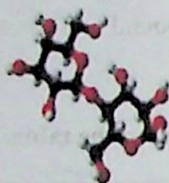
Use language such as:

No wait, I mean

How many atoms of each?

Do you remember the formula ?

What am I?



The molecular mass is the size of a given molecule. Now given the definition below, name the things that are being described. Write your answer in the given space provided.

Type of molecule only has 2 atoms



Molecules generated two kinds of bonds



A single-atom, the covalent-bond-free molecule is referred to as _____.



Molecule is made up of two or more different elements or compounds that have been physically mixed.



Formed from atoms that are two or more distinct elements together in a consistent weight ratio. It is possible to decompose it chemically into a simpler form of matter.



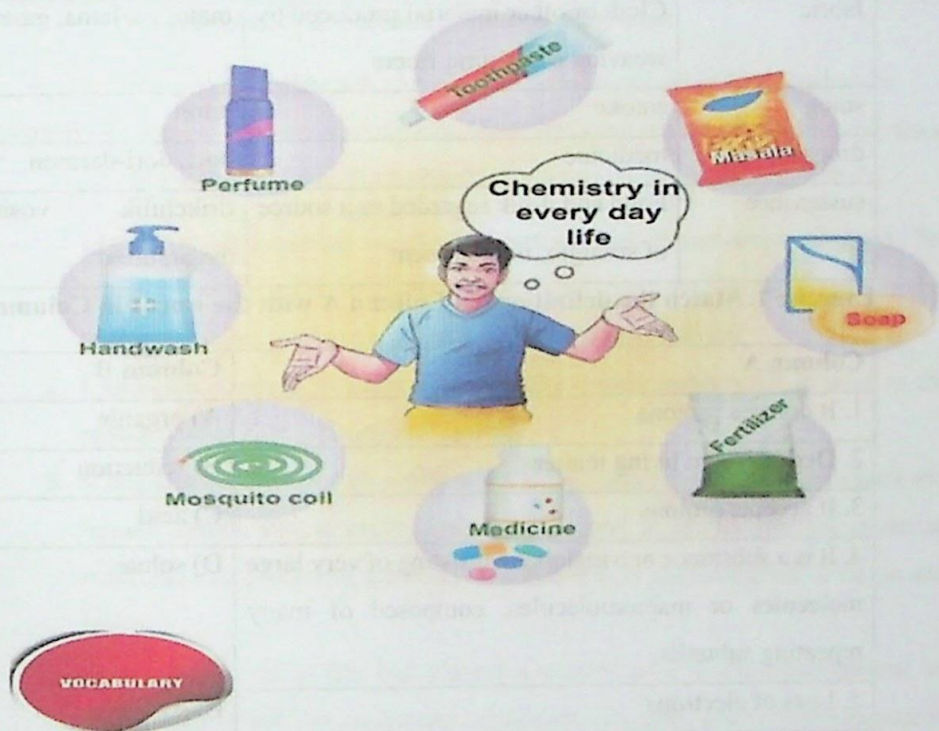
The term ____ was used to name substances composed of two or more atoms, whether they are from the same atom or distinct ones.



Lesson 10. Everyday Chemistry.

Warming up: Answer the questions before reading the text.

Why is Chemistry important in our everyday life?



English	Definition	Uzbek
crucial	vital	hal qiluvchi, asosiy
significant	important	muhim, ahamiyatli
ignore	refuse to take notice of or acknowledge	e'tiborsiz qoldsirmoq, mensimaslik
breathe	inhale	nafas olmoq
preservation	the action of preserving something	saqlamoq, ehtiyot qilmoq
complex	complicated	murakkab

dyes	A natural or synthetic substance used to add a color to or change the color of something	bo'yoqlar, rang
fibers	bast, filament	tola
fabric	Cloth or other material produced by weaving or knitting fibers	mato, gazlama, gazmol
smog	smoke	tutun
drugs	medicine	dori, dori-darmon
sustenance	Food and drink regarded as a source of strength; nourishment	tirikchilik vositalari, ovqat, taom

Exercise 1. Match the definitions in Column A with the words in Column B.

Column A	Column B
1. It donates protons	A) organic
2. Derived from living matter	B) reduction
3. It accepts protons	C) acid
4. It is a substance or a material consisting of very large molecules or macromolecules, composed of many repeating subunits.	D) solute
5. Loss of electrons	E) spoils system
6. Gain of electrons	F) Bunsen burner
7. A small adjustable gas burner used in laboratories as a source of heat	G) catalyst
8. Substance that dissolves in another substance	H) base
9. Able to dissolve other substance.	I) reactant
10. Chemical substance composed of many identical molecules.	J) solvent
11. Substance that speeds up the chemical reaction	K) polymer
12. A substance that is used in the chemical reaction	L) saturated fats

13. Is a substance that is produced and present at the end of a chemical reaction	M) product
14. Fats that have single bonds.	N) oxidation
	O) compound

Importance of chemistry in Everyday Life.

Chemistry in everyday life plays crucial role in our daily lives, making it significant subject that we can't ignore. From the food we eat, the clothes we wear, the air we breathe, and the technology we use chemistry is everywhere.

1. Chemistry is essential in the production and preservation of food. For example, when we cook, chemical reactions occur that break down complex molecules into simpler ones, making them easier to digest.
2. Chemistry plays a significant role in the textile industry. It is used in the production of dyes, fibers, and fabrics.
3. It helps in the study of air pollutants and their impact on the environment and human health. For example, chemistry is used to understand the chemical reactions that occur in the atmosphere that lead to the formation of ozone and smog.
4. Chemistry in daily life has played a crucial role in the development of technology. From the production of plastics, batteries, and semiconductors to the development of new drugs and much more.

The importance of chemistry in everyday life cannot be overstated. It is a subject affects every aspect of our lives, from the food we eat to the clothes we wear.

Chemicals of Food in Everyday Life.

The chemistry of food is crucial to our sustenance and well-being. From the production to the preservation and analysis of food, chemistry is essential. Let's discuss the chemicals used in food and how they impact our everyday lives.

1. Food production.

Chemicals are used in food production to enhance the appearance, texture, and flavor of food.

- . salt is used in food to enhance the taste and prevent bacterial growth, which can cause food spoilage.

- . other chemicals used in food production include citric acid, which is used in soft drinks, and ascorbic acid, which is used as a preservative in fruit products.

2. Food preservation.

Chemicals are also used in food preservation to extend the shelf life of food.

- . one of the most common food preservatives is sulfur dioxide, which is used to preserve dried fruits and wine.

- . Sulfur dioxide prevents the growth of bacteria and other microorganisms that can cause food spoilage.

3. Food analysis.

Chemistry is also used in food analysis to ensure the safety and quality of food.

- . One example of food analysis is testing for the presence of pesticides in fruits and vegetables. Pesticides are chemicals used to kill pests that can damage crops.

- . Another example of food analysis is testing for the presence of bacteria and other microorganisms in food.

To preserve food well and use it to its maximum potential, it is essential to understand chemistry in everyday life.

Chemistry of Cleansing Agents in Everyday life.

Chemistry in everyday life: The science Behind Cleaning Agents.

Cleaning agents, such as detergents and soaps, are essential in our daily lives. These products help us keep our homes, clothes, and personal hygiene in check. But have you ever wondered about the science behind these products? How are they

formulated to effectively remove dirt and stains while being gentle on our skin and the environment? The answer lies in chemistry.

Exercise 2. There are some recap questions. Answer these questions.

1. Are food additives always artificial?
2. Are cosmetics an invention from the 20th century?
3. Is there chemistry in our bodies?
4. Is it important to read the label of a product before using it?

Exercise 3. What do we use these products for?

1. Multi-purpose cleaner
2. Washing machine cleaner
3. Glass and surface cleaner
4. Disinfecting bathroom cleaner
5. Stain remover
6. Toilet bowl cleaner

Lesson 11. Water

Read the text and retell the summary using terms and phrases on your own direction



One of the most striking properties of water is its ability to dissolve many substances, forming aqueous solutions. Solutions are very important kinds of matter — important for industry and for life. The ocean is an aqueous solution that contains thousands of components: ions of the metals and non-metals, complex organic ions, many different organic substances. It was in this solution that the first living organisms developed, and it was from it that they obtained the ions and molecules needed for their growth and life. In the course of time organisms that were evolved could leave this aqueous environment, and move out onto the land and into the air. They achieved this ability by carrying the aqueous solution with them, as tissue fluid, blood plasma, and intracellular fluids containing the necessary supply of ions and molecules. The properties of solution have been extensively studied, and it has been found that they can be correlated in large part by some simple laws. Water not only is the most widely used of all solvents, but also, of all liquids, it most nearly approaches being the “universal solvent”. Every substance is probably soluble in water to some extent, although in many cases the solubility is so small that it is almost imperceptible. Such substances as barium sulphate, silver chloride, quartz, glass, mercury, and cellulose are usually considered as “insoluble” in water; but this term, it must be remembered,

is merely a relative one, and it would be more accurate to say that their solubility is exceedingly small.

1. Read the sentences and find out if they match information given in the text and correct sentences .

1. Water can dissolve a great number of substances.
2. Solutions are important in industry, but not in life.
3. A lot of components are dissolved in the ocean water.
4. The first living organisms developed in water and on the land and then moved into the air.
5. There are no laws common to all the solutions and the properties of each solution are studied separately.
6. Every substance is soluble in water to some extent.

2. Respond to the statements and questions, using the following expressions: / *hope so; so it is; it is; it would be wrong to say so; I'm of the same opinion.*

1. I think we speak too much about water, there are many other interesting liquids.
2. Barium sulphate is insoluble in water.
3. The ocean is an aqueous solution, isn't it?
4. It was in the ocean that the first living organisms developed.
5. Could we obtain a solution of quartz?
6. Thus, in conclusion we may say that the term "insoluble" in water is not accurate when we speak about silver chloride.
7. Water is usually called the "universal solvent".
8. Soon we shall learn the structure of water and then we shall clearly understand the nature of its properties.

3. Find definitions of these words:

Aqueous-

Soluble-

Component-

Tissue-

Ions-

Accurate-

Imperceptible-

Supply-

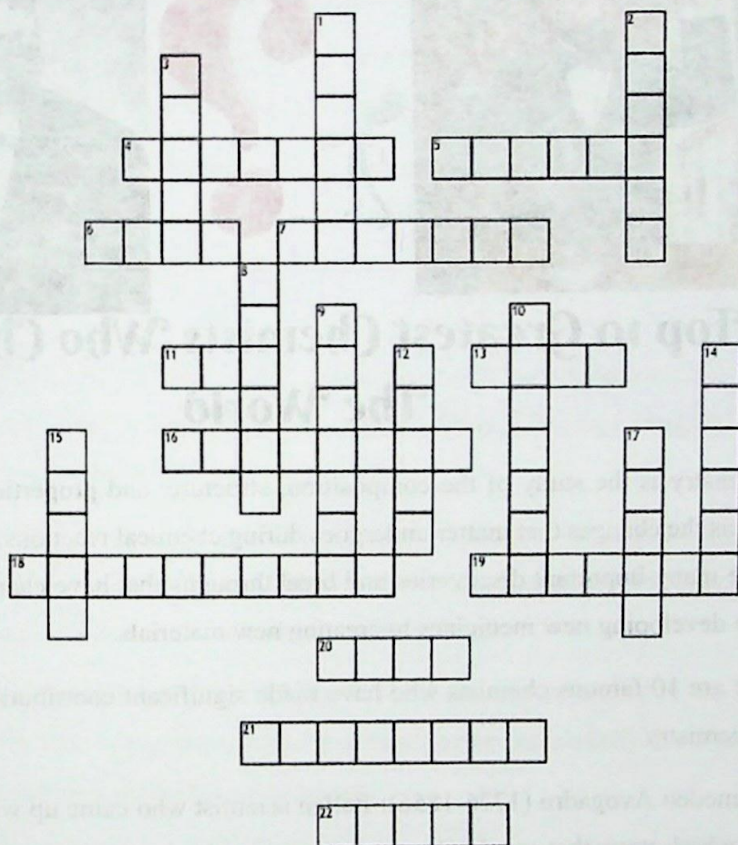
Universal-

Water-

Solvent-

Liquids-

WATER



Across

4. Water and the sun create this
5. Water goes in here to boil
6. Water comes out of this when turned on
7. Huge sea waves
11. Chemical Formula for water
13. Nice to be in on a hot day
16. Frozen blocks of water

18. Where rainwater is stored
19. These grow when given water
20. Another name for water
21. You fill this with water so a car doesn't overheat
22. Sand and water is here

Down

1. Heavy rainfall or storms
2. You can catch fish here
3. These sit on top of water

8. We have these daily
9. When animals have no food supply or water
10. Sugary liquid mixed with water
12. The Titanic went down here
14. Where rain is made
15. Boiled water creates this
17. Colourless liquid



Top 10 Greatest Chemists Who Changed The World

Chemistry is the study of the composition, structure, and properties of matter, as well as the changes that matter undergoes during chemical reactions. Chemists have made many important discoveries and breakthroughs that have changed the world, from developing new medicines to creating new materials.

Here are 10 famous chemists who have made significant contributions to the field of chemistry.

1. Amedeo Avogadro (1776-1856): Italian scientist who came up with Avogadro's law, which states that equal volume of all gases at the same temperature and pressure contain the same number of molecules.
2. John Jacob Berzelius (1779-1848): Swedish chemist who developed the notation for writing chemical formulas and helped to discover and isolate many elements, including silicon, thorium, cerium, and selenium.
3. Robert Boyle (1627-1691): Irish chemist and physicist who is considered one of the founders of modern chemistry. He developed Boyle's law, which states that the pressure and volume of a gas are inversely proportional.

4. Marie Curie (1867-1934): Polish chemist and physicist who conducted pioneering research on radioactivity. She was the first woman to win the Noble Prize and won the award twice, once for physics in 1903 and again for chemistry in 1911.
5. John Dalton (1766-1844): English chemist who developed the atomic theory of matter. He is also known for his work on color blindness.
6. Sir Humphry Davy (1778-1829): English chemist and inventor who isolated or discovered several elements, including sodium, calcium, boron, barium, magnesium, iodine, chlorine, and potassium. He also invented the Davy lamp, a safety lamp for miners.
7. Rosalin Franklin (1920-1958): English chemist and physicist who contributed to the discovery of the DNA double helix. Her X-ray diffraction image of DNA played an important role in its discovery.
8. Antoine Lavoisier (1743-1794): French chemist who is sometimes called the “father of modern chemistry”. He developed the law of conservation of mass and helped to standardize the chemical nomenclature.
9. Dmitri Mendeleyev (1834-1907): Russian chemist who created the first periodic table of the elements. His table helped to organize and classify the elements and led to the discovery of many new elements.
10. Alfred Nobel (1833-1896): Swedish chemist and inventor who invented dynamite. He was also a philanthropist who established the Noble Prize.

These are just a few of the many famous chemists who have made significant contributions to the field. Their work has helped to improve our understanding of the world around us and has led to many important advances in science and technology.



**DID YOU
KNOW?**

1. Mars is red because its surface has a lot of rust or iron oxide.

2. Tabletop volcanoes can be created through the aid of ammonium dichromate
3. The softest known substance is talk.
4. The lighter was invented before the match. It was invented by J.W. Dobereiner in 1816.
5. Sometimes hot water can freeze quicker than cold water. This effect is known as the Mpemba effect.
6. DNA doesn't catch fire.
7. You cannot freeze helium simply by cooling it to absolute zero. It will freeze only under extreme pressure.
8. By the time you feel thirsty, you have already lost about 1% of your body's water.

Exercise 1. Read the text. Then, mark the following statements as true (T) or false (F).

1. Chemists have made many insignificant discoveries and breakthroughs that have changed the world.
2. Amedeo Avogadro developed the atomic theory of matter.
3. Swedish chemist, John Jacob Berzelius, developed the notation for writing chemical formulas and helped to discover and isolate many elements.
4. Marie Curie was the first woman to win the Noble Prize.
5. John Dalton, American chemist who developed the atomic theory of matter.
6. Antoine Lavoisier developed the law of conservation of mass and helped to standardize the chemical nomenclature.
7. The first periodic table of the elements was created by Dmitri Mendeleyev.
8. Antoine Lavoisier invented dynamite.
9. Their work has helped to improve our understanding of the world around us and has led to many important advances in science and technology.

10. Chemistry is the study of the composition, structure, and properties of matter.

Exercise 2. Match the scientists (1-10) with their inventions (A-J).

Scientists	Inventions, contributions
1.Dmitri Mendeleev	A. the atomic theory of matter
2.Alfred Nobel	B. research on radioactivity
3.Rosalin Franklin	C. the notation for writing chemical formulas and helped to discover and isolate many elements
4.Antoine Lavoisier	D. Boyle's law
5.Humphry Davy	E. dynamite
6.Amedeo Avogadro	F. the first periodic table of the elements
7.Johns Jacob Berzelius	G. the law of conservation of mass
8.Robert Boyle	H. the discovery of the DNA double helix
9.Marie Curie	I. discovered several elements, including sodium, calcium, boron, barium, magnesium, iodine, chlorine, and potassium.
10.John Dalton	J. Avogadro's law, which states that equal volume of all gases at the same temperature and pressure contain the same number of molecules.

Chemistry inventions that enabled the modern world.

1. Penicillin. Alexander Fleming discovered penicillin in 1928, but it wasn't until 1939 that Howard Florey worked out how to make it in useful quantities. They were amongst the first drugs effective against multiple bacterial infections.

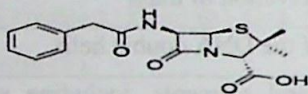
2. Plants need nitrogen, but a major limiting factor in agriculture is its availability. German chemists Fritz Haber and Carl Bosch worked out a way of combining hydrogen and nitrogen to make ammonia, which can be used as crop fertilizer.

3. A large number of plastic objects you come across are made of some form of polythene. It was initially discovered in 1898, but a practical method for producing it wasn't developed until 1933. 80 million tons are made each year.

4. Russel Marker, an organic chemist, discovered a chemical in Mexican yarns could be turned into the hormone progesterone in a single step. This made its production affordable and led to the development of the first contraceptive pills.

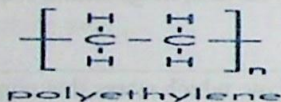
5. Chemists have known about liquid crystals for some time, but room temperature LCD displays only became possible after George Gray's discovery of 5CB in 1972. 5CB derivatives are still present in TV, phone and laptop screens.

1) Penicillin



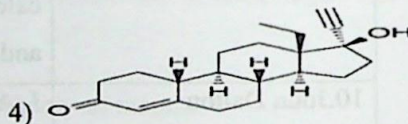
Nitrogen Hydrogen Ammonia

2) Ammonia

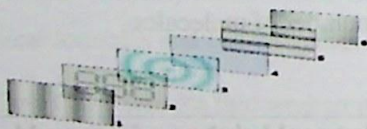


3)

polyethylene



4)



5)

(LCDs)

Exercise 3. Fill in the gaps with the words penicillins, ammonia, polyethylene, LCDs.

A) are used in a wide range of applications, including LCD televisions, computer monitors, instrument panels, aircraft cockpit displays, and indoor and outdoor signage.

B) produced by industry is used in agriculture as fertilizer. It is also used as a refrigerant gas, for purification of water supplies, and in the manufacture of plastics, explosives, textiles, pesticides, dyes and other chemicals.

C) are used in the treatment of throat infections, meningitis, syphilis, and various other infections.

D) is typically used for plastic bags, food/drink containers, and medical applications like knee joints.

FAMOUS CHEMISTS WORDSEARCH

R	K	D	F	E	H	H	B	C	B	S	G	B	S	S	V	H	C	B	E
L	E	S	I	S	H	H	A	U	R	L	L	O	I	E	S	E	O	G	R
E	D	L	L	H	N	A	E	B	N	O	N	Y	B	V	D	A	R	V	I
E	E	R	H	M	P	P	R	I	E	S	T	L	E	Y	I	O	A	S	S
R	T	A	H	O	D	I	E	R	R	R	E	E	R	G	B	E	W	T	E
Y	S	O	S	I	W	W	Y	M	H	U	L	N	Z	A	E	M	E	Y	H
E	N	F	I	S	C	H	E	R	H	E	C	E	E	Y	S	N	D	E	V
G	O	L	D	S	C	H	M	I	D	T	N	S	L	L	E	I	E	B	H
I	R	E	N	A	U	L	N	N	B	S	W	I	I	U	O	K	E	K	B
B	B	T	E	N	S	S	E	H	L	A	R	B	U	S	K	R	E	S	A
B	Y	V	V	R	U	M	L	W	E	P	O	K	S	S	A	E	I	G	E
S	S	S	A	N	G	E	R	E	I	S	I	O	V	A	L	P	K	L	Y
A	T	D	C	N	A	A	E	N	C	S	F	S	S	C	H	E	E	L	E
S	D	I	Y	D	T	B	I	H	P	A	U	L	I	N	G	B	E	I	R
N	I	K	G	D	O	H	R	R	N	O	R	D	A	G	O	V	A	R	D
H	A	F	E	N	A	E	O	S	L	S	D	A	E	N	O	T	T	O	K
E	D	A	Y	H	E	L	H	F	L	L	E	B	P	H	E	R	L	U	I
U	L	K	N	E	S	S	I	E	F	A	A	D	D	I	Y	Y	V	A	D
B	I	E	S	T	H	E	A	V	O	N	D	K	I	E	O	V	N	S	D
L	S	N	G	M	R	O	R	U	H	S	S	G	E	A	S	L	O	U	R

Abegg
 Bosch
 Curie
 Erlenmeyer
 Haber
 Lavoisier
 Paracelsus
 Sanger

Arrhenius
 Boyle
 Dalton
 Fischer
 Hahn
 Lewis
 Pasteur
 Scheele

Avogadro
 Bronsted
 Davy
 Gay Lussac
 Hess
 Mendeleev
 Pauling
 Seaborg

Baeyer
 Bunsen
 Dewar
 Gibbs
 Hodgkin
 Molssan
 Perkin
 van 't Hoff

Berzelius
 Cavendish
 Dow
 Goldschmidt
 Kekule
 Nobel
 Priestley
 Wohler

Lesson 13. Science and Scientists.

Find the translations of these words.

English	Definition	Uzbek
Hypothesis	A possible answer to a question that can be tested to see if it is correct	
Question	The problem you want to solve in an experiment	
Purpose	The reason for the experiment	
Research	The facts you find in reference sources that support your data in an experiment	
Materials	The items needed to complete the experiment	
Data	The results of the experiments in a chart, graph or other visual form	
Result/ conclusion	The explanation of whether the experiment worked or not	
Experiment	A test done to see if a hypothesis is correct or not	

Exercise 1. Complete the names of scientists, using suffixes: -ist or -ian or -er

Physics -

archeology -

Mathematics -

geology -

Chemistry -

psychology -

Biology -

astronomy -

Botany -

metheorology -

SCIENCE

Exercise 2. Fill the gaps with the correct noun from the box.

lab, record, beaker, vapour, survey, conclusion, germs.

- A) The acid was poured into a and put in the sink.
- B) The liquid in the vial gave off a greenish
- C) Use rubbing alcohol to sanitize the surface and kill
- D) In a chemistry, experiments are conducted.
- E) The was conducted in a form of a questionnaire.
- F) It is important to keep Of all our research for future reference.
- G) Be careful not to introduce new ideas in the of your essay.

Exercise 3. Connect these verbs(1-8) with their definition(a-h).

Verbs	Definitions
1. to examine	a) to study a subject in detail, in order to discover new information.
2. to conduct	b) to organize and perform a particular activity
3. to research	c) to look at or consider a person or thing closely and carefully
4. to dissolve	d) to make something to combine with oxygen and lose hydrogen and create a new substance
5. to oxidize	e) to make something less pure or make it poisonous
6. to melt	f) to guess or calculate the cost, size, value, etc. of something.
7. to estimate	g) to turn from something solid into something soft or liquid
8. to contaminate	h) to be absorbed by a liquid, especially when mixed

Exercise 4. A) Read and complete the statements.**Different ways to learn**

Scientists learn about the world around them. They use their sense. Scientists do experiments to learn. They carry out experiments again and again to make sure they get the same results. Scientists learn from each other, too. They ask each other "How do you know?" and share what they learn. They give answers. They tell how they know.

1. Scientists carry out 2. Scientists use their 3. Scientists learn from

Exercise 4. B) Read and match the questions with their answers.

1. Why do scientists repeat their experiments?	A) to help answer each other's question
2. Why do scientists use their senses?	B) to make sure the results are the same
3. Why do scientists share what they learn?	C) to learn about the world around them



English	Russian	Uzbek
important	важный	muhim
to develop the modern tools of war	разработать современные орудия войны	zamonaviy qurol yaratish
to keep the peace	сохранять мир	tinchlikni saqlash
to improve life	улучшить жизнь	hayotni yaxshilash
the problem of supplying the world with enough energy	проблема снабжения мира с достаточным количеством энергии	dunyoni yetarlicha quvvat bilan ta'minlash muammosi

to analyze the world's resources	анализировать мировые ресурсы	dunyo resurslarini tahlil qilmoq
to share the resources	делиться ресурсами	resurslarni bo'lishish
a result of advances in technology	результат технических достижений	texnik yutuqlar natijalari
to be essential for one's life	иметь огромное значение для чьей-либо жизни	biror kishining hayotida katta ahamiyatga ega bo'lish
to predict earthquakes	предсказывать землетрясение	yer qimirlashini bashorat qilish
the origin and developments of the human race	происхождение и развитие человеческого рода	odamni paydo bo'lishi va rivojlanishi
a basic knowledge of science	элементарное знание наука	fanning asosay bilimlari
to find one's way in the changing world	найти путь меняющемся мире	o'zgaruvchan dunyoda yo'lini topish

Exercise 5. Read the text and retell its summary using the vocabulary.

Science

Science is important to most people living in the modern world for a number of reasons. In particular, science is important for world peace and understanding, for the understanding of technology, and for our understanding of the world.

Science is important for world peace in many ways. On one hand, scientists have helped to develop many of the modern tools of war. On the other hand, they have also helped to keep the peace through research, which has improved life for people. Scientists have helped us understand problem of supplying the world with enough energy they have begun to develop a number of solutions to the energy problem – for example, using energy from the sun and from the atom. Scientists have also analyzed the world's resources. We can begin to learn to share the resources with

the knowledge provided to us by science. Science studies the Universe and how to use its possibilities for the benefit of people.

Science is also important to everyone who is connected by modern technology. Many of the things that make our lives easier and better are results of advances in technology and, if the present patterns continue, technology will affect us even more in the future than it does now. In some cases, such as technology for taking salt out of ocean water may be essential for our lives on Earth.

The study of science also provides people with an understanding of natural world. Scientists are learning to predict earthquakes, are continuing to study many other natural events such as storms. Scientists are also studying various aspects of human biology and the origin and developments of the human race. The study of natural world may help improve life for many people all over the world.

A basic knowledge of science is essential for everyone. It helps people find their way in the changing world.

Exercise 6. Answer the questions.

1. Why is the science so important in the modern life?
2. How does science help keep peace in the world?
3. How does science help solve the energy program?
4. What proves that the science is important for understanding of the natural world?



1. Maximum Oxygen on the Earth comes from the Oceans.
2. Soil is full of life.
3. Water can have three existing forms at the same time.
4. Animals use the earth's magnetic field for orientation.
5. Helium can work against gravity.
6. A cloud might weigh about a million pounds.
7. Trees on earth are more in number than stars on the planet.

8. Days are getting longer on earth.
9. Earth's gravity isn't uniform.
10. The Earth might have frozen several times.

WONDERS OF SCIENCE

This is an age of science. Science has completely changed the entire world. Science has made our life more comfortable and trouble free. Science is useful to us. The blessings of Science are too many to count. Science has conquered time and distance. Electricity is another wonderful gift of science.

Electricity, one of its off shoots, is used in washing clothes, cooking food and in entertaining us. Its uses are unlimited. It lights our houses, shops, showrooms and streets. It runs our air-conditioners and air coolers. It keeps us warm in winter and cool in summer. It has increased our speed of work and has given us fast moving means of transport. Travelling is now so safe and fast. We have cars, buses, metro- rails, trains, ships and aero planes. Man can walk and talk at any corner of the world. In the fields of education, entertainment and agriculture it has proved a great blessing. The worst fact of science is seen in the wars.

It is a wonder that science has conquered deadly diseases, made man healthier and lengthened the span of human life. With the help of science, man has even reached the moon. Soon he will be visiting other planets too. There is no limit to the wonders of science. Scientists are coming out with new inventions and wonders every now and then.

The atom bomb and nuclear weapons are also wonders of science. As these can cause much destruction, it would be better for men to make constructive use of the wonders of science. Then only will they add to the happiness and prosperity of mankind. Science is a boon and a blessing for man if used in the right manner.

Lesson 14. Choosing a career.

What do chemical engineers do?

1. Develop new substances for products like foods, and beverages, cosmetics, cleaners, medicines and more.
2. Help design and operate machinery in industrial chemical plants.



English	Definition	Uzbek
chemical	relating to chemistry	kimyoviy
engineering	the branch of science and technology concerned with the design, building, and use of engines, machines and structures	muhandislik
research (v)	investigation, exploration	tadqiq etmoq, ilmiy ish olib bormoq
Alternative	(of one or more things) available as another possibility	muqobil, birini tanlab olish zaruriyati
rate process	A fixed price paid or charged for something, especially goods or services	tarif (narx) jarayoni
Synthesize	make(something) by synthesis, especially chemically	sintez qilish
Transform	change, alter	o'zgartirmoq, aylantirmoq
Desalination	The process of removing salt from seawater	tuzsizlantirish
Pharmaceuticals	A compound manufactured for use as a medicinal drug	farmatsevtika mahsulotlari

Drug	medicine, medication	dori, dori-darmon
Release	set free, allow(something) to move, act, or flow freely	ozod qilmoq, chiqarmoq

Exercise 1. Before reading passage, try to answer the questions.

1. What jobs do chemical engineers perform within the medical industry?
2. What kind of problems do chemical engineers try to solve?

Chemical Engineers.

Chemical engineers work on all sorts of jobs. **Chemical engineering** applies to nearly every field. Some engineers **research** new forms of **alternative energy**. Others improve **rate processes** for chemical plants. Many engineers **synthesize** new chemicals and **transform** existing ones. Often, chemical engineers try to solve major problems. For instance, some engineers develop **desalination** methods.

Desalination will create fresh water where it is needed. A current chemical engineering project involves **pharmaceuticals**. Its engineers want to create special **computer chip**. The pharmaceutical chip will provide a **controlled drug release**.

As a result, people will not need to take medicine regularly.

Exercise 2. Read the article above and choose the correct answer.

1. What is the main idea of the article?
 - A) types of work chemical engineers perform
 - B) how to become a chemical engineer
 - C) the history of chemical engineering
 - D) problems engineers currently face
2. Which of the following chemical engineering projects was Not mentioned?
 - A) developing alternative energy sources

B) synthesizing new chemical compounds

C) making faster medical computers

D) creating new desalination methods

3. According to the passage, what is a potential benefit of chemical engineering in pharmaceuticals?

A) new ways to eliminate salt

B) devices that release medicines

C) higher concentrations of chemicals

D) computer chips that create energy

Exercise 3. Match the words or phrases (1-6) with the definitions (A-F).

1. Transform _____

2. Desalination _____

3. Pharmaceuticals _____

4. Computer chip _____

5. Alternative energy _____

6. Chemical engineering _____

a) a small circuit that transmits data

b) to cause something to change into something else

c) a source of power that doesn't consume fossil fuels

d) the process of removing salt from a substance

e) a branch of engineering that studies chemical manufacturing

f) compounds meant to be taken as medicine

How to get a good job?



LABORATORY TECHNICIANS WANTED

Always read a job advertisement very carefully and think: Am I this person?

Summary	Laboratory Technician
. Job type	. About the job
Full time, Permanent	More than 200 new drugs for medical use are produced by pharmaceutical engineering in Hadford every year. Thirty three thousand people in ten countries work for Pharmeng. Researchers from all over Europe come to us for the latest in vaccines, painkillers and heart medications. Many problems need urgent solutions, so applicants for this post must be willing to work long hours and at the weekends.
. Working hours	
9:00 - 5:00 Monday to Friday	
. Career level	
Entry or experienced	We are looking for two technicians for our laboratory in Hadford. They will have a good level of general education. Training in Biology and Chemistry is essential. A good knowledge of statistical software like SPSS is important.
. Salary	Successful candidates will have excellent communication skills and will be good teamworkers. They will be willing to learn new skills.
£18,000-£20,000 p.a depending on experience	A wide range of training is provided in analysis, evaluation and reporting.
. Job reference code	Previous experience of laboratory work is an advantage. However, it is not essential because full training is given.
AC-LABTEC- PHENG	

	If this is the job for you, send an email application with CV to Antonia Marquez at a marquez@pharmeng.com
--	--

Scan the job advertisement and find the information below.

Job title	Laboratory technician
Location	
Salary	
Full time or part time	
Days	
Temporary or permanent	
Hours	
Contact person	

SPEAKING: Study 10 common interview questions.



1. What do you know about our organization?
2. What are your strengths?
3. What are your weaknesses?

4. What motivates you to work hard?
5. Do you have good communication skills?
6. Have you ever worked in a team?
7. What is your greatest achievement in your life so far?
8. Where do you want to be in five years' time?
9. What is the most important part of customer service?
10. Have you got any questions?

Top tips for interviews:

- . Research the organization
- . Plan your answers to common interview questions
- . Think of some questions to ask at the end of the interview
- . Check the location of the interview carefully
- . Arrive 15 minutes before the interview

Lesson 15. Filling in a Form.

Meaning	Word	Example	About you
single or married man married woman single woman single or married woman	Mr Mrs Miss Ms	Miss	
family name	surname	Rodriguez	
first name(s)	forename(s)	Maria Helena	
day, month, and year you were born	date of birth	12 June 1985	
	nationality	Argentinian	
first language	mother tongue	Spanish	
	Home address	California 2000, Piso 12 Buenos Aires C 1289AAN	
phone number during the day	daytime tel	[54] 1143028000	

no means "number"	mobile no	0341241248	
Not email number	email address	malena@latinoa.co.ar	
married or single?	marital status	single	
job	occupation	sports teacher	
elementary? intermediate? etc tick=✓	level of English (please tick)	elementary ✓ intermediate advanced	
your written name	signature	Maria Rodriguez	

Exercise 1. True or false? Write T or F.

For example: Miss = married or single – F

1. occupation = married or single _____
2. Mrs = married or single _____
3. Mr = single or married man _____
4. surname = first name _____
5. tick = ✓ _____
6. forename = family name _____
7. level = write your name _____
8. marital status = married or single _____
9. mother tongue = mother's name _____
10. email address = where you live _____
11. date of birth = today's date _____
12. daytime tel = phone number during the day _____

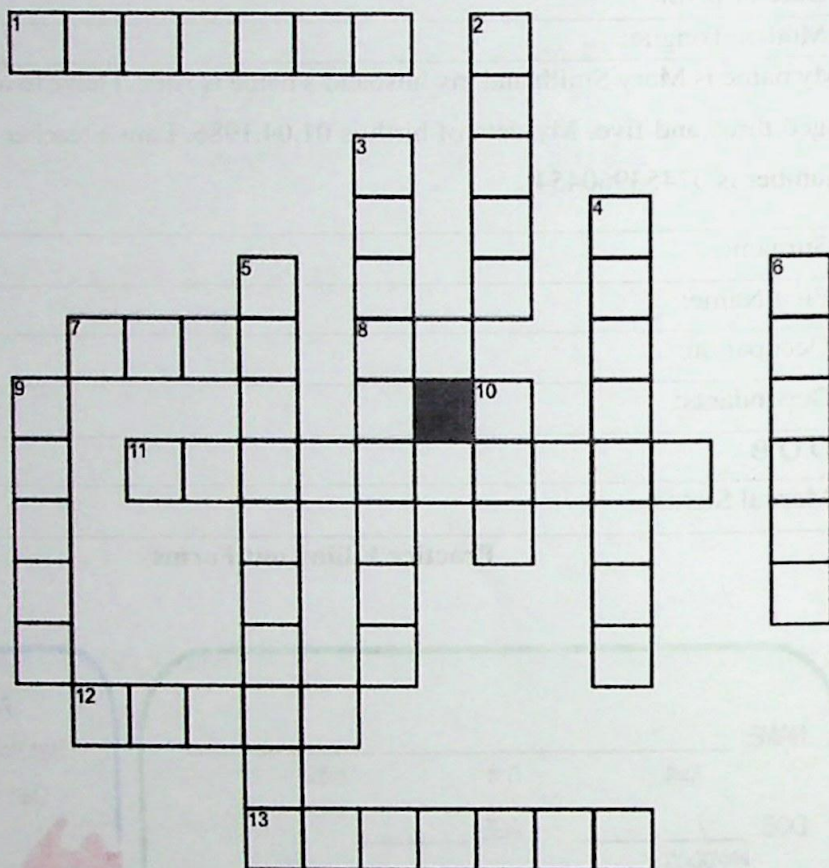
Exercise 2. Write your information in the table above.

Exercise 3. Read the text about Kate and Sarah and then fill the forms.

My name is Kate Ramos and I am manager at a famous French hotel. I live with my two children Tom and Richard. My husbands name is Rafael Ramos. I speak French and English. I was born in france on the 16th of August 1984.

Surname:
First Name:
Spouse's name:

Filling in Forms



Across

1. Where you live
7. You should always _
_ a copy of forms you
fill in online
8. Abbreviation for Not
Applicable
11. A form that is
completed and sent
online
12. Write without joining
up the letters

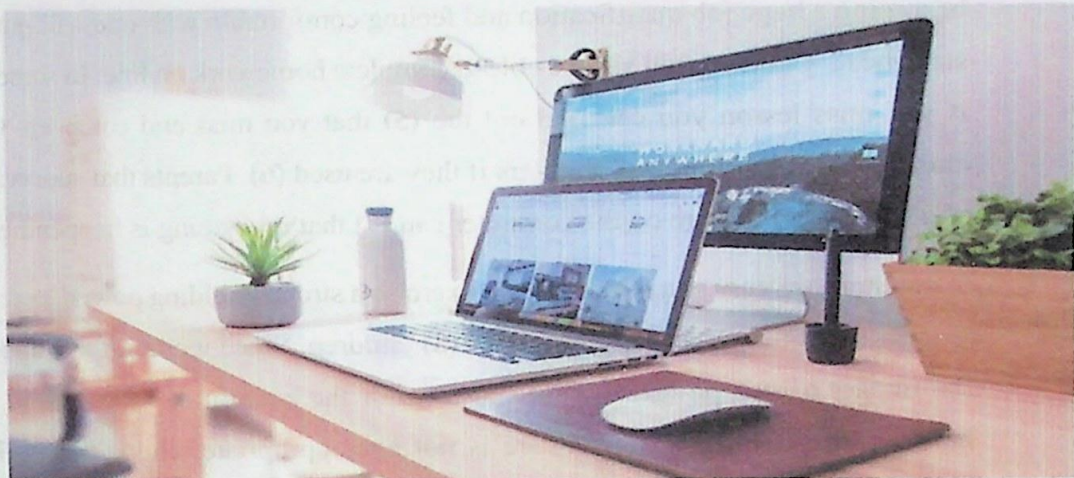
Down

2. Mr/Mrs/Ms/Miss
3. How you sign your
name
4. The first letter of
your first name and last
name
5. Family members
who rely on you for
financial support
13. To give details

6. A woman's family
name before any marriage
9. Letters written in
capitals
10. Abbreviation for
Date of Birth

Lesson 16. Computers and Internet in our life.

Computer age.



Over the past few years, computer have become a vastly popular household item. The luxury of emailing messages as opposed to charging up the phone bill is more (1). Checking news, weather, and sports via the Internet is a convenience that many are taking advantage of.

Our children's lives are already getting influenced by technology. Children are learning to read and write with computer games instead of homemade flash cards. They are reading their bedtime stories online instead of in bed with their parents. Slowly traditions are being broken and the computer is becoming a child's learning (2). Many parents are buying computer learning games instead of board games and pop-up books.

Parents are leaving the learning up to the computers and spending less quality time with their children. The most important learning step for the children is interaction with others. If they are sitting in front of the (3) all day, they don't learn to share, wait their turn, or even something as simple as manners. Children need to be in contact with other children, adults, and animals. They need to experience things first hand not off a computer screen.

One benefit of the computer age is that children are becoming (4). They are growing up computer literate and will have that as a huge advantage. Computer literacy is becoming a huge job qualification and feeling comfortable with one will put them a step ahead. Children will also be able to complete homework on line. In some places, if you miss lesson you can find out the (5) that you miss and catch up. Overall, children can benefit from computers if they are used (6). Parents that supervise their children when they are on the computer can (7) that everything is happening safely.

Computers are very engaging and can exercise a strong "holding power" on children as well as adults. They really seem to (8) children. Since we don't yet understand the impact of this power, we need to monitor the amount of time a child spends before a computer. If the software is not age-appropriate, children are likely to become (9) and associate a computer with failure.

Kids with access to software that is not age appropriate may be (10) to such negative influences as violence, strong language, and over- stimulation from fast-action graphics. Frequent and prolonged computer sessions may pose physical health risks for children. The most frequently cited are visual strain, (11) effects of radiation, and posture and skeletal problems. In the case of normal usage and normal operating conditions, however, research has shown that computer monitors are safe and do not compromise the health of our eyes and that computer monitors (12) little or harmful radiation.

1. Complete the text with the given words.

Tool/ assignments/ exposed/ appealing/ smarter/ wisely/ mesmerize/ frustrated/ emit/ screen/ ensure/ harmful		
1 _____	1 _____	1 _____
2 _____	2 _____	2 _____
3 _____	3 _____	3 _____
4 _____	4 _____	4 _____

2. Complete the table according to the text.

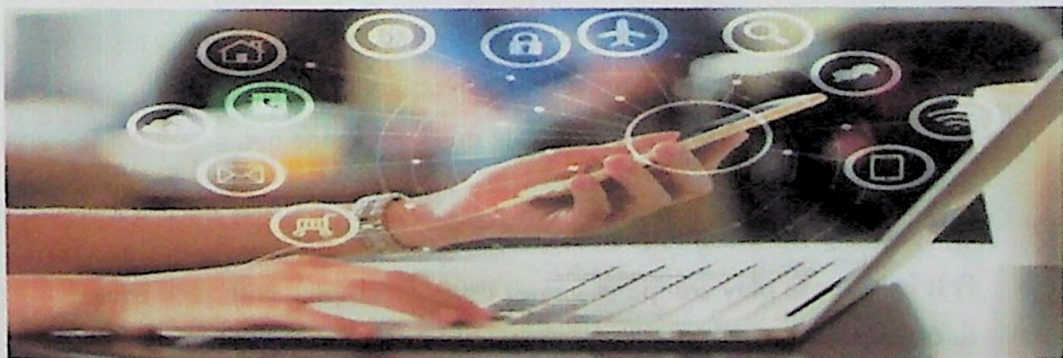
The advantages of the computers	The disadvantages of the computers

3.Fill in the table with the right forms of the given words.

Adjective	Verb	Noun
Popular	xxxxxxxxxxxxxxxxxxxxxx	_____
_____	influence	_____
_____	xxxxxxxxxxxxxxxxxxxxxx	luxury
_____	_____	interaction
literate	xxxxxxxxxxxxxxxxxxxxxx	_____
_____	benefit	_____
_____	supervise	_____
_____	_____	qualification
Strong	_____	_____

4.Writing: write a 12-line essay to explain how computer have changed your own life.

The Internet: a friend or an enemy?



The internet is an important part of our life now. It helps students a lot in their studying. You don't need to go to the library to get a book for your literature lesson. There are many sites where you can find a necessary e-book. If you are going to make a project you can surf the net and get information on any topic.

Doing shopping, booking tickets, watching popular clips, sharing interesting ideas, communicating, downloading music are the things you can do online. Can you live without the Internet? It seems you can do everything in the net. But, is it good to spend too much time in the Internet?

For today's young people there is practically no line between on line and real world's communication. They chat online, make friends online, fall in love online, in fact they, they live online! The children become Internet-addicted. Internet addiction is a disease, and every disease has its symptoms.

There are some symptoms of internet addiction:

- 1) spending too much time in the Internet;
- 2) having problems with doing homework because you are online;
- 3) isolation from family and friends;
- 4) feeling happy while you are online and being upset when you are offline.

So, if you are going camping with your friends instead of killing computer monsters online, you are surely making the right choice.

5. Find if the sentences are true or false.

- a) There are many activities you can do online.
- b) The Internet helps students to study in universities.
- c) You can't download your favourite music from the net.
- d) Internet addiction is a disease.
- e) Spending too much time in the Internet is good for your health.
- f) It is better to play computer games than go camping with your friends.

6. Choose the best answer per each question.

1. According to the text

- A) the Internet is a good thing.
- B) the Internet is bad thing.
- C) the Internet has both a good and a bad side.

2. Which Internet activity is not mentioned in the text?

- A) booking tickets;
- B) getting an e-book;
- C) buying things online;
- D) cooking with the help of online courses.

3. The cons of using the Internet are:

- A) you can get any information you want;
- B) you can spend the whole day surfing the Internet;
- C) you can share your ideas through the Internet;
- D) the Internet deprives you real communication.

4. What are the symptoms of Internet addiction?

- A) you have problems with your homework if you are always online;
- B) you get upset if you can't be online;
- C) you use the Internet to do your homework;
- D) you buy things online.

7. Find the synonym in the text.

- A) a book that you can read on computers or other electronic devices.
- B) when you don't have enough contacts with people, we call it.
- C) to search information in the Internet, to spend time in the Internet.
- D) physical disorder, illness.
- E) to talk online.
- F) to feel sad about something.

GLOSSARY

Lesson1.

English	Definition	Uzbek
Dedicate	devote (time, effort, or oneself) to a particular task or purpose	bag'ishlamoq
Differ	be unlike or dissimilar	farq qilmoq
Help	make easier/ better	yordam bermoq
Speak	say something in order to convey information, an opinion or feeling	gapirmoq, gaplashmoq
Know	be aware of through observation, inquiry, or information	bilmoq, xabardor bo'lmoq
Promote	To move somebody to a higher rank or more senior job	martabasini ko'tarmoq
Sea	the expanse of salt water that covers most of the earth's surface and surrounds its landmasses	dengiz
Teaching	training, education	ta'lim berish, o'qitish
Success	achievement	muvaffaqiyat, omad
Interest	The state of wanting to know or learn about something or someone	qiziqish
Prepare	make ready for use or consideration	tayyorlamoq
Like	be fond of	yoqtirmoq

Advance	move forward in a purposeful way	oldinga harakat qilmoq
Direct	straight, straightforward	bevosita, to'g'ri
Poet	a person who writes poems	shoir
Connect	Bring together or into contact so that a real or notional link is established	biriktirmoq, bog'lamoq

Lesson 2.

English	Definition	Uzbek
space	a continuous area or expanse which is free, available, or unoccupied	bo'sh joy
matter	physical substance in general that everything in the world consists of	fizik modda, narsa
property	an attribute, quality, or characteristic of something	xususiyat
substance	a particular kind of matter with uniform properties	modda, materiya
composition	the different parts which something is made of; the way in which the different parts are organized	tarkibi
convert into	cause to change in form, character, or function	bir holatdan ikkinchi holatga o'tkazmoq
valid	based on what is logical or true	yaroqli
contribute	give in order to help achieve or provide something	hissa qo'shmoq

branch	a division of an area of knowledge or a group of languages	tarmoq, bo'lim, soha
observe	to watch and sometimes also listen carefully	kuzatmoq
enormous	very large in size, quantity, or extent	ulkan, juda katta

Lesson 3.

English	Definition	Uzbek
production	the process of making or growing something for sale or use	ishlab chiqarish, mahsulot
compound	to form (something) by combining separate things	aralashma, birikma, tarkib
repel	if one thing repels another, or if 2 things repel each other, an electrical or magnetic force pushes them apart	qaytarmoq, itarmoq, haydamoq
enable	make (a device or system) operational; activate	yoqmoq, imkoniyat bermoq, yengillashtirmoq
unpaired	not arranged in pairs	juft bo'lib joylashmagan
chain	a sequence of items of the same type forming a line	zanjir
solution		eritma
foodstuffs	a substance suitable for consumption as food	oziq-ovqat mahsulotlari
electrolysis	chemical decomposition produced by passing an electric current through a liquid or solution containing ions	elektroliz, elektr toki vositasida yo'q qilish

Lesson 4

English	Definition (English)	Uzbek
to break down	to separate	buzilmoq, ajralmoq
building block	constituent	tarkibi, tarkibiy qism

fixed	definite	belgilangan
increasing	growing	oshayotgan, o'sayotgan
kinetic	dynamic	faol
man-made	synthetic	sun'iy
mean	method, manner	uslub, usul
packed together	compact	zich, ixcham
referred to as	called	..deb nomlangan, atalgan
to spread out	to extend	kengaytirmoq
to take up	to occupy	egallamoq, bosib olmoq
tightly	closely, strongly	mahkam

Lesson 5

English	Definition (English)	Uzbek
added	inserted	qo'shilgan, kiritilgan
as	since, because	chunki
to be made up	to be formed	tuzilmoq, shakillantirilmoq
drop	small round mass of liquid	tomchi
kind	type	turi, xili, navi
main	principal	asosiy
to melt	to become liquid	erimoq
no matter	it makes no difference	ahamiyatsiz, farqi yo'q
pot	container	qozon, idish
ratio	proportion	nisbat
sensitive to	influenced by	-ga sezgir, - dan ta'sirlangan

Lesson 6

English	Definition	Uzbek
calcium	a soft gray metal	kaltsiy

carbon	a nonmetal which has two main forms	uglerod
chlorine	a toxic, irritant, pale green gas	xlor
copper	a red-brown metal	mis
fluorine	a poisonous pale yellow gas of the halogen series.	flor
gold	a yellow precious metal	oltin
hydrogen	a colorless, odorless, highly flammable gas.	vodorod
iron	a strong, hard- magnetic silvery-gray metal.	temir
mercury	a heavy silvery-white metal which is liquid at ordinary temperatures	simob
nitrogen	a colorless, odorless unreactive gas that forms about 78% of the earth's atmosphere	azot
oxygen	a colorless, odorless reactive gas and the life- supporting component of the air	kislород
potassium	a soft silvery-white reactive metal of the alkali metal group	kaliy
silver	a precious shiny grayish-white metal	kumush
sodium	a soft silver-white reactive metal of the alkali metal group	natriy
sulphur	a yellow combustible nonmetal	oltingugurt

Lesson 7

English	Definition	Uzbek
to decompose	to break down	buzilish, ishdan chiqish, parchalanmoq
to obtain	to gain	erishmoq
to take place	to occur	sodir bo'lmoq
the around area	surroundings	atrof –muhit, tevarak- atrof
whenever	every time	doim, qachon bo'lmasin
influenced	affected	ta'sirlangan, ta'sir qilgan
quantity	amount	miqdori, soni
to dispose of	to eliminate	bartaraf qilmoq, tugatmoq
to happen	to take place, to occur	sodir bo'lmoq
litmus	blue vegetable dye	ko'k rangli o'simlik bo'yog'i
to lower	to reduce	pasaytirmoq, kamaytirmoq
main	principal	asosiy

Lesson 8

English	Definition	Uzbek
bench	a long, sturdy work table	uzun, mustahkam ish stoli
container	an object that can hold something	Biror narsa saqlanadigan idish
drag	pull, haul	tortmoq, sudramoq
dip	dunk	botirmoq, cho'ktirmoq
explosion	blowing up, burst	portlamoq
flame	fire	olov, alanga
flammable	easily set on fire	yong'in jihatidan xavfli

goggles	close fitting eyeglasses with side shields, for protecting the eyes from glare, dust, water, etc.	himoya ko'zoynagi
gown	robe, overalls	xalat
hazard	a danger	xavf, xavf-xatar
jewelry	jewels, bijouterie	taqinchoq, zeb-ziynat
loose	baggy	keng, erkin, shalviragan
low-heeled	(of shoes) having low heels	past poshnoli
non-slip soles	designed to prevent slipping	sirpanmaydigan tagliklar
precautions	safety measure	ehtiyot choralari, ogohlantirish
protect	keep safe from harm or injury	himoya/muhofaza qilmoq
poisonous	toxic, fatal	zaharli
safety	security	xavfsizlik
spillage	the action of spilling a liquid	to'kilishi
splatter	swing, careen	chayqalmoq
valuable	costly, precious	qimmatli, qadrlı

Lesson 9

English	Definition	Uzbek
aggregate	a whole formed by combining several elements	agregat (ot), bir joyga to'plamoq (fe'l)
arise	emerge; become apparent	turmoq, ko'tarilmoq, paydo bo'lmoq
commonly	usually	odatda, odatga ko'ra
constitute	be (a part) of a whole	tashkil qilmoq, hosil qilmoq, belgilamoq
definition	a statement of the exact meaning of a word, especially in a dictionary	ta'rif, izoh, tavsif

density	the degree of compactness of a substance	zichlik, tigizlik
distribute	give shares of, deal out	taqsimlamoq, tarqatmoq
helium	an inert gas which is the lightest member of the noble gas series.	geliy
at least	minimum	kamida
neutral	Objective, unselfish	neytral, xolis, betaraf
pack	Cram a large number of things into (a container or space)	joylamoq, to'daga birlashtirmoq

Lesson 10

English	Definition	Uzbek
crucial	vital	hal qiluvchi, asosiy
significant	important	muhim, ahamiyatli
ignore	refuse to take notice of or acknowledge	e'tiborsiz qoldirmoq, mensimaslik
breathe	inhale	nafas olmoq
preservation	the action of preserving something	saqlamoq, ehtiyot qilmoq
complex	complicated	murakkab
dyes	a natural or synthetic substance used to add a color to or change the color of something	bo'yoqlar, rang
fibers	bast, filament	tola
fabric	cloth or other material produced by weaving or knitting fibers	mato, gazlama, gazmol
smog	smoke	tutun
drugs	medicine	dori, dori-darmon
sustenance	food and drink regarded as a source of strength; nourishment	tirikchilik vositalari, ovqat, taom

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