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АНГЛИЙСКИЙ ЯЗЫК

Методические рекомендации для студентов 1 курса
фармацевтического факультета
(часть III)

Под общей редакцией Р.В. Кадушко

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Методические рекомендации по английскому языку предназначены для студентов, имеющих фоновые знания по английскому языку. Они могут быть использованы как для работы в аудитории, так и для управляемой самостоятельной работы. Представленная в методических рекомендациях тематика текстов позволит студентам сформировать навыки понимания и перевода аутентичной литературы по специальности «Фармация» с опорой на знание профессиональной лексики и грамматических структур, характерных для научного стиля. Методические рекомендации состоят из 2 разделов.

Утверждены и рекомендованы к изданию Центральным учебно-методическим Советом непрерывного медицинского и фармацевтического образования Витебского государственного медицинского университета 25 октября 2017г., протокол № 9.

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ПРЕДИСЛОВИЕ

Методические рекомендации по английскому языку предназначены для студентов 1 курса фармацевтического факультета как для работы в аудитории, так и для самостоятельной работы.

Целью данных методических рекомендаций является ознакомление студентов с терминологической лексикой по специальности «Фармация», развитие навыков чтения текстов на основе изученной лексики и грамматики с последующим обсуждением прочитанного в форме беседы на определенную тему.

Методические рекомендации состоят из 2 разделов: “Plant study”, “In the pharmacy”, что отражает познавательную и профессиональную направленность языкового материала.

Каждый раздел методических рекомендаций состоит из следующих частей:

1) “Grammar practice” – изучение и узнавание грамматических структур с помощью таблиц и упражнений с последующим использованием их в речевой деятельности;
2) “Vocabulary learning” – изучение профессиональной лексики и её закрепление при выполнении серии упражнений;
3) “Reading comprehension” – чтение текстов для развития навыков как изучающего, так и просмотрового чтения;
4) “Rendering” – развитие навыков интерпретации текста на английском языке;
5) “Speaking” – развитие навыков монологической и диалогической речи.

Тексты для чтения подобраны из аутентичных источников путем компиляции с соблюдением методического принципа “от простого к сложному”. Все разделы методических рекомендаций содержат текстовой материал для самостоятельного изучения студентами.

CONTENTS

SECTION 5

ORAL TOPIC: PLANT STUDY

Grammar: Perfect (Active and Passive voice). Compound prepositions. Homonyms (prepositions and conjunctions).

PART I. GRAMMAR PRACTICE

PERFECT ACTIVE

Table 1

PRESENT	I	**have** ask**ed**	him to prepare for this experiment alone.
	He	**has** just **made**	the report on classification of elements.
	Many scientists	**have** already visit**ed**	Silicon Valley.
PAST	The professor	**had** deliver**ed**	the lecture before our practical class on quantitative analysis began.
	We	**had** receiv**ed**	all chemical preparations by 5 o'clock yesterday.
FUTURE	The assistant professor	**will have** finish**ed**	the lecture by 12 p.m. tomorrow.

Time markers:
Present: today, this week (month, year), never, ever, yet, already, lately, recently.
Past: by … o'clock yesterday, by the … of May, by the end of the week (year, month), since …, after … .
Future: by … o'clock tomorrow, by the… of March, by the end of the week (year, month), after … .

Exercise 1. *Read and translate the following sentences. Define the tense form of a predicate in each sentence.*

1. All life depends on plants for food. 2. Scientists have discovered a great many tropical fruits in rain forest over the years. 3. Ancient men knew and used at least 12 elements. 4. The number of neutrons does not affect the properties of an atom. 5. Many plants have developed strong chemical defensive properties. They are an important source of poisons and drugs. 6. The development of microscope as a scientific tool during the 17^{th} century brought new insight to botany. 7. Oxygen will form oxides with all other elements, except the noble gases.

Exercise 2. *Compare the sentences in the right-hand and left-hand columns. State the difference in using the Present Perfect and Past Indefinite predicates.*

1. She **lost** her textbook yesterday.	1. She **has lost** her textbook and can't do her home task now.
2. **Did** you **find** your lost key yesterday? – Yes, I found it after my class in Latin.	2. **Have** you **found** your lost key? – Yes, I have. Here it is.
3. The students **didn't finish** their laboratory work yesterday.	3. We **haven't finished** our laboratory work. We need more time.

Open the brackets and put the verb in either Past Simple or Present Perfect. State the difference in using the Present Perfect and the Past Indefinite predicates.

1. I (not to see) him lately I think he (to go) to Britain.
2. I (not meet) him yesterday.
3. The researchers (not to finish) their work so far, but they promise good results.
4. Professor (to come). You can have a talk with him right now.
5. He (to publish) his first article only two years ago and now he is a well-known specialist in this field.
6. My brother (not to decide) yet what faculty to choose.
7. You ever (to meet) this professor? – No, I never (to meet) him.
8. You (to translate) this text already? – Yes, I (to translate) it.
9. When the conference on pharmaceutical education of the XXI century (to take place)? It (to take place) last month.
10. You (to surprise) me yesterday. I (not to expect) you to come.
11. Marie Curie (to discover) a new chemical element which was called "polonium".

12. We (to repeat) the experiment several times this week. The results are the same.

Exercise 3. *Answer the questions saying that somebody has done the action.*

Model:	Why isn't she doing her experiment? – She has already done it.

1. Why aren't the students reading up for their examinations? 2. Why isn't the lecturer demonstrating the video film? 3. Why isn't he answering the instructor's questions? 4. Why aren't you writing an essay? 5. Why aren't you making the experiments? 6. Why isn't Ann writing the report? 7. Why aren't you learning the grammar rule? 8. Why aren't they writing down the obtained data? 9. Why isn't your groupmate revising the most important points of the credit-test?

Exercise 4. *Have you ever used these facilities? Answer as in the model.*

Model:	I've used a volumetric flask to measure specific volumes accurately. (I haven't used it).

Centigrade thermometer to measure temperature; herbal medicines to treat minor diseases; transfusion apparatus to transfuse blood; distillator to distill water; microscope to see plant tissues; ventilator to ventilate the laboratory; burners to heat solutions; graduated pipette to measure different volumes; analytical balances to weigh different substances accurately.

Exercise 5. *Answer the questions saying that somebody had completed the action before he (she) was asked about it.*

Model:	- Why didn't you watch that film on TV yesterday? (to see). - I didn't watch it because I had seen it before.

1. Why didn't you tell him my address? (forget). 2. Why did Frieda come so soon from her holiday? (spend all the money). 3. Why didn't you see your groupmate when you came to Pinsk? (leave). 4. Why couldn't you get to your room at the hostel at once? (lose the key). 5. Why didn't David play cricket yesterday? (break the leg). 6. Why didn't you tell me about the results of your examinations? (fail in chemistry). 7. Why didn't you go to the students' festival? (have an appointment with the doctor).

Exercise 6. *Open the brackets and use proper tense forms of the verb in* ***Present, Past or Future Perfect and Indefinite (Active voice)****.*

1. After D.I. Mendeleyev (to arrange) all known elements in a table, it (to undergo) several adjustments and rearrangements some time later. 2. Botanists (to use) biotechnology to produce a variety of genetically engineering plants. 3. Up to 110 million years ago non-flowering plants (to dominate). 4. Plants (to be) always of interest to man. 5. In ancient times men (to try) different plants to see which ones helped cure certain diseases. 6. Leaves, one way or another, (to produce) all the foods a plant needs for growth. 7. In future there (to be) a great variety of genetically engineering plants. 8. A plant (to need) materials (carbon dioxide, water and nutrients) to carry out its life process. 9. Eventually even the biggest trees must fall. Their bodies (to contain) several tons of carbon, nitrogen, phosphorus and other valuable elements that the trees over their lifetime (to extract) from the atmosphere and the ground.

PERFECT PASSIVE

Table 2

PRESENT	This liquid The solutions	**has** not **been filtered** **have** already **been heated**	today.
PAST	He said that the solution The experiment	**had** already **been cooled**. **had been made**	 by 12 o'clock yesterday.
FUTURE	All the test-tubes	**will have been prepared**	by tomorrow.

Exercise 7. *Define the Perfect Passive predicates in the following sentences. Translate them into Russian.*

1. By the end of the week the obtained results of the investigation will have been presented at the conference. 2. About half a million organic compounds have been described in the chemical literature. 3. This solution has been infused for a very long time. 4. Medicinal properties have been ascribed to iron since time immemorial. 5. By the time the instructor entered the biochemical laboratory, all necessary specimens had already been prepared by the laboratory assistant. 6. The solutions for laboratory diagnosis have not been delivered yet. 7. A new book on organic chemistry has been published recently. 8. This report will have been finished by next month.

Exercise 8. *Rewrite the sentences in the Perfect Passive tense.*

1. Biochemistry and biophysics have achieved remarkable results in analyzing and synthesizing DNA and RNA. 2. Modern scientists have discovered 20 new elements. 3. The scientists have made little progress in fundamental theory. 4. By 1939 Otto Hahn, Fritz Strassmann, and Lise Meitner had established the occurrence of uranium fission. 5. The rapid growth in the understanding of chemical processes in general, organic and biochemical reactions, in particular, has brought a revolution in the pharmaceutical industry. 6. After we had heated the solution, we wrote down the result of the experiment. 7. Today chemists have not only synthesized many of the organic substances occurring in nature, but have prepared substances that do not occur in nature, such as plastic, different types of rubber, medicines, etc.

Exercise 9. *Open the brackets and use the correct tense form of the verb in* ***Present, Past, Future Perfect and Indefinite (Passive Voice)****.*

1. More than 300 flowering plants (to recognize) today. 2. The classification of chemical elements (to express) by Mendeleyev in the form of a periodic table. 3. Specimens of plants that (to prepare) properly can remain in excellent condition for many years. 4. Gallium (to discover) in 1875 but its existence (to predict) already six years earlier by D. Mendeleyev. 5. The greenness of plants (to cause) by chlorophyll. 6. The symbols of the elements (to establish) by international agreement and (to use) nowadays throughout the world. 7. Vitamins (to extract) mainly from natural sources, but nowadays the majority of them (to make) by synthetic methods. 8. Plants (to find) throughout the world, on land, in water, and in air. 9. Matter (to compose) of elements, of which there are 107 known – 17 (to produce) artificially and 90 (to occur) naturally on our planet.

COMPOUND PREPOSITIONS

according to	«согласно», «в соответствии»
because of	«из-за», «вследствие», «благодаря»
due to	«из-за», «вследствие», «благодаря»
thanks to	«благодаря»
by means of	«при помощи», «посредством»
depending on	«в зависимости от»
as to	«что касается»
in spite of	«несмотря на»
regardless of	«невзирая на»

Exercise 10. *Read the following sentences and indicate compound prepositions. Translate the sentences.*

1. Many carbon compounds play a vital role due to their effect on the processes in the human body. 2. Antibodies can be classified according to their mode of action. 3. As to the starch it was then recognized that it gave glucose when heated with dilute sulphuric acid. 4. By means of the glycolytic series of reactions pyruvic acid is formed in the cells of plants. 5. Depending on the basis of the functional group carbon compounds are divided into several classes. 6. The chemical properties of phenols differ from those of alcohols chiefly because of the acidic character of the phenols. 7. In spite of the importance of the contributions to chemistry that had been made earlier, the greatest portion of credit for the development of the Periodic system must go to the Russian scientist D.I. Mendeleyev (1834-1907). 8. Regardless of their diverse molecular structures, all hydrocarbons have a number of properties in common.

HOMONYMS (PREPOSITIONS AND CONJUNCTIONS)

ПРЕДЛОГИ, совпадающие по форме с СОЮЗАМИ

СЛОВОФОРМА	ПРЕДЛОГ	СОЮЗ
since	с	с тех пор как, так как;
till **until**	до	до того как, (до тех пор) пока (не), пока;
for	для	так как, потому что;
after	после	после того как;
before	до	до того как, прежде чем;
as	как, в качестве	так как, по мере того как.

Exercise 11. *Translate the following sentences, pointing out conjunctions of the subordinate sentences.*

1. Cells must grow before they can divide. 2. As the leaf ages, hormonal changes take place and at least two layers of cells become differentiated. 3. For a long period man has known about the medicinal properties of plants. 4. Until man learned to develop nuclear energy, he depended entirely on sunlight for his energy needs. 5. After algae and other simple green plants appeared in the oceans about 3.5 billion years ago, the amount of oxygen started to increase as a result of photosynthesis. 6. Two dyes are used for the preparation of lipstick. 7. In the vitamin field the efforts of the chemists are especially large since they isolated and synthesized a number of new vitamins. 8. Plants are very important as they help to maintain the balance of the atmosphere. 9. Since 1930 all other vitamins have been isolated. 10. Before the era of electricity, acetylene gas was used as a component of illuminating gas, for it burns with a colourless flame.

PART II. SPEECH PATTERNS

Exercise 1. *Practise the dialogues paying attention to the use of Present Perfect and Past Simple.*

Model:	A.	- Have you ever won the lottery? - No, I haven't. I have never won anything. - (No, every time I wasn't lucky).
	B.	- Have you ever been to the Palace of Arts in Minsk? - Yes, I've been there several times. - (Yes, I was there a few days ago.)
	C.	- Has he spoken to you about his plans? - No, he hasn't said anything to me. - (No, he went to Riga last week and hasn't arrived yet.)

Exercise 2. *Finish the dialogues according to the model given above.*

- Have you ever met anyone famous?
- … … … … … … … … … … … …
- Have you ever travelled abroad?
- … … … … … … … … … … …
- Have you ever visited Moscow museums of arts?
- … … … … … … … … … … … … … … … …
- Have you ever lived at the students' hostel?
- … … … … … … … … … … … … … … …

Task: *Prepare some questions for a questionnaire using* ***Have you ever*** *pattern to find out something interesting or unusual about some other people. Use the following verbs:* **to stay, to visit, to be, to win, to speak, to fly, to develop, to take part in, to discuss, to plan.**

DIALOGUES

Meeting people after a long time.

Read and learn the following speech patterns.

- We haven't seen you for ages.	- Мы давно не видели вас.
- We haven't seen much of you lately.	- Последнее время тебя что-то совсем не видно.
- I have seen very little of you lately.	- Последнее время я тебя редко вижу.
- It's a pity you haven't made up your mind.	- Жаль, что вы не приняли решения.
- Sorry to have kept you waiting.	- Простите, что заставил вас ждать.
- Never mind.	- Ничего страшного.
- Sorry to have failed to fulfil your request.	- Простите, что не удалось выполнить вашу просьбу.
- No harm done.	- Все благополучно.
- Sorry to have woken you up.	- Простите, что вас разбудил.

Read the dialogues in pairs.

I.

A. I'm delighted to see you again. Where have you been all this time?
B. I've been at my relatives.
C. Whereabouts?
D. I was in the country where my aunt and uncle live.

II.

A. It's such a long time since we met.
B. Oh, yes. I've been away on holiday.
C. Where exactly?
D. In Latvia. I've got relations there.

III.

A. I haven't seen much of you lately. Where have you been? Home?
B. I have just returned from Italy.

C. Were you on a business trip?
D. Oh, no, I was on leave.
E. A lucky man. How did you spend time there?
F. Oh, it was marvelous!

IV.

A. Hi! I haven't seen you for ages.
B. I've been away for a while. I was on a business trip. A couple of days have passed since I came back.
C. I'm very glad you rang me up. I've got a lot to tell you about.
D. You see, I've been so busy since my return that I had no time to visit any of my friends.

PART III. VOCABULARY LEARNING

Exercise 1. *Read and memorize the following words of the active vocabulary:*

a)	***words naming parts of plants :***
	root [ruːt] *n*. – корень;
	rhizome ['raɪzəum] *n*. – корневище;
	stem [stem] *n*. – ствол, стебель;
	seed [sɪːd] *n*. – семя; семечко;
	inflorescence [ˌɪnflɔː'res(ə)ns] *n*. – 1) соцветие 2) цветение;
	bark [bɑːk] *n*. – кора (*дерева*);
	fruit [fru :t] *n*. – плод, фрукт;
	top [tɔp] *n*. – 1) верхушка, вершина;
	bud [bʌd] *n*. – (*бот*.) почка;
b)	***words indicating taste or ordour of plants, fruits, etc.:***
	distinct [dɪ'stɪŋkt] *a*. – особый, индивидуальный;
	spicy ['spaɪsɪ] *a*. – острый, пикантный, пряный (*о пище*);
	bitter ['bɪtə] *a*. – горький (*на вкус*);
	agreeable [ə'grɪəbl] *a*. – приятный;
	mucilaginous [ˌmjuːsɪ'lædʒɪnəs] *a*. – 1) слизистый 2) клейкий, липкий; вязкий;
	astringent [ə'strɪndʒənt] *n*., *a*. – вяжущее средство; вяжущий;
	pungent ['pʌndʒənt] *a*. – острый, пикантный; едкий;
	peculiar [pɪ'kjuːlɪə] *a*. – специфический; особенный; своеобразный; необычный;
	sweet [swɪːt] *a*. – сладкий (*о вкусе*), душистый;
	acrid ['ækrɪd] *a*. – острый, резкий (*на вкус*); едкий (*о запахе*); раздражающий;

	nauseous ['nɔ:sjəs] *a*. – вызывающий тошноту, тошнотворный; вонючий;
c)	***words indicating shape and colour of plants, fruits, etc.:***
	shape [ʃeɪp] *n*. – форма, очертание;
	round [raund] *a*. – круглый; шарообразный; сферический;
	oblong ['ɔblɔŋ] *a*. – продолговатый; вытянутый, удлинённый;
	elliptic(al) [ɪ'lɪptɪk(ə)l] *a*. – эллиптический;
	broad [brɔ:d] *a*. – широкий;
	pale [peɪl] *a*. – бледный;
d)	***words relating to maturing and harvesting of plants, fruits, etc.:***
	pollination [ˌpɔlɪ'neʃn] *n*. – опыление;
	ripen ['raɪpən] *v*. – зреть; созревать;
	moisture ['mɔɪstʃə] *n*. – влажность, сырость;
	harvest ['hɑ:vɪst] *n*. – сбор (*урожая и т. п*.);
	mature [mə'tjuə] *a*. – зрелый, спелый (*о плоде*);
	humid ['hju:mɪd] *a*. – влажный, сырой;
e)	***general scientific words:***
	determine [dɪ'tə:mɪn] *v*.- определять , устанавливать;
	investigate [ɪn'vestɪgeɪt] *v*. – исследовать, изучать;
	nutrition [nju:'trɪʃn] *n*. – еда, корм, пища;
	nutrient ['nju:trɪənt] *a*., *n*. – питательный; пища, питательное вещество;
	efficacy ['efɪkəsɪ] *n*. – сила, действенность;
	relieve [rɪ'lɪ:v] *v*. – облегчать , освобождать;
	refer (to) [rɪ'fə:] *v*. – относиться (к классу), ссылаться (на кого-либо, что-либо);
	purpose ['pə:pəs] *n*. – цель, результат;
	vary ['veərɪ] *v*. – менять, изменять;
	constituent [kən'stɪtjuənt] *n*. – составная часть;
	treat [trɪ:t] *v*. – обрабатывать, обращаться; лечить;
	store [stɔ:] *n*., *v*. – запас, изобилие; хранить, запасать;
	harm [hɑ:m] *n*., *v*. – вред, ущерб; вредить, наносить ущерб;
	property ['prɔpətɪ] *n*. – свойство, качество;
	result [rɪ'zʌlt] *v*. – (in smth) кончаться (чем-либо), иметь свой результат; ~ from – следовать, происходить в результате чего- либо.

Exercise 2. *Read the words of the Greek and Latin origin and try to translate them using your knowledge of the Russian, Latin and English languages.*

Ancient [ˊeɪnʃənt], Egyptian [ɪˊdʒɪpʃən], Athens [ˊæθɪnz], China [ˊʧaɪnə], Chinese [ˊʧaɪˊni:z], Assyrian [əˊsɪrɪən], cultivate [ˊkʌltɪveɪt], palm [pɑ:m], ferment [ˊfə:ment], list [lɪst], legend [ˊledʒənd], symptom [ˊsɪmptəm], popular [ˊpɔpjulə], lethal [ˊli:θəl],

immunity [ɪ´mju:nɪtɪ], abscess [´æbsɪs], stimulate [´stɪmjuleɪt], traditional [trə´dɪʃənl], therapy [´θerəpɪ], circulation [ˌsə:kju´leɪʃən], respiratory [rɪs´paɪərətərɪ], penicillin [ˌpenɪ´sɪlɪn], principal [´prɪnsəpəl], reproductive [ˌrɪ:prə´dʌktɪv], function [´fʌŋkʃən], absorb [əb´sɔ:b], syrup [´sɪrəp], manufacture [ˌmænju´fæktʃə], photosynthesis [ˌfəutəu´sɪnθɪsɪs], herb [hə:b], herbal ['hɜ:b(ə)l], phytomedicine [ˌfaɪto´meds(ɪ)n], phytopharmacy [ˌfaɪto´fa:məsɪ], natural [´nætʃrəl], climate [´klaɪmɪt], metabolite [me´tæbəlaɪt], carbohydrate [ˌkɑ:bəu´haɪdreɪt], diphtheria [dɪf´θɪərɪə], pneumonia [nju(:)´məunjə], typhus [´taɪfəs], tuberculosis [tju(:),bə:kju´ləusɪs], asthma [´æsmə], bronchitis [brɔŋ´kaɪtɪs], malaria [mə´lɛərɪə], nerve [nɜ:v].

Exercise 3. *Read the names of the following plants and translate them using a dictionary if necessary.*

Ginkgo [´gɪŋkgəʊ, ´gɪŋkəʊ], ginger [´dʒɪnʤə], camphor [´kæmfə], cinchona [sɪŋ´kəunə], coca [´kəukə], oak [əuk], ginseng [´dʒɪnseŋ], lily-of-the valley [´lɪlɪəvðə´vælɪ], lobelia [ləu´bi:ljə], onion [´ʌnjən], pansy [´pænzɪ], senna [´senə], strophanthus [ˌstrəu´fentəs], digitalis [ˌdɪdʒɪ´teɪlɪs], foxglove [´fɔksglʌv], valerian [və´lɪərɪən], hemlock [´hemlok], garlic [´gɑ:lɪk], chamomile ['kæməmaɪl], snowdrop [´snəudrɔp], dog-rose [´dɔgrəuz], opium poppy [´əupjəm´pɔpɪ], ephedra [´efedrə], aloe [´æləu], echinacea [e,kaɪnə'sɪə], cassia [´kæsɪə], mint [mɪnt], lavender [´lævɪndə], jasmin(e) [´dʒæsmɪn], primrose [´prɪmrəuz], hawthorn ['hɔ:ðɔ:n], fennel ['fenl], calamus ['kæləməs].

Exercise 4. *Give English equivalents to the following Latin terms.*

Herba, radix, rhizoma, cortex, inflorescentia, floss, fructus, folium, semen, turio, bulbus, corolla, gemmae (почки).

Exercise 5. *Learn the following nouns and adjectives.*

herb [hə:b] – herbaceous [hə:'beɪʃəs];
cancer [kænsə] – oncological [ˌɔnkə´lɔdʒɪkəl];
nerve [nə:v] – nervous [´nə:vəs];
intestine [ɪn´testɪn] – intestinal [ɪn´testɪnəl];
lung [lʌŋ] – pulmonary [´pʌlmənərɪ];
heart [ha:t] – cardiac [´kɑ:dɪæk];
spice [spɑɪs] – spicy [´spɑɪsɪ];
respiration [ˌrespə´reɪʃ(ə)n] – respiratory [rɪs´paɪrət(ə)rɪ];
stomach [´stʌmək] – gastric [´gæstrɪk].

Exercise 6. *Arrange the words into a) synonyms and b) antonyms.*

a) Ripe, define, lead to, accurate, act upon, wide, result in, efficacy, collect, mature, affect, determine, peculiar, precise, harvest, specific, broad, efficiency
b) Harm, sweet, agreeable, useful, moisture, true, disagreeable, useless, bitter, dryness, untrue, good.

Exercise 7. *Match the explanation with its term.*

1. The part of a plant that grows downward, usually into the soil, holds it in place, absorbs water and mineral foods from the soil, and often stores food material.
2. The main part of a tree, shrub, or other plant, usually above the ground.
3. A root like stem lying on or underneath the ground, which usually sends out roots below and leafy shoots above.
4. A part of a plant from which a flower, vegetable or other plant grows.
5. One of the thin, usually flat, green parts of a tree or other plant that grows on the stem or grows up from the roots.
6. A juicy or fleshy product of a tree, bush, shrub, vine, or fleshy-stemmed plant that is good to eat.
7. The way in which the flowers of a plant are arranged on the stem or axis and in relation to each other.

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a) a rhizome; b) a fruit; c) a leaf; d) a root; e) an inflorescence; f) a stem; g) a seed.

Exercise 8. *Translate from English into Russian.*

To absorb plant nutrients and water, therapeutic efficacy, nutritive substances, fully ripened, even drying, to be in bloom, as low (high) as possible, lethal dose, to relieve the symptoms of illness, resulting from heat factors, to result in poisoning, agreeable taste, unpleasant odour, list of medicinal plants.

Exercise 9. *Translate the following word combinations from Russian into English.*

Корень валерианы, кора дуба, листья наперстянки, корневище аира, сок алоэ, экстракт сены, экстракт листьев гинкго, зрелые плоды боярышника, семена укропа, стебель и корни эфедры, экстракт цветков ландыша, кора кассии.

Репродуктивная часть растений, верхушка растения, питательные и лекарственные свойства растений, полное созревание растений, наиболее подходящее время сбора растений, сходные фармакологические свойства, как можно быстрее, не иметь вкуса, неприятный на вкус.

Exercise 10. *Read the description of some flowering plants and guess what plants are described.*

A. It is a fragrant (благоухающий) garden flower. It grows in North America, Europe and North Asia. The beautiful bell-shaped flowers are pure white. They hang down in a long cluster (кисть, гроздь) along a slender stem. The flower stalk rises from a rhizome. Each stalk usually has two or three wide, oblong leaves. The fruit is a red berry about six millimeters in diameter. The plant requires rich, well-drained soil and grows well in shade (тень). It is a perennial (многолетний) plant, flowering naturally in late spring.
B. They are common garden flowers in temperate (умеренный) regions around the world. They grow from 30 to 60 centimeters high. The leaves lie one above the other on the stem. The flower heads have yellow or orange rays of petals (лепестки). Some of the species are favorite annual garden flowers in many parts of the world. Gardeners usually grow them from seeds. In Shakespeare's time the plant blossom was used in cooking to flavor soups.
C. It is a group of small plants that are sometimes used as medicinal herbs. A perennial, it grows about 30 centimeters high and has a slender, trailing (стелющийся) stem and many branches. The flowers look much like daises (маргаритки). The flowers and leaves smell sweet, but taste bitter. The dried flowers are used to make a tea that has a relaxing effect. The flowers are sometimes applied as a warm poultice (warm moist mass) to treat toothache, or made into a tonic.

The flowers described: chamomile, lilly-of the-valley, calendula.

Exercise 11. *Translate the sentences from Russian into English.*

1. Настойка и экстракт ландыша – одно из лучших сердечных средств. 2. Запах корневища валерианы сильный, ароматный, вкус приятный, сладковато-горьковатый. 3. Побег является надземной (иногда подземной) частью растения, состоящей из стебля и листьев. 4. Корень – подземный орган растения, который укрепляет растение в земле, всасывает воду и минеральные соли, накапливает запасные вещества. 5. Лист является той частью растения, в которой протекают основные жизненные процессы, такие как фотосинтез, газообмен, транспирация. 6. Соцветие является собранием цветков, расположенных на одной оси.

PART IV. READING COMPREHENSION

Read and translate Text 1.

Text 1

MEDICINAL HERBS

I

The principal parts of a plant are: 1) the root system, 2) the stems and leaves, 3) the reproductive part made up of flowers, fruits or seeds.

The *roots* grow downward into the soil and have two main functions – to absorb plant nutrients and water from the soil and to anchor the plant. As to *stems and leaves*, they are usually above the ground. The food used in growth by green plants is manufactured in the leaves from the raw materials taken from the soil and air. This process is known as *photosynthesis*. To support the leaves and to connect them with the roots are the main functions of the stem. A *flower* is the part of the plant where seeds are produced. Thus, to produce seeds the plant must have flowers.

Herbal medicine – also called botanical medicine or *phytomedicine* refers to using plant's seeds, fruits, roots, leaves, bark, or flowers for medicinal purposes. Plants that give drugs have both *active substances*, the so-*called primary plant products*, and *inactive substances, the so-called secondary products*. The constituents and active principles vary in quantity at different seasons of the year and the majority of plant materials are usually best collected during the dry season, when the herbs are at peak maturity and concentration.

Roots and rhizomes: Best collected from October to February, when the plants are more vigorously storing food in their underground organs.

Leaves: The most opportune time is when the plant is about to bloom.

Flowers: Best collected in the time of pollination. Buds are preferred, collected in the morning after the morning dew has evaporated; flowers, just before or shortly after opening. Dry the herbal materials as quickly as possible.

Bark materials and stems: Generally, best gathered in summer time as the bark of any plant usually contains richer nutritive substances including the medicinal metabolites.

Fruits and seeds: Fully ripened fruits and mature seeds are preferred. Turn the fleshy fruit frequently for even drying.

Whole plant: When the whole plant is desired, it is advisable to harvest the plant at the time when the flowers are all in bloom.

II

The moisture content of the dried plant materials should be less than 10% before storage.

The dried plant materials should be placed in plastic containers or tightly covered bottles. The storage place should be dry, well-ventilated, and spacious. Drug materials can be kept on large open wooden shelves.

The odour of a drug of plant origin may be distinct or indistinct, depending upon the amount of volatile constituents the drug possesses. It is described as

aromatic, balsamic, spicy, camphorous, etc. When it is difficult to compare the odour with other substances it is described as characteristic.

According to taste substances may be classified into four groups:

1. Those possessing a true taste, such as acid, sweet, alkaline, bitter;
2. Those possessing no taste and thus are tasteless;
3. Those possessing a characteristic odour which gives name to the so-called "taste". They may be grouped broadly into those which are agreeable or pleasant (aromatic, balsamic, spicy) and disagreeable or unpleasant (alliaceous, camphorous, etc.);
4. Those giving certain sensation to the tongue (mucilaginous, oily, astringent, pungent, acrid, nauseous).

Pharmacological activity of certain drugs is established using different tests and methods, such as *chemical tests* for the determination of presence of inorganic elements, *a chemical analysis* for the determination of the official activity, *chromatographic study* to separate and analyze constituents and inert materials occurring in drugs, etc.

Exercise 1. *Finish the following sentences.*

1. Herbal medicine is also called … . 2. Primary plant products are called … . 3. Secondary plant products are also called … . 4. Flowers are best collected in … . 5. Bark materials and stems are best gathered in … . 6. Roots and rhizomes are collected in … . 7. It is advisable to harvest the whole plant when … . 8. The storage place should be … . 9. Drug material can be kept on … .

Exercise 2. *Put the questions to which the following will be the answers.*

1. The majority of plant materials are usually best collected during dry season. (When?) 2. The dried plant material should be stored in plastic containers or tightly covered bottles. (What?) 3. Yes, the constituents and active principles of plants vary in quantity during different times or seasons of the year. (Do?) 4. According to taste substances may be classified into four groups. (How many?) 5. Plants giving drugs have both active and inactive substances. (What?) 6. The taste, colour and odour of medicinal plants are standardized by describing lightness and strength of their colour. (How?)

Exercise 3. *Answer the following questions.*

1. What is the best season of the year to collect the following parts of medicinal plants and why?
   a) roots and rhizomes; b) leaves; c) bark; d) flowers; e) fruits and seeds.
2. Is it advisable to collect the whole plant when it is old or is in bloom?

3. What are the main rules for storing the dried plant materials taking into consideration a) the storage place itself; b) the humidity of the place; c) types of containers?
4. What is the classification of drugs of plant origin according to a) odour; b) taste?
5. What tests and methods are used to establish pharmacological activity of certain drugs?

Exercise 4. *Translate the following sentences from Russian into English.*

1. Научные исследования доказали эффективность трав при лечении различных болезней. 2. Если мы собираем лекарственные травы, то нужно хорошо знать период сбора каждого растения и его частей. 3. Траву, то есть надземную часть растения, собирают почти всегда в период начала или полного цветения, когда растение содержит наибольшее количество биологически активных веществ. 4. Корни и корневища выкапывают обычно поздней осенью или ранней весной, еще до появления листьев. 5. Листья травянистых растений собирают до их цветения или во время цветения. 6. Плоды собирают, когда они созрели, но не перезрели. 7. Некоторые растения имеют приятный запах, но горький, вяжущий вкус. 8. Различают сладкий, соленый, горький, кисловатый вкус, а у ароматического сырья – пряный и смолистый (resinous); иногда вкус определяют путем сравнения. 9. Содержание биологически активных и других веществ определяют лабораторными методами – микроскопическими, физико-химическими и биологическими.

Read Text 2 and be ready for a comprehension check-up.

Text 2

NATURE'S MEDICINES

1. Without plants there would be no life on Earth. In ancient times, plants played a vital role in healing, and many are still used by the modern pharmaceutical industry.
2. The Assyrians and Egyptians, the early civilized people started cultivating plants. By the seventh century they had produced a systematically arranged list of medicinal plants. In China medical authorities recognized the medical properties of more than 5,800 plants. They classified the medicinal effects of the plants on the various parts of the body, and then tested them to determine their toxicity, what dosages would be lethal, etc. For example, *cassia bark* is warming

in nature, and is useful in treating colds*. *Mint* is cooling in nature, and is used to relieve the symptoms of illness resulting from heat factors.

3. One of the most widely used plants that was known to man 5000 years ago is *garlic.* It is well known that garlic is therapeutically useful for the following purposes: it is a powerful agent in preventing diphtheria, typhus, tuberculosis, pneumonia; it is useful in all respiratory infections, especially in symptoms of a dry hacking cough*, in colds, asthma and bronchitis, and in many other cases. It is also an excellent nerve tonic.

4. Valerian (Valeriana officinalis) is a popular alternative to commonly prescribed medications for sleep problems. Unlike many prescription sleeping pills, valerian may have fewer side effects such as morning drowsiness.*

5. Echinacea is one of the most commonly used herbal products. Its preparations may improve the body's natural immunity. Clinical studies found that Echinacea supplements decreased the chance of getting a cold by 58%. It also shortened the duration of a cold by 1.4 days.

6. Used correctly, herbs can help treat a variety of conditions and in some cases may have fewer side effects than some conventional medications. But some herbs may cause allergic reactions and some are toxic if used improperly or at high doses. Taking herbs on your own increases your risk, so it is important to consult your doctor or pharmacist before taking herbal medicines.

7. Plants have been used by people not only as source of medicines but for some other purposes. They supply people with food and many other useful products. They also add beauty and pleasure to people's life. Flax has been used for centuries for its fibers and linseed oil. Paper money is made from fibers of flax. Popular drinks such as coffee, tea, and coconuts are all made from parts of plants. Chocolate is made from the fruits of cocoa (Theobroma cacao). Although the modern perfume industry can make perfumes artificially, it still relies on essential oils* extracted from flowers such as rose, lavender, jasmine, and orange.

* cold – простуда;
* hacking cough – кашель (отрывистый и сухой);
* drowsiness – дремота;
* oil – масло (*обычно растительное или минеральное*).

Exercise 1. *Make up sentences.*

1. Mint	are	a) the chance of getting cold;
2. Valerian	is used	b) source of essential oils used in perfumery;
3. Echinacea	is made	c) from fruits of cocoa;
4. Chocolate	is useful	d) in treating colds;
5. Flowers of rose, lavender,	decreases	e) to relieve the symptoms of illness resulting from heat factors;

jasmine and orange 6. Garlic 7. Cassia bark		f) in preventing diphtheria, typhus, tuberculosis, pneumonia and respiratory infections; g) in sleep problems.

Exercise 2. *Define the statements as TRUE or FALSE. Correct the false statements.*

1. The Egyptians tested plants to discover their nutritional and medicinal properties.
2. Garlic was known to men 2000 years ago.
3. Garlic is considered as antimicrobial agent.
4. Valerian is effective in sleep problems.
5. Medicinal plants may not have any adverse effects.
6. Essential oils extracted from flowers of some plants are not used in perfume industry because modern perfume industry can make perfumes artificially.
7. Taking herbs without consulting a doctor or a pharmacist doesn't pose any risk to an individual.

Exercise 3. *Tell your groupmates about medicinal plants known to you and their use for medicinal purposes.*

Read Text 3 and do the tasks which follow it.

Text 3

POISONOUS PLANTS

Poisonous plants when used in small or moderate amounts cause a harmful reaction resulting in illness or death. Many ornamental plants, such as oleander, lilly-of-the-valley, and mistletoe[1] are poisonous. Some plants contain both edible and poisonous parts; potatoes and tomatoes are common plant foods, but their green parts are poisonous.

The poisonous compound may be distributed[2] throughout all parts of the plant, or it may accumulate in one part more than in any other, such as the root or berry. Every plant may vary in the amount of toxins it contains due to different growing conditions and slight variations in subspecies. Certain plants, however, can be highly toxic when young and harmless later.

Usually more than 60g of the poisonous part of the plant must be eaten by an average adult before poisonous results. Some plants, however, are toxic in small amounts; for instance, one or two castor beans, the seeds of castor-oil plant, may kill a child.

Poisonous plants cause painful skin irritations[3] upon contact, they cause internal poisoning when eaten, and they poison through skin absorption or inhalation into the respiratory tract. After ingestion[4], the poison may act immediately on the digestive tract. Symptoms of ingestion poisoning can include nausea, vomiting, diarrhea, depressed heartbeat, hallucinations, dry mouth, coma and death. Some plants affect the heart (oleander). Plants containing alkaloids often produce unpleasant or dangerous reactions in the nervous system. Examples are paralysis, hallucinations, or heart block. A few poisons act directly within the cells of the body. Cyanide, for example, prevents cells of the body from using oxygen.

First aid in case of poisoning.

The symptoms of poisoning depend on both the amount of poison ingested and the individual's reaction to the poison, as every person has a different level of resistance to toxic substances.

Action. If the victim[5] has eaten a poisonous plant or mushroom, summon[6] emergency medical aid immediately. If the victim has been in contact with a poisonous plant, like poison ivy[7], ensure that your hands are protected before removing the victim's contaminated[8] clothing. Do not touch other parts of the victim's body, especially the eyes. Wash the affected area several times with soap and water. Calamine lotion[9] may be applied.

If the Victim Is Conscious[10]. Ask which plant was eaten. Induce[11] vomiting by giving the patient a glass of syrup of ipecac[12]. Save any vomit[13] for medical analysis. Do not induce vomiting if the patient is unconscious.

Give the patient milk or water to drink in order to dilute the poison left in the body.

If the Victim Is Unconscious. Place the victim in the recumbent position[14]. Do not leave the victim alone. Do not give the victim food or drink or induce vomiting.

If the victim stops breathing, give artificial resuscitation[15]. If poisoning is suspected, a doctor should be consulted immediately.

Notes:

1. mistletoe [ˊmɪslt͡əu] – омела белая;
2. to distribute [dɪsˊtrɪbju(:)t] – распространять;
3. irritation [ˌɪrɪˈteɪʃ(ə)n] – раздражение;
4. ingestion [ɪnˊd͡ʒestən] – прием внутрь пищи (*лекарства*), проглатывание;
5. victim [ˊvɪktɪm] – жертва;
6. to summon [ˊsʌmən] – требовать исполнения чего-либо;
7. poison ivy [ˊpɔɪzn ˊaɪvɪ] – ядовитый плющ;
8. contaminated [kənˊtæmɪneɪtɪd] – зараженный;
9. calamine lotion [ˊləuʃən] – примочка (лосьон) каламина;
10. to be conscious [ˊkɔnʃəs] – находиться в сознании;

11. to induce – вызывать, стимулировать;
12. ipecac [ˊɪpɪkæk] – *сокр.* от ipecacuanha *фарм.* ипекакуана, рвотный корень;
13. vomit – рвота;
14. recumbent position – положение лежа;
15. resuscitation [rɪˌsʌsɪˈteɪʃ(ə)n] – оживление, приведение в сознание.

Exercise 1. *Translate from English into Russian the following word combinations:*

to provoke a harmful reaction; to result in illness or death; contain both edible and poisonous parts; through skin absorption or inhalation into the respiratory tract; to prevent cells of the body from using oxygen; to be in contact with poisonous plant; the amount of poison ingested; the affected area; to dilute the poison left in the body; to induce vomiting; to place the victim in the recumbent position; to give artificial resuscitation.

Exercise 2. *Choose the right options.*

A. If you ingest a bit of a poisonous plant, you may fall ill or die.
B. Ornamental plants are not harmful.
C. Poisonous compounds may accumulate only in a certain part of the plant.

2. Poisonous plants can affect _____.
   A. the urinary system.
   B. the nervous system.
   C. the heart.
   D. the skin.
3. The effects of poisoning may be _____.
   A. vomiting.
   B. allergic reaction.
   C. earache.
   D. loss of consciousness.
   E. hallucinations.
4. The symptoms of poisoning depend on _____.
   A. the toxicity of the plant.
   B. the quantity of the ingested poison.
   C. individual level of resistance to poison.
   D. sex of a person.
   E. age of a person.

Exercise 3. *Answer the following questions:*

1. In what case poisonous plants provoke a harmful reaction in human beings or animals?
2. What poisonous plants are mentioned in the text? What other poisonous plants do you know?
3. In what parts of plants may the poisonous compounds be distributed?
4. Must most poisons enter the body before they act?
5. What reactions do toxins produce in a victim?
6. What do the symptoms of poisoning depend on?

Exercise 4. *Enumerate the main measures to be taken to help the victim who has eaten a poisonous plant or mushroom.*

Exercise 5. *Read the texts and translate them using a dictionary.*

BELLADONNA

Belladonna is probably named in honour of Italians who made eye drops of the fresh juice to dilate their pupils and make them appear more alluring. According to a medieval superstition, witches used belladonna in their ceremonies to promote hallucinations, and it was combined with aconite to produce the sensation of flying. Gerard described the herb as “a plant so furious and deadly”. Belladonna has powerful sedative and narcotic properties, mainly due to the presence of two poisonous crystalline alkaloids. One of them, atropine affects the autonomous nervous system. Today ophthalmologists still use atropine to dilate the pupils, and it also antidotes the nerve gas discharges from chemical weapons. The other alkaloid is used as a sedative. Belladonna extracts are used medicinally to treat ailments characterized by spasms, including Parkinson’s disease, epilepsy, asthma and whooping cough. Atropine also controls mucous secretions and may be found in medications for colds and fever. Homeopathically, belladonna is prescribed for scarlet fever, inflammations, throbbing headaches and sore throats.

All parts of plants are highly poisonous. They should be taken only under medical supervision. All parts of the fresh plants give off an unpleasant smell when bruised and are extremely poisonous. Black berries contain a sweet inky juice that is deadly poison.

CAMPHOR

Camphor, chemical formula $C_{10}H_{12O}$ is a substance that comes from the camphor tree. The trees grow tall and have white flowers and green leaves. Most grow in China and on the island of Taiwan.

Camphor is produced by steaming wood chips from the camphor tree. During this process camphor collects in an oily layer on the chips. The oily substance is drained and pressed to remove the oil and water. Camphor is then left in the form of whitish, almost transparent crystals. The crystals are usually purified by sublimation, a process by which the camphor changes directly from a solid to a vapour, leaving behind impurities. Chemists now produce synthetic camphor in laboratories.

Camphor is used in cosmetics, lacquers and pharmaceuticals. Spirits of camphor – mixture of 10 parts camphor, 70 parts alcohol, and 20 parts water – is a mild antiseptic. Camphor is also combined with another compound to make camphorated parachlorophenol, a germ-killing drug sometimes used in dental work. Chemists use camphor to denature ethyl alcohol, the type of alcohol used in alcoholic beverages. Denatured alcohol is ethyl alcohol that is unfit for drinking but has other uses. Large doses of camphor are poisonous and will cause delirium and convulsions.

PART V. RENDERING

Read the newspaper article and render it into English.

ЭТОТ ВКУСНЫЙ ШОКОЛАД

Ученые, естественно, не могли пройти мимо какао, не попытавшись выявить в нем активное действующее начало. В 1841 году адъюнкт Петербургского университета А.А. Введенский извлек (extracted) из какао-бобов новый алкалоид, который назвал теобромином.

Плоды теобромы помещаются (are placed) в специальные емкости (containers) и подвергаются брожению (ферментации) (are undergone). Какао-бобы, прошедшие ферментацию, содержат 50% - масла, 15% - белка, 9% - ароматических и экстрактивных веществ, 7% - крахмала (starch), 5% - дубильных веществ (tannins), 5% - минеральных веществ, 1,5% - катехинов (catechins) со свойствами витамина РР, 0,5%-2% - теобромина и 0,2% кофеина. Калорийность (caloric content) бобов составляет 600 калорий на (per) 100 граммов массы.

Масло какао вот уже почти три века используется при изготовлении суппозиториев – лечебных свечей и шариков. Теперь масло какао все больше используется для производства губной помады (for the manufacture

of lipstick), а суппозитории все чаще готовятся из гидрогенизированного жира – бутирола.

Какао-напиток – ценный диетический продукт. Он высококалориен, поэтому назначается (is indicated) на стадии выздоровления (recovery) после изнурительных (exhausting) заболеваний. Какао рекомендуют пить при сердечной слабости (asthenia of the heart), учитывая его положительное влияние на силу сердечных сокращений (contractions) и относительно высокое содержание (content) калия.

В чистом виде теобромин как лекарственный препарат практически не используется. Он раздражает желудок (irritates the stomach), плохо и медленно всасывается (is absorbed) в кишечнике (the intestines), и эффективность его крайне низкая. Поэтому созданы и продаются в аптеках препараты, в которых действие теобромина усилено (is enhanced by) другими компонентами.

PART VI. SPEAKING

Exercise 1. *Answer the questions with more than one sentence.*

1. Do you use medicinal plants to keep yourself healthy? Which ones?
2. For what purposes have people selected and used plants?
3. Would you name the flowers the modern perfume industry uses for the purest fragrances? Would you name some of natural cosmetic products?
4. Many of the early botanists were also doctors. Why do you suppose this is no longer so?

Exercise 2. *Ask your friend:*

1. Использовал ли он (его родители) когда-либо лекарственные растения?
2. Какие лекарственные растения он (его родители) предпочитает иметь в домашней аптечке (medicine chest)?
3. Знает ли он правила хранения лекарственных растений?
4. Какие лекарственные растения произрастают в Беларуси?
5. Какие из растений, произрастающих в Беларуси, относятся к ядовитым?
6. Знает ли он время сбора лекарственных растений?

Exercise 3. *Fulfil the following tasks:*

a) *Enumerate:* plants which are harvested a) in spring, b) in summer, c) in autumn. Which parts of the enumerated plants are usually used in medical practice?
b) *Indicate:* some spices and medicines obtained from a) roots or rhizomes, b) stems, c) leaves, d) flowers.

c) *Briefly indicate:* contributions to plant science made by the ancient Egyptians and the Chinese.

Exercise 4. *Look through the list of plants in* Appendix part *of the textbook and choose any of the flowering plants. Think of a description and present it to your groupmates to guess the name of the plant described.*

Exercise 5. *Give your recommendations a) how to deal with wild plants; b) how to store dried medicinal plants. Use the following phrases:* ***you should (shouldn't) do something; you'd better (you'd better not) do something; it's (isn't) advisable to do something; it's (isn't) recommended to do something.***

Exercise 6. *Act out the following situation:*
You are giving emergency help for the victim of poisoning. Before rendering help ask the victim 1) what plant he was in contact with, 2) what complaints the victim has.
Use the following word combinations: skin irritation, reddening of the affected area, dryness in the mouth, to induce vomiting, to wash clothing, to make the victim drink some water, to consult a doctor.

Exercise 7. *Speak on the following*.
1. Herbal medicines as a source of natural drugs.
2. Best time for harvesting different parts of plants.
3. Rules for storing dried plant material.
4. Description of drugs of plant origin by odour and taste.
5. Therapeutic effects of some medicinal plants.
6. Poisonous plants and their effects.

SECTION 6

ORAL TOPIC: IN THE PHARMACY

Grammar: 1. Modal verbs with Active and Passive Infinitive. 2. Pronoun "one" with modal verbs. 3. The use of "can", "could", "may" and "would" in requests, permissions, suggestions and invitations.

PART I. GRAMMAR PRACTICE

MODAL VERBS AND THEIR EQUIVALLENTS

Table 1

Present Indefinite	**Past Indefinite**	**Отрица-тельная форма**	**Перевод**	**Что обозначает**	**эквиваленты (синонимы)**
can	could	cannot can't could not	могу, можем, можно, сможешь, умею, смогли	физическая или умственная возможность, умение; вежливая просьба	to be able (to)
may	might	may not might not	можно, возможно, могу, быть может, вероятно	разрешение; предположение; возможность	to be allowed (to)
must	had to	must not mustn't need not needn't	должен, надо, нужно, должно быть, вероятно	долженствование; обязанность; вероятность; предположение	to have (to)
to have (to) has (to)	had (to)	don't have (to) doesn't have (to) didn't have (to)	придется, вынужден, надо (было)	необходимость, вызванная обстоятельствами	-
to be (to) am	was (to) were (to)	is not (to) was not	должен, надо	необходимость совершения	-

is }(to) are		(to)		заранее запланированного (обусловленного) действия	
should	-	should not	должен, следует	совет, желательность (субъективное мнение)	ought (to)
ought (to)	-	ought not oughtn't	должен, следует	необходимость, обусловленная логикой вещей, моральный долг	-

Note:

They **must not** go there. Выражает категорическое запрещение. В переводе – *нельзя, не должен.*	They **needn't** go there Выражает отсутствие необходимости и долженствования. В переводе – *не надо, не нужно*.
Им нельзя идти туда.	Им не надо идти туда.

Exercise 1. *Read and translate the sentences using Table 1. Pay attention to the mode of translation of Modals and their equivalents.*

1. Students have to pass exams twice a year. 2. Hurry up, they must be waiting for us. 3. You ought to inform your parents about your studies at the University. 4. The second-year students can carry out complex experiments with chemical substances. 5. You should do the work with care. 6. She will have to sign these papers. 6. Will you be allowed to take this journal? 7. We will be able to finish this experiment in time. 8. May he begin doing the task without waiting for you? 9. The first-year students are to have the acquaintance practice at the chemist's. 10. I can't understand what has gone wrong with my experiment. 11. They don't have to take part in the scientific conference as it has been postponed. 12. All vessels, bottles, glass tubes, etc. must be clean and ready for use.

Exercise 2. *Insert where necessary the particle "to" before the infinitive after modal verbs or their equivalents.*

They have … translate; they were allowed … answer; he will be able … conduct the research work;

They should … learn the name of plants in Latin; you must … add another substance; he ought … know; they were allowed … use another method; she is … prepare a report; they ought … be present at the lecture; you needn't call in the doctor; does he need … go their at once?

Exercise 3. *Fill in the blanks with the suitable modal verb.*
1. If a person is able to pass his examinations we say that he … pass them. 2. If it is not necessary for a person to do something we may say that he … do it. 3. If one is not permitted to talk during classes we say that one … not do so. 4. If a person is able to work every evening in the lab we say that he … work here every evening. 5. If a person is to become a pharmacist we say that he … study pharmaceutical sciences. 6. If you want to know chemistry well you … make lots of experiments. 7. If a person wants to specialize in Botany he … know the subject well. 8. If you are interested in research work you … join the students' scientific society.

Exercise 4. *Put the modal verbs in the Past and Future Tenses, where it is possible.*
1. This medicine may help her. 2. The scientist can prove the importance of his investigation. 3. You must take this mixture. 4. He can become a good pharmacist. 5. He may come any minute. 6. You can cure this disease. 7. The students must work hard during the whole term. 8. The pharmacist must instruct the patient about the side effects of the drug. 9. All pharmacists must be familiar with the action of drugs on the body. 10. A toxic syndrome can result from excessive vitamin intake. 11. A new medicine must undergo extensive testing in the laboratory. 12. You may warm the ear drops to body temperature.

Exercise 5. *Student A and student B are inspecting an old medicine chest (аптечка). There are no labels on bottles and boxes and they may only partly guess the identity of their contents.*

Model:	It's a dark yellow powder so it can't be aspirin.

- yellow tablets …… vitamin C
- pungent fluid …… eye lotion
- small pills …… soluble calcium
- stinging fluid …… nasal drops
- small capsules …… aspirin
- bitter - smelling powder …… remedy for children

Exercise 6. *An experienced pharmacist is talking to his assistant who has just started working at the chemist's. He is recommending the young person very strongly not to do certain things.*

Model:	You mustn't criticize the prescribed medication.

To sell antibiotics/ doctor's prescription.
To forget/ to put a label on the medicine.
To keep vitamin C/ metallic container.
To freeze / insulin injections.
To sell narcotics/ doctor's prescription.
To store this medicine / above 25°C.

Exercise 7. *Use modal verbs to join the phrases.*

Model:	To heat the solution – the burner was out of order. They had to heat the solution, but they couldn't, as the burner was out of order.

To buy the prescribed drugs - the prescription was lost.
To read the directions on the label - the label was torn out.
To make an injection - the syringe was mislaid.
To tell the doctor about patient's condition - the doctor was at the conference.
To carry out the experiment - the reagents were not available at the moment.
To give instructions to the assistant – he (she) was out.

Exercise 8. *Transform the following sentences from Active to Passive voice and translate the transformed sentences.*

Model:	You must do it. **—** Вам нужно это сделать. It must be done. **—** Это нужно сделать.

1. You can find the book on the history of Pharmacy in the university library.
2. You mustn't take this medicine together with dairy products.
3. You must do this laboratory work very carefully.
4. Before entering the chemical laboratory we must put on white gowns and caps.
5. We may collect many flowers in the time of pollination.
6. I could buy all the necessary drugs at the chemist's yesterday.
7. The students should ventilate the room after experiments in chemistry.
8. You must take all medicines according to the indications.

Exercise 9. *Translate given in brackets Modals with Passive Infinitive.*
1. On using this preparation allergic reaction (могут отмечаться). 2. The preparation (не следует принимать) together with antidepressants. 3. Response to the treatment is not as good as (могла бы ожидаться). 4. This drug

(необходимо заказать) in the hospital pharmacy. 5. All drugs (следует хранить) in a cool place, protected from light. 6. In this case hypersensitivity reaction (нельзя исключить). 7. Explain to the patient how this medicine (нужно принимать). 8. In this case steroid preparations (можно назначать). 9. Aspirin (не следует давать) to children who have viral infections.

Pronoun "one" with modal verbs

Impersonal pronoun "one" may be used as a formal subject and together with modal verbs is translated as follows:

One can see … . – Можно видеть … .
One must know … . – Нужно знать … .
One should learn … . – Следует изучить … .
One needn't hurry. – Не надо спешить.
One must not be late. – Нельзя опаздывать.
One has to get up early. – Приходится вставать рано.

Exercise 10. *Make up sentences and translate them into Russian.*

One can	order buy ask (for)	1. items for medical care; 2. medicines according to prescription; 3. advice; 4. this drug in a local pharmacy.
One must (mustn't) need to (needn't)	be careful know be late have work read	1. for classes; 2. about possible side effects of a drug; 3. the instruction in taking medicines; 4. while taking these preparations; 5. doctor's permission for non-prescription drugs; 6. hard to achieve excellent results.
One should (shouldn't)	keep avoid switch take follow neglect	1. taking drugs prescribed for other persons; 2. to vitamin therapy; 3. medicines in a cool place; 4. pharmacist's advice; 5. doctor's recommendations; 6. prescribed medicines properly.

Exercise 11. *Translate the sentences from Russian into English using modal verbs or their equivalents.*

1. Вы можете применить свой опыт на практике в аптеке. 2. Врач смог дать ему это лекарство только через два часа. 3. Вы сможете приобрести большой опыт практической работы в нашей лаборатории. 4. Это лекарство следует принимать по столовой ложке через каждые два часа. 5.

Как долго мне придется принимать это лекарство, доктор? 6. Вам нужно принимать лекарство (микстуру, пилюли, порошки) в соответствии с рецептом. 7. Можно купить этот препарат в любой аптеке без рецепта. 8. Лекарства следует хранить в прохладном месте. 9. Нельзя принимать лекарства, прописанные другим лицам.

PART II. SPEECH PATTERNS

"Can", "could", "may" and "would" in requests (1), asking for permission (2), offers (3) and invitations (4).

Study the following examples:

1.
- Could I have a pain-killer, please? (in a pharmacy);
- Hello, can I speak to Ann, please? (on the phone);
- Can I have the salt, please? (at table).

2.
- May I come in? – Yes, of course;
- Can I take the thermometer? – Yes, please;
- May I take part in the presentation? – Yes, certainly (–Yes, you may);
- May I have a look at your paper? – No, I can't agree to that, I'm afraid.

3.
- Can I do anything to make you feel better? – Thanks. A glass of water, please;
- Can I get you a cup of coffee? – That's very nice of you;
- Can I help you, madam? – No, thank you, I'm being served.

4.
- Would you like to come to see us tomorrow evening? – Thank you, with pleasure.

Exercise 14. *Give the answers to the questions asked.*

Could I have syringes for intramuscular injections, please?

… … … … … … … … … … … … … … … … … … .

Can I borrow your thermometer, please?

… … … … … … … … … … … … … … .

Could you explain to me, please, how I have to take this medicine?

… .

What would you like me to do?

… … … … … … … … … … .

Exercise 15. *Ask the questions for which these remarks would be suitable.*

… … … … … … … … … … … … … … … … … … … ?
Sorry, but I don't know where the nearest pharmacy is.
… … … … … … … … … … … … … … … … … ?
I need some cough mixture and tablets for a cold.
… … … … … … … … … … … … … ?
It's just over here. I can see you to it.
… … … … … … … … … … … … … … … … … … ?
Yes, please. I need an eye dropper and a disinfectant.

PART III. VOCABULARY LEARNING

Exercise 1. *Read and memorize the words of the active vocabulary.*

a) drug, medication, poison, dose, dosage:

1.	medicine [´meds*i*n] *n.* – лекарство;
2.	medical charcoal [me´dıkəl ´ʧa:kəul] – активированный уголь;
3.	drug for cough [kɔ:f] – лекарство от кашля;
4.	cardiac medicine [´kɑ:dıæk] – сердечное средство;
5.	drug for headache [´hedeık] – лекарство от головной боли;
6.	sedative [´sedətıv] *n.*– успокаивающее средство или снотворное;
7.	tranquillizer [´træŋkwılaızə] *n.* – успокаивающее средство, транквилизатор;
8.	stimulant [´stımjulənt] *n.* – возбуждающее средство;
9.	diuretic [,daıjuə´retık] *n.* – мочегонное средство;
10.	depressant [dı´presənt] *n.* – успокаивающее средство;
11.	antihypertensive [´æntı´hɑıpə:´tensıv] *n.* – средство, понижающее давление;
12.	hypotensive [ˈhɑıpəuˈtensıv] *n.* – гипотензивное лекарственное средство;
13.	hypnotic/ sleeping pill [hıp´nɔtık] – снотворное.

b) things for medical care:

1.	dressing [ˈdresıŋ] *n.* – перевязочный материал;
2.	cotton wool [ˈkɔtn wul] – вата;
3.	bandage [´bændıdʒ] *n.* – бинт, повязка, перевязочный материал;
4.	gauze [gɔ:z] *n.* – марля;
5.	sponge [spʌn*d*ʒ] *n.* – тампон, губка;
6.	plaster [´plɑ:stə] *n.* – пластырь;
7.	mustard plaster [´mʌstəd] – горчичник;
8.	adhesive plaster [əd´hi:sıv] – липкий пластырь;
9.	medicine dropper [drɔpə] – пипетка;
10.	hot-water bottle [´hɔt,wɔ:tə´bɔtl] – грелка;

11.	syringe [ˊsɪrɪndʒ] *n*. – шприц.

c) medical forms:

1.	drops [drɔps] *n*. – *мед*. капли;
2.	ointment [ˊɔɪntmənt] *n*. – мазь;
3.	mixture [ˊmɪkstʃə] *n*. – микстура, смесь;
4.	pill [pɪl] *n*. – пилюля, драже, таблетка;
5.	powder [paudə] *n*. – порошок;
6.	solution [səˊluʃən] *n*. – раствор, жидкое лекарство;
7.	lotion [ləuʃən] *n*. – примочка, лосьон.

d) names of side-effects and diseases:

1.	cough [kɔ:f] *v*., *n*. – кашлять, кашель;
2.	side effect [saɪd ɪˊfekt] – побочная реакция;
3.	dizziness [ˊdɪzɪnɪs] *n*. – головокружение;
4.	thyroid disease [ˊθaɪrɔ:ɪd] – заболевание щитовидной железы;
5.	fever [ˊfi:və] *n*. – лихорадка;
6.	quinsy [ˊkwɪnzɪ] *n*. – *мед*. острый, гнойный тонзиллит;
7.	insomnia [ɪnˈsɔmnɪə] *n*. – бессонница.

e) general scientific words:

1.	severe [sɪˈvɪə] *a*. – резкий, сильный;
2.	gargle [ˊgɑ:gl] *n*., *v*. – полоскание (*для горла*); полоскать горло;
3.	sweat [swet] *n*. – пот, потение;
4.	discard [dɪsˈkɑ:d] *v*. – выбрасывать (за ненадобностью);
5.	beverage [ˊbevərɪdʒ] *n*. – напиток;
6.	condition [kənˊdɪʃən] *n*. – состояние (здоровья);
7.	warning [ˊwɔ:nɪŋ] *n*. – предупреждение, предостережение;
8.	anxiety [æŋˊzaɪətɪ] *n*. – беспокойство, тревога;
9.	available [əˈveɪləbl] *a*. – доступный, имеющийся в распоряжении;
10.	ready-to-use [ˊredɪ təˊju:s] *n*. – готовая (*лек.форма*);
11.	injury [ˊɪn*d*ʒərɪ] *n*. – *мед*. рана, ушиб;
12.	history [ˊhɪstərɪ] *n*. – *мед*. история болезни;
13.	remedy [ˈremɪdɪ] *n*. – лекарство, лечебное средство;
14.	induce [ɪnˈdju:s] *v*. – вызывать, заставлять.

Exercise 2. *Read and memorize the words of Greek and Latin origin.*

Suppository [səˈpɔzɪtərɪ], syrup [ˈsɪrəp], suspension [səˈspenʃən], tablet [ˈtæblɪt], liniment [ˈlɪnɪmənt], mixture [ˈmɪkstʃə], pill [pɪl], cream [krɪ:m], cosmetics [kɔzˈmetɪks], vaseline [ˈvæsɪlɪ:n], septic [ˈseptɪk], iodine [ˈaɪədɪ:n], bicarbonate of soda [baɪˈkɑ:bənɪt,əfˈsəudə], diarrhea [ˌdaɪəˈrɪə], placebo [plə'sɪ:bəu], diabetes

[daɪə'bɪ:tɪ:z], container [kən'teɪnə], narcotic [nɑ:'kɔtɪk], antibiotic [ˈæntɪbaɪˈɔtɪk], tonic ['tɔnɪk], injection [ɪn'dʒekʃ(ə)n], ampoule ['æmpu:l], urine ['juərɪn], muscle ['mʌsl], influenza [,ɪnflu'enzə], viral ['vaɪərəl], cardiologist [,kɑ:diˈɔlədʒɪst], kidney ['kɪdnɪ], patient ['peɪʃənt], signature ['sɪgnətʃə], internal [ɪn'tə:nl], external [eksˈtənl], petroleum [pɪ'trəuljəm], sterile ['steraɪl], ipecac ['ɪpɪkæk], stomach ['stʌmək], caustic ['kɔ:stɪk], digitalis [,dɪdʒɪ'teɪlɪs], strychnine ['strɪknɪ:n], capsule ['kæpsju:l], blood [blʌd], plasma ['plæzmə], vaccine ['væksɪ:n], insulin ['ɪnsjəlɪn], biotech [baɪəuˈtek], allergy ['ælədʒɪ], disinfectant [,dɪsɪn'fektənt], antihistamine [ˈæntɪˈhɪstəmɪn].

Exercise 3. *Form the words with the help of prefixes or suffixes. Translate them into Russian.*
Prefix **“anti”** means *“против”*, *“анти”*.
Stressful, diarrheal, septic, hypertensive.
Prefix **“over”** means *“сверх”*, *“чрезмерно”*, *“над”*, *“пере”*.
Dosage, pressure, work, mature, heat, dose.
Prefix **“re”** means *“снова”*, *“заново”*, *“еще раз”*, *“обратно”*.
Name, examine, fill, use, bandage.
Suffix **“ful”** means *“обладающий качеством”*.
Suffix **“less”** means *“отсутствие качества”*.
Help, pain, use, stress, harm, thank, hope.

Exercise 4. *Match English expressions with their Russian equivalents.*

1. two tablets at once	a) шкаф для хранения лекарств;
2. R, Rx, recipe, take	b) указания по приему (лек. средства);
3. doctor’s signature (sig.)	c) подписывать рецепт;
4. adult (ad.) prescription	d) дата истечения срока годности;
5. prescription form	e) принимать лекарство по одной чайной ложке;
6. direction to a pharmacist	f) печать врача;
7. to take a teaspoonful of a drug	g) рецептурный бланк;
8. on an empty stomach	h) возьми;
9. doctor’s private (personal) seal	i) смешай поровну;
10. to sign a prescription	j) взрослый рецепт;
11. to deliver (to fill) prescriptions	k) натощак;
12. send, mix ana (a.a.)	l) подпись врача;
13. drug cabinet	m) две таблетки на один приём;
14. directions for administration	n) отпускать лекарства по рецепту;
15. non-prescription drugs	o) указание фармацевту;
16. expiry date	p) лекарства, выдаваемые без рецепта.

Exercise 5. *Find the "false" word in the chain of words.*

1. chemist's – drugstore – pharmacy – pharmacology
2. sickness – illness – weakness – disease
3. drug – medicine – prescription – medication
4. side effect – unwanted reaction – affect
5. beverage – drink – alcohol – liquid
6. to occur – to take place – to take part in – to happen
7. ingredient – component – compound – part
8. warning – caution – signal – signature

Exercise 6. *Make up word combinations and translate them.*

to make	injections; a diagnosis;
to feel	feverish; dizzy; pain; anxious;
to produce (induce)	vomiting; sleep; anxiety;
to reduce	temperature; blood pressure; fever;
to be	available; ready; familiar with; responsible for; in charge of; under care of smb.;
to apply	dressing; bandage; plaster; hot-water bottle;
to carry out (on)	tests; investigations; scientific research;
to give } to follow	instructions; information; orders; advice; recommendations;
to take	medicines; pills; temperature; blood pressure;
to keep	fit; in good shape; medicines;
to perform	analyses; operation; duties.

Exercise 7. *Translate from English into Russian.*

A drug for injection, a syringe, an intramuscular (I/M) injection, an intravenous (I/V) injection, (non)prescription medicine, health-care items, to take medicine by mouth (per os), on an empty stomach, to feel dizzy, drug action, drugstore, drug for internal (external) application, to take the drug under medical supervision, cardiac medicines, a hot-water bottle, a bottle label, different powders, sedatives, ampoules of glucose, dosed drugs, a warning label, a total dose, the name of the drug, medicine cabinet, medicine chest, once a day (i.d.), twice a day (t.d.s.), three times a day (t.i.d.),four times a day (q.i.d.), to write out a prescription, expiry date, contamination of a drug, to induce sleep.

Exercise 8. *Answer the following questions*

I. *using the words and word combinations in brackets;*

1. What are herb teas used for? (for various diseases, headaches).2.What is valerian used for? (as a remedy for emotional states). 3. What are antihistamines used for? (for allergy relief). 4. What are dressing materials used for? (to dress cuts). 5. What is a syringe used for? (to make injections). 6. What are bandages used for? (to bandage wounds). 7. What are sponges and cotton balls used for? (to stop bleeding, to sponge blood away). 8. Whom is the prescription for? (adults, children).

II. *using the words given under the line.*

a) What is the name of the drug
   - used to produce sleep in patients with insomnia?
   - that suppresses the coughing reflex?
   - used to treat viral infections?
   - that suppresses anxiety and relaxes muscles?
   - used for the relief of diarrhea?
   - that has a calming or sedative effect?
   - that increases the quantity of urine produced by kidneys and passes it out of the body?
   - that reduces high blood pressure?
   - used to treat infections?
   - used to treat allergies?

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antidiarrheal, antihistamine, antihypertensive, antiviral, cough suppressant, sleeping drug, diuretic, sedative, tranquilizer, antibacterial.

Exercise 9. *Match the phrases.*

1. If you have a high temperature	a) you have to gargle your throat;
2. If you have pain when swallowing	b) you have to take some medicine to reduce temperature;
3. If you have heart trouble	c) she has to take antihypertensive remedy;
4. If one has a headache	d) you should take a sedative before going to bed;
5. If you are nervous all the time	e) you have to take any drug for cough and phytotea;
6. If your grandmother has got a high blood pressure	f) you should consult a cardiologist;
7. If you can't fall asleep	g) the doctor will prescribe a depressant to you;
8. If you have a dry cough	h) one should take a drug for headache.

Exercise 10. *Choose the words in brackets which can be used with the given nouns.*

1. The pain can be (controlled, relieved, indicated);
2. The prescription can be (filled, refilled, developed, signed, supplied, written out);
3. The medicine (remedy) can be (taken, dispensed, discarded, treated, delivered, prepared);
4. The treatment can be (given, prescribed, discontinued, advised, allowed, administered);
5. Side effects may be (severe, rare, high, common, obvious);
6. A drug may be taken (once a day, before meals, with food, instead of food, a tablespoonful, with dairy products).

PART IV. READING COMPREHENSION

Read the text and do the tasks that follow it.

Text 1

IN THE PHARMACY

Pharmacy is a place where medicines are prepared and sold. Most pharmacies, sometimes called ***chemists' or drugstores*** also sell many other products. Every pharmacy has a hall for visitors, a department for selling drugs, which is called the ***chemist department***, and proper working rooms. Large pharmacies have also a ***prescription department*** where prescriptions are filled. Today pharmaceutical manufacturers supply most drugs. But pharmacists must still compound some medicines and be able to prepare antiseptic solutions, ointments and other common remedies.

At the chemist department one can buy ready-to-use remedies in various forms, such as tablets (sleeping tablets, sedative tablets), pills, drops (cough drops, nasal drops), tinctures (tincture of iodine), mixtures, herbs for infusion (peppermint, chamomile), ointments (boric ointment, zinc ointment), powders (talcum powder), lotions (eye lotion). Such remedies as valerian, medical charcoal, bicarbonate of soda, vaseline and hydrogen peroxide are also available at the chemist department. One can get there dressing material including gauze, cotton wool, elastic bandages, adhesive tape, plasters, etc. Besides medicines and health-care items we may also buy all sorts of other things as well, such as soap, shaving cream, toothpaste, toothbrush, cosmetics, etc.

A person usually asks the pharmacist or the chemist whether the medicine is for internal or external application. He may also ask the chemist to give him

something for gargling, something to produce sweating, a remedy for diarrhea, headache, earache, backache or stomachache.

At the prescription department pharmacists fill prescriptions written by doctors or dentists, and prepare labels for medicines. The name of the medicine, the single dose and the total dose are indicated on the ***label*** or ***signature***. On the labels pharmacists include directions for patients given in the prescriptions. The labels for the drugs prepared in the pharmacy are of different colors. Labels of a ***green color*** indicate medicines ***for internal use***; ***blue*** labels indicate ***drugs for injections***. Drugs for ***external application*** have labels of a ***yellow color***. Drugs used for treatment of ***eye diseases*** have labels of a ***pink color***.

All medicines are kept in drug cabinets, on the open shelves and in the refrigerator. ***Poisonous drugs*** are kept in the drug cabinet with ***the letter A***. ***Strong effective drugs*** are kept in the drug cabinet having ***the letter B***. The ***drugs*** prepared in the pharmacy ***for immediate use*** should be kept in the refrigerator. Powders, galenical preparations and ready-made medicines are usually kept on the shelves protected from light at a constant temperature, not higher than a room one. At the chemist department medicines are kept according to their therapeutic effect: drugs for cough, cardiac medicines, drugs for headache. Disinfectants, herbs and health-care items such as hot-water bottles, medicine droppers and thermometers are kept separately.

The personnel of an average pharmacy consists of ***a manager of the pharmacy***, a ***dispensing pharmacist*** who fills prescriptions, a ***chemist*** controlling the prescriptions, that is physical, physico-chemical and pharmacological compatibility of the ingredients of the compound prescribed by the physician. The pharmacy is also staffed by a ***chemist-analyst*** who controls effectiveness of the drug prepared in the pharmacy and a ***pharmacist*** who is in charge of the supply of necessary medicines.

Exercise 1. *Translate the following word combinations from Russian into English.*

Рецептурный отдел; отдел готовых лекарственных форм; помещения аптеки; шкафы для хранения лекарств; выдавать лекарства по рецепту; этикетки с указанием пациенту; одноразовая доза; общая доза; согласно терапевтического эффекта; для внутреннего применения; для полоскания горла; средство от диареи (головной боли, ушной боли, боли в спине); изделия медицинского назначения; готовые лекарственные формы; активированный уголь; вата; физико-химическая и фармакологическая совместимость ингредиентов.

Exercise 2. *Use the verbs in brackets in the proper form indicated.*
1. In the pharmacy there (to be – Present Simple Active) a special room where medicines (to prepare – Present Simple Passive). 2. The prescription (to contain – Present Simple Active) the name of the drug, the name of the patient, the name of the physician and other information. 3. Powders, galenical preparations and medicines (can – Past Simple) be produced at pharmaceutical plants. 4. The prescription (to fill – Future Simple Passive) in two hours. 5. Health-care items (to keep – Present Simple Passive) separately from medicines. 6. The personnel of a pharmacy (to include – Present Simple Active) a manager, pharmacists and chemists. 7. As a rule pharmacies (to be situated – Present Simple Passive) on the ground floor. 8. At one time, pharmacists (to compound – Past Simple Active) their own medicines, but today most drugs (to supply – Present Simple Passive) by pharmaceutical manufacturers.

Exercise 3. *Insert instead of gaps the suitable words.*
1. … is a place where medicines are sold. 2. The department for reception of prescriptions and delivery of drugs is called …. 3. At the … department one may buy medicines without prescriptions. 4. Pills, drops, tinctures, herbs, ointments are … remedies. 5. The name of the medicine, the single dose and the total dose are indicated on the …. 6. At the chemist department medicines are kept according to their …. 7. A pharmacist who fills prescriptions is called a …. 8. A specialist who controls the effectiveness of the drugs prepared in the pharmacy is called a …. 9. A specialist who controls the prescription is called a ….

Exercise 4. *Answer the following questions. In your answers use the word combinations given in brackets.*
1. What is a chemist department meant for? (to buy ready-to-use medicines and health-care items).
2. What is a prescription department meant for? (to fill prescriptions).
3. What are different colors of medicines meant for? (to distinguish medicines for internal or external application).
4. What are drug cabinets used for? (to keep poisonous or strong effective drugs).
5. What is a manager of the pharmacy in charge of? (to supervise the work of the personnel).
6. What is a dispensing pharmacist in charge of? (to deliver drugs according to prescriptions).
7. What is a chemist-analyst responsible for? (to control effectiveness of the drugs prepared according to prescription).

Exercise 5. *Work in pairs asking each other as many questions as possible.*

1. What can one buy
   - at the prescription department?
   - at the chemist department?
2. What can one do with
   - medicinal plants?
   - the prescription?
3. What can one do if
   - there is no label on the drug's container?
   - one doesn't know how to take the medicine bought in the pharmacy?
   - one needs medicines for cough (for headache, for quinsy)?
4. Where should one keep
   - strong effective drugs?
   - poisonous drugs?
   - non-prescription drugs?
   - health-care items?

Exercise 6. *Fill in the following table based on the content of the text read and speak about medicines and health-care items which can be bought in a pharmacy.*

Medicines for internal use	Medicines for external use	Things for medical care

Exercise 7. *Read the following text and do the tasks which follow it.*

STORAGE OF DRUGS

1. There are strict legal requirements for the purchase (покупка), storage, use, identification, dispensing and prescription of drugs.
2. Many drugs are poisonous if taken accidentally or in excess (в избытке); others are caustic and may cause painful burns. Some common sense precautions (из соображений здравого смысла) in storing drugs are to keep them well away from strong light, heat, pungent odors, food and drinks; to keep poisons up in a special poisons cabinet; and to keep caustics on the lowest shelf where accidental spillage (случайно пролившаяся жидкость) cannot affect the eyes or burn the face.
3. The condition of the drugs stored for long period depends generally on the conditions of storage over this period and in certain cases depends on the drugs themselves.

4. Certain drugs will keep perfectly if they are stored in well closed containers in the dark, and in a dry atmosphere at a moderate (умеренная) temperature. On the other hand, a drug, such as digitalis, even if it is stored under the most ideal conditions, will have lost all its potency by the end of one year, while other drugs will be all right even if they are stored under the most varied conditions for long periods (for. ex., the ampoules of strychnine or the capsules containing drug powders).
5. Some medical products need to be stored at a lower than ambient (окружающая) temperature to assure (обеспечивать) their quality and efficacy. These are often referred to as “cold chain products” or fridge lines”. They are to be stored and distributed in strict accordance with (в строгом соответствии) the product labeling requirements. Some cold chain items, such as vaccine, insulin, biotech products and products derived from (полученные) blood or plasma can be classified as high risk ones because they are at risk from freezing as well as elevated temperatures. Other products, for example, chloramphenicol, eye drops, may be labeled as requiring storage between 2° and 8°C but a short deviation from (отклонение) this temperature range presents less of danger to users.
6. Stocks of drugs must be stored in accordance with manufacturer’s instructions and not kept beyond their expiry date (срок годности). Records of their purchase, supply and expiry date must be kept for at least 11 years. Any drugs which have passed their expiry date should be discarded (выбрасывать), together with any solutions which have become discolored or cloudy.

Task 1. *Pay attention to how the narration is structured and complete the gaps with the words and phrases from the box.*

a) stocks of drugs; b) strict legal requirements; c) the expiry date; d) "cold chain products";	e) poisons and caustics; f) the condition; g) storing; h) examples.

Paragraph 1 introduces the fact that there are _____ for buying, storage, use, identification, dispensing and prescription of medicines.

Paragraph 2 describes some common sense precautions in storing ordinary medicines as well as _____.

Paragraph 3 brings in factors on which _____ of storing drugs for a long period depends on.

Paragraph 4 continues enumerating conditions for _____ most drugs and gives some _____.

Paragraph 5 points out the main regulations for storing _____ which are to be stored strictly in accordance with their labeling requirements.

Paragraph 6 provides information about proper storage of _____ in accordance with manufacturer's instructions and utilization of drugs after passing _____.

Task 2. *Formulate the main rules for storing different kinds of drugs using the Imperative Mood.*

Exercise 8. *Translate with the help of a dictionary.*

HOW IS HERBAL MEDICINE SOLD IN STORES?

The herbs available in most stores come in several different forms: teas, syrups, oils, liquid extracts, tinctures, and dry extracts (pills or capsules). Teas can be made from dried herbs left to soak for a few minutes in hot water, or by boiling herbs in water and then straining the liquid. Syrups, made from concentrated extracts and added to sweet-tasting preparations, are often used for sore throats and coughs. Oils are extracted from plants and often used as rubs for massage, either by themselves or as part of an ointment or cream. Tinctures and liquid extracts are made of active herbal ingredients dissolved in a liquid (usually water, alcohol, or glycerol). Tinctures are typically a 1:5 or 1:10 concentration, meaning that one part of the herb is prepared with five to ten parts (by weight) of the liquid. Liquid extracts are more concentrated than tinctures and are typically a 1:1 concentration. A dry extract form is the most concentrated form of an herbal product (typically 2:1 - 8:1) and is sold as a tablet, capsule, or lozenge.

Currently, no organization or agency regulates the manufacture or certifies the labeling of herbal preparations. This means you can't be sure that the amount of the herb contained in the bottle or even from dose to dose, is the same as what is stated on the label. Some herbal preparations are standardized, meaning that the preparation is guaranteed to contain a specific amount of the active ingredients of the herb. However, it is still important to ask companies making standardized herbal products about their product's guarantee. It is important to talk to your doctor or an expert in herbal medicine about the recommended doses of any herbal products.

Exercise 9. *Translate from Russian into English.*
1. Храните лекарство в защищенном от света месте. 2. Храните лекарство в холодильнике. 3. Храните препарат в темном, прохладном и сухом месте. 4. Не замораживать. 5. Делайте и используйте каждый день свежий раствор. 6. Не кипятите раствор. 7. Храните лекарство в недоступном для детей месте. 8. Не давайте принимаемое вами лекарство другому лицу. 9. Не пропускайте очередного приема лекарства. 10. Не увеличивайте дозировку лекарства. 11. Не принимайте большую или меньшую дозу препарата. 12. Принимайте препарат, запивая его стаканом воды.

Read the text and do the tasks that follow it.

Text 2

A PRESCRIPTION

The word “prescription”, from “pre” (before) and “script” (writing, written), refers to the fact that the prescription is an order that must be written down before a compounding drug can be prepared.

Prescriptions are handwritten on preprinted prescription form. Each prescription is dated.

A complete prescription is made up of five essential parts: 1) *the superscription, 2) the inscription, 3) the subscription, 4) the signature,* and 5) *the prescriber’s name*. The *superscription* section contains the date and patient’s information (name, address, age, etc.). The *inscription* is the body of the prescription. This contains the ingredients and quantities of each. The traditional symbol *Rx* separates the subscription from the inscription section. The symbol originated in medieval manuscripts as an abbreviation* of the late Latin verb “recipe” meaning “to take”. It’s the instruction to the pharmacist – “take the following components and compound this medication for the patient”. The *subscription* always follows the inscription and contains the writer’s instruction to the pharmacist. This designates the form of preparation (mixture, tablets, ointments, etc.), the strength (in words and figures) and the quantity of the total number (in words and figures). The *signature* consists of the directions to the patient. This information is placed on the label of the container in which the medication is dispensed. *The prescriber’s name* is the part of the prescription that guarantees its authenticity*. Some prescriptions will specify whether and how many “repeats” or “refills” are allowed, that is whether the patient may obtain more of the same medication.

The language of the prescription was unique* in Great Britain some half a century ago when all the names of drugs were latinized*. It was possible because the physician used only dosed drugs. Today all prescriptions are written

in English. The only Latin which is used is a few traditional abbreviations in the instruction to the pharmacist and on the label.

A more serious problem is *the naming of drugs*. In the old days, drugs had only one official name. At present each drug has at least three names. They are the *chemical name*, the so-called *generic name*, and *trade name**. The *chemical name* is difficult to use and remember except for the simplest drugs because of its length and complexity. The *trade or brand name* is the private property* of the drug company and is copy right*. Many brand name drugs have less expensive generic drug substitutes that are therapeutically and biochemically equivalent. Prescriptions will also contain instructions whether the prescriber will allow the pharmacist to substitute the generic version of the drug.

It goes without saying* that a prescription cannot be written without a very good knowledge of the dose effects of drugs. Each drug has its own dose specification* dependent on the pharmacological properties and metabolism of the drug.

Note:

* abbreviation – традиционное сокращение;
* authenticity – подлинность;
* unique – единый;
* latinize – латинизировать;
* generic name and trade name – официальное (фармакопейное) и торговое название;
* private property – частная собственность;
* is copy right – на него распространяется авторское право;
* It goes without saying – само собой разумеется;
* dose specification – инструкция по дозировке.

Exercise 1. *Study the following Latin abbreviations used in prescriptions.*

Abbreviation	**Latin**	**English**
bis	bis	twice
p.o.	per os	by mouth or orally
b.d./b.i.d.	bis in die	twice daily
q.d.s.	quarter die sumendus	four times a day
q.h.	quaque hora	every hour
t.d.s.	ter die sumendum	three times a day
t.i.d.	ter in die	three times a day
I		one or one time
M	misce	mix
x		times

Non rep	non repetatur	no repeats
p.r.n.		as needed

Exercise 2. *Insert the words from the text.*

1. The prescription is written on the … . 2. The body of the prescription contains … and is called … . 3. The traditional symbol *Rx* is a … meaning "…". 4. The … follows the inscription and contains the direction to the pharmacist. 5. The directions to the patient as to how he should take the medicine are called … . 6. Each drug has its own dose … dependent on the pharmacological properties and metabolism of the drug. 7. The trade name is usually known to … as well as to the specialists of medicine. 8. In the old days drugs had only one ... name. 9. The chemical name is difficult to … and … .

Exercise 3. *Match each part of the prescription with its explanation. Restore the right order of the prescription and translate it into Russian.*

1. Rx	a) direction to the patient
2. Tel. ER 5 – 6oo	b) the patient's name, age, and address
3. Joseph A. Hiatt, M.D.	c) a traditional symbol meaning "take"
4. 1481 Altadena Ave., L.A., California	d) the subscription
5. Arlene Bihop, age 45	e) the name, telephone and address of the prescriber
6. 619 Locust Street, California	f) the inscription
7. Tylenol Cod. 30 mg #30	g) instruction to the pharmacist that the prescription is not to be repeated
8. J.A. Hiatt	h) prescriber's signature
9. Sig. 1 tablet b.i.d.	
10. Non. rep.	

Exercise 4. *Debate the following answering the questions.*

1. What is meant by a prescription? 2. What is the origin of the word "prescription"? 3. What are the main parts of the prescription? 4. What is the difference between superscription, subscription and inscription? 5. What is the body of the prescription? 6. What parts does the inscription consist of? 7. What does the word "refill" mean in the prescription? 8. In what language are the prescriptions written in Great Britain? 9. Is Latin used in English prescriptions nowadays? 10. How many names does the drug have? 10. Which name of the drug is difficult to use and remember? 11. Which name of the drug is usually used by the prescriber? 12. What does the title M.D. in the prescription indicate? 13. What does the dose of the drug depend on?

Exercise 5*. Read the following information and translate it into English. Point out the difference between the English prescription and the Belarusian one.*

РЕЦЕПТ В БЕЛАРУСИ

Рецепт – это письменное обращение врача к фармацевту об изготовлении и выдаче лекарства. Рецепты выписываются на рецептурных бланках. Рецептурный бланк содержит следующую информацию:
Штамп УЗ;
Надписи «Взрослый», «Детский»;
Дата выписки рецепта;
Фамилия, инициалы и возраст больного;
Фамилия и инициалы врача;
Слово «Recipe», которое означает «Возьми» и является обращением врача к фармацевту;
Состав лекарственного средства, где перечисляются все ингредиенты лекарственной формы, прописывается на латинском языке. Разрешается использовать только латинские рецептурные сокращения, принятые в медицинской и фармацевтической практике;
Обозначение лекарственной формы (пилюли, капсулы) и количество доз пишется также на латинском языке;
Способ применения лекарственного средства. Эта часть начинается со слов «Signa» и обозначается на белорусском или русском языке с указанием дозы, частоты, времени приема (до еды, во время еды или после еды) и особые способы приема;
Рецепт заверяется подписью и личной печатью врача.

Text 3

LABELS OF MEDICINES

A **prescription medicine container** usually has a label with the following information on it:

1. The name of the patient.
2. The name of the pharmacy.
3. The phone number of the pharmacy.
4. The date the prescription was filled.
5. The prescription number.
6. The name of the medicine.
7. The strength of the medicine.
8. The quantity (how much) of medicine in the container.
9. The name of the doctor who prescribed the medicine to the patient.

10. The instructions on how much medicine one should take, i.e. dose or dosage.
11. The instructions on when one should take the medicine.
12. Information on how many times one can refill the medicine.
13. Warning labels that tell you what you need to be careful about when you take the medicine.

Task 1. *Look at the label and write the number of the information given above on the correct line.*

LABEL 1

→	Main Street Pharmacy (714) 998-6545	
	1454 Main Street, Westminster, CA	
→	Dr. T. Anderson	
→	Rx No: 298561 01/25/2016	←
→	JORGE WASHINGTON	
→	Take one tablet by mouth, daily	
→	Zocor Tabs Mfg Merck	
→	Qty: 20	
→	Refills: 3 BEFORE 11/30/16	

Task 2. *Read the label and answer the questions given below:*

LABEL 2

Central Avenue Pharmacy (763) 555-1234
7000 Central Avenue, Minneapolis, MN
Dr. S. Smith
Rx No: 34554 01/11/2016
Sam Clinton
Dose: TAKE ONE TABLET BY MOUTH, TWICE DAILY.
Glucophage Tabs Mfg Bristrol Myers Squibb
Qty:60
REFILLS: 2 BEFORE 7/27/16

1. What is the name of the medicine?

_____

2. What is the name of the patient?

_____

3. Who is the prescribing doctor?

_____

4. What is the dosage?

_____

5. How many refills has the doctor prescribed?

_____

6. What is the date the prescription was filled?

_____

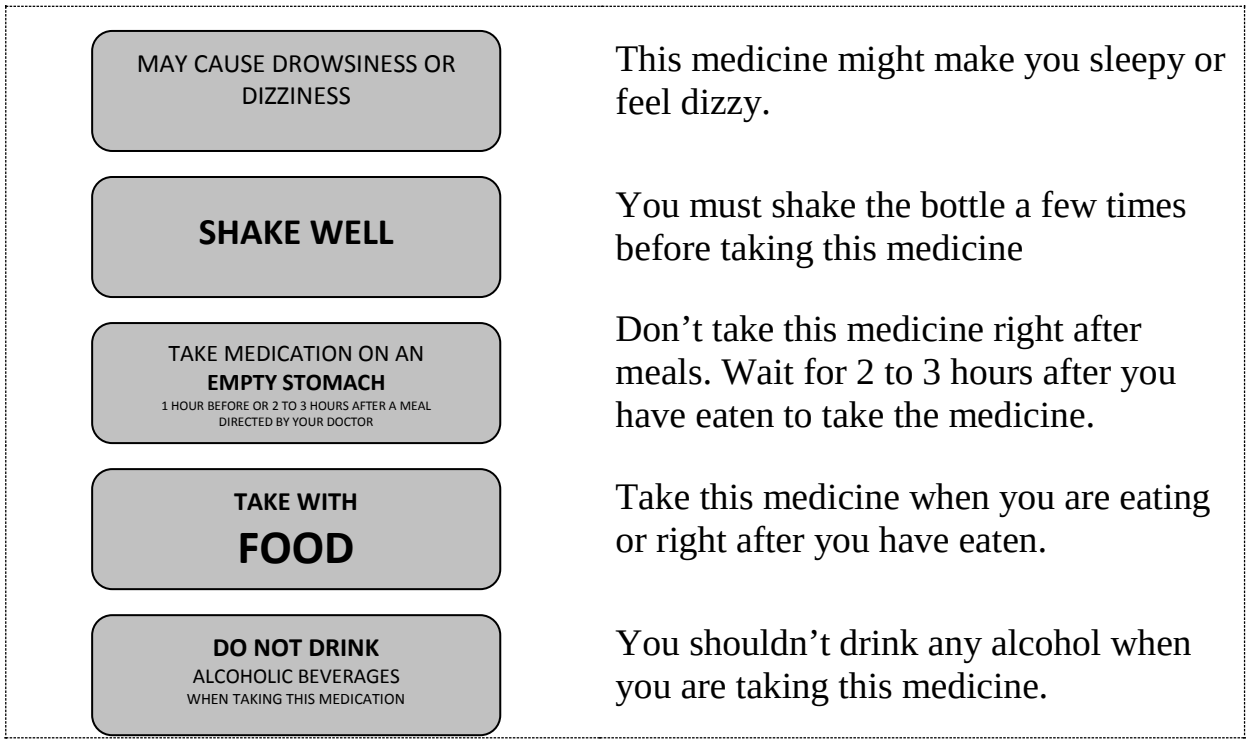
7. What is the name of the pharmacy where the prescription was filled?

_____

Warning labels

Sometimes, there is a warning label on your medicine container. For example *'May cause drowsiness'* or *'Take capsule with food'*. Ask your pharmacist to explain the warning labels.

Look at some examples of warning labels below and explanations of their meanings:



Task 3. *Read the label and answer the questions given below:*

Waltown Pharmacy	Phone:(714) 959-6688
18945 Beach Blvd, CA 92647	Date:04/21/05
NAME: Carmella Soprano	RX#: 55446622

TAKE 1 TABLET TWICE A DAY.
For Allergy Relief
BENADRYL 10MG CAPSULE QTY: 30.00
MFG: MERCK
DISCARD AFTER 04/21/06
Dr. Joseph Sanders
Refills: 0

MAY CAUSE DROWSINESS OR DIZZINESS

DO NOT DRINK ALCOHOLIC BEVERAGES WHEN TAKING THIS MEDICATION

1. What is the name of the medicine?

_____

2. What is the name of the patient?

_____

3. Who has prescribed the medicine?

_____

4. What is the dosage indicated?

_____

5. How many refills has the doctor prescribed?

_____

6. Can you drink alcoholic beverages while taking this medicine?

_____

7. What is the medicine for?

_____

INFORMATION ON THE LABEL OF NON-PRESCRIPTION MEDICINE

Active ingredients	What is in the medicine.
Uses (The symptoms for which one can take this medicine are listed)	What disease one should take the medicine for.
Warnings	❋ When one should not use the medicine. ❋ Conditions that may require advice from the doctor before taking the medicine. ❋ Possible interactions or side effects. ❋ When to stop taking the medicine. ❋ When to call the doctor.
Directions	How much medicine and how often

	one should take the medicine.
Other information	How to store the medicine properly.
Expiration date	Date after which it isn't recommended to use the product.
What to do if overdose occurs	What to do if you or someone takes too much of the medicine.
Name and address of manufacturer	Company that makes the medicine.
Net quantity of contents	How much medicine is in the package.
Inactive ingredients	Other things in the medicine like colors and flavors.

Task 4. *Study the information on the label.* ***Read*** *the questions given below and choose the right option.*

Drug Information	
Active Ingredient (in each tablet) **Purpose** Pseudoephedrine HCL 30 mg …… Nasal Decongestant	
Uses temporarily relieves nasal congestion due to ♦ common cold ♦ respiratory allergies	
Warnings **Ask a doctor before use if you have** ♦ high blood pressure ♦ heart disease ♦ thyroid disease ♦ diabetes	
When using this product ♦ do not use more than directed ♦ stop use and ask a doctor if you get nervous, dizzy or sleepless	
Directions	
Adults and children 12 years and over	take 2 tablets every 4 to 6 hours not more than 4 doses in 24 hours
Children 6 years to under 12 years	take 1 tablet every 4 to 6 hours not more than 4 doses in 24 hours
Children under 6 years	ask a doctor

1. What symptoms does this medicine treat?	**2. How much medicine can an adult take in 24 hours?**
a) High blood pressure b) Nasal congestion c) Running nose d) Headache	a) 2 tablets b) 3 tablets c) 4 tablets d) ask a pharmacist
3. How much medicine should a child under 6 take?	**4. What is a side effect of this medicine?**

a) 3 tablets b) 1 tablet c) Ask a doctor d) 2 doses	1. nervousness 2. rash 3. irritability 4. nasal congestion
5. Who should ask a doctor before using this?	
a) someone with nasal congestion b) someone with allergies c) someone with the grippe d) someone with diabetes	

PART IV. RENDERING

Read the newspaper article and render it into English.

ЧТО ТАКОЕ КАКТОРИЙ?

Самой старой аптеке Беларуси 300 с лишним лет. Сегодня в сохранившемся здании в центре города Гродно снова работает аптека. А при ней – единственный в Беларуси музей аптеки. Исчерпывающие тексты возле каждого стенда помогут понять, к какой эпохе относятся таблетки, красочные рецепты, колбы (retorts) и весы. Все они, кроме экспонатов XVI века, настоящие (original). Муляжи (plaster casts) здесь – только хирургические (surgical) инструменты.

Лекарства постарше подписаны на латыни. А названия и производители фармацевтики, начиная с XX века, в переводе не нуждаются. Крем «Нивея» и зубной порошок «Лакалют» отличаются лишь непривычной упаковкой.

Ну а самое интересное место музея-аптеки – какторий. Так в старину называлась лаборатория при аптеке, где готовили лекарство из трав – галеновые (galenic) препараты. Тут же – чай, кофе, разные специи. Их раньше продавали не на рынке, а в аптеке. Помимо столов с весами, разных ступок (motars), мензурок и кастрюль для отваров (decoction), тут, как и в любой средневековой (medieval) аптеке, висят чучела (stuffed animals) крокодилов и ящериц (lizards), заспиртованы (preserved in alcohol) разные лягушки и змеи. То, что сегодня кажется украшением (decoration), во времена алхимии использовалось для приготовления различных лекарств.

Те же посетители, кто после посещения музея решит и свою домашнюю аптечку (medicine chest) обставить старинными предметами, могут купить глиняные горшки (clay pots) или бутылочки, в которых можно хранить уже свои лекарства.

«Аргументы и факты», 2016

PART V. SPEAKING

Exercise 1. *Read the following dialogues and act them out.*

***

- Good morning. I want to fill my prescription.
- OK, I'll do it for you right now. It will be ready in 30 minutes.
- Thank you. How often should I take the medicine?
- According to the doctor's instructions you should take one capsule three times a day after meals.
- How long should I take it?
- Three or four days perhaps.
- Thank you very much. By the way, what do you suggest me to use for insect bites?
- This ointment may relieve itching. Rub it in (втирать) several times a day.

***

- Pharmacist: Hello. What can I do for you?
- Customer: Well, I'm unwell. Actually I've got temperature and stomachache as well.
- Ph.: Have you consulted the doctor?
- C.: No, I really have no time. Give me some medicine, please.
- Ph.: I mustn't give drugs without a prescription. It may be influenza, poisoning or even dysentery.
- C.: Do I really have to consult the doctor?
- Ph.: Quite so, and the sooner, the better. The doctor will make the diagnosis and write out a prescription. Come with it and I will give you the necessary drugs.
- C.: Thanks a lot.

Exercise 2. *Work in pairs.*

I. *Ask in English and answer the questions asked.*

1. Есть ли рецептурный отдел в ближайшей аптеке?
2. Что ваш друг обычно принимает от головной боли?
3. Продаются ли в аптеках косметические средства, если «да», то какие?
4. Какого цвета этикетки соответствуют лекарствам для внутреннего применения (наружного применения, для инъекций)?
5. Какая информация содержится на этикетке к лекарству?
6. Какие средства медицинского назначения можно купить в аптеке?
7. Часто ли ваш друг ходит в аптеку, и какие лекарства обычно покупает?
8. Принимал ли он когда-либо лекарство по совету своих друзей?

9. Принимал ли он когда-либо лекарство, прописанное другому человеку?

II. *Make up your own dialogues on the following situations.*
1. You came to a chemist's to fill the prescription.
2. Your brother/sister has already graduated from the university and is working now as a pharmacist at a chemist's shop. Ask him about his duties.
3. You want to buy drugs for your medicine-chest. Ask a pharmacist to give you a piece of advice about necessary drugs and health care items.

Exercise 3. *Answer the questions. Extend the idea.*
1. Can you describe your ordinary working day when you graduate from the university?
2. What subjects must you learn and what skills must you acquire to be able to work as a pharmacist?
3. What do you think of people who try to prepare medicines at home? Can they do any harm to those who may take them?

Exercise 4. *Answer the questions expressing your point of view. Use the following phrases:* ***I believe / consider (that) … . In my opinion / To my mind … . From my point of view … . As far as I know ... . I should say … .***
1. Should all the drugs be affordable for the customers? How much should be an average cost of a drug?
2. Is it possible to solve the problem of high cost of some drugs? If, yes, in what way.
3. What drugs should be sold without a prescription and what drugs by prescription only?
4. What rules should one follow in keeping drugs at home?
5. May the doctor prescribe dangerous drugs that will do harm to his/her patient?

Exercise 5. *Speak about the following.*
1. Premises of a pharmacy;
2. Regulations for keeping drugs in a pharmacy;
3. Prescription and non-prescription medicines;
4. Duties of a pharmacy's staff;
5. The labels of medicines;
6. Warning labels;
7. Filling a prescription.

APPENDIX (**приложение**)

PLANTS

belladonna	белладонна
calamus	аир тростниковый или ирный; пальма каламус
camphor	камфара
carrot	морковь
cassia	кассия
chamomile	ромашка
cinchona	хинное дерево
clove	гвоздика (пряность); гвоздичное дерево
corn	пшеница; кукуруза, маис
cotton	хлопок, вата (медицинская)
daisy	маргаритка; *амер.* поповник, нивяник обыкновенный
dandelion	одуванчик
deadly nightshade	красавка, белладонна, сонная одурь
ephedra	эфедра
foxglove	наперстянка
ginseng	женьшень
grape	виноград
hollyhock	штокроза розовая
ipecac (ipecacuanha)	ипекакуана, рвотный корень
ivy	плющ (обыкновенный)
jasmine	жасмин
lavender	лаванда
lilly of the valley	ландыш
mint	мята
mistletoe	омела
olive	олива
opium	опий
orange	апельсин, цитрус
poppy	мак
rose	роза
saffron	шафран
willow tree	ива
yew	тис

SUPPLEMENTARY TEXTS

SECTION 5. PLANT STUDY

Read the following text and say what the main functions of plant essential elements are.

PLANT NUTRITION

More than 60 elements have been found in plant tissues. These elements range from as common as carbon and hydrogen to those as exotic as platinum, uranium, and gold. Are all these elements essential for growth?

Carbon, hydrogen, oxygen, phosphorus, potassium, nitrogen, sulfur, calcium and magnesium are required in relatively large amounts and are called *macronutrients*. Iron, chlorine, copper, manganese, zinc, boron, and molybdenum are required in relatively small amounts and are called micronutrients.

Functions of essential elements.

1. Plants require different amounts of different elements. Most plants require 60 million times more hydrogen atoms than molybdenum atoms. These different requirements reflect different uses of these elements. Hydrogen is in almost all compounds in plants, while molybdenum occurs only in few.
2. Different elements are absorbed in different forms. Calcium and iron are absorbed as cations, while phosphorus and sulfur are absorbed as anions.
3. Most elements have several functions. Potassium is involved in starch synthesis, affects protein conformation, and activates enzymes.

Although the functions of essential elements are diverse, they can be grouped into four general categories:

– Essential elements can be part of structural units. Carbon, hydrogen and oxygen make up carbohydrates such as cellulose. Similarly, nitrogen is an integral part of proteins.
– Essential elements can be part of compounds involved in metabolism. Magnesium is part of chlorophyll, and phosphorus is part of ATP and nucleic acids.
– Essential elements can activate or inhibit enzymes.

Magnesium stimulates several respiratory enzymes, while calcium inhibits several enzymes. In some cases, these enzymes may be those responsible for synthesizing plant hormones.

Essential elements can alter the osmotic potential of a cell.

SECTION 6. IN THE PHARMACY

Read the following passage without a dictionary and say what products can be bought in the Chinese pharmacy and what they are used for?

CHINESE PHARMACEUTICAL PRODUCTS

Visiting a Chinese pharmacy is much like being inside a miniature museum of natural sciences. Tucked away (запрятанные) in row after row of tidy drawers are animal, plant, and mineral products, each with a particular purpose. Among the assortment of curiosities are cinnabar (киноварь) and amber (янтарь) to relax the nerves; peach pits (косточки персика) and safflower (цветок шафрана) to improve blood circulation; bears gall (желчь медведя) to relive pain and tranquilize; Chinese ephedra to induce perspiration (потение); and ginseng to strengthen cardiac function.

The filling of a prescription ordered by a Chinese doctor is a fascinating process to watch. The pharmacist selects a few particular ingredients from the hundreds on the shelf. These are taken home by the patient, boiled into a “soup”, and drunk. Confronted with such a steaming brew (напиток сваренный и настоянный), you might ask yourself just what the basis of this ancient medical art is.

The Government of the Republic of China has put great effort into promoting the modernization of Chinese medicine. In the area of pharmacology, researchers have evaluated effectiveness, analyzed, tested, and formulated concentrated dosages of Chinese pharmaceutical products for commercial sale. The prescriptions for these drugs are easier to fill, and are much more convenient for the patient than the old boiling method.

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