

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ

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ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ
ИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ, МЕХАНИКИ И ОПТИКИ

ИНСТИТУТ ХОЛОДА И БИОТЕХНОЛОГИЙ



А.В. Домбровская, А.Г. Серебрянская

АНГЛИЙСКИЙ ЯЗЫК
КОНТРОЛЬНЫЕ ЗАДАНИЯ
Учебно-методическое пособие



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Учебно-методическое пособие состоит из двух частей. Первая часть содержит три контрольные работы в двух вариантах. Вторая часть включает в себя тексты для устного перевода общим объемом 15000 знаков, словарь слов и выражений, встречающихся в контрольных работах и текстах, а также список сокращений. Задания предназначены для промежуточного и итогового контроля усвоения грамматического минимума и лексики тематической направленности.

Предназначено для студентов 2-го курса факультета заочного обучения, обучающихся по направлению 241000.

Рецензент: кандидат техн. наук, доц. О.И. Сергиенко

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Института холода и биотехнологий**



В 2009 году Университет стал победителем многоэтапного конкурса, в результате которого определены 12 ведущих университетов России, которым присвоена категория «Национальный исследовательский университет». Министерством образования и науки Российской Федерации была утверждена программа его развития на 2009–2018 годы. В 2011 году Университет получил наименование «Санкт-Петербургский национальный исследовательский университет информационных технологий, механики и оптики».

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ВВЕДЕНИЕ

При заочном обучении в неязыковых вузах практическое владение иностранным языком означает умение самостоятельно читать и переводить со словарем литературу на английском языке по специальности широкого профиля. Полученные знания, умения и навыки дают возможность читать тексты по специальности на языке оригинала и извлекать из них полезную для работы информацию.

Для развития навыков чтения общенаучной литературы и литературы по специальности решающими факторами являются:

- 1) накопление словарного запаса;
- 2) овладение грамматическими категориями, необходимыми для понимания текста и перевода его с английского языка на русский.

За полный курс обучения студент приобретает словарный запас в объеме 900–1000 лексических единиц. Особенно большое значение для расширения словарного запаса, необходимого для понимания научных текстов, имеет твердое усвоение системы словообразования в английском языке: аффиксация, словосложение, аббревиация (сокращение) и конверсия. Особое внимание следует уделить конверсии, так как необходимо научиться с помощью формальных признаков и по месту в предложении определять, к какой части речи относятся одинаковые по написанию слова. Необходимо освоить основные префиксы (приставки) и суффиксы и запомнить условные сокращения слов, принятые в английских научных и технических текстах.

Студенты должны освоить следующие разделы грамматики:

Морфология

- Имя существительное: число, падеж, артикли как признаки имени существительного, существительное в функции определения (правило цепочки существительных).
- Предлоги: места, направления, времени, компенсации падежных отношений.
- Имя прилагательное и наречие: степени сравнения, усиление сравнения, перевод сравнительных конструкций.
- Имя числительное: количественные, порядковые, дробные числительные, чтение дат.

- Местоимение: личные, притяжательные указательные, неопределенные, вопросительные, относительные, отрицательные. Неопределенное местоимение one (ones) и его функции. Неопределенные местоимения some, any, отрицательное местоимение no и их производные. Указательные местоимения it, this (those) и их функции.
- Глагол: основные формы. Вспомогательные глаголы. Многозначность глаголов to be, to have, to do. Действительный залог (Active Voice). Система времен: Simple, Continuous, Perfect, Perfect Continuous в действительном и страдательном залоге. Модальные глаголы. Страдательный залог (Passive Voice). Способы перевода страдательного залога на русский язык. Неличные формы глагола.
- Причастие (I и II): формы и функции в предложении. Независимый причастный оборот.
- Герундий: формы и функции. Герундиальный оборот.
- Инфинитив: формы и функции. Инфинитивные обороты.
- Служебные слова: артикли, предлоги, союзы.
- Многофункциональность слов it, that (those), one (ones), very, after, before, because, because of, as, since, if, whether, either, neither и др.

Синтаксис

- Структура предложения: части речи, члены предложения, порядок слов. Прямой порядок слов повествовательного предложения в утвердительной и отрицательной формах. Обратный порядок слов в вопросительном предложении. Оборот there is (are) в трех временах (Present, Past, Future).
- Простое и сложное предложение. Типы придаточных предложений.
- Условные предложения. Инверсия.
- Наклонение: изъявительное, сослагательное и повелительное.

ВЫПОЛНЕНИЕ КОНТРОЛЬНЫХ ЗАДАНИЙ И ОФОРМЛЕНИЕ КОНТРОЛЬНЫХ РАБОТ

Студенты 2-го курса заочного отделения письменно выполняют три контрольные работы(контрольные задания № 4, 5, 6). Контроль-

дений, обучающихся по техническим специальностям / Л.Н. Андрианова, Н.Ю. Багрова, Э.В. Ершова. – М.: Высш. шк., 2010 (или более ранними изданиями).

При работе над контрольными работами и для устного перевода текстов рекомендуется использовать следующие словари:

- 1) Англо-русский экологический словарь / Г.Н. Акжигитов, И.И. Мазур, Г.Я. Маттис и др. – М.: Русский язык, 2001.
- 2) Мюллер В.К. Большой англо-русский словарь (в новой редакции). – М.: Цитадел-Трейд, Рипол классик, 2005.
- 3) Электронный словарь АBBYY Lingvo 12.

Если возникают трудности с выполнением контрольных заданий, следует обращаться за консультацией к преподавателям кафедры иностранных языков ИХиБТ в дни консультаций.

Консультации проводятся регулярно два раза в месяц. Дату и время проведения консультаций можно уточнить на кафедре иностранных языков ИХиБТ в ауд. 3201.

В конце данного пособия приводится словарь, включающий слова и выражения, встречающиеся в контрольных заданиях и текстах для устного перевода, а также список сокращений.

ТЕКСТЫ ДЛЯ УСТНОГО ПЕРЕВОДА

Тексты сдаются только устно в дни консультаций или во время сессии. Письменные переводы текстов не принимаются.

ИНФОРМАЦИЯ ОБ ЭКЗАМЕНЕ

Для того чтобы сдать экзамен, необходимо иметь зачет за 1-й курс, выполнить три контрольные работы за 2-й курс (№ 4, 5, 6) и устно сдать рекомендованные кафедрой тексты в дни консультаций или во время сессии.

Часть 1

Контрольное задание № 4

Чтобы правильно выполнить задание № 4, необходимо повторить следующие разделы курса английского языка по рекомендованному учебнику:

1. Формы и функции инфинитива.
2. Грамматические функции глаголов *should*, *would*.
3. Различные значения слов: *because*, *because of*, *since*, *for*, *as*.

Вариант 1

Образец выполнения заданий:

АНГЛИЙСКИЙ ВАРИАНТ	ПЕРЕВОД
Образец выполнения к упр. 1	
This is an article to be translated into English.	Эта статья, <u>которую нужно перевести</u> на английский язык.
Образец выполнения к упр. 2	
We decided that we should meet in February.	Мы решили, что <u>следует</u> встретиться в феврале.
If it were my book, I should give it to you.	Если бы это была моя книга, я бы дала ее вам.
Would you kindly help me.	Будьте любезны, помогите, пожалуйста.
Образец выполнения к упр. 3	
She is either English or American.	Она <u>или</u> англичанка, <u>или</u> американка.

1. Перепишите и письменно переведите на русский язык следующие предложения, обращая внимание на функции инфинитива.

1. There are some specific mechanisms to provide population balance in nature.
2. To achieve the benefits of waste recycling the community must also contribute to it.

3. It is important to find out solutions to ecological problems.
4. To take care of the planet is to take care of our own home.
5. The most important point is to prevent ecosystems from changing.

2. Перепишите и переведите на русский язык следующие предложения, обращая внимание на различные значения глаголов **should** и **would**.

1. If the Antarctic ice melted the sea level would raise more than 70 meters.
2. Water is our life and we should take care about keeping it clean.
3. The scientists of 1980s expected that the problem of the nuclear wastes would be solved.
4. Many detergents and laundry powders would contain phosphates.

3. Перепишите и переведите на русский язык следующие предложения, обращая внимание на значения выделенных слов.

1. Water resources continued to diminish **because of** pollution and climate changes.
2. The rain forests have ability to slow down the green house effect **since** during photosynthesis trees trap carbon from carbon dioxide.
3. Environmental awareness and information technology can be considered as facilitators **for** sustainable development.
4. The waste generation is growing rapidly **because** global resource consumption is growing too accordingly.

1. Прочтите и письменно переведите следующий текст.

Ecological Problems

Since ancient times Nature has served Man, being the source of his life. For thousands of years people lived in harmony with environment and it seemed to them that natural riches were unlimited. But with the development of civilization man's interference in nature began to increase.

Large cities with thousands of smoky industrial enterprises appear all over the world today. The by-products of their activity pollute the air we breathe, the water we drink, the land we grow grain and vegetables on.

Every year world industry pollutes the atmosphere with about 1000 million tons of dust and other harmful substances. Many cities suffer from smog. Vast forests are cut and burn in fire. Their disappearance upsets the oxygen balance. As a result some rare species of animals, birds, fish and plants disappear forever, a number of rivers and lakes dry up.

The pollution of air and the world's ocean, destruction of the ozone layer is certain to be the result of man's careless interaction with nature, a sign of the ecological crises.

The most horrible ecological disaster befell Ukraine and its people after the Chernobyl tragedy in April 1986. About 18 percent of the territory of Byelarus was also polluted with radioactive substances. A great damage has been done to the agriculture, forests and people's health.

Environmental protection is of a universal concern. That is why serious measures to create a system of ecological security should be taken.

Some progress has been already made in this direction. As many as 159 countries — members of the UNO — have set up environmental protection agencies. Numerous conferences have been held by these agencies to discuss problems facing ecologically poor regions including the Aral Sea, the South Urals, Kuzbass, Donbass, Semipalatinsk and Chernobyl.

But these are only the initial steps and they must be carried onward to protect nature, to save life on the planet not only for the sake of the present but also for the future generations. (1663)

Вариант 2 (для шифров, заканчивающихся на чётные цифры).

Образец выполнения заданий:

АНГЛИЙСКИЙ ВАРИАНТ	ПЕРЕВОД
Образец выполнения к упр. 1	
This is an article to be translated into English.	Эта статья, <u>которую нужно перевести</u> на английский язык.
Образец выполнения к упр. 2	
We decided that we should meet in February.	Мы решили, что <u>следует</u> встретиться в феврале.
If it were my book, I should give it to you.	Если бы это была моя книга, я бы дала ее вам.
Would you kindly help me.	Будьте любезны, помогите, пожалуйста.
Образец выполнения к упр. 3	
She is either English or American.	Она <u>или</u> англичанка, <u>или</u> американка.

1. Перепишите и письменно переведите на русский язык следующие предложения, обращая внимание на функции инфинитива.

1. To solve ecological problems is a task of vital importance.
2. Scientists have tried to reduce the acidity of lakes artificially by adding chemicals to the water.
3. To preserve the environment of our planet industrial development in the world must be sustainable.
4. The chlorine atoms to promote the decomposition of the ozone layer are in the upper atmosphere.
5. The purpose of scientists is to get rid of the chemicals destroying the Earth ozone layer.

2. Перепишите и переведите на русский язык следующие предложения, обращая внимание на различные значения глаголов **should** и **would**.

1. Slowing population growth would help to improve living standards.
2. The principle of maintaining a stable (non- growing) population should not be ignored.
3. If the natural recourses were valued in the same way that manufactured assets are valued , it would help to save the environment.
4. Paper, plastics and solid waste would recycle in European countries.

3. Перепишите и переведите на русский язык следующие предложения, обращая внимание на значения выделенных слов.

1. Sulphur black dyes are widely used in the textile industry **because of** low cost.
2. Industrial ecology can be considered **as** the science of sustainability.
3. The sustainability formula might change from country to country **because** there are different levels of environment awareness and culture.
4. The problem of plastic wastes has increased greatly **since** the use of plastics increased in industrial, commercial and residential applications.

4. Прочтите и письменно переведите следующий текст.

Ecology and its problems

Ecology is a science which studies the relationship between all forms of life on our planet with its environment. This word came from the Greek "oikos" which means "home". This idea of "home" includes the whole planet of ours, its population, the nature, animals, bird, fish, insects, all other living beings and even the atmosphere around our planet. Do all of them live a happy and healthy life in our Home nowadays? Unfortunately, it isn't so. Indeed, many territories, water basins, lake, rivers, seas, oceans - and the atmosphere are sure to be polluted with all kinds of technological, agricultural, chemical, nuclear and other wastes. The intensive development of sciences, industry and chemistry in the 20th century has made the pollution of our environment a global problem which should be solved by all means.

The Earth is a home to millions of different kinds of living things, which are linked in many ways. Together, they make up the complex world of nature, some being rivals or enemies while others depending on each other for survival.

Wild plants and animals live in a particular set of surroundings, called their habitat. Nowadays people are in a hurry to change habitats to suit their own needs - to create farmlands or build cities, for example. The

way people live threatens the delicate balance between living things and their habitats. People create pollution, which travels through the air and water from one habitat to another. They also destroy wildlife habitats by digging the ground up for mining, or by building roads through them. So there are different types of pollution: water pollution, air pollution, ground pollution and nuclear pollution.

Now people begin to realize the danger of their activity. In order to make our life not only easier but better and healthier we must learn to protect water, air, earth from planet pollution. Our planet belongs to our children and if we want our children to live in a healthier world we must do everything to protect them from the catastrophe. (1682)

Контрольное задание № 5

Чтобы правильно выполнить контрольное задание №5, необходимо усвоить следующие разделы грамматики английского языка по рекомендованному учебнику:

1. Условные предложения трех типов.
2. Сложные формы и функции инфинитива и причастия.
3. Обороты, равнозначные придаточным предложениям: объектный инфинитивный оборот, субъектный инфинитивный оборот, предложный инфинитивный оборот, независимый причастный оборот.

Вариант 1 (для шифров, заканчивающихся на нечетные цифры)

Образец выполнения заданий:

АНГЛИЙСКИЙ ВАРИАНТ	ПЕРЕВОД
Образец выполнения к упр. 1	
1. We want this method to be applied at the plant.	1. Мы хотим, чтобы этот метод приняли на заводе.
2. This method is reported to be applied at the plant.	2. Сообщают, что этот метод применяется на их заводе.
Образец выполнения к упр. 2	
1. Having done a given number of operations , the machine stopped automatically.	1. Проделав заданное количество операций , машина автоматически остановилась.
2. A given number of operations having been done , the machine stopped automatically.	2. После того, как было проделано заданное количество операций , машина автоматически остановилась.
3. The installation was automatized last year, its capacity rising by 25 per cent .	3. Эта установка была автоматизирована в прошлом году, причем ее производительность увеличилась на 25% .
Образец выполнения к упр. 3	
1. If this machine were installed at the plant , labour productivity would increase considerably.	1. Если бы эта машина была установлена на заводе , производительность труда значительно увеличилась бы.
2. If the new technology had not been introduced , labour productivity would not have been raised.	2. Если бы не была внедрена новая технология , производительность труда не повысилась бы.

1. Перепишите и письменно переведите на русский язык следующие предложения, принимая во внимание, что объектный, субъектный и предложный инфинитивные обороты большей частью соответствуют придаточным предложениям.

1. The worst environment pollution is certain to be caused by the manufacture industries.

2. The problem of environment pollution is too serious for mankind to solve it in the near future.

3. Today we know all natural ecosystems to depend on nitrogen-fixing organisms.

4. The ozone layer is known to act as a filter.

2. Перепишите и письменно переведите на русский язык следующие предложения, учитывая различия в переводе зависимого и независимого причастных оборотов.

1. Having explained the biotic structure the lecturer presented the major abiotic factors.

2. Oceans include a variety of environments, each of these environments depending on water temperature, depth, nature of bottom and concentration of nutrients.

3. Every year people consuming more goods, production of goods uses more energy and natural resources which cannot be replenished fast.

3. Перепишите и письменно переведите на русский язык следующие предложения, содержащие придаточные предложения условия.

1. If we want to live in a healthier world, we must learn to use the environment carefully.

2. If one family planted a tree, over a billion pounds of greenhouse gases would be removed from the atmosphere every year.

3. Unless world industry had polluted the atmosphere with about 1,000 million tons of dust and other harmful substances, many cities would not have suffered from smog.

4. Прочтите и письменно переведите следующий текст.

Our planet problems

Acid rain falls when poisonous gases from power stations and vehicle exhausts mix with oxygen and moisture in the air. These gases become part of the water cycle and may be carried a long way by the wind before they fall as acid rain, or snow. Acid rain poisons or kills wildlife in lakes, rivers, and forests, and damages the surrounding plant life. The problem could be controlled by reducing vehicle emissions and limiting the gases released from power stations.

Recently climate has changed a lot in Russia, especially in its European part. Some scientists think the world is becoming hotter. If you compare Moscow winter and summer temperatures at the beginning of the 20th century and at its end you will see that climate has really changed. Winters have become warmer. Sometimes there is little snow in January, and there were winters when it rained (not snowed!) on the New Year's Eve.

Many people say that it is so because of the greenhouse effect. It works like this: sunlight gives us heat, some of the heat warms the atmosphere, and some of the heat goes back into space. Nowadays the air surrounding the Earth has become much warmer because the heat cannot go back into space. That is why winter and summer temperatures in many places have become higher.

During the last 100 years people have produced a lot of carbon dioxide. In the atmosphere it works like glass in a greenhouse. It lets heat get in, but it does not let much heat get out. So the atmosphere becomes warmer. Where does the carbon dioxide come from? People and animals breathe in oxygen, and breathe out carbon dioxide. We produce carbon dioxide when we burn things. Trees take this gas from the air, and produce oxygen. But in the last few years, people have cut and burnt lots of rainforest. This means there are fewer oxygen and, of course, more carbon dioxide!

As we see the climate in different parts of the world changes a little from year to year. These changes are certain to be dangerous for our fragile planet which needs protection. The Earth is millions of years old, much older than the humans. We know many of its secrets. Yet there is still much to learn. (1766)

Вариант 2 (для шифров, заканчивающихся на четные цифры)

Образец выполнения заданий:

АНГЛИЙСКИЙ ВАРИАНТ	ПЕРЕВОД
Образец выполнения к упр. 1	
1. We want this method to be applied at the plant.	1. Мы хотим, чтобы этот метод приняли на заводе.
2. This method is reported to be applied at the plant.	2. Сообщают, что этот метод применяется на их заводе.
Образец выполнения к упр. 2	
1. Having done a given number of operations , the machine stopped automatically.	1. Проделав заданное количество операций , машина автоматически остановилась.
2. A given number of operations having been done , the machine stopped automatically.	2. После того, как было проделано заданное количество операций , машина автоматически остановилась.
3. The installation was automatized last year, its capacity rising by 25 per cent .	3. Эта установка была автоматизирована в прошлом году, причем ее производительность увеличилась на 25% .
Образец выполнения к упр. 3	
1. If this machine were installed at the plant , labour productivity would increase considerably.	1. Если бы эта машина была установлена на заводе , производительность труда значительно увеличилась бы.
2. If the new technology had not been introduced , labour productivity would not have been raised.	2. Если бы не была внедрена новая технология , производительность труда не повысилась бы.

1. Перепишите и письменно переведите на русский язык следующие предложения, принимая во внимание, что объектный, субъектный и предложный инфинитивные обороты большей частью соответствуют придаточным предложениям.

1. Major terrestrial ecosystems, such as forest, are known not to be uniform because each consists of a number of more or less distinct but related ecosystems.

2. It is quite obvious for some kinds of animals to disappear due to people activities.

3. Water in seas, rivers and lakes is sure to be polluted by wastes and toxic chemicals.

4. Some scientists consider water crisis to be one of the most worrying problems for the new millennium.

2. Перепишите и письменно переведите на русский язык следующие предложения, учитывая различия в переводе зависимого и независимого причастных оборотов.

1. Having improved living standards, the mankind partly damaged environment.

2. There is a high level of air pollution in Eastern Europe, it causing serious health problems.

3. The water crisis being crucial for the survival of our planet, we should take care about keeping it clean.

3. Перепишите и письменно переведите на русский язык следующие предложения, содержащие придаточные предложения условия.

1. If we want to live in a healthier world, we must protect it from damage caused by our activities.

2. If the supply of oxygen had stopped in the atmosphere, air breathing animals would have died very quickly.

3. If we all had recycled our week papers, we could have saved over 500,000 trees every week.

4. Прочтите и письменно переведите следующий текст.

Global environmental problems

The rapid rise in human population and the corresponding demand for resources have had a dramatic impact on the natural world. While global warming, acid rain, and holes in the ozone layer affect the whole planet, other changes, such as habitat destruction and hunting, threaten individual species. Over millions of years, many species have adapted to natural changes, such as long-term variation in climate. However, it is more difficult for living things to adapt to the harmful materials released into the environment as a result of human activities.

A quarter of all the plants in the world are known to be in a danger or threatened with extinction.

The world has over nine million square km. of forests. But they are disappearing fast. Every day we use paper and cardboard, both made from wood. We use different kinds of wood in furniture and in other ways. Every year over 100,000 sq. km. of forests are cleared for different uses, and a lot of forests are so badly damaged that they will hardly be able to recover. If we go on like this, by the time you are as old as your grandparents are now all the forests on Earth can be destroyed. This includes rainforests in South America, Africa and Asia. The huge forests help to control the world's weather, and to produce much of the oxygen in the air. There are many illnesses which we still cannot cure. There are old ones like cancer and new ones like AIDS. It may be that the medicines we need will be discovered in wild plants in savannas, deserts or rainforests. If we destroy these places, we will never find the cure.

A lot of endangered species - fish, reptiles, insects, birds, mammals - are disappearing fast. By the year 2030, scientists report that 25% of all animals, birds and insects may be extinct. The reason is Man that kills animals and destroys their habitats.

World temperatures are currently rising every year. This so called global warming is caused by the buildup of gases and water vapour in the atmosphere. As the planet warms up, the water in the oceans will take up more space and water locked up in glaciers and the polar ice caps will start to melt. This could cause sea levels to rise and many habitats will disappear under water. (1821)

Контрольное задание № 6

Вариант 1 (для шифров, заканчивающихся на нечетные цифры)

Прочитайте и письменно переведите текст:

Methods of disposal. Landfill and incineration.

Waste management is the collection, transport, processing or disposal, managing and monitoring of waste materials. The term usually relates to materials produced by human activity, and the process is generally undertaken to reduce their effect on health and the environment. All waste materials, whether they are solid, liquid, gaseous or radioactive refer to waste management.

Waste management practices can differ for developed and developing nations, for urban and rural areas, and for residential and industrial producers.

Landfill

Disposal of waste in a landfill involves burying the waste, and this remains a common practice in most countries. Landfills were often established in abandoned or unused quarries, mining voids or borrow pits. A properly designed and well-managed landfill can be a hygienic and relatively inexpensive method of disposing of waste materials. Older, poorly designed or poorly managed landfills can create a number of environmental impacts, e.g., wind-blown litter or attraction of vermin. Another common product of landfills is gas (mostly composed of methane and carbon dioxide), which is produced as organic waste breaks down anaerobically. This gas can create odor problems, kill surface vegetation, and is a greenhouse gas.

Design characteristics of a modern landfill include methods to contain leachate such as clay or plastic lining material. Many landfills also have landfill gas extraction systems installed to extract the landfill gas. Gas is pumped out of the landfill using perforated pipes and burnt in a gas engine to generate electricity.

Incineration

Incineration is a disposal method in which solid organic wastes are subjected to combustion so as to convert them into residue and gaseous products. This method is useful for disposal of solid residue of both solid

waste management and solid residue from waste water management. Incineration and other high temperature waste treatment systems are sometimes described as "thermal treatment". Incinerators convert waste materials into heat, gas, steam and ash.

Incineration is used to dispose of solid, liquid and gaseous waste. It is recognized as a practical method of disposing of certain hazardous waste materials (such as biological medical waste).

Incineration is common in such countries as Japan where land is more scarce, as these facilities generally do not require as much area as landfills. Combustion in an incinerator is not always perfect and there have been concerns about pollutants in gaseous emissions from incinerator stacks. (2154)

Вариант 2 (для шифров, заканчивающихся на четные цифры)

Прочитайте и письменно переведите текст:

Recycling and other methods of waste management

Recycling is a resource recovery practice that refers to the collection and reuse of waste materials such as empty beverage containers. The materials from which the items are made can be reprocessed into new products.

The most common consumer products recycled include aluminium such as beverage cans, copper such as wire, steel food and aerosol cans, old steel furnishings or equipment, polyethylene and PET bottles, glass bottles and jars, paperboard cartons, newspapers, magazines and light paper, and corrugated fiberboard boxes.

PVC, LDPE, and PP (see resin identification code) are also recyclable. These items are usually composed of a single type of material, making them relatively easy to recycle into new products. The recycling of complex products (such as computers and electronic equipment) is more difficult, due to the additional dismantling and separation required.

The type of material accepted for recycling varies by city and country. Each city and country have different recycling programs in place that can handle the various types of recyclable materials.

Biological reprocessing

Recoverable materials that are organic in nature, such as plant material, food scraps, and paper products, can be recovered through

composting and digestion processes to decompose the organic matter. The resulting organic material is then recycled as mulch or compost for agricultural or landscaping purposes. In addition, waste gas from the process (such as methane) can be captured and used for generating electricity and heat. The intention of biological processing in waste management is to control and accelerate the natural process of decomposition of organic matter.

Energy recovery

The energy content of waste products can be harnessed directly by using them as a direct combustion fuel, or indirectly by processing them into another type of fuel. Thermal treatment ranges from using waste as a fuel source for cooking or heating, to fuel for boilers to generate steam and electricity in a turbine.

Resource recovery

Resource recovery (as opposed to waste management) uses LCA (life cycle analysis) attempts to offer alternatives to waste management. For mixed MSW (Municipal Solid Waste) a number of broad studies have indicated that administration, source separation and collection followed by reuse and recycling of the non-organic fraction and energy and compost/fertilizer production of the organic material via anaerobic digestion to be the best option. (2097)

Часть 2

Тексты для устного перевода

THE CARBON CYCLE

The carbon of the planet is found in the atmosphere as carbon dioxide, dissolved in ocean water, bound in biomass, and stored in the lithosphere as carbonate minerals. Although the atmosphere holds only 0.036% of CO₂, this substance is a key component of the planet since it interacts with the heat balance. It is also essential to all living cells as it is used when new biomass is built up in carbon dioxide fixation.

The carbon cycle starts when carbon dioxide in the atmosphere is formed from carbonated in the lithosphere. Carbon has been added to the atmosphere through volcanic activities throughout the history of the planet. An important part of the carbon flow is the formation of calcium carbonate in the seas especially as shells in marine organisms. As these die and their shells sink to the bottom carbonate is transferred from the atmosphere to the sediments which finally become limestone rock, and thus returned to the lithosphere. This slow, but in the history of the planet, major part of the carbon cycle is estimated to have taken care of some 60 entire atmospheres of carbon dioxide, and that each carbon atom has made some 30 such round trips.

The absorption of carbon dioxide in the ocean water is slow, however, and in addition, limited by the slow mixing of the upper layer with the rest of the oceans. An immediate component is the fixation of carbon dioxide to organic substances by living organisms during photosynthesis. As the biosphere builds up to considerable amounts of biomass, this constitutes a major carbon sink, not the least in the forests of the planet, but also organic material in soil.

Just as carbon dioxide fixation removes carbon from the atmosphere respiration returns it back. In respiration organic molecules are oxidized with oxygen to provide energy for living cells. The by-products are water and carbon dioxide. All kinds of combustion and decay processes add to this flow.

The comparatively immense utilization of fossil fuels today seriously disturbs the balance between the natural processes and the

modern combustion practices causing the concentrations of carbon dioxide to increase. (1790)

THE PHOSPHORUS CYCLE

Phosphorus is another element essential to living cells. Phosphorus is common in soil and minerals, and the cycle begins when such phosphorus is released from soil through weathering process. Phosphorus as phosphate is dissolved in water absorbed by plants and in this way enters the biological forms. It returns to the inorganic phosphate as the organisms decay.

Phosphorus has no atmospheric form, and it is thus directly transferred by water, bound to fine particles of surface water where it is trapped in sediments and in this way returns to the lithosphere.

The phosphorus cycle is a very slow one. Man, however, dramatically speeds it up as phosphorus is mined as e.g. phosphorites. Some of the richest phosphorite mines in the world are found in Estonia and in Northern Russia in the Murmansk region. The large amounts of phosphorus used as fertilizers in agriculture add again to eutrophication of surface waters, especially in lakes. (790)

THE SULPHUR CYCLE

Sulphur is a common element in many minerals and thus part of the lithosphere. It is released in weathering processes and dissolved in various forms in water. As such it is taken up by plants and bacteria and incorporated in several kinds of biomolecules. It is essential for all life forms.

Sulphur has a complex chemistry and is available both as dissolved substance in water, and in gaseous form in atmosphere. It has a capacity to form aerosols and droplets in air. Dimethylsulphide, DMS, formed by certain algae in the seas seems to have a role in climate regulation. DMS initiates aerosol formation and later droplets, which add to the albedo of the atmosphere above the oceans. Since it is formed when the water is warmer, it thus counteracts a temperature increase. Sulphur is added to the atmosphere by volcanic activities. In the atmosphere, it is naturally oxidised to become sulphuric acid, a strong acid that is efficiently

acidifying the water or soil where it finally precipitates. It is returned to the lithosphere as sediments.

Man has dramatically increased the sulphur flow by burning fossil fuels, which often contain several percent sulphur. Again these artificial sulphur flows equal the natural sulphur flows. (1031)

THE ENHANCED GREENHOUSE EFFECT

Greenhouse gases in the atmosphere are part of the biogeochemical cycles on Earth.

Carbon dioxide is part of the carbon cycle. Only a small part of total carbon dioxide is stored in the atmosphere, while much larger amounts are contained in soils, plants and oceans. These reservoirs exchange carbon dioxide on a massive scale. Each year, some 700 GT (Giga tons) of carbon is emitted to the atmosphere, and absorbed again – mainly through photosynthesis in plants. Human activities interfere with these cycles, disrupting their balance. Fossil fuels are extracted from the ground and burnt, releasing carbon dioxide. Forests are cut, releasing carbon dioxide, and replaced by pasture and arable land, constraining the capacity to absorb carbon dioxide from the atmosphere. At present human activities add some 6 GT of carbon to the atmosphere, of which only 3 GT is immediately absorbed by the ocean and land surfaces. The result is a slow but steady increase in the amount of carbon dioxide in the atmosphere. Since the start of the industrial transformation, atmospheric carbon dioxide has risen by 30% from 280 ppm (parts per million, equals 0.028%) in 1790 to 370 ppm in 1999.

Other natural trace gases with “greenhouse properties” show similar trends. Methane (CH₄) and nitrous oxide (N₂O) are the two most important of these rising from 700 ppb (parts per billion) to 1700 ppb, and from 290 ppb to 340 ppb, respectively in 1996. Methane sources include rice paddies, cows, termites, natural gas leakage, biomass burning, landfills, and wetlands. Nitrous oxide sources include oceans, fossil fuel and biomass combustion, agricultural fertilizers, and land disturbances. In addition, a number of artificial gases with similar effect are released to the atmosphere, particularly chlorofluorocarbons (CFC). These gases are present in lower amounts than CO₂ but are more efficient greenhouse gases. (1603)

FOOD CHAINS AND FOOD WEBS

A feeding relationship in an ecosystem is called a food chain, while the totality of the chains constitutes a food web. Often the food webs are quite complex with many different feeding relationships. In addition to primary producers, herbivores and carnivores, omnivores are common in some ecosystems. Many bird species, such as finches and sparrows are examples of omnivores. In autumn they feed on seeds and are herbivores, but in summer they feed their offsprings on insects and are then predators. However, it is often possible to differentiate between the levels described. They are called trophic levels. In an ecosystem there are normally four trophic levels but there might be more or fewer.

The biomass in an ecosystem is very unevenly distributed between the trophic levels. This is because not all of the biomass consumed is converted to the body mass on the next level; rather it is used as energy source for running, flying, swimming, for keeping the body temperature, etc. Thus, no more than 1-10% of the mass of a lower level becomes biomass on the next level. This explains why an ecosystem normally does not support more than three or four trophic levels. So in the transfer between trophic levels, most energy is lost as heat (much like the engine in an automobile – much petrol is wasted as the engine becomes hot).

From this we can see the distinct difference between the transfer of energy and nutrients in the ecosystem. Energy enters the ecosystem through photosynthesis and is gradually lost as heat through the trophic levels.

Nutrients circulate from plants to consumers and decomposers and back to plants. An important environmental issue is how closed this circulation is. With excessive addition of fertilizers to arable land and by nitrogen added as an air-borne pollutant, the plants may be unable to take up all nutrients, and excess nutrients is then leaking to soil water. This water ends up in rivers and lakes and leads to eutrophication of these and, finally, of the seas.

Human use of ecosystem resources, for instance, by agriculture, forestry or fishing has had dramatic effects on energy flow, nutrient circulation and biological diversity, locally as well as globally. Sustainability has been suggested as an overall aim for environmental protection work. This implies that our use of ecosystems should not jeopardise central ecosystem functions in the short or long run. The role of

ecologists is to try to establish levels of resource use, for instance fishing quotas that lead to sustainable use of the ecosystems.

To really know if human use of ecosystems is sustainable, we need environmental monitoring.

This means that we carefully measure long-term changes in species diversity, nutrient levels and vital ecosystem functions. (2330)

THE BALTIC SEA BASIN

Environmental problems have their roots in the use of natural resources. Forests, fields and mountains form the basis for agriculture, forestry and industrial production, which, in the end give rise to environmental impact. Behind these, there are roads of the development of societies and economic and political decisions. It is thus important to get an understanding of these aspects to get a grip on the environmental situation.

Even if many environmental problems are the same all over the world, each area also has its specific challenges to deal with.

Although the environment has gone through negative developments, let us start by recognizing that the Baltic basin is a corner of the world where the resources are plentiful, the population limited and the societies developed, in comparison to other areas. We have good potential to take care of our environment.

The drainage area, the basin or catchment area, of the Baltic Sea is the entire land area from which water flows into the Baltic Sea. The Baltic basin, with some 85 million inhabitants, covers the whole or parts of 14 countries, and accounts for a large part of Northern Europe, 15% of all of Europe. It is an area where east meets west and north meets south. The dramatic political changes in 1989-1991, when the iron curtain which went right through the middle of the region for 50 years, was removed, characterize the region politically and create a platform for present developments.

It might seem strange to focus on such a heterogeneous area as the Baltic region, but there are several reasons why a drainage basin is a natural unit for the study of the environment. The flow of water defines an area in a more relevant way than e.g. political or national borders. In the end most pollutants dissolve in water and are carried and disseminated by the water stream. In this way, in fact much impact is limited to the region.

The Baltic basin is a good example of an “ecogeographical region”, a natural unit for environmental issues.

A basin also naturally has much common history. For hundreds of years, waterways provided the only east way of travelling and ships connected the coasts rather than roads the inland. This is reflected in the history of the Baltic region. Today, it is rather common interests and responsibilities that link the countries in a region to each other. Paramount are efforts to create international security, which address not only the absence of war but a secure life in a deeper sense, including environmental security. Environmental cooperation is part of the efforts to develop a Baltic security community. The Baltic region has fortunately been an area of environmental cooperation since 1970s.

The Baltic Sea basin is one out of six major basins on the European continent, and about sixty in the world as a whole. In Europe the others are the North Sea, the Mediterranean Sea, the Black Sea, the Caspian Sea and the smaller White Sea/Barents Sea basins. Even if these are very different, a study of the environment of one or the other basin would have much in common.

Distribution of pollutants by wind and rain is also relevant. In particular, the Baltic region receives many air-borne pollutants from Western Europe, and exports some to Russia and Ukraine. Through the atmosphere, we also become a part of the global environment with both responsibilities and just requirements. (2823)

INDUSTRIAL ECOLOGY

Ecology can be broadly defined as the study of the interactions between the abiotic and the biotic components of a system. Industrial ecology is the study of the interactions between industrial and ecological systems; consequently, it addresses the environmental effects on both the abiotic and biotic components of the ecosphere.

Industrial Ecology is an emerging interdisciplinary field combining natural, technical and social sciences. Its core concept is the analogy between processes in nature (biosphere) and processes in society (technosphere). Industrial ecology studies material and energy flows through industrial systems. The global industrial economy can be represented as a network of industrial processes that extract resources from the Earth and

transform them into commodities which can be bought and sold to meet the needs of humanity. Industrial ecology is supposed to quantify the material flows and document the industrial processes that make modern society function. Industrial ecologists deal with the impacts that industrial activities have on the environment, use of the planet's supply of natural resources, and problems of waste disposal. Industrial ecology is a young but growing multidisciplinary field of research which combines aspects of engineering, economics, sociology, toxicology and the natural sciences.

Evolution has resulted in a highly efficient use of materials and energy in biosphere systems: waste from one process is a resource for another. In today's society, resources are exploited, producing unusable waste streams and release of pollutants to soil, water, and air, leading to complex sustainability problems. Society should take lessons from the biosphere to solve these problems.

The primary goal of industrial ecology is to promote sustainable development at the global, regional, and local levels. One more goal of industrial ecology is to change the linear nature of our industrial system, where raw materials are used, and products, by-products, and wastes are produced, to a cyclical system where the wastes are reused as energy or raw materials for another product or process. (1818)

SUSTANAIBLE DEVELOPMENT

Sustainable development refers to a mode of human development in which resource use aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for generations to come. Sustainable development has been defined in many ways, but the most frequently quoted definition is from Our Common Future, also known as the Brundtland Report:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of **needs**, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of **limitations** imposed by the state of technology and social organization on the environment's ability to meet present and future needs."

All definitions of sustainable development require that we see the world as a system—a system that connects space; and a system that connects time.

When you think of the world as a system over space, you grow to understand that air pollution from North America affects air quality in Asia, and that pesticides sprayed in Argentina could harm fish stocks off the coast of Australia.

And when you think of the world as a system over time, you start to realize that the decisions our grandparents made about how to farm the land continue to affect agricultural practice today; and the economic policies we endorse today will have an impact on urban poverty when our children are adults.

We also understand that quality of life is a system, too. It is good to be physically healthy, but what if you are poor and do not have access to education? It is good to have a secure income, but what if the air in your part of the world is unclean? And it is good to have freedom of religious expression, but what if you cannot feed your family?

The concept of sustainable development is rooted in this sort of systems thinking. It helps us understand ourselves and our world.

Sustainable development ties together concern for the carrying capacity of natural systems with the social challenges faced by humanity. As early as the 1970s, "sustainability" was employed to describe an economy "in equilibrium with basic ecological support systems." Ecologists have pointed to *The Limits to Growth*¹, and presented the alternative of a "steady state economy" in order to address environmental concerns.

The concept of sustainable development has in the past most often been broken out into three constituent parts: environmental sustainability, economic sustainability and sociopolitical sustainability. More recently, it has been suggested that a more consistent analytical breakdown is to distinguish four domains of economic, ecological, political and cultural sustainability. (2366)

VOCABULARY

absorb (v.) – поглощать
accelerate (v.) – ускорять
account for (v.) – объяснять; отвечать за; составлять
achieve (v.) – достигать
acidity (n.) – кислотность
affect (n.) – влияние
affect (v.) – влиять
air-borne pollutants – атмосферные загрязняющие вещества
albedo (n.) – альbedo (величина, характеризующая отражательную способность поверхности)
ariable land – пахотная земля
artificial (adj.) – искусственный
assets (n.) – средства, фонды, имущество
attempt (n.) – попытка
awareness (n.) – осведомленность, информированность
beverage (n.) – напиток
boiler (n.) – котел, бойлер
borrow pit – разрез, штольня, котлован
bottom (n.) – дно
breakdown (n.) – классификация
Bruntland Report – доклад Комиссии Брунтланд
build (built, built) up (v.) – создавать; накапливать
buildup (n.) – накопление
by-product (n.) – побочный продукт
cancer (n.) – рак
capacity (n.) – способность
capture (v.) – захватывать, добывать
carnivore (n.) – плотоядное животное
catchment area – площадь водосбора, бассейн реки
cause (n.) – причина
cause (v.) – быть причиной, вызывать, заставлять
cell (n.) – клетка
challenge (n.) – проблема
clay (n.) – глина
combine (v.) – совмещать, комбинировать
commodity (n.) – (сырьевой товар), предмет потребления

community (n.) – объединение, сообщество
composting (n.) – компостирование (отходов)
concept (n.) – понятие
consider (v.) – рассматривать, считать
consist of (v.) – состоять из
consistent (adj.) – последовательный, стойкий
constrain (v.) – ограничивать
consume (v.) – потреблять
contribute (v.) – вносить вклад, содействовать, способствовать
copper (n.) – медь
core (n.) – центр, ядро
corrugated fiberboard box – коробка из гофрированного картона
counteract (v.) – препятствовать, противодействовать, нейтрализовать
cure (n.) – лекарство
decay (n.) – гниение, разложение
define (v.) – определять
delay (v.) – задерживать
demand (n.) – спрос
denote (v.) – показывать, обозначать
depend on (v.) – зависеть от
detergent (n.) – моющее средство
develop (v.) – развивать, разрабатывать
development (n.) – развитие, разработка
dig (dug) (v.) – копать, рыть
digestion (n.) – гидролитическое разложение
diminish (v.) – уменьшаться, убывать
dismantling (n.) – демонтаж, разборка
disposable (adj.) – одноразового действия
disposal (n.) – утилизация, удаление, очистка
disseminate (v.) – рассеивать, распространять
distinct (adj.) – определенный, явный
distinguish (v.) – определять, характеризовать
domain (n.) – сфера деятельности
drainage basin – бассейн реки, водосборная площадь
droplet (n.) – капля
due to – благодаря, вследствие, в результате
emerge (v.) – появляться, возникать
emission (n.) – выделение

empty (adj.) – пустой
encourage (v.) – поощрять, поддерживать
endangered species – вымирающие вид(ы)
endorse (v.) – поддерживать, одобрять, рекомендовать
environment (n.) – окружающая среда
environmental monitoring – мониторинг (наблюдение, контроль)
состояния окружающей среды
equal (adj.) – равный
equipment (n.) – оборудование
essential (adj.) – существенный, необходимый
establish (v.) – основывать
excessive (adj.) – избыточный
fertilizer (n.) – удобрение
finch (n.) – зяблик
fine (adj.) – мелкий
flow (n.) – поток
food chain – пищевая цепочка
food scraps – пищевые отходы
food web – пищевая сеть
fragile (adj.) – хрупкий
fuel (n.) – топливо
furnishings (n.) – оборудование, оснастка
get a grip on – владеть ч.-л., постигать
get rid of (v.) – избавляться
glacier (n.) – глетчер, ледник
go on (v.) – продолжаться
goal (n.) – цель
greenhouse gas – парниковый газ
handle (v.) – обрабатывать
harmful (adj.) – вредный
harness (v.) – использовать, приспособливать
heating (n.) – отопление
herbivore (n.) – травоядное животное
heterogeneous (adj.) – разнородный
humanity (n.) – человечество
immense (adj.) – огромный, бескрайний
impact (n.) – воздействие, влияние
impose (v.) – налагать (ограничения и т.п.)

improve (v.) – улучшать
incineration (n.) – сжигание мусора
incinerator stack – вытяжная труба, шахта печи для сжигания отходов
include (v.) – включать в себя
incorporate (v.) – соединять(ся), объединять(ся)
increase (v.) – возрастать, увеличиваться
initiate (v.) – начинать
insect (n.) – насекомое
install (v.) – устанавливать
intention (n.) – намерение
interaction (n.) – взаимодействие
interfere with (v.) – сталкиваться
interference (n.) – вмешательство
iron curtain – «железный занавес»
jar (n.) – стеклянная банка
land disturbance – разрушение земель
landfill (n.) – мусорная свалка
laundry powder – стиральный порошок
layer (n.) – слой
leachate (n.) – 1) сточные воды 2) промывная вода, фильтрат
level (n.) – уровень
limestone rock – известняк
lining material – материал для фильтрации
litter (n.) – мусор
maintain (v.) – сохранять, поддерживать
mankind (n.) – человечество
marine (adj.) – морской
mine (n., v.) – 1) шахта, рудник 2) добывать (руду)
mining (n.) – горная промышленность, разработка месторождения
moisture (n.) – влага, влажность
mulch (n.) – мульча
obvious (adj.) – очевидный, явный
offspring (n.) – отпрыск
omnivore (n.) – всеядное животное
overriding (adj.) – основной, главный, доминирующий
paramount (adj.) – первостепенный, важный
pasture (n.) – пастбище
phosphorites (n.) – фосфориты

point (v.) – указывать
pollutant (n.) – загрязняющий агент, вещество
pollution (n.) – загрязнение
poverty (n.) – бедность, нищета
precipitate (v.) – осаждаться
predator (n.) - хищник
primary (adj.) – основной, первостепенный
promote (v.) – продвигать, способствовать
provide (v.) – обеспечивать, снабжать
purpose (n.) – цель
quantify (v.) – измерять, определять количество
quarry (n.) – каменоломня, открытая разработка, карьер
quote (v.) – цитировать
range (v.) – простираться, распространяться в пределах ч.-л.
raw materials (n.) – сырье
recoverable (adj.) – возобновляемый
recovery (n.) – получение, восстановление
recycle (v.) – перерабатывать
reduce (v.) – уменьшать, сокращать
refer to (v.) – относиться, ссылаться на
release (v.) – выделять, высвобождать
relevant (adj.) – уместный, относящийся к делу
remove (v.) – удалять
replenish (v.) – пополнять, восполнять
represent (v.) – представлять
require (v.) – требовать
residue (n.) – осадок
resource (n.) – ресурс
respectively (adv.) – соответственно
respiration (n.) – дыхание
responsibilities (n.) – обязательства
result in (v.) – приводить к
rice paddy – рисовое поле
rival (n.) – соперник, конкурент
round trip – оборот, круговой цикл
rural (adj.) – сельский
sediment (n.) – осадок, отложение
separation (n.) – отделение, разделение

set of surroundings – комплекс элементов окружающей среды
shell (n.) – раковина
sink (n.) – сток
sink (sank, sunk) (v.) – тонуть
soil (n.) – почва
solid (adj.) – твердый
solve (v.) – решать
sparrow (n.) – воробей
specific challenge – особая проблема
store (v.) – хранить, накапливать
stream (n.) – поток
subject (v.) – подвергать воздействию
suffer (v.) – страдать
suggest (v.) – предлагать, соответствовать, предполагать
sulphur black dye – сернистый черный краситель
supply (n.) – снабжение, поставка
sustainability (n.) – устойчивость
sustainable (adj.) – устойчивый
take (took, taken) care of (v.) – заботиться о
terrestrial (adj.) – земной, континентальный
threaten (v.) – угрожать
trace gases – следовые количества годовых примесей
transfer (v.) – перемещать, передавать
trap (v.) – улавливать, поглощать, задерживать
trophic level – трофический уровень (совокупность организмов, объединенных типом питания)
utilisation (n.) – использование, употребление, утилизация
unevenly (adv.) – неоднородно, неровно
value (v.) – ценить
vehicle exhaust – выхлопные газы
vermin (n.) – паразиты, вредители
void (n.) – пустота в горной породе
waste (v.) – опустошать, истощать, разорять
waste generation – образование отходов
waste management – организация сбора и утилизации отходов
wastes (n.) – отходы
wire (n.) – проволока, провод

СПИСОК СОКРАЩЕНИЙ

UNO (the United Nations Organization) – ООН
AIDS (Acquired Immunodeficiency Syndrome) – СПИД
PET (Polyethylene Terephthalate) – ПЭТФ (полиэтиленовый терефталат)
PVC (polyvinylchloride) – ПВХ
LDPE (Low Density Polyethylene) – ПВД/ПЭВД (полиэтилен низкой плотности)
PP (polypropylene) - полипропилен
LCA (life cycle analysis) – ОЭР (оценка эксплуатационного ресурса)
MSW (municipal solid waste) – ТБО (твердые бытовые отходы)

КОММЕНТАРИИ К ТЕКСТАМ

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СОДЕРЖАНИЕ

Введение.....	3
Контрольное задание № 4.....	7
Контрольное задание № 5.....	13
Контрольное задание № 6.....	19
Тексты для устного перевода.....	22
Словарь.....	30
Список сокращений.....	36
Список литературы.....	37

Домбровская Антонина Васильевна
Серебрянская Александра Германовна

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