МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ

 РОССИЙСКОЙ ФЕДЕРАЦИИ

Федеральное государственное бюджетное образовательное учреждение

высшего образования

«Забайкальский государственный университет»

(ФГБОУ ВО «ЗабГУ»)

Историко-филологический факультет

Кафедра иностранных языков

**УЧЕБНЫЕ МАТЕРИАЛЫ**

**для студентов заочной формы обучения**

по дисциплине «Иностранный язык (английский)»

для специальности 21.05.04 «Горное дело»

специализация «Маркшейдерское дело»

Общая трудоемкость дисциплины – 324 часа, 9 зачетных единиц.

Форма текущего контроля в семестре – контрольная работа.

Курсовая работа (курсовой проект) (КР, КП) – нет .

Форма промежуточного контроля: экзамен – в четвертом семестре, зачет – в первом, втором, третьем семестрах.

**Краткое содержание курса**

Перечень изучаемых тем, разделов дисциплины (модуля).

|  |  |
| --- | --- |
| №п/п | Контролируемые разделы(темы) дисциплины |
| 1 семестр |
| 1 | Контрольное задание № 1. Grammar: Существительные. Множественное число существительных. Притяжательный падеж. Существительное в функции определения. Числительные.Повелительное наклонениеВидо-временные формы глагола: активный залог — формы Simple (Present, Past, Future); формы Continuous (Present, Past, Future);Прилагательные. Степени сравнения.Неопределенные и отрицательные местоимения Texts: Mining Higher Education in RussiaEratosthenesThe first mining schools in RussiaMining and geological engineers |
| 2 | Grammar: Глаголы to be, to have в Present, Past, Future Simple. Оборот there + be ПовелительноенаклонениеВидо-временныеформыглагола: активныйзалог — формы Simple (Present, Past, Future); формы Continuous (Present, Past, Future); Text. : Mining Higher Education in RussiaEratosthenesThe first mining schools in RussiaMining and geological engineers |
| 3 | Grammar: Видо-временные формы глагола: активный залог — формы Perfect (Present, Past, Future). Функции слова it Text. Higher mining education abroad |
| 4 | Grammar: Модальные глаголы: а) выражающие возможность: can (could), may и эквивалент глагола сап — to be able; b) выражающие долженствование: must, его эквиваленты to have to, to be to, should.Text. Higher mining education abroad |
| 2 семестр |
| 5 | Контрольное задание № 2.Grammar:Пассивный залог (The Passive Voice) видо-временных форм Simple, Continuous, Perfect; Особенности перевода пассивных конструкций на русский язык. Text. Different types of jobs in the field of mining  |
| 6 | Grammar: Инфинитив в функции: а) подлежащего, б) составной части сказуемого, в) определения, г) обстоятельства цели. Text. Mining Science of today. |
| 7 | Grammar: Participle I и II в функциях оп-ределения и обстоятельства.Функции слова ONE; Функции глагола to be |
| 8 | Grammar: Функции слова ONE; Функции глагола to beWritten Translation |
| 3 семестр |
| 9 | Контрольное задание № 3. Grammar:Определительные и дополнительные придаточные предложения (союзные); придаточные обстоятельственные предложения времени и условия |
| 10 | Grammar: Бессоюзное подчинениеФункции глагола to have |
| 11 | Grammar:Функции слова AS. Функции слова THAT |
| 12 | Grammar:Gerund Written Translation |
| 4 семестр |
| 13 | Контрольное задание № 4. Grammar: Причастие I. Причастие IIБессоюзное подчинение |
| 14 | Text 9. Generators. Measuring Instruments Grammar:Сложные формы причастия |
| 15 | Text 10. TransformersGrammar: Функции герундия |
| 16 | Text 11. Single-Phase Motors Grammar: Инфинитив. Функции инфинитиваWritten Translation |

**ВЫПОЛНЕНИЕ КОНТРОЛЬНЫХ ЗАДАНИЙ И ОФОРМЛЕНИЕ КОНТРОЛЬНЫХ РАБОТ**

Каждое контрольное задание пред­лагается в четырёх вариантах. Вы должны выполнить один из четырёх вариантов в соответствии с последними цифрами зачетной книжки : студенты, зачетная книжка которых оканчивается на 1 или 2, выполняют вариант № 1; на 3 или 4 - № 2; на 5 или 6 - № 3; на 7 или 8,9,0 — №4;

Выполнять письменные контрольные работы следу­ет в отдельной тетради. На обложке тетради напишите свою фамилию, номер зачетной книжки , предмет, номер контрольной работы

Контрольные работы должны выполняться черни­лами, аккуратно, четким почерком. При выполнении кон­трольной работы оставляйте в тетради широкие поля для замечаний, объяснений и методических указаний рецен­зента.

Материал контрольной работы следует располагать в тетради по следующему образцу:

|  |  |
| --- | --- |
| Левая страница | Правая страница |
| Поля | Английский текст |  Русский текст | Поля |
|  |  |  |  |

**ТРЕБОВАНИЯ НА ЗАЧЕТЕ И ЭКЗАМЕНЕ**

**Зачет**. К зачету допускаются студенты, выполнившие контрольную работу.

Для получения зачета студент должен уметь прочитать со словарем незнакомый текст на англий­ском языке, содержащий изученный грамматический ма­териал.

Форма проверки — письменный перевод. Норма перевода — 600-800 печатных знаков в час пись­менно со словарем.

**Экзамен.** К экзамену по английскому языку допускают­ся студенты, имеющие зачет за I курс, выполнившие 4 пись­менные контрольные работы и сдавшие учебный матери­ал по чтению за II курс в объеме 13 с.

На экзамене по английскому языку проверяются уме­ния: читать со словарем текст по специальности вуза.

 Форма проверки понимания — письменный перевод. Норма перевода - 1000 печатных знаков в час письмен­но.

**КОНТРОЛЬНОЕ ЗАДАНИЕ 1**

Чтобы правильно выполнить **задание** 1, необходимо ус­воить следующие разделы курса

1. Существительные. Множественное число существительных. Притяжательный падеж. Существительное в функции определения
2. Прилагательные. Степени сравнения
3. Числительные
4. Местоимения
5. Present, Past, Future Indefinite. Глаголы *to be,*  *to have* в Present, Past, Future Indefinite. Повелительное наклонение
6. Оборот *there + be*

 ОБРАЗЕЦ ВЫПОЛНЕНИЯ 1 (К УПР. 1)

|  |  |
| --- | --- |
| The students attend lectures and seminars on History | Студенты посещают лекции и семинары по истории |
| Lectures – множественное число от существительного а lecture лекция |
| He lectures on political economy. | Он читает лекции по политической экономии |
| Lectures – 3–е лицо единственного числа от глагола to lecture в Present Indefinite |
| My brother’s son is a student. | Сын моего брата – студент. |
| Слово brother’s – форма притяжательного падежа существительного |

ОБРАЗЕЦ ВЫПОЛНЕНИЯ 2 (К УПР. IV)

|  |  |
| --- | --- |
| Lomonosov founded the first Russian University in Moscow.  | Ломоносов основал первый русский университет в Москве. |

Founded - Past Indefinite Active от стандартного глагола to found.

**КОНТРОЛЬНОЕ ЗАДАНИЕ 2**

Для того чтобы правильно выполнить задание 2, необ­ходимо усвоить следующие разделы курса английского языка:

1. Видо-временные формы глагола: активный залог — формы Indefinite (Present, Past, Future); формы Continuous (Present, Past, Future); формы Perfect (Present, Past, Future)

2. Модальные глаголы: а) выражающие возможность: can (could), may и эквивалент глагола сап — to be able; b) выражающие долженствование: must, его эквиваленты to have to, to be to, should.

3. Неопределенные и отрицательные местоимения

4. Функции слова it

**КОНТРОЛЬНОЕ ЗАДАНИЕ 3**

Для того чтобы правильно выполнить задание 3, необ­ходимо усвоить следующие разделы курса английского языка:

1. Видо-временные формы глагола: пассивный залог – формы Indefinite (Present, Past, Fu­ture).

Особенности перевода пассивных конструкций на русский язык.

2. Функции глагола to BE

3. Функции слова ONE

4. Определительные и дополнительные придаточные предложения (союзные); придаточные обстоятельственные предложения времени и условия

ОБРАЗЕЦ ВЫПОЛНЕНИЯ 1 (К УПР. I)

|  |  |
| --- | --- |
|  The new laboratory equipment **was sent for** yesterday. Вчера *послали*  | Вчера *послали* за новым оборудованием лаборатории. |
| **was sent for -** Past Indefinite Passive от глагола to **send.** |
| His scientific work **is** much **spoken** about. | О его научной работе много говорят. |
| **is** **spoken –**  Present Indefinite Passive от глагола to **speak** |

**Форма промежуточного контроля.**

**Зачёт.**

**Контрольная работа № 1**

**Вариант 1**

***1) Напишите следующие существительные во множественном числе и переведите:***

1. a library, 2. a scientist, 3. a man, 4. a foot, 5. a researcher, 6. a generator, 7. substance, 8. a miner, 9. an establishment, 10. an explosive.

***2) Определите функцию глаголов “tobe”, “tohave” в следующих предложениях. Предложенияпереведите:***

1. He has already translated that text.

2. For versatility Lomonosov has no equal in Russian science.

3. They were at the University last week.

4. Pete has to study hard as he wants to pass his examination session well.

5. We are carrying out an interesting experiment at the moment.

6. He is to meet them at the railway station.

7. The miner we met at the colliery has three sons.

8. These group of scientists had achieved good results in their investigation.

***3) Переведите следующие предложения на русский язык:***

1. There were twelve students in our group last year.

2. There will be an important lecture on the geology of oil deposits tomorrow at our University.

3. There are three main group of rocks, namely, sedimentary, igneous and metamorphic rock.

4. There are many technical institutions in Great Britain.

5. There is some interesting information about the structure of the Earth.

6. There was somebody in the laboratory.

***4) Подчеркните местоимения и укажите их типы. Переведите предложения на русский язык:***

1. I see him and his sister.

2. We know them and their children.

3. My father works as a miner.

4. Our Institute is not far from here.

5. Why do you want to become a mining engineer?

6. The mining Institutes design their courses to give both to basic engineering and mathematics.

***5) Составьте к каждому из следующих предложений вопросы (общий, альтернативный (or) и разделительный). Повествовательные предложения переведите на русский язык:***

1. ShegoestotheUniversityeveryday.

2. We study geology, mining engineering, mine surveying and others.

3. He entered the Moscow Mining Academy.

4. He will become a mining engineer in 5 years.

***6) Переведите текст на русский язык со словарем:***

**The First Mining School in Russia**

The Moscow Mining Academy was established in 1918. The main task of the Academy was to train mining engineers and technicians, to popularize technological achievements among miners, to work on important problems of mining and metallurgical engineering and to direct scientific research. There were three departments in the Academy: mining, geological prospecting and metallurgy. The Moscow Mining Academy introduced a new course in coal mining mechanization, which provided the basis for the development of mining engineering. ThetwoscientistsA.M. Terpigorev and M.M. Protodyakonov wrote the first textbook on machinery for mining bedded deposits.

In 1925 the Moscow Mining Academy was one of the best-known educational institutions in Russia. It had well-equipped laboratories, demonstration rooms and a library which had many volumes of Russian and foreign scientific books and journals. The Academy established close contacts with the coal mining industries. The scientists carried out scientific research and worked on important mining problems.

In 1930 the Moscow Mining Academy was transformed into six independent institutes. Among the new colleges which grew out of the Academy’s departments were the Moscow Mining Institute and the Moscow Institute of Geological Prospecting. Later, the scientific research Institute of Mining appeared near Moscow.

***7) Ответьте на вопросы по тексту:***

1. What was the main task of the Moscow Mining Academy?

2. How many departments were there in the Academy?

3. What did the scientists do?

4. Was the Moscow Mining Academy transformed into twelve independent institutes?

**Вариант 2**

***1) Напишите следующие существительные во множественном числе и переведите:***

1. a roof, 2. a branch, 3. a woman, 4. a tooth, 5. a century, 6. an island, 7. a device, 8. an engine, 9. a stage, 10. a source.

***2) Определите функцию глаголов “tobe”, “tohave” в следующих предложениях. Предложенияпереведите:***

1. M. Lomonosov was the first who discovered the vegetation origin of coal.

2. While at the college he had a lot of friends. 3. He has to redo the task.

4. Jane didn’t go to see the film last night because she had seen it before.

5. We are translating an interesting text at the moment.

6. We are to pass three exams this winter session.

7. Sediments are formed by action of glaciers.

8. Many research centres were established by V.I. Vernadsky.

***3) Переведите следующие предложения на русский язык:***

1. There are many subjects at our University.

2.There will be new collieries and open-cast mines in different parts of our country.

3. There were only a few higher educational establishments which trained geologists and mining engineers.

4. There are many lecture-rooms, laboratories and a large library in our Institute.

5. There is a wide range of courses and programs at higher mining schools.

6. There was nobody in the laboratory.

***4) Подчеркните местоимения и укажите их типы. Переведите предложения на русский язык:***

1. She likes her study.

2. I see a car. Its’ colour is black.

3. My father works as a mining engineer.

4. He meets me every day.

5. Why did you enter a higher mining school?

6. For many years he headed the Russian Geological Committee the staff of which was made up of his pupils.

***5) Составьте к каждому из следующих предложений вопросы (общий, альтернативный (or) и разделительный). Повествовательные предложения переведите на русский язык:***

1. Shepassedherexamswelllastyear.

2. They will become mine surveyors in 5 years.

3. The Moscow Mining Academy trains geologists, mining engineers and mine surveyors.

4. Russian higher educational establishments offer different specializations for students.

***6) Переведите текст на русский язык со словарем:***

## Mining Higher Education in Russia

In Russia young people get mining education at special institutes which train geologists and mining engineers for coal and ore mining. The total number of students of an institute includes full-time students, part-time students and postgraduate students.

Higher mining schools develop a wide range of courses and programs that meet the requirements of the society. They offer courses in mining technology, machinery and transport, hydraulic engineering, electrical engineering, industrial electronics, automation, surveying, geodesy, information technology, etc. The main trend in the development of higher mining education is the introduction of courses in environmental protection, management (environmental human resources), economics and management of mining enterprises, marketing studies, computer-aided design and others.

The students go through practical training at mines, plants and other industrial enterprises. They become familiar with all stages of production and every job from worker to engineer. Here they get practical knowledge and experience necessary for their diploma papers.

Students graduate from mining higher schools as mining engineers, mining mechanical engineers, ecologists, mining electrical engineers, geologists, economists and managers for mining industry.

***7) Ответьте на вопросы по тексту:***

1. Where are geologists and mining engineers trained?

2. What do higher mining educational institutions offer?

3. Where do the students have their practical training?

4. What specialties do the students receive after graduation?

**Вариант 3**

1. ***Напишите следующие существительные во множественном числе и переведите:***
2. a book, 2. a child, 3. a mouse, 4. a mineral, 5. a supplier, 6. an analysis, 7. a shovel, 8. a stream, 9. a case, 10. a structure.

***2) Определите функцию глаголов “tobe”, “tohave” в следующих предложениях. Предложения переведите:***

1. James Hutton (1726–1797), a Scottish farmer and naturalist, is known as the founder of modern geology.
2. As a scientist, Lomonosov was equal parts thinker and experimenter.
3. Today we have to do a lot of research to prove the theory.
4. Earth’s water supply has had, since Earth was created, major influences on Earth’s climate.
5. We are to carry out a huge amount of experiments in the laboratory.
6. They are listening to the lecturer now.
7. The first documented discovery of gold in the United States was made by 12-year-old Conrad Reed in 1799.
8. We had a number of credits and tests last term.

***3) Переведите следующие предложения на русский язык:***

1. There are many methods of investigation in Natural Science.

2.There will be a new technical college in the town next year.

3. There were many problems in the Russian mining industry last decade.

4. There is a broad range of potential environmental problems associated with mining the ocean for resources.

5. There are a lot of hydrothermal mineral deposits in the region.

6. There wasn’t any valuable metal in the sample.

***4) Подчеркните местоимения и укажите их типы. Переведите предложения на русский язык:***

1. Copper extraction techniques refer to the methods for obtaining copper from its ores.

2. Ancient mining techniques go well back into our history – well back into our prehistory, in fact.

3. Diodorus in his “History” of the 1st century BC writes about the despair of the miners.

4. Pliny gives us a detailed history of ancient mining.

5. She is taking English classes as she’s going to spend six months in a Canadian mining company.

6. His ideas and approach to studying the Earth established geology as a proper science.

***5) Составьте к каждому из следующих предложений вопросы (общий, альтернативный (or) и разделительный). Повествовательные предложения переведите на русский язык:***

1. Large hydraulics hovels, wheelloaders, bulldozers, andtrucksremoveoverburden.

2. At our mining school students will participate in practical exercises using a combination of remote laboratories and simulation software.

3. Mining and geological engineers develop economical solutions to technical problems.

4. The famous American mining engineer George Argall graduated from the Colorado School of Mines in 1935.

***6) Переведите текст на русский язык со словарем:***

**Eratosthenes**

Eratosthenes was a Greek scholar, who lived in the 3rd century BC, renowned for his love of learning. Born in the Libyan city of Cyrene, which was once part of the Greek Empire, he received the equivalent of a university education when he was a teenager. He was an all-round scholar, and during his life named himself as a poet, grammarian, philosopher, mathematician, astronomer, chronographer, and geographer in equal measure. He published works in several areas, and was also something of a problem solver.

His most famous works were in the fields of geography and mathematics, and he was known for creating the first map of the ancient world that featured latitude and longitude lines. He also used geometric formulas, and the sun, to calculate the Earth’s circumference to a 10% accuracy, and made measurements of the tilt of the Earth’s axis. These measurements led to further exploration by other scholars and geologists, and the production of maps and globes that were the most accurate in existence for hundreds of years.

Although there is very little evidence of Eratosthenes’ work around today, or details of his methodology and calculations, he has been referenced in publications by other noted scholars, such as Strabo. A three volume study on the Earth and the Earth’s measurement, Geographica by Eratosthenes, is still well-known in the geology field today.

***7) Ответьте на вопросы по тексту:***

1. What sciences was Eratosthenes interested in?

2. What was Eratosthenes famous for?

3. How did Eratosthenes’ measurements influence the further exploration of the Earth?

4.What is the most prominent publication by Eratosthenes still known in the modern science?

**Вариант 4**

1. ***Напишите следующие существительные во множественном числе и переведите:***
2. an experiment, 2. a deposit, 3. a louse, 4. an ore, 5. a hypothesis, 6. a spectrum, 7. a depth, 8. a technician, 9. a producer, 10. an activity .

***2) Определите функцию глаголов “tobe”, “tohave” в следующих предложениях. Предложения переведите:***

1. Rocks from the earliest Archaean are predominantly igneous.
2. Russia is the world’s second largest PGE producer, after South Africa.
3. Today we have to do a lot of geophysical and mine surveying research to construct a mine.
4. The Siberian-Urals Aluminium Company has begun construction of Sredne-Tuman bauxite field.
5. The scientists are to know more about the fossil fuels in this region in the nearest future.
6. They are still exploiting this mine.
7. Although 90 percent of the country's coal reserves are concentrated in 10 states, coal in mined in 27 states.
8. The United Kingdom has a rich history of mining.

***3) Переведите следующие предложения на русский язык:***

1. There are a lot of copper reserves in Siberia and the Urals.

2.If a woman comes into a coal mine, there will be an accident to the miners (English superstition).

3. There were different mining complexes in Transbaikalia.

4. There is a big mining enterprise in Krasnokamensk.

5. There are different ways of extracting raw materials from the earth.

6. There was nobody in the auditorium.

***4) Подчеркните местоимения и укажите их типы. Переведите предложения на русский язык:***

1. Vernadsky attends Saint Petersburg’s grammar school, where he shows a keen interest in natural sciences.

2. Vernadsky develops mineral genesis theory and defends his Doctor thesis (Phenomenon of crystalline matter sliding) in 1897.

3. Pliny left us a profound description of the ancient types of extracting valuable minerals.

4. George Argall began his work as an editor of mining magazines in 1950, when he became editor of Mining World and World Mining.

5. Russia had not its own gold and silver till the end of the XVII century.

6. He became the first Russian professor of chemistry at St. Petersburg Academy of Science in 1745.

***5) Составьте к каждому из следующих предложений вопросы (общий, альтернативный (or) и разделительный). Повествовательныепредложенияпереведитенарусскийязык:***

1. Russia contains 10% of the worlds' copper reserves with most reserves located in Siberia (70%) and the Urals (20%).

2. Lead and copper attracted the Romans to Britain.

3. The scientists will discuss the formation of natural diamonds on the conference.

4. The proper conditions for diamond formation occur in the upper mantle about 100 miles below stable continent interiors.

***6) Переведите текст на русский язык со словарем:***

**Mining and geological engineers**

Mining and geological engineers find, extract and prepare minerals, metals and coal for use by utilities and manufacturing industries. They may supervise the construction of underground mine operations, design open-pit and underground mines and create ways to transport minerals to processing plants. They’re responsible for ensuring the operation of mines is safe, economical and environmentally sound. Some mining and geological engineers work alongside metallurgical engineers and geologists to find and appraise new ore deposits. Some mining and geological engineers direct mineral-processing operations to extract dirt, rock and other materials from valuable minerals. Others develop new mining equipment. Often mining and geological engineers specialize in a particular metal such as gold or coal. They use their knowledge of mine practices and design to comply with safety regulations and ensure worker safety. They must monitor air quality, examine equipment for safety compliance and inspect surfaces of walls and roofs. Most mining and geological engineers work in laboratories, plants or offices, though they may also spend time at mine sites to direct and monitor operations and solve onsite problems. Some must travel to worksites.

Computers are a must for mining and geological engineers. They use them to produce and analyze designs, simulate tests, generate specifications, monitor quality and control efficiency. Another new aspect of the design process for mining and geological engineers is nanotechnology.

***7) Ответьте на вопросы по тексту:***

1. What is mining and geological engineers job?

2. May mining engineers and geologists specialize in particular mineral or metal?

3. Where do mining and geological engineers often work?

4. What do they use different gargets such as computers for?

**Контрольная работа № 2**

**Вариант 1**

***1) Подчеркните местоимения в следующих предложениях. Переведите предложения на русский язык:***

1. Will you deliver any lecture tomorrow?

2. He has some experience in mining as he is a fifth-year student now.

3. That mining engineer is a very good specialist.

4. Someone wants to see you.

5. Those rocks are igneous rocks.

6. In some cases limestone is a clastic rock.

7. Nobody knows everything,

8. This academician is famous in the field of opencast mining of minerals.

***2) Объясните употребление или отсутствие артиклей. Предложенияпереведите:***

1. Russia is a large industrial country.

2. They are adults.

3. Mineral deposits of the USA are concentrated largely among the Appalachian Mountains.

4. There are, however, important oil-fields in Texas, Oklahoma and California, and important iron mines in Minnesota.

5. Nowadays natural gas is utilized as a raw material for manufacturing.

6. It is difficult to understand the nature of fossils without studying their origin.

***3) Подчеркните прилагательные. Переведите предложения на русский язык:***

1. Hard rocks have the highest resistance to penetration with a tool.

2. The effectiveness of modern equipment is greater than that of the old one.

3. The process of rock disintegration by direct influence of local atmospheric conditions on the Earth’s surface is called weathering.

4. Rocks are composed of different minerals.

***4) Переведите предложения на русский язык. Составьте вопросы к выделенным словам:***

1. You are doing **that** exercise correctly.

2. **He** was looking for the book which he lost.

3. My father will be working **in the mine** for the whole day tomorrow.

4. Ann is doing well in her studies **at present**.

***5) Переведите текст на русский язык со словарем:***

## Outstanding Geologists

One of the first contributors to mining and geology was the great Russian scientist M.V. Lomonosov who connected the study of minerals and rocks with chemistry and physics, discovered and formulated the laws of mining ventilation and mining geometry.

Among the most prominent geologists are A.P. Karpinsky, V.A. Obruchev, A.Y.Fersman, I.M. Gubkin and many others. Academician A.Y.Fersman ranks among those learning mineralogists who converted mineralogy from a purely descriptive science into a science based on the most fundamental chemical investigations. As the organizer of the Geochemical Institute in Moscow, academician A.Y.Fersman worked out the basic lines of the study of chemical elements and laid the foundation for the scientific surveying and prospecting for useful minerals. A number of scientific expeditions to different parts of the country were organized by him. He was the leader of the important investigations in the Kara-Kum Desert resulting in the discovery of big sulphur deposits, the construction of a large preparation plant for the processing of sulphur and sulphur products. Academician A.Y.Fersman led the expedition to Central Asia, the Urals, the Altai, the Caucasus and the Crimea. He is especially known for his detailed investigation of the Kola Peninsula which led to the discovery of enormous apatite deposits and the development of a mining-industrial region in the Khibiny Mountains where new towns came into being. ***6) Составьте к тексту не менее четырех вопросов разного типа, чтобы они покрывали содержание.***

**Вариант 2**

***1) Подчеркните местоимения в следующих предложениях. Переведите предложения на русский язык:***

1. Our professor knows some foreign languages.

2. He has not any experience in mining as he is a first-year student now.

3. Those students study quite well.

4. Do you have any lectures in addition to practical classes on Saturday?

5. These rocks made up the crust of the Earth.

6. Somebody came to the laboratory.

7. Yesterday that group of students visited the concentration plant.

8. There was nobody in the laboratory.

***2) Объясните употребление или отсутствие артиклей. Предложения переведите:***

1. Hegetsastipend.

2. They are mining engineers.

3. Because of the overwhelming concentration of minerals in the north-eastern part of the USA.

4. Manufacturing is also concentrated there.

5. The problem of extracting geothermal energy is under consideration now.

6. Gas is not so convenient type of fuel as coal.

***3) Подчеркните прилагательные. Переведите предложения на русский язык:***

1. The oldest sedimentary rocks were known some 3,500 million years ago.

2. Peat and coal are the organic sediments which are of great practical value.

3. The most principal kinds of sedimentary rocks are conglomerate, sandstone, siltstone, shale, limestone and dolomite.

4. This time our group of geologists received better results in prospecting for mineral resources in the sea.

***4) Переведите предложения на русский язык. Составьте вопросы к выделенным словам:***

1. They were travelling in Europe **for three weeks**.

2. I am waiting for **at the railway station** now.

3. She will be translating **this text** for an hour or so.

4. **Mr. Evans** is writing a series of articles on the mining situation.

***5) Переведите текст на русский язык со словарем:***

## Famous Scientists in Mining

Among those who contributed to the development of mining are B.I. Boky, M.M.Protodyakonov, A.A. Scochinsky, N.V. Melnikov and others. Professor B.I.Boky’s name is associated with the solution of a number of significant technical problems in the mining industry of the country and with the whole trend in the development of the science of mining – the analytical method of designing new collieries.

Credit for working out the theoretical principles of the exploration of deposits is due to Professor M.M.Protodyakonov. His most remarkable works are those concerning the problems of underground pressure and mine timbering. Professor M.M.Protodyakonov founded a school for the study of rock pressure and its influence on mine timbering.

The leading organization in working out theoretical problems connected with mining in Russia is the Mining Institute of the Academy of Science named after Alexander Skochisky. A.A. Skochinsky’s deep interest in theoretical problems was always combined with wide engineering experience. He took an interest in mining aerology. He discovered the laws of the movement and control of the movement of air and gases underground. His works are devoted to localization, liquidation and prevention of underground fires.

Academician N.V. Mechnikov is well known for his research in the field of open-cast mining not only of coal but also of ferrous and non-ferrous metals and other minerals.

***6) Составьте к тексту не менее четырех вопросов разного типа, чтобы они покрывали содержание.***

***1) Подчеркните местоимения в следующих предложениях. Переведите предложения на русский язык:***

1. Is this your geologic dictionary? – I am afraid, it is not mine.

2. His last work “Some words about the noosphere” comes off the press in 1944.

3. Everybody knows about Nikola Tesla’s works in electricity.

4. Anybody can join our scientific society.

5. These are metamorphic rocks and those are sedimentary ones.

6. None of the students miss the lectures of this professor.

7. Nobody can answer how the Earth came into being.

8. The local authorities did not want any social disturbance and feared to ignite an uncontrolled gold rush in the area populated by serfs.

***2) Объясните употребление или отсутствие артиклей. Предложенияпереведите:***

1. In 1813 a little girl KaterinaBogdanova found a gold nugget in the basin of the Neiva River (Mid-Urals) and brought it to a local official.

2. We are students.

3. In 1737 gold was on the northern coast of the White Sea, then, in 1733-35, in the Altay mountains (as a by-product in silver ores).

4. In 1803 the first gold deposit was found on the western slope of the Urals.

5. Torsvik, a professor at the University of Oslo in Norway, and Burke developed the conceptual ideas for this research.

6. Our approach is new, because it combines observations of the Earth's deep interior from seismology.

***3) Подчеркните прилагательные. Переведите предложения на русский язык:***

1. Smithsonian researchers also found large numbers of tiny diamonds when they were cutting a sample from the Allen Hills meteorite.

2. Oceanic plates are more likely candidates for subduction than continental plates because of their higher density.

3. Coal is a sedimentary rock, formed from plant debris deposited at Earth's surface.

4. The Cullinan I or Star Africa diamond is the largest cut diamond in the world.

***4) Переведите предложения на русский язык. Составьте вопросы к выделенным словам:***

1. **Meteorologists** are studying the atmospheric conditions now to predict the weather forecast for tomorrow.

2. Mining in the United Kingdom is producing **a wide variety of fossil fuels, metals, and industrial minerals** now.

3. There is evidence that mining was taking place **in Wales** during **the Bronze Age, in approximately 2200-850 BC**.

4. Alex **is taking part** in an extremely interesting project initiated by Pr. Green.

***5) Переведитетекстнарусскийязыксословарем:***

**Mikhail Lomonosov**

 Russia's first world-famed specialist in natural science, a poet who laid down the foundations of Russian literary language and an advocate of education, Mikhail VasilievichLomonosov (1711-1765) will forever remain in the history of Russian science as "the first and the greatest."

Aspiring to get an education, Lomonosov left his native village of Kholmogory in Northern Russia in 1730 and travelled all the way to Moscow on foot. The son of a poor fisherman, he had to conceal his origin in order to be admitted to the Slavonic-Greek-Latin Academy of Moscow, where he started his education at the age of 19. Recognized by his instructors as an excellent student, he completed his education in St. Petersburg and in Germany. He became the first Russian professor of chemistry at St. Petersburg Academy of Science in 1745. His major scientific accomplishment was in the field of physical chemistry, with other notable discoveries in astronomy, geophysics, geology, metallurgy and mineralogy.

Mikhail Lomonosov was the one who created a system of higher education in Russia. The foundation of a university in Moscow became possible only due to the efforts of M. Lomonosov, the outstanding Russian scholar and scientist, a person of encyclopedic knowledge. In 1940 on the occasion of its 185th Anniversary, Moscow State University was named after him.

***6) Составьте к тексту не менее четырех вопросов разного типа, чтобы они покрывали содержание.***

**Вариант 4**

***1) Подчеркните местоимения в следующих предложениях. Переведите предложения на русский язык:***

1. Do you have any practical training in addition to your lectures and practical classes?

2. He discovered that a body loses as much motion as it gives to another body.

3. Those experiments are hard to carry out.

4. Is there any additional information on the formation of the diamonds? – Nothing new.

5. This igneous rock is very common.

6. Trolls are everyone’s favorite bogey in Ireland and England.

7. If a dog goes inside a coal mine, someone who works in the mine will be killed (English miners’ superstition)

8. It was bad luck to enter a mine if you met a red headed woman on the way to work (common miners’ superstition).

***2) Объясните употребление или отсутствие артиклей. Предложенияпереведите:***

1. He works as a mining engineer.

2. In 2006, there were over 2,200 active mines, quarries, and offshore drilling sites on the continental land mass of the United Kingdom.

3. The United Kingdom is the fourth largest producer of natural gas in the world, after Russia, the United States, and Canada.

4. Diamonds are pure carbon and the hardest mineral of all.

5. The uranium mining area of Krasnokamensk is situated in Eastern Siberia.

6. Roman miners dug vertical shafts and horizontal galleries and adits.

***3) Подчеркните прилагательные. Переведите предложения на русский язык:***

1. The Cullinan was later cut into nine large stones and about 100 smaller ones.

2. The second largest stone, the "Star of Africa II" or "Cullinan II," is 317 carats.

3. As well as other numerous innovations in the life of Russia successful gold exploration and mining were introduced by Peter the Great.

4. Due to a greater Palladium to Platinum ratio of its ores, Russia is the world's leading palladium producer.

***4) Переведите предложения на русский язык. Составьте вопросы к выделенным словам:***

1. They were investigating **the formation of diamonds** at the moment.

2. The students will be taking their exams **for two weeks in June**.

3. They **are working** in the laboratory **carrying out** a very important experiment.

4. In few months **he**’ll be speaking fluently.

***5) Переведите текст на русский язык со словарем:***

**Mining**

Mining is the extraction of valuable minerals or other geological materials from the earth, from an orebody, lode, vein, (coal) seam or reef, which forms the mineralized horizon and package of economic interest to the miner. In 2005, Russia ranked among the leading world producers or was a significant producer of such mineral commodities as aluminum; arsenic; asbestos; bauxite; boron; cadmium; cement; coal; cobalt; copper; diamond; fluorspar; gold; iron ore; lime; lithium; magnesium compounds and metals; mica, sheet, and flake; natural gas; nickel; nitrogen; oil shale; palladium; peat; petroleum; phosphate; potash; rhenium; silicon, sulfur; titanium sponge; tin; tungsten; and vanadium.

Following the mineral fuel industry, the next leading branch of the mineral industry, in terms of its contribution to the national economy was the metallurgical sector, which contributed 19% of the value of industrial production, accounted for 11.1% of the value of industrial capital stock, and employed 9.3% of the industrial labor force. In 2005, a total of 1,071,000people were employed in the mineral extraction sector and made up 1.6% of the country's labor force. Investment in mineral extraction and metallurgy accounted for about 20% of total investment in the Russian economy.

***6) Составьте к тексту не менее четырех вопросов разного типа, чтобы они покрывали содержание.***

**Контрольная работа № 3**

**Вариант 1**

***1) Обозначьте словообразовательные элементы в следующих словах. Словапереведите:***

1. investigation, 2. founder, 3. highly, 4. external, 5. consolidate, 6. valuable, 7. sedimentary, 8. specific.

***2) Подчеркните двойные союзы. Предложения переведите на русский язык:***

1. Metamorphic rocks have been derived either from igneous or from sedimentary rocks.

2. Neither the thickness of overburden nor the angles of dip and strike were determined correctly.

3. The Moscow Mining Academy trains both mining engineers and technicians.

4. Both miners were highly skilled workers.

***3) Употребите глагол ’tohave’ в нужной форме. Предложения переведите на русский язык:***

1. They (to have) opened the new road.

2. She told me she (to have) never been to London before.

3. She is the best student in the group: she (to have) a good command of English.

4. They (to have) explored those coal deposits by the end of this month.

***4) Подчеркните сказуемые в следующих предложениях. Предложения переведите на русский язык и к предложениям в страдательном залоге задайте общий вопрос:***

1. Students course is designed on a modular basis.

2. The modern equipment is effective.

3. The decomposition of rocks under the direct influence of heat and cold is called physical weathering.

4. Mineral fuels are organic materials accumulated in the geologic past.

5. Using modern mining equipment allowed the miners to increase the output of coal.

6. Core-drilling is used in prospecting for loose rocks.

7. Explosives are used for excavating hard rocks.

8. The thickness of ore deposits is a constant value.

***5) Подчеркните модальные глаголы и их заменители в следующих предложениях. Предложенияпереведитенарусскийязык:***

1. Coal beds may consist of different bands of varying thickness.

2. It should be noticed that the theory of prospecting and exploration is a link connecting specialists in two fields of mining: the exploration geologist and the mining engineer.

3. Bituminous coals cannot be stored in open piles.

4. Mining can be done either as a surface operation or by an underground method.

5. I have to study hard to become a highly qualified mining engineer.

6. Surveyor must be very attentive an accurate.

7. They will be able to work as mining engineers in five years.

8. We are to pass our exams at the end of each term.

***6) Переведите текст на русский язык со словарем:***

## Minerals

Minerals that make up rocks, are defined as inorganic substances which occur naturally and have a definite chemical composition and physical properties which vary within known limits. The major properties are colour, crystal form, hardness, cleavage and others. Cleavage is one of the most diagnostically useful mineralogical properties which can be found throughout the mineral.

Minerals of use to man can be grouped into two broad categories: 1) metals, such as aluminium, copper, gold, silver, iron-tin, platinum, chromium, nickel, lead and zinc, and 2) non-metallic minerals, such as diamonds, salt, limestone, cement, sulphur, and asbestos. When minerals occur so that they can be worked at a profit they are called ore deposits. Mineral deposits are seldom equally rich throughout.

Economic minerals are those which are of economic importance and include both metallic and non-metallic minerals. Most minerals consist of several elements. Such elements are oxygen, silicon, titanium, aluminium, iron, magnesium, calcium, sodium, potassium, and hydrogen. They make up more than 99 per cent by weight of all the rock-forming minerals. Of these, aluminium, iron and magnesium are industrial metals. The other metals are present in small quantities, mostly in igneous rocks.

***7) Составьте план к тексту в форме простых предложений.***

**Вариант 2**

***1) Обозначьте словообразовательные элементы в следующих словах. Словапереведите:***

1. accumulation, 2. investigator, 3. firmly, 4. thickness, 5. originate, 6. biochemical, 7. different, 8. igneous.

***2) Подчеркните двойные союзы. Предложения переведите на русский язык:***

1. Mechanical sediments can be either consolidated or unconsolidated.

2. Neither faults nor fissures were found by the surveyors.

3. We study both rock mechanics and surveying.

4. Both mining engineers were highly skilled specialists.

***3) Употребите глагол ’tohave’ в нужной форме. Предложения переведите на русский язык:***

1. They (to have) obtained reliable information on the mineral reserves next week.

2. We (to have) already observed physical weathering in deserts.

3. He is the best student in our group: he (to have) excellent marks in metallurgy and mining.

4. He told me he (to have) never heard about academician A.Y. Fersman before.

***4) Подчеркните сказуемые в следующих предложениях. Предложения переведите на русский язык и к предложениям в страдательном залоге задайте общий вопрос:***

1. Coal is still the most important fuel.

2. No fissures were found.

3. We say that the method of mining is rational if it guarantees only safety of the men and maximum output of minerals.

4. The shield method of mining is used where short faces are worked.

5. After mining or dredging ores are usually processed, crushed or dried.

6. The drills for making holes have handles.

7. A level is a horizontal road with no direct access to the surface.

8. As a rule open-cast mining is used when the deposit lies near the surface.

***5) Подчеркните модальные глаголы и их заменители в следующих предложениях. Предложенияпереведитенарусскийязык:***

1. The benches may be separated by thin layers of clay, shale, pyrite or other mineral matters commonly called partings.

2. Modern deposits of Kamchatka volcanoes must be investigated.

3. They were to meet at the Institute at five.

4. One can get higher mining education at a higher mining Institute.

5. You should attend your classes regularly to become a highly qualified specialist.

6. They have to explore those deposits again.

7. He will be able to work as a mining engineer after graduation from the Institute.

8. The students were allowed to use this modern equipment while their practical training.

***6) Переведите текст на русский язык со словарем:***

## IronDeposits

IronisoneofthemostabundantmetalsintheEarth’scrust. There are three important classes of iron deposits associated with igneous rocks; residual deposits and sedimentary deposits. Iron deposits associated with igneous rocks are usually small but very rich bodies either of hematite or magnetite. Large concentrations have been successfully mined in Pensylvania (the USA) and in the Russian Federation.

Residual deposits of iron minerals are formed wherever weathering occurs. Iron deposits formed this way are very widespread. Sedimentary iron deposits make up most of the world’s current production.

As the essential component of every variety of steel, iron is obviously the most important of all industrial metals. It has played a large part in the development of our modern civilization. Iron ores are mainly used for producing cast iron, steels and ferroalloys. From a scientific point of view, iron’s most significant property is that it becomes magnetized. The magnetic iron ore is the main wealth of the Kursk Magnetic Anomaly (KMA). Iron fields are worked by surface mining which is more economical. But the KMA is rich not only in iron ores. Its deposits contain bauxite, phosphorite, cement, sand and clay.

***7) Составьтепланктекстувформепростыхпредложений.***

**Вариант 3**

***1) Обозначьте словообразовательные элементы в следующих словах. Словапереведите:***

1. industrial, 2. extraction, 3. significant, 4. researcher, 5. conglomerate, 6. relative, 7. lithosphere, 8. investment.

***2) Подчеркните двойные союзы. Предложения переведите на русский язык:***

1. Hydrothermal mineral deposits are neither common, nor very large compared to other geological features.

2. Mineral deposits have been found both in rocks that lie beneath the oceans and in rocks that form the continents.

3. Neither of them is a mining engineer.

4. In a few cases, silicate minerals are used as ore minerals because the metals either do not form more desirable minerals or form desirable minerals that rarely occur in large deposits.

***3) Употребите глагол ’tohave’ в нужной форме. Предложения переведите на русский язык:***

1. Pegmatites (to have) been discovered in all continents.

2. Our understanding of Earth (to have) expanded tremendously in the past 100 years.

3. Humans (to have) been on the Earth for a mere 0.004% of the Earth’s history.

4. They (to have) a very important conference tomorrow.

***4) Подчеркните сказуемые в следующих предложениях. Предложения переведите на русский язык и к предложениям в страдательном залоге задайте общий вопрос:***

1. The Earth is a little over 4.5 billion years old.

2. Russia is the world's second largest PGE producer, after South Africa.

3. The deepest gold mines are about 4 Km. below the Earth's surface.

4. The most significant mineral producing regions in Russia are located in the Kola Peninsula, the North Caucuses, East Siberia, the Urals and the Russian Far East.

5. The first Russian dredge was introduced into mining practice in the Amur region by the Verkhne-Amurskaya company in 1894.

6. Anthracite is a hard, shiny, black coal that burns with a blue, smokeless flame.

7. The United Kingdom has an estimated 780 million tonnes of proved and probable oil reserves.

8. Tin and lead is still being mined from deep mines located in England, Scotland and Wales.

***5) Подчеркните модальные глаголы и их заменители в следующих предложениях. Предложенияпереведитенарусскийязык:***

1. Impurities must be removed from the ore before the extraction of the metal.

2. Certain kinds of mineral can be smelted more readily than others.

3. Scientists have to apply different geophysical methods to explore a certain mineral.

4. Coal was so abundant in Britain that the supply could be stepped up to meet the rapidly rising demand.

5. In future we’ll be able to explain the origin of the Earth.

6. Diamonds cannot be formed in the low temperatures and pressures.

7. They are to make a lot of experiments and investigations.

8. We should have checked the data once more before making the final conclusion.

***6) Переведите текст на русский язык со словарем:***

**Types of rocks**

Sedimentary rocks are formed from particles of sand, shells, pebbles, and other fragments of material. Together, all these particles are called sediment. Gradually, the sediment accumulates in layers and over a long period of time hardens into rock. Generally, sedimentary rock is fairly soft and may break apart or crumble easily. You can often see sand, pebbles, or stones in the rock, and it is usually the only type that contains fossils.

Metamorphic rocks are formed under the surface of the earth from the metamorphosis (change) that occurs due to intense heat and pressure (squeezing). The rocks that result from these processes often have ribbonlike layers and may have shiny crystals, formed by minerals growing slowly over time, on their surface

Igneous rocks are formed from melted rock that has cooled and solidified. When rocks are buried deep within the Earth, they melt because of the high pressure and temperature; the molten rock (called magma) can then flow upward or even be erupted from a volcano onto the Earth's surface. When magma cools slowly, usually at depths of thousands of feet, crystals grow from the molten liquid, and a coarse-grained rock forms. When magma cools rapidly, usually at or near the Earth's surface, the crystals are extremely small, and a fine-grained rock results.

***7) Составьте план к тексту в форме простых предложений.***

**Вариант 4**

***1) Обозначьте словообразовательные элементы в следующих словах. Словапереведите:***

1. aqueous, 2. scientific, 3. mainly, 4. subsurface, 5. precipitate, 6. geophysical, 7. volcanism, 8. watery.

***2) Подчеркните двойные союзы. Предложения переведите на русский язык:***

1. Technological development throughout the 19th and 20th centuries helped both to improve the safety of colliers and the productive capacity of collieries they worked.

2. Either of methods is appropriate in this case.

3. For sulfide ores, both secondary (supergene) and primary (unweathered), froth flotation is used to physically separate ore from gangue.

4. You can use either underground mining or surface mining to extract coal.

***3) Употребите глагол ’tohave’ в нужной форме. Предложения переведите на русский язык:***

1. Since the dissolution of the Soviet Union, Russia (to have) struggled to maintain its ailing mineral industry.

2. Deep-vein miners (to have) to deal with a number of difficult problems, including drainage, ventilation, lighting, and safety.

3. The Siberian-Urals Aluminium Company (to have) begun construction of Sredne-Timan bauxite field.

4. He told that he (to have) studied mining in Germany.

***4) Подчеркните сказуемые в следующих предложениях. Предложения переведите на русский язык и к предложениям в страдательном залоге задайте общий вопрос:***

1. Both extrusive and intrusive igneous rocks are derived from magmas.

2. The folded and broken layers indicate the rock has undergone deformation during mountain-building.

3. Gold has been discovered on every continent on earth.

4. The reserve base are being diminished rapidly in the country.

5. People are always attracted towards gold mining thinking about lots of money.

6. As with other commodities in Russia, lead and zinc are being rapidly depleted.

7. The largest gold mine is present in Papua, Indonesia.

8. The Emerald is one of the most well known and most attractive gemstone available.

***5) Подчеркните модальные глаголы и их заменители в следующих предложениях. Предложенияпереведитенарусскийязык:***

1. Seismic data are to be used to determine in which direction rocks first moved along a fault during an earthquake.

2. Nowadays geologists are unable to explain why glaciers form, advance, and retreat.

3. An analysis of push-pull data can generate two possible fault orientations that fit the first-motion data.

4. Glaciers can move more than 15 meters a day.

5. You should study the question before the experiment.

6. As a submarine lava flow cools, blobs of lava may break through the exterior and harden immediately in the cold water.

7. He might have helped us to take the measurements.

8. The students will be allowed to choose the topic for their further research.

***6) Переведите текст на русский язык со словарем:***

**Borehole mining**

Borehole mining is used for surface and underground mining. It can be used in open pit mining which is a kind of surface mining. With borehole mining, a hole is drilled deep enough into the ground to reach whatever is going to be mined. Then a long, tube-like tool is dropped into the hole. This tube has places for water to be forced down the tube and places where the water can be pushed back up the tube. The water is forced down this tube. The stream of water breaks up the dirt and rock when it hits it. The water combines with the dirt, rock, and minerals to make a combination called a slurry. The slurry is pumped back up to the surface where it is put into a storage tank. The water is drained and the ore is taken out of it. From that time on, the ore is treated depending on what it will be used for.

The good thing about borehole mining is that it doesn’t wreck the environment like other kinds of mining do. It costs less money than some mining does and can be easily moved from one place to another. Also, borehole mining works in places that would be very dangerous to mine with other kinds of mining

***7) Составьте план к тексту в форме простых предложений.***

**Контрольная работа № 4**

***К прочитанным текстам в качестве контроля предлагается составить план, конспект- реферат, аннотацию.***

1. **План** – наиболее краткая формой записи. Это перечень вопросов, рассматриваемых в книге или статье. План обычно раскрывает структуру произведения, логику автора, способствует лучшей ориентации в содержании.
Различают простой и развернутый план. В отличие от простого плана развернутый план не только содержит перечисление вопросов, но и раскрывает основные идей произведения, может включать выдержки из него, схемы, таблицы. Планом, особенно развернутым, необходимо пользоваться при написании выступления или статьи.
В целом развернутый план дает гораздо большее представление о произведении, его основных идеях, задачах, которые в нем решаются. Он может включать положения, замечания, собственные мысли студента.

2. **Тезисы** – более сложная и совершенная форма записи, чем составление плана.
Это сжатое изложение основных мыслей прочитанного произведения или подготовляемого вступления. Особенностью тезисов является их утвердительный характер.
Тезисы не должны повторять дословно текст, но в ряде мест могут быть близки к нему, воспроизводя некоторые характерные выражения автора, важные для понимания хода его мыслей. Составление тезисов помогает глубже понять основные идеи произведения, выделить главное в нем; приучают сжато, точно и четко сформулировать свои мысли, повышает культуру речи и письма. При составлении тезисов учитывают следующее. Прежде всего, если произведение небольшое, необходимо внимательно изучать его в целом, если большое – изучать по главам и разделам. Затем, когда будут ясны основные идеи, кратко и последовательно излагать их в виде пунктов.
Различают простые и сложные, развернутые тезисы. Если записывают только утверждение чего – либо, такой тезис называют простым, а сложным тезисом будет выражение главной мысли, содержащее, кроме утверждения, еще и краткое ее доказательство.
Часто тезисы формулируются самим автором как выводы и обобщения в заключении книги или разделах книги. Нередко тезисы выделяются в тексте другим шрифтом.
Рекомендуется делать тезисные записи своими словами, причем можно записывать один абзац за другим, учитывая смысловую связь между ними. Но в большинстве случаев следует составлять сводный тезис, сложный по форме. При этом объединяется несколько утверждений, тесно связанных между собой.
Тезисы по содержанию очень близки к конспекту, но конспект носит более описательный характер, и его положения не столь категоричны, как в тезисах. Кроме того, конспект представляет собой более полную форму записи.
Следует отметить, что различие между формами записей условно, но в любой форме запись – важнейшая часть самостоятельной работы с книгой.

**1.Конспект**
Конспектирование — процесс мысленной переработки и письменной фиксации информации, в виде краткого изложения основного содержания, смысла какого-либо текста.
Результат конспектирования — запись, позволяющая конспектирующему немедленно или через некоторый срок с нужной полнотой восстановить полученную информацию. Конспект в переводе с латыни означает «обзор». По существу его и составлять надо как обзор, содержащий основные мысли текста без подробностей и второстепенных деталей. Конспект носит индивидуализированный характер: он рассчитан на самого автора и поэтому может оказаться малопонятным для других.
Для того чтобы осуществлять этот вид работы, в каждом конкретном случае необходимо грамотно решить следующие задачи:

1. Сориентироваться в общей композиции текста (уметь определить вступление, основную часть, заключение).
2. Увидеть логико-смысловую канву сообщения, понять систему изложения автором информации в целом, а также ход развития каждой отдельной мысли.
3. Выявить «ключевые» мысли, т.е. основные смысловые вехи, на которые «нанизано» все содержание текста.
4. Определить детализирующую информацию.
5. Лаконично сформулировать основную информацию, не перенося на письмо все целиком и дословно.

**Конспектирование**. Существуют два разных способаконспектирования – непосредственное и опосредованное.

Непосредственное конспектирование – это запись в сокращенномвиде сути информации по мере ее изложения.

Опосредованное конспектирование начинают лишь послепрочтения (желательно – перечитывания) всего текста до конца,после того, как будет понятен общий смысл текста и его внутренниесодержательно-логические взаимосвязи. Сам же конспект необходимо вести не в порядке его изложения, а впоследовательности этих взаимосвязей: они часто не совпадают, ауяснить суть дела можно только в его логической, а не риторическойпоследовательности. Естественно, логическую последовательностьсодержания можно понять, лишь дочитав текст до конца и осознав вцелом его содержание.

При такой работе станет ясно, что в каждом месте для вассущественно, что будет заведомо перекрыто содержанием другогопассажа, а что можно вообще опустить. Естественно, что приподобном конспектировании придется компенсировать нарушениепорядка изложения текста всякого рода пометками, перекрестнымиссылками и уточнениями. Но в этом нет ничего плохого, потому чтоименно перекрестные ссылки наиболее полно фиксируют внутренниевзаимосвязи темы.

**Вариант 1**

***1) определите инговые формы:***

***а) Participle I;***

***b) Gerund;***

***c) Verbalnoun.***

***Данные предложения переведите на русский язык.***

1. The aim of geological prospecting is to provide information on a preliminary estimation of the deposit and the cost of the geological investigations to be made.

2. New techniques have been developed for rapid mapping and geochemical sampling from light aircraft while in flight.

3. Cosmic rays coming in from the depth of the Universe are expected to explore near-earth and interplanetary space.

4. Galena, the most important mineral containing lead, is dark grey, heavy and lustrous.

5. This equipment needs repairing.

6. After receiving good results they stopped experiments.

7. Laser is used in mining.

8. Speaking about the future of coal, it is necessary to note the production of liquid fuels such as gas and oil from coal.

***2) Переведите следующие предложения на русский язык, обращая внимание на союзы и на бессоюзную связь:***

1. If conditions permit the geologists will apply aerial prospecting.

2. It is interesting to note basalt is the most abundant of all lava types.

3. Leader from the international mining, regulatory and environmental communities will meet to discuss the most crucial environmental issues facing the mining industry.

4. When mining leaves waste rock behind, contained metals often leach into the land and the water.

***3) Переведите следующие предложения на русский язык, обращая внимание на согласование времен:***

1. Boris says that he knows geology quite well.

2. He said that he knew those miners.

3. She thinks that you passed your examination in chemistry.

4. She thought that you passed your examination session.

5. The student said that he could not translate the article without a dictionary.

***4) Вставьте глагол в нужной форме. Предложенияпереведите:***

1. Computers (to apply) in different fields of science and engineering.

2. Abyssal rocks (to belong) to the group of intrusive rocks.

3. The process of metamorphism (to create) such minerals as tremolite, sillimanite and others.

4. The problem of geothermal energy (to be) under consideration now.

5. Professor I.M. Gubkin (to found) the Institute of Combustible Minerals and (to become) its director.

***5) Выберите предложения с синтаксическими комплексами:***

***а) сложное дополнение;***

***b) сложное подлежащее;***

***c) абсолютная причастная конструкция.***

***Данные предложения переведите на русский язык:***

1. Oil consists of a mixture of hydrocarbons, some other compounds being also present.

2. Oil is known to be one of the most important sources of energy.

3. The teacher said the students to translate that special article.

4. Petroleum is believed to have been formed from decaying vegetable and animal remains.

5. Good results having been obtained, the researchers could continue the experiment.

6. He allowed that specialist to use new equipment.

***6) Переведите текст на русский язык со словарем:***

## Prospecting

Mining activities include prospecting and exploration for a mineral deposit through finding, developing, extracting and processing the ore. That is why it is possible to divide the mining activity into three major phases: 1) before mining which involves prospecting and exploration required to locate, characterize and prove a potential ore body; 2) mining which refers to actual coal or ore extraction; extraction processes include underground or surface mining and dredging; 3) after mining which involves processing and preparing the raw ore for the end product.

Before a mineral deposit can be worked, that is, before it can be extracted from the Earth for use by man, it must first be found. The search for economically useful mineral deposits is called prospecting. To establish the quality and quantity of a mineral deposit, the type of country rock, etc. means to prove it and this process is called proving. Prospecting and proving are only two different stages of mining geological exploration, the latter includes drilling and driving of openings.

Last century prospectors looked for visible evidence of mineralization on the surface of the Earth. To recognize valuable minerals it was necessary to know their various distinctive physical properties. For example, gold occurs in nature as a heavy malleable yellow metal. The first ores of iron to be mined were deposits of magnetite, a black heavy mineral capable of attracting a piece of iron. The aim of geological prospecting is to provide information on a preliminary estimation of the deposit and the costs of the geological investigations to be made. It also indicates whether it is available to continue the exploration or not.

***7) Составьте план к тексту в форме ключевых слов.***

**Вариант 2**

***1) определите инговые формы:***

***а) ParticipleI;***

***b) Gerund;***

***c) Verbal noun.***

***Данные предложения переведите на русский язык.***

1. Core drilling with diamond and carbide bits is widely used.

2. There different ways of obtaining this substance.

3. Most solar-heating systems coming on the market use a black surface to absorb the Sun’s heat.

4. While at the Institute every student is to go through practical training at mines, open-pits, quarries or dressing plants.

5. Making the geological map the geologists study all the data of ground and aerial geological surveys.

6. A method of prospecting for mineral, gas, oil, etc. which is based on combination of X-rays and ultrasonic transmissions came into use recently.

7. Like other sedimentary rocks coal beds may be structurally disturbed by folding and faulting.

8. Being intensively used in the iron and steel industry bituminous coal varies from medium to high rank.

***2) Переведите следующие предложения на русский язык, обращая внимание на союзы и на бессоюзную связь:***

1. If conditions had permitted the geologists would have applied aerial prospecting.

2. If projects are planned from the outset with a low impact perspective, it should be possible to avoid problems or turn potential problems into assets.

3. It is necessary to say land reclamation has emerged as a method of controlling the negative after-effects of extracting coal and other minerals.

4. To recognize valuable minerals it was necessary to know their various distinctive physical properties.

***3) Переведите следующие предложения на русский язык, обращая внимание на согласование времен:***

1. They know you will graduate from the Institute next year.

2. They knew you would graduate from the Institute the next year.

3. The teacher asks if you can answer.

4. The teacher asked if you could answer.

5. He asked how normal temperature was maintained in the underground.

***4) Вставьте глагол в нужной форме. Предложенияпереведите:***

1. Professor I.M. Gubkin (to make) a great contribution to the development of the science of geology.

2. Flaky materials (to cause) the rock to split into thin sheets.

3. The action of plants (to be) even more destructive.

4. Iron fields (to work) by surface mining which (to be) more economical.

5. Coke (to represent) natural solid fuel.

***5) Выберите предложения с синтаксическими комплексами:***

***а) сложное дополнение;***

***b) сложное подлежащее;***

***c) абсолютная причастная конструкция.***

***Данные предложения переведите на русский язык:***

1. Neighbouring coal beds seemed to be sloping gently.

2. At this mine the method of working is longwall, the faces being rather long.

3. The computerizing systems of planning and control proved to be reliable.

4. The teacher asked the student to answer the question.

5. The researcher reported the new method to meet their requirements.

6. Different kinds of exploratory drilling are used, their choice depending on the geological conditions of the deposit.

***6) Переведите текст на русский язык со словарем:***

## Exploration

Exploration is known to include a whole complex of investigations carried out for determining the industrial importance of deposit. The main task is to determine the quality and quantity of mineral and the natural and economic conditions in which it occurs. The exploration of the deposit is divided into three stages, namely preliminary exploration, detailed exploration and exploitation exploration.

The aim of preliminary exploration is to establish the general size of a deposit and to obtain an approximate idea of its shape, dimensions and quality. At this stage the geological map of the deposit is corrected and a detailed survey of its surface is completed. The information on the preliminary exploration is expected to give an all-round description of the deposit which will enable the cost of its detailed exploration to be estimated.

The following points should be taken into consideration: 1) the shape and area of the deposit; 2) its depth and angles of dip and strike; 3) its thickness; 4) the properties of the surrounding rock and overburden; 5) the degree of uniformity of distribution of the mineral within the deposit and the country rock, etc.

Preliminary explorations can make use of exploratory openings such as trenches, prospecting pits, adits, crosscuts and boreholes. They are planned according to a definite system, and some are driven to a great depth. All the exploratory workings are plotted on the plan. These data allow the geologist to establish the vertical section of the deposit. The quality of the mineral deposit is determined on the basis of analyses and tests of samples taken from exploratory work.

***7) Составьте план к тексту в форме ключевых слов.***

**Вариант 3**

***1) определите инговые формы:***

***а) ParticipleI;***

***b) Gerund;***

***c) Verbal noun.***

***Данные предложения переведите на русский язык.***

1. Copper extraction techniques refer to the methods for obtaining copper from its ores.

2. After spending over $30 million on the project, the company has decided to discontinue its development activities in Russia.

3. The pulverized ore is separated by physical processes like hydraulic washing, froth-floatation, and magnetic separation or by chemical processes, depending on the nature of the ore and its impurities.

4. Further cooling will go more slowly.

5. There are so many historical episodes involving the Orloff.

6. The engines power hydraulic pumps, which generate very high pressure oil for driving the track motors and moving the excavator rams.

7. According to the basic definition, mining means extracting minerals from the earth.

8. Drilling and blasting is employed to remove the worthless overburden.

***2) Переведите следующие предложения на русский язык, обращая внимание на союзы и на бессоюзную связь:***

1. The geological record shows that after the cataclysm the world was dominated by oceans.

2. When mineral rains of different density are moved by flowing water, the less dense grains will be most rapidly moved, and a separation of high density grains can be effected.

3. The higher the silica content, the more viscous a magma and the more slowly segregation can proceed.

4. It was interesting to see the value of gemstones depends on a lot of things.

***3) Переведите следующие предложения на русский язык, обращая внимание на согласование времен:***

1. John said that it was difficult to study geochemistry.

2. He asked if the history of life on Earth had begun form the asteroids.

3. He thinks that they are taking their examination in Geology now.

4. He thought that they were taking their examination in Geology at that moment.

5. The teacher informed that in ancient Egypt, gold had been considered the skin or flesh of the gods, particularly the Egyptian sun god Ra.

***4) Вставьте глагол в нужной форме. Предложенияпереведите:***

1. Only approximately 142,000 tons of gold (to mine) throughout history.

2. Venice (to introduce) the gold ducat in 1284 and it (to become) the most popular gold coin in the world for the next 500 years.

3. The USA’s environmental agencies recently (to place) increasing pressure on mining and exploration companies.

4. Mining companies (to blame for) releasing excessive amounts of pollutants into the air and water which has caused considerable public response.

5. Tin and lead still (to mine) from deep mines located in England, Scotland and Wales.

***5) Выберите предложения с синтаксическими комплексами:***

***а) сложное дополнение;***

***b) сложное подлежащее;***

***c) абсолютная причастная конструкция.***

***Данные предложения переведите на русский язык:***

1. The average grade of copper ores in the 21st century is below 0.6% copper, with a proportion of economic ore minerals being less than 2 % of the total volume of the ore rock.

2. Coal was known to be used in England already in the XII century.

3. Scientists found the Romans to employ three techniques to recover the metals.

4. Some specialists consider it to be an intrusive igneous complex.

5.With the old creation destroyed, terrestrial crust had to be formed, by massive underwater intrusions.

6. We all know gold to conduct both heat and electricity and not to rust.

***6) Переведите текст на русский язык со словарем:***

**Alluvial Mining**

Alluvium refers to sediment that is transported and deposited by water. Alluvium is found in rivers, lakes and along coastlines. In the case of alluvium transported by an ancient stream, alluvium can also be found in a terrestrial environment. The alluvial process can transport, and concentrate, valuable minerals. Over thousands of years, minerals are eroded from their source and transported by water to a new locale. Because sediments settle out of water according to their weight, heavier, valuable minerals such as diamonds, platinum group metals, and gold will often deposit at the same time, this characteristic can lead to a concentrated deposit of valuable minerals, prime for extraction.

Alluvial mining is an ancient technology. The early gold-panners were alluvial miners. Although somewhat archaic, small scale alluvial mining operations are still common, both as a hobby and as a source of income, in areas of Africa and South America. Alluvial mining has also morphed into a big business involving cutting edge technology and a great deal of capital investment.

In the case of alluvial deposits that are “cut-off” from their water source, mining is simple. The resource can be extracted through a conventional open-pit. If the deposit is still covered by water, the mining process is a bit more complex. If the water is shallow, such as a lake or adjacent a coast-line; a wall may be built and pumps used to pump out water. The overburden (if any) is removed, and then the deposit is excavated and transported for screening. Dredging is used to remove overburden in areas with very wet ground conditions. The dredge is floated in an initial pond and then moved into the mining block where it excavates down to the mineral bearing material.

***7) Составьте план к тексту в форме ключевых слов.***

**Вариант 4**

***1) определите инговые формы:***

***а) ParticipleI;***

***b) Gerund;***

***c) Verbal noun.***

***Данные предложения переведите на русский язык.***

1. Existing hydrothermal solutions can be studied at hot springs such as those in the Cheleken Peninsula on the eastern edge of the Caspian Sea.

2. Exploration is the work involved in determining the location, size, shape, position, and value of an ore body using prospecting methods, geologic mapping and field investigations, remote sensing (aerial and satellite-borne sensor systems that detect ore-bearing rocks), drilling, and other methods.

3. The deep mine workings created problems with ventilation, lighting, and drainage in Ancient Rome.

4. Restoring ecology is the process of putting an ecosystem back to life from a traumatic experience in activities like mining.

5. It is most convenient to discuss hydrothermal mineral deposits in the context of their settings.

6. Gold is so rare that the world pours more steel in an hour than it has poured gold since the beginning of recorded history.

7. Alluvial diamond mining is an above ground form of mining which concentrates on gathering diamonds on the surface.

8. After the Romans left Britain, in AD 410, there are no records of coal being used in the country until the end of the 12th century.

***2) Переведите следующие предложения на русский язык, обращая внимание на союзы и на бессоюзную связь:***

1. If mice run out of a mine, the mine will fall in.

2. The higher the number, the greater the purity.

3. If you are a pre-college student you can start preparing for a career in Earth science by enrolling in the college preparation program and doing well in all of your courses.

4. When the mine works out the mineral deposit it will be closed.

***3) Переведите следующие предложения на русский язык, обращая внимание на согласование времен:***

1. Everyone knew that to work alone in the lower mines was to invite trouble from those who roamed the empty rooms (English miners’ superstitions).

2. Miners believed that mules could see ghosts and spirits, that the miners couldn't see (English miners’ superstitions).

3. They say that if you stand at the opening of a mine, even today you can hear them tapping away (English miners’ superstitions).

4. A medical study in France during the early twentieth century suggests that gold is an effective treatment for rheumatoid arthritis.

5. The Greeks thought that gold was a dense combination of water and sunlight.

***4) Вставьте глагол в нужной форме. Предложенияпереведите:***

1. Gold (to know) to people for over 6000 years now.

2. In fact, most diamonds that (to date) are much older than Earth's first land plants.

3. Our climate (to change) and that change (to cause) by human activity.

4. Today we (to live) in a time when the Earth and its inhabitants (to face) many challenges.

5. Metal production in the United Kingdom (to decrease) over the past century.

***5) Выберите предложения с синтаксическими комплексами:***

***а) сложное дополнение;***

***b) сложное подлежащее;***

***c) абсолютная причастная конструкция.***

***Данные предложения переведите на русский язык:***

1. The Greeks thought gold to be a dense combination of water and sunlight.

2. Some specialists consider it to be a combination of intrusive and extrusive igneous rocks.

3. Some scientists believe diamonds to be formed from coal.

4. Water is supposed to have come from comets hitting the Earth after the proto-crust solidified.

5. The original Earth was two-layered, with a body of deep water lying underneath the land rather than encircling it.

6. Similar to South Africa, Russia is thought to employ approximately 400 000 people in its gold mining industry.

***6) Переведите текст на русский язык со словарем:***

**From the history of coal mining in Great Britain**

In Roman Britain, the Romans were exploiting all major coalfields (save those of North and South Staffordshire) by the late 2nd century AD. While much of its use remained local, a lively trade developed along the North Sea coast supplying coal to Yorkshire and London. This also extended to the continental Rhineland, where bituminous coal was already used for the smelting of iron ore. It was used in hypocausts to heat public baths, the baths in military forts, and the villas of wealthy individuals. Excavation has revealed coal stores at many forts along Hadrian's Wall, as well as the remains of a smelting industry at forts such as Longovicium nearby.

After the Romans left Britain, in AD 410, there are no records of coal being used in the country until the end of the 12th century. Shortly after the signing of the Magna Carta, in 1215, coal began to be traded in areas of Scotland and the north-east England, where the carboniferous strata where exposed on the sea shore, and thus became known as "sea coal". As early as 1228, sea coal from the north-east was being taken to London. During the 13th century, the trading of coal increased across Britain and by the end of the century most of the coalfields in England, Scotland and Wales were being worked on a small scale. During the first half of the 14th century coal began to be used for domestic heating in coal producing areas of Britain, as improvements were made in the design of domestic hearths. Edward III was the first king to take an interest in the coal trade of the north east, issuing a number of writs to regulate the trade and allowing the export of coal to Calais. The demand for coal steadily increased in Britain during the 15th century, but it was still mainly being used in the mining districts, in coastal towns or being exported to continental Europe. However, by the middle of the 16th century supplies of wood were beginning to fail in Britain and the use of coal as a domestic fuel rapidly expanded.

***7) Составьте план к тексту в форме ключевых слов.***

**Зачет**

Правильно выполненная и оформленная контрольная работа является основным требованием для получения зачёта

***Итоговый контроль – ЭКЗАМЕН***

Перечень примерных вопросов для подготовки к экзамену.

О переводе технического текста

Перевод научно-технического текста должен верно передавать смысл оригинала в форме, по возможности близкой к форме оригинала. Отступления должны быть оправданы особенностями русского языка, требованиями стиля.

Перевод в целом не должен быть ни буквальным подстрочником, ни вольным пересказом оригинала, хотя элементы того и другого обязательно присутствуют обязательно: если буквальный перевод какой-то фразы хорошо передает ее смысл и хорошо звучит по-русски, нет оснований изменять его; и наоборот, можно (и должно) пересказать содержание своими словами, если иначе «никак не получается». Важно лишь не допускать потери существенной информации или, наоборот, привносить от себя то, чего нет в тексте (или хотя бы в достаточно явном подтексте) оригинала.

Верность научного перевода определяется тем, насколько хорошо переводчик знает язык оригинала и предмет изложения. Однако верный смысл должен быть передан ясно и доходчиво.

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| --- | --- |
| МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИФедеральное государственное бюджетное образовательное учреждениевысшего образования**«**Забайкальский государственный университет» | ЭКЗАМЕНАЦИОННЫЙ БИЛЕТ № 1по дисциплине иностранный языкспециальности 21.05.04 «Горное дело»семестр IV |

1. Read and translate the text “Methods of Extraction”
2. Read and give a brief summary of the text “Surface mining”
3. Speak on the topic “Types of processing”

|  |  |
| --- | --- |
| Составил доцент Кречетова О.В.«\_\_\_\_\_» \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 20\_\_ г  | УТВЕРЖДАЮЗав. кафедрой проф. Каплина С.Е.«\_\_\_\_\_» \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 20\_\_ г. |

**Учебно-методическое и информационное обеспечение дисциплины**

**Основная литература**

1. Венявская В.М. Английский язык. Страноведение = Across the countries and continets: учебник / В.М. Венявская. – Ростов н/Д.: Феникс, 2009. – 444с.
2. Козыкина Н.В. Практика перевода в комментариях и упражнениях: учеб. пособие / Н.В. Козыкина, О.И. Флешлер. – Чита: ЧитГУ, 2008. – 129с.
3. Полякова Т.Ю. Достижения науки и техники XX века : учеб. пособие / Т.Ю. Полякова, Е.В. Синявская, Г.А. Селезнева. – 3-е изд., стер. – М. : Высш. шк., 2009. – 287с.
4. Соколова Л.А. Грамматические трудности перевода с английского языка на русский: учеб. пособие / Л.А. Соколова, Е.П. Трофимова, Н.А. Калевич. – М.: Высшая школа, 2008. – 204с.

**Дополнительная литература**

1. Английский язык для инженеров-химиков. Книга для студента: учебное пособие / авторы-сост.: Т.С. Петровская, И.Е. Рыманова, А.В. Макаровских; Томский политехнический университет. – Томск: Изд-во Томского политехнического университета, 2012. – 165 с.
2. Журавлева Р.И. Английский язык. Учебник для студентов горно-геологических специальностей вузов. – Ростов н/Д: Феникс, 2013. – 508 с.
3. Baker A. Ship or sheep. An intermediate phonetic course/ 3d ed. – UK., Cambridge: Cambridge University, 2006.
4. Brieger N., Pohl A. Technical English: Vocabulary and Grammar. – UK., Summertown Publishing, 2012. – 250 с.
5. Glendinning E.H., Pohl A. Technology. – UK., Oxford, 2011. – 136 c.
6. Haines M., Nettle S. Advanced Grammar in use. Supplementary exercises. – UK., Cambridge: Cambridge University Press, 2012. 136 c.
7. Ibbotson M. Professional English in Use: Technical English for Professionals. – UK., Cambridge: Cambridge University Press, 2009. 156 c.
8. Ibbotson M. Cambridge English for Engineering. – UK., Cambridge: Cambridge University Press, 2012. 110 c.
9. MacCarthy M., O’Dell F. Academic Vocabulary in Use. 7th ed. – UK., Cambridge: Cambridge university press, 2012. 176 c.

**Словари:**

1. Баринов С.М., Борковский А.Б., Владимиров В.А. и др. Большой англорусский политехнический словарь: В 2х т. Около 200000 терминов. – М.: Рус. яз., 1991. –720 с. 820 с.
2. Перлов Н.И., Истеев А.И., Тюрин В.А. и др. Англо-русский металлургический словарь. Ок. 66000 терминов. – М.: Рус. яз., 1985. – 841 с.
3. Тимофеев П.П., Алексеев М.Н., Софиано Т.А. Англо-русский геологический словарь. – М.: «Русский язык», 1988. – 542 с.
4. Woods A. English-Russian /Russian-English Encyclopedic dictionary of Exploration and production geophysics. About 30 000 terms.– USA, Dallas, 1997. – 303 c.

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 http://environmentofearth.wordpress.com/2008/09/02/hydrosphere-of-earth/

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<http://www.neargov.org>

www. nineplanets.org /earth.html

[http://sib.chita.ru/p65.htmhttp://sib.chita.ru/p65.htm](http://sib.chita.ru/p65.htmhttp%3A/sib.chita.ru/p65.htm)

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