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**КОНТРОЛЬНЫЕ РАБОТЫ
ПО ИНОСТРАННОМУ ЯЗЫКУ
(АНГЛИЙСКИЙ)**

**Методические указания к контрольной работе
для студентов заочной формы обучения**

Рекомендовано учебно-методической комиссией
специальности 21.05.04 «Горное дело», специализации «Горные
машины и оборудование», «Электрификация и автоматизация
горного производства» в качестве электронного издания
для самостоятельной работы

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Контрольные работы по иностранному языку (английский):
методические указания к контрольной работе [Электронный ресурс] для
студентов специальности «Горное дело», специализации «Горные машины
и оборудование», «Электрификация и автоматизация горного
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Целью контрольных работ является формирование у студентов
заочной формы обучения такой общекультурной компетенции, как
владение одним из иностранных языков для изучения зарубежного опыта в
профессиональной деятельности, а также для осуществления контактов на
профессиональном (элементарном) уровне.

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Предисловие

Цель контрольных работ – формирование у студентов такой общекультурной компетенции, как владение одним из иностранных языков для изучения зарубежного опыта в профессиональной деятельности, а также для осуществления контактов на профессиональном (элементарном) уровне

Упражнения и задания, представленные в контрольных работах, направлены на обеспечение практического владения студентами английским языком на уровне умения самостоятельного чтения литературы по специальности. Сопутствующая задача – обеспечить корректировку и выравнивание уровня знаний, умений и навыков студентов заочного отделения, приступающих к изучению иностранного языка в вузе.

Проработка практических материалов данных контрольных работ обеспечивает необходимую и достаточную базу для перехода к работе с текстами по широким вопросам будущей профессиональной деятельности студента.

1. Каждая контрольная работа представлена в пяти вариантах. **Номер варианта** определяется по последней цифре шифра зачетной книжки студента. Если шифр оканчивается на 1 или 2, вариант – № 1; на 3 или 4 – № 2; на 5 или 6 – № 3; на 7 или 8 – № 4; на 9 или 0 – № 5.

2. Контрольные работы распределяются по семестрам следующим образом:

<i>Семестр</i>	<i>Номер контрольной работы, подлежащей выполнению</i>
I	Контрольная работа №1
II	Контрольная работа №2
III	Контрольная работа №3

3. Работы выполняются **в письменном виде** и представляются в дирекцию института за месяц до начала сессии. На обложке тетради должны быть четко представлены следующие данные: название языка (английский); номер и вариант контрольной работы; фамилия, имя, отчество (студента); группа и шифр.

4. Работы выполняются на развернутых листах (первая страница остается чистой). По краям обеих страниц оставляются поля для замечаний и методических указаний преподавателя, проверяющего работу.

Образец расположения материала контрольной работы

Поля	Левая страница	Правая страница	Поля
	Контрольная работа №1 № задания и его формулировка Английский текст Русский текст		
	I.	I.	
	Необходимые по заданию объяснения		
	II.	II.	

5. Работы с пометой «К защите», сделанной преподавателем, остаются на кафедре и дорабатываются студентом во время сессионных занятий. Исправление ошибок осуществляется на основе указанных замечаний проверяющего преподавателя с помощью необходимого грамматического раздела учебника или самоучителя и словарей (см. «Список литературы»).

6. Работы с пометой «Незачет» возвращаются студенту до начала сессии на переработку. Работа, выполненная без соблюдения предъявляемых требований или не полностью, возвращается без проверки.

7. Зачет по дисциплине «Иностранный язык» (I семестр) ставится по итогам защиты контрольной работы.

8. Зачет по дисциплине «Иностранный язык» (II семестр) ставится по итогам защиты контрольной работы.

9. Экзамен по дисциплине «Иностранный язык» (III семестр) состоит из следующих заданий:

1. *Письменный перевод текста по широкому или узкому профилю специальности с использованием словаря (1200-1500) п.зн. Время подготовки: 45 минут.*

2. *Аннотация (на русском или английском языке) текста по специальности без словаря (2000-2500) п.зн. Время подготовки 15 минут.*

3. *Прослушивание текста профессиональной тематики. Продолжительность звучания до 4 мин; двукратное предъявление. Форма проверки – тест на понимание содержания.*

4. *Устное изложение или беседа по одной из пройденных тем (15-20 предложений).*

- *Моя специальность*
- *КузГТУ*
- *Кузбасс*
- *Высшее образование в России и за рубежом*
- *Горное дело*
- *Выдающиеся ученые и их открытия*
- *Экологические проблемы*

КОНТРОЛЬНАЯ РАБОТА № 1

Вариант 1

I. Запишите и переведите предложения, обращая внимание на степени сравнения прилагательного и наречия.

1. The more hazardous is an occupation; the more important is safety aspect of an industry.

2. The greatest advantage of this extraction technique is that it is much cheaper than the previous one.

3. The most difficult thing in their experiment was to keep the temperature constant.

II. Запишите и переведите предложения, обращая внимание на значение неопределенных и отрицательных местоимений.

1. Any of scientists can take part in this important experiment.

2. Only some years ago there were no industrial enterprises in this region.

3. These devices are very efficient but they have some drawbacks.

III. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите, обращая особое внимание на перевод пассивных конструкций.

1. Surface mining and deep underground mining are the two basic methods of mining.

2. Coal is greatly valued for its energy content.

3. The development of this hypothesis was undertaken by numerous investigators.

4. The properties of this mineral are affected by many natural phenomena.

IV. Запишите предложения и подчеркните в них модальный глагол или его эквивалент. Переведите.

1. Statistical analysis is used when the facts can be presented in numbers.

2. The goal of mining is to obtain coal from the ground.

3. As the construction of the open-pit was an international project, scientists from different countries had to take part in the experiments.

4. The foreman is the person who gives instructions how the work is to be done.

V. Запишите и переведите предложения, обращая внимание на разные значения слова *it*.

1. It was important to test the properties of the material before using it as a protective coating.

2. These substances remain in the air making it harmful for environment.

3. It is light weight of this metal which made it possible to use it for roof support.

VI. Запишите и переведите предложения, обращая внимание на бессоюзные дополнительные и определительные придаточные предложения.

1. Everyone knows coal produces heat.

2. The device the engineer is speaking about will be used for air ventilation.

VII. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 2, 3, 4.

Minerals

1. A mineral is a naturally occurring substance that is solid and stable at room temperature, representable by a chemical formula, usually abiogenic, and has an ordered atomic structure. It is different from a rock, which can be an aggregate of minerals or non-minerals, and does not have a specific chemical composition.

2. The exact definition of a mineral is under debate, especially with respect to the requirement a valid species is abiogenic, and to a lesser extent with regards to it having an ordered atomic structure. The study of minerals is called mineralogy.

3. There are over 4,900 known mineral species; over 4,660 of these have been approved by the International Mineralogical

Association (IMA). The silicate minerals compose over 90% of the Earth's crust. The diversity and abundance of mineral species is controlled by the Earth's chemistry. Silicon and oxygen constitute approximately 75% of the Earth's crust, which translates directly into the predominance of silicate minerals.

4. Minerals are distinguished by various chemical and physical properties. Differences in chemical composition and crystal structure distinguish various species, and these properties in turn are influenced by the mineral's geological environment of formation. Changes in the temperature, pressure, and bulk composition of a rock mass cause changes in its mineralogy; however, a rock can maintain its bulk composition, but as long as temperature and pressure change, its mineralogy can change as well.

5. Minerals can be described by variable physical properties, which relate to its chemical structure and composition. Common distinguishing characteristics include crystal structure and habit, hardness, lustre, diaphaneity, colour, streak, tenacity, cleavage, fracture, parting, and specific gravity. More specific tests for minerals include reaction to acid, magnetism, taste or smell, and radioactivity.

VIII. Просмотрите 5-й абзац теста и ответьте на вопрос: *What do variable physical properties of minerals relate to?* Запишите и переведите вопрос и ответ.

Вариант 2

I. Запишите и переведите предложения, обращая внимание на степени сравнения прилагательного и наречия.

1. Rational use of natural resources is the most vital problem of the country's national economy.

2. The heavier the equipment, the more difficult to install it.

3. The old device was more valuable for our research than the new one.

II. Запишите и переведите предложения, обращая внимание на значение неопределенных и отрицательных местоимений.

1. Nobody knows anything about this problem.

2. Will you carry out any experiment in our research laboratory this year?

3. We invited some skilful workers for the construction of the new workings.

III. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите, обращая особое внимание на перевод пассивных конструкций.

1. Many scientists from different countries entered the new field of research.

2. Automation is being increasingly used in all branches of mining.

3. It is not surprising that every great discovery is much spoken about.

4. High speed electronic machines have introduced great changes in making industry-purpose calculations.

IV. Запишите предложения и подчеркните в них модальный глагол или его эквивалент. Переведите.

1. Our laboratory has to investigate a series of accidents that have taken place in the locality within the last three months.

2. Every future miner should strictly follow safety patterns.

3. This company is able to expand production to 32 million tons by 2020.

4. Both surface and deep underground mining methods can be used in this region.

V. Запишите и переведите предложения, обращая внимание на разные значения слова *it*.

1. Surface mining accounts for around 80 percent of production in Australia. It is 67 percent of total output.

2. It is obvious that we have to do all possible to reduce atmospheric pollution.

3. It was the Industrial Revolution which promoted the application of coal to power steam engines.

VI. Запишите и переведите предложения, обращая внимание на бессоюзные дополнительные и определительные придаточные предложения.

1. The properties of materials the designers use for these technologies do not react to temperature changes.

2. We know some geological conditions are considered dangerous for mining.

VII. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 4, 5.

Rocks

1. Rocks are generally classified by mineral and chemical composition, by the texture of the constituent particles and by the processes that formed them. These indicators separate rocks into three types: igneous, sedimentary, and metamorphic. They are further classified according to particle size. The transformation of one rock type to another is described by the geological model called the rock cycle.

2. Igneous rocks are formed when molten magma cools and are divided into two main categories: plutonic rock and volcanic. Plutonic or intrusive rocks result when magma cools and crystallizes slowly within the Earth's crust (example granite), while volcanic or extrusive rocks result from magma reaching the surface either as lava or fragmental ejecta.

3. Sedimentary rocks are formed by deposition of clastic sediments, organic matter, or chemical precipitates, followed by compaction of the particulate matter and cementation during diagenesis. Sedimentary rocks form at or near the Earth's surface. Mud rocks comprise 65% (mudstone, shale and siltstone); sandstones 20 to 25% and carbonate rocks 10 to 15% (limestone and dolostone).

4. Metamorphic rocks are formed by subjecting any rock type (including previously formed metamorphic rock) to different temperature and pressure conditions than those in which the original rock was formed. These temperatures and pressures are always higher than those at the Earth's surface and must be sufficiently high so as to

change the original minerals into other mineral types or else into other forms of the same minerals.

5. The three classes of rocks – the igneous, the sedimentary and the metamorphic – are subdivided into many groups. There are, however, no hard and fast boundaries between allied rocks. By increase or decrease in the proportions of their constituent minerals they pass by every gradation into one another, the distinctive structures also of one kind of rock may often be traced gradually merging into those of another. Hence the definitions adopted in establishing rock nomenclature merely correspond to selected points in a continuously graduated series.

VIII. Просмотрите абзац 3 и выберите из предложенных вариантов правильное продолжение предложения: *Sedimentary rocks are ...* Запишите все предложение и переведите его.

- 1) *deep under the Earth's surface.*
- 2) *close the Earth's surface.*
- 3) *only at the Earth's surface.*

Вариант 3

I. Запишите и переведите предложения, обращая внимание на степени сравнения прилагательного и наречия.

1. The more scientists work in studying the problem, the more reliable are the research results.
2. When coal seams are nearer the surface, it may be economical to extract it using open cut.
3. At present coal is one of the cheapest sources for power generation.

II. Запишите и переведите предложения, обращая внимание на значение неопределенных и отрицательных местоимений.

1. According to Albert Einstein nothing can move faster than light.
2. Any industry needs modern machinery to improve its production.
3. Some 250 scientists from more than 40 countries gathered for this international conference.

III. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите, обращая особое внимание на перевод пассивных конструкций.

1. Lectures in up-to-date mining techniques were always attended by a great number of students and young scientists.

2. Since the 1880s, coal has been widely used to generate electricity.

3. Coal mining has had a lot of developments over the recent years.

4. They will have completed the construction of the new deep-level tunnel by autumn.

IV. Запишите предложения и подчеркните в них модальный глагол или его эквивалент. Переведите.

1. As a skilled worker he could easily start and stop every kind of engine.

2. This research work may require much money and time.

3. Such instruments were to be used to make measurements and to express these measurements in physical units.

4. Engineers will have to use new equipment to improve operation.

V. Запишите и переведите предложения, обращая внимание на разные значения слова *it*.

1. When the capacity had been increased it exceeded the technological limits.

2. This deposit was discovered in 1938. It is the deep lying seam which contains a great amount of coal.

3. It was necessary to review some aspects of the problem once again.

VI. Запишите и переведите предложения, обращая внимание на бессоюзные дополнительные и определительные придаточные предложения.

1. We were told the experiments with this machinery had been completed successfully.

2. Mines and other industrial enterprises pollute the air and water we cannot live without.

VII. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 2, 4, 5.

Mining

1. 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.

2. To gain access to the mineralised package within the lease area it is often necessary to mine through or remove to the side waste material which is not of immediate interest to the miner. The total movement of ore and waste, which also includes the removal of soil in some cases, is referred to as the mining process. Depending on the nature, attitude, and grade of the orebody, it is often the case that more waste than ore is mined during the course of the life of a mine. The waste removal and placement is a major cost to the mining operator and to facilitate detailed planning the detailed geological and mineralisation characterization of the waste material forms an essential part of the geological exploration programme.

3. The waste is classified as either sterile or mineralised and the movement and stacking (or dumping) of this material forms a major part of the mine planning process. In cases where the mineralised package is determined by an economic cut-off, the near grade mineralised waste is dumped separately with view to treatment should market conditions change and it becomes economic viable to treat this material.

4. Civil engineering design parameters are used in the design of the waste dumps, and special conditions apply to high-rainfall areas, e.g. Brazil or Venezuela, or where the dumps are created in seismically active areas like Chile, Peru, and parts of Canada. In addition, the waste dump designs must meet with all regulatory requirements of the country in whose jurisdiction the mine is located. It is also common practice for major mining companies to do the rehabilitation of the dumps to an international acceptable standard, which in some cases means that higher standards than the local regulatory standard are applied.

5. The materials of economic interest recovered by mining include base metals, precious metals, iron, uranium, coal, diamonds, limestone, oil shale, rock salt and potash. Mining is required to obtain any material that cannot be grown through agricultural processes, or created artificially in a laboratory or factory. Mining in a wider sense comprises extraction of any non-renewable resource.

VIII. Просмотрите 1-й абзац текста и ответьте на вопрос: *What forms the mineralized horizon?* Запишите и переведите вопрос и ответ.

Вариант 4

I. Запишите и переведите предложения, обращая внимание на степени сравнения прилагательного и наречия.

1. The largest coal field in the country has been explored in the beginning of the last century.

2. These devices are the most effective instruments for studying geological conditions.

3. The lower the level of labour force qualification, the less efficient is mining operation.

II. Запишите и переведите предложения, обращая внимание на значение неопределенных и отрицательных местоимений.

1. We needed some 20 minutes to check and adjust the measuring instrument.

2. Anybody can explain you the operational principles of that apparatus.

3. Any skilled operator can easily start and stop the conveyor.

III. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите, обращая особое внимание на перевод пассивных конструкций.

1. Last month the workers fulfilled the plan ahead of schedule.

2. The delegation of German miners will come to our region to share experience with our workers.

3. This unique apparatus has been invented by one of our engineers.

4. By 1912, surface mining was conducted with steam shovels designed for coal mining.

IV. Запишите предложения и подчеркните в них модальный глагол или его эквивалент. Переведите.

1. The mechanical shop of our plant was to be reconstructed.
2. He is a skilful worker who can operate practically any type of mining equipment.
3. Everyone working underground should know safety rules.
4. In view of reconstruction works old equipment will have to be replaced within a month.

V. Запишите и переведите предложения, обращая внимание на разные значения слова *it*.

1. It is the country's natural wealth that determines the structure of its national economy.
2. It was proved that industrial waste has a dangerous effect on the environment.
3. When the temperature had been measured it was written down in the table.

VI. Запишите и переведите предложения, обращая внимание на бессоюзные дополнительные и определительные придаточные предложения.

1. Many problems we are solving today have been caused by man's economic activity.
2. Scientists believe this protective coating will withstand high temperature underground.

VII. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 2, 3, 4.

Mining

1. Mining in Europe has a very long history, examples including the silver mines of Laurium, which helped support the Greek city state of Athens. However, it is the Romans who developed large scale mining methods, especially the use of large volumes of water brought

to the minehead by numerous aqueducts. The water was used for a variety of purposes, including using it to remove overburden and rock debris, called hydraulic mining, as well as washing comminuted or crushed ores, and driving simple machinery.

2. The Romans used hydraulic mining methods on a large scale to prospect for the veins of ore, especially a now obsolete form of mining known as hushing. It involved building numerous aqueducts to supply water to the minehead where it was stored in large reservoirs and tanks. When a full tank was opened, the wave of water sluiced away the overburden to expose the bedrock underneath and any gold veins. The rock was then attacked by fire-setting to heat the rock, which would be quenched with a stream of water. The thermal shock cracked the rock, enabling it to be removed, aided by further streams of water from the overhead tanks. They used similar methods to work cassiterite deposits in Cornwall and lead ore in the Pennines.

3. The methods had been developed by the Romans in Spain in 25 AD to exploit large alluvial gold deposits, the largest site being at Las Medulas, where seven long aqueducts were built to tap local rivers and to sluice the deposits. Spain was one of the most important mining regions, but all regions of the Roman Empire were exploited. They used reverse overshot water-wheels for dewatering their deep mines such as those at Rio Tinto. In Great Britain the natives had mined minerals for millennia, but when the Romans came, the scale of the operations changed dramatically.

4. The Romans needed what Britain possessed, especially gold, silver, tin and lead. Roman techniques were not limited to surface mining. They followed the ore veins underground once opencast mining was no longer feasible. At Dolaucothi they stoped out the veins, and drove adits through barren rock to drain the stopes. The same adits were also used to ventilate the workings; especially important when fire-setting was used.

5. At other parts of the site, they penetrated the water table and dewatered the mines using several kinds of machine, especially reverse overshot water-wheels. These were used extensively in the copper mines at Rio Tinto in Spain, where one sequence comprised 16 such wheels arranged in pairs, and lifting water about 80 feet (24 m). They were worked as treadmills with miners standing on the top slats. Many examples of such devices have been found in old Roman mines

and some examples are now preserved in the British Museum and the National Museum of Wales.

VIII. Просмотрите 5-й абзац текста и закончите предложение *In old Roman mines were found many...*, выбрав вариант, соответствующий его содержанию. Запишите и переведите полученное предложение.

1. ... *reverse overshot water-wheels*.
2. ... *treadmills*.
3. ... *top slats*.

Вариант 5

I. Запишите и переведите предложения, обращая внимание на степени сравнения прилагательного и наречия.

1. A wider application of computers makes our labour easier and more efficient.
2. The newer the equipment, the higher is labour productivity.
3. This book gives the most detailed explanation of different mining techniques.

II. Запишите и переведите предложения, обращая внимание на значение неопределенных и отрицательных местоимений.

1. Will anybody analyze these data in your scientific laboratory?
2. Any industrial enterprise should provide safe labour conditions for workers.
3. These researchers are doing some important work at our mine.

III. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите, обращая особое внимание на перевод пассивных конструкций.

1. The commission will consider this offer carefully before accepting it.
2. Mining at large scale requires the use of draglines, trucks, conveyor, jacks and shearers.
3. Coals occurring below 100 m are usually deep mined.
4. The results of this research work were often referred to by the professor.

IV. Запишите предложения и подчеркните в них модальный глагол или его эквивалент. Переведите.

1. You should try to find out as many facts as possible about history of surface mining.

2. The team of experts is to analyze the present situation connected with our city's ecological problems.

3. The young engineer was allowed to apply the mobile equipment in his field experiments.

4. This production process had to be further improved by new technical means.

V. Запишите и переведите предложения, обращая внимание на разные значения слова *it*.

1. It is said that the first mines were organized in Ancient Greece some 1,500 years ago.

2. It is China which leads the world in coal extraction.

3. Longwall mining is the principal method of mining. It accounts for about 50 percent of underground production.

VI. Запишите и переведите предложения, обращая внимание на бессоюзные дополнительные и определительные придаточные предложения.

1. It is well-known electronics has made great progress over the last decades.

2. Amount of the pollutants the enterprises throw into air depends on the quality of purifying installations.

VII. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 2, 3 и 4.

Mining techniques

1. Mining techniques can be divided into two common excavation types: surface mining and underground mining. Surface mining is much more common, and produces, for example, 85% of

minerals (excluding petroleum and natural gas) in the United States, including 98% of metallic ores.

2. Targets are divided into two general categories of materials: *placer deposits*, consisting of valuable minerals contained within river gravels, beach sands, and other unconsolidated materials; and *lode deposits*, where valuable minerals are found in veins, in layers, or in mineral grains generally distributed throughout a mass of actual rock. Both types of ore deposit, placer or lode, are mined by both surface and underground methods.

3. Surface mining is done by removing (stripping) surface vegetation, dirt, and if necessary, layers of bedrock in order to reach buried ore deposits. Techniques of surface mining include:

- open-pit mining which consists of recovery of materials from an open pit in the ground,
- quarrying or gathering building materials from an open pit mine,
- strip mining which consists of stripping surface layers off to reveal ore/seams underneath.

4. Underground mining consists of digging tunnels or shafts into the earth to reach buried ore deposits. Ore, for processing, and waste rock, for disposal, are brought to the surface through the tunnels and shafts.

5. Underground mining can be classified by the type of access shafts used, the extraction method or the technique used to reach the mineral deposit. Drift mining utilizes horizontal access tunnels, slope mining uses diagonally sloping access shafts and shaft mining consists of vertical access shafts. Mining in hard and soft rock formations require different techniques.

VIII. Просмотрите 5-й абзац текста и ответьте на вопрос: *What is the basis for the classificication of underground mining techniques?* Запишите и переведите вопрос и ответ.

КОНТРОЛЬНАЯ РАБОТА № 2

Вариант 1

I. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите.

1. Great efforts have been undertaken in the area of the environment protection.

2. They could not solve this complex problem without applying digital computers.

3. The development of automatic control systems is being paid much attention to.

4. The worker was told to increase the pressure up to 25 atmospheres.

II. Запишите и переведите предложения, обращая внимание на функцию инфинитива (Infinitive).

1. Throughout human history man has invented machines and techniques to make mining easier and safer.

2. To explain this process the engineer was to demonstrate some schemes, tables and diagrams.

3. To reduce pollutants from enterprises, industry was forced to change combustion processes and to add controllers.

4. The properties of coal to be extracted in the region are being carefully studied.

III. Перепишите и переведите предложения, содержащие субъектный и объектный инфинитивные обороты, инфинитив в функции определения.

1. These electronic instruments are supposed to be able to solve complex logical problems.

2. Long ago researchers believed minerals to be an immense and inexhaustible source of energy.

3. The coke to be produced at our plant will be bought throughout the country.

IV. Запишите предложения. Выпишите из них причастия, укажите их вид (Participle I или Participle II) определите их

самостоятельную функцию (определение или обстоятельство).
Переведите.

1. The students studying at the Kuzbass Technical University are to have practical training at mines and other enterprises.

2. When asked about the plan the chief engineer said that it had been fulfilled in time.

3. Working on the device in the laboratory, the engineers were regularly testing it at the mine.

4. Advanced techniques used in mining open wide possibilities for the automatic control.

V. Перепишите и переведите предложения, содержащие зависимый и независимый (самостоятельный) причастные обороты.

1. When extracted coal is transported to the surface.

2. Various characteristics of the mineral stratification having been discovered, it was possible to determine the method of extraction.

3. Progress in the development of industrial robotics has been so rapid that today electronics is applied in many mining processes.

4. Excavating minerals by means of heavy machinery industrialists should pay attention to nature recovery.

VI. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 2, 3.

Process of mining

1. The process of mining from discovery of an ore body through extraction of minerals and finally to returning the land to its natural state consists of several distinct steps. The first is discovery of the ore body, which is carried out through prospecting or exploration to find and then define the extent, location and value of the ore body. This leads to mathematical resource estimation to estimate the size and grade of the deposit.

2. This estimation is used to conduct a pre-feasibility study to determine the theoretical economics of the ore deposit. This identifies, early on, whether further investment in estimation and engineering

studies is warranted and identifies key risks and areas for further work. The next step is to conduct a feasibility study to evaluate the financial viability, technical and financial risks and robustness of the project.

3. This is when the mining company makes the decision to develop the mine or to walk away from the project. This includes mine planning to evaluate the economically recoverable portion of the deposit, the metallurgy and ore recoverability, marketability and payability of the ore concentrates, engineering concerns, milling and infrastructure costs, finance and equity requirements and an analysis of the proposed mine from the initial excavation all the way through to reclamation. The proportion of a deposit that is economically recoverable is dependent on the enrichment factor of the ore in the area.

4. Once the analysis determines a given ore body is worth recovering, development begins to create access to the ore body. The mine buildings and processing plants are built and any necessary equipment is obtained. The operation of the mine to recover the ore begins and continues as long as the company operating the mine finds it economical to do so. Once all the ore that the mine can produce profitably is recovered, reclamation begins to make the land used by the mine suitable for future use.

VII. Просмотрите 4-й абзац и ответьте на вопрос: *When does operation of the mine usually finish?* Запишите и переведите вопрос и ответ.

Вариант 2

I. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите.

1. Mineral properties are always being studied with great interest.

2. We expect that the technology used at our mine will have been greatly improved.

3. Every living organism is affected by the level of the air, water and soil pollution.

4. The man testing the engine belongs to the team responsible for the equipment.

II. Запишите и переведите предложения, обращая внимание на функцию инфинитива (Infinitive).

1. Computer-aided monitoring systems are used to detect hazardous gases underground.

2. To gain control over nature means to know its laws and not to break them.

3. In order to extract coal from the ground, either underground or open pit mining techniques are used.

4. The method to be introduced at our mine was developed some years ago and proved very efficient.

III. Перепишите и переведите предложения, содержащие субъектный и объектный инфинитивные обороты, инфинитив в функции определения.

1. Efficiency of ventilation systems to be used underground is being improved every year.

2. The basic idea of longwall mining is known to have been developed in England in the late 17th century.

3. Specialists know the resistance of metals to depend on their temperature.

IV. Запишите предложения. Выпишите из них причастия, укажите их вид (Participle I или Participle II) определите их самостоятельную функцию (определение или обстоятельство). Переведите.

1. The students studying at Kuzbass Technical University are to have practical training at mines and other enterprises.

2. When asked about the plan the chief engineer said that it had been fulfilled in time.

3. Working on the device in the laboratory, the engineers were regularly testing it at the mine.

4. Advanced techniques used in mining open wide possibilities for the automatic control.

V. Перепишите и переведите предложения, содержащие зависимый и независимый (самостоятельный) причастные обороты.

1. Major principles of computer-aided mining having been developed, scientists and engineers put them into practice.

2. When extracting coal it is necessary to remember that it can result in a number of adverse effects on the environment.

3. We know that modern shearers are machines usually having faces of 300 m or more.

4. Coal extracted in our region is supplied to the various districts of the country.

VII. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 2, 3.

Bituminous coals

1. When coal seams are near the surface, it may be economical to extract the coal using open cut (also referred to as open cast, open pit, or strip) mining methods. Open cast coal mining recovers a greater proportion of the coal deposit than underground methods, as more of the coal seams in the strata may be exploited. Large open cast mines can cover an area of many square kilometers and use very large pieces of equipment.

2. In this mining method, explosives are first used in order to break through the surface, or overburden, of the mining area. The overburden is then removed by draglines or by shovel and truck. Once the coal seam is exposed, it is drilled, fractured and thoroughly mined in strips. The coal is then loaded on to large trucks or conveyors for transport to either the coal preparation plant or directly to where it will be used.

3. Most open cast mines in the United States extract bituminous coal. In Australia and South Africa open cast mining is used for both thermal and metallurgical coals. In New South Wales open casting for steam coal and anthracite is practised. Surface mining accounts for around 80 percent of production in Australia, while in the US it is used for about 67 percent of production. Globally, about 40 percent of coal production involves surface mining.

4. Bituminous coals are graded according to vitrinite reflectance, moisture content, volatile content, plasticity and ash content. Generally, the highest value bituminous coals have a specific grade of plasticity, volatility and low ash content, especially with low carbonate, phosphorus, and sulphur. Plasticity is vital for coking as it represents its ability to gradually form specific plasticity phases during the coking process, measured by coal dilatation tests. Low phosphorus content is vital for these coals, as phosphorus is a highly damaging element in steel making.

VII. Просмотрите 4-й абзац и ответьте на вопрос: *What is the basis for gradation of bituminous coals?* Запишите и переведите вопрос и ответ.

Вариант 3

I. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите.

1. Improvements in mining methods have reduced many of the risks of rock falls.

2. The chief engineer was informed of the changes made in the production cycle.

3. Scientists of different countries were working hard to improve technologies for proper coal treatment.

4. The results of the experiment could not be relied upon because of some fault in the equipment.

II. Запишите и переведите предложения, обращая внимание на функцию инфинитива (Infinitive).

1. Our intention was to expand the production and to increase the output of coal by 20 per cent.

2. The drill to be used for this operation was being constructed for several years.

3. To explain the problem the professor mentioned some facts from his life.

4. People use discoveries to satisfy their needs and to improve the environment they live in.

III. Перепишите и переведите предложения, содержащие субъектный и объектный инфинитивные обороты, инфинитив в функции определения.

1. The coke must be strong enough to resist the weight of overburden in the blast furnace.

2. Coal is one of the first minerals to have been found by man in nature.

3. Scientists affirm coal to have been used by the Chinese long before it was used in Europe.

IV. Запишите предложения. Выпишите из них причастия, укажите их вид (Participle I или Participle II) и определите их самостоятельную функцию (определение или обстоятельство). Переведите.

1. It took the builders three years to complete the construction of new dressing plant in the region.

2. The results received will be of great importance for their further work.

3. When studying coal properties researchers came to know that they it could be converted into synthetic fuels equivalent to gasoline or diesel.

4. If used for electricity generation, coal is usually pulverized and then combusted in a furnace with a boiler.

V. Перепишите и переведите предложения, содержащие зависимый и независимый (самостоятельный) причастные обороты.

1. While studying coal properties scientists found that it is the largest worldwide anthropogenic sources of carbon dioxide releases.

2. In all mines visited new electronic means of controlling are used.

3. Lignite, or brown coal, being the lowest rank of coal, is used almost exclusively as fuel for electric power generation.

4. Computer technologies having been widely introduced into industry, we could automate a lot of processes.

VI. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 3, 4.

Open-pit mining

1. Open-pit mining is a method of extracting rock or minerals from the earth by their removal from an open pit or borrow. This form of mining differs from extractive methods that require tunneling into the earth such as long wall mining. Open-pit mines are used when deposits of commercially useful minerals or rock are found near the surface; that is, where the overburden (surface material covering the valuable deposit) is relatively thin or the material of interest is structurally unsuitable for tunneling. For minerals that occur deep below the surface underground mining methods extract the valued material.

2. Open-pit mines are dug on benches, which describe vertical levels of the hole. These benches are usually on four meter to sixty meter intervals, depending on the size of the machinery that is being used. Many quarries do not use benches, as they are usually shallow. Most walls of the pit are generally dug on an angle less than vertical, to prevent and minimize damage and danger from rock falls. This depends on how weathered the rocks are, and the type of rock, and also how many structural weaknesses occur within the rocks, such as a fault, shears, joints or foliations.

3. The walls are stepped. The inclined section of the wall is known as the batter, and the flat part of the step is known as the bench or berm. The steps in the walls help prevent rock falls continuing down the entire face of the wall. In some instances additional ground support is required and rock bolts, cable bolts and shotcrete are used. De-watering bores may be used to relieve water pressure by drilling horizontally into the wall, which is often enough to cause failures in the wall by itself. A haul road is usually situated at the side of the pit, forming a ramp up which trucks can drive, carrying ore and waste rock.

4. Waste rock is piled up at the surface, near the edge of the open pit. This is known as the waste dump. The waste dump is also tiered and stepped, to minimize degradation. Ore which has been processed is known as tailings, and is generally slurry. This is pumped to a

tailings dam or settling pond, where the water evaporates. Tailings dams can often be toxic due to the presence of unextracted sulfide minerals, some forms of toxic minerals in the gangue, and often cyanide which is used to treat gold ore via the cyanide leach process. This toxicity can harm the surrounding environment.

VII. Просмотрите 2-й абзац и ответьте на вопрос: *What do the intervals of benches depend on?* Запишите и переведите вопрос и ответ.

Вариант 4

I. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите.

1. Experts in mine construction technologies have been shown some types of new building materials.

2. In Australia and South Africa open cast mining is used for both thermal and metallurgical coals.

3. The results of calculation are influenced by the calculation method.

4. The operator had to replace only one part in that device.

II. Запишите и переведите предложения, обращая внимание на функцию инфинитива (Infinitive).

1. The goals of precombustion coal technologies are to increase efficiency and reduce emissions when the coal is burned.

2. The principle of room and pillar mining system is to extract mined material across a horizontal plane while leaving «pillars» of untouched material to support the roof overburden leaving open areas or «rooms» underground.

3. To make accurate measurements several parameters must be known.

4. To mine great amounts of coal is impossible without modern shearers and cutters.

III. Перепишите и переведите предложения, содержащие субъектный и объектный инфинитивные обороты, инфинитив в функции определения.

1. Everyone knows coal to have been formed under high pressure and high temperature.

2. Kuzbass is considered to be one of the largest coal fields all over the world.

3. The equipment to be tested in our shop will be used for carbonization operations.

IV. Запишите предложения. Выпишите из них причастия, укажите их вид (Participle I или Participle II) и определите их самостоятельную функцию (определение или обстоятельство). Переведите.

1. When put into operation «Kedrovskiy» had a capacity of 3,000,000 tons of annual output.

2. Designing new mining machines engineers should pay attention to geological conditions of mines.

3. Anthracite, being the highest rank of coal, is hard, glossy black coal.

4. The problem discussed at the conference is of vital importance for our region.

V. Перепишите и переведите предложения, содержащие зависимый и независимый (самостоятельный) причастные обороты.

1. Being studied intensively by specialists of different branches bituminous coal quickly found wide-scale application for various purposes.

2. The type of methods applied depended on geological conditions.

3. These easily accessible sources of coal having been exhausted; underground extraction by shaft mining was developed.

4. Mining engineers are the scientists involved in theory and practice of extracting minerals from a naturally occurring environment.

VI. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 2, 4.

Clean coal technology

1. Clean coal technology is a collection of technologies being developed to mitigate the environmental impact of coal energy generation. When coal is used as a fuel source, the gaseous emissions generated by the thermal decomposition of the coal include sulphur dioxide, nitrogen dioxide, carbon dioxide, and other chemical byproducts that vary depending of the type of the coal being used. These emissions have been established to have a negative impact on the environment, contributing to acid rain and climate change.

2. As a result, clean coal technologies are being developed to remove or reduce pollutant emissions to the atmosphere. Some of the techniques that would be used to accomplish this include chemically washing minerals and impurities from the coal, gasification, treating the flue gases with steam to remove sulfur dioxide, carbon capture and storage technologies to capture the carbon dioxide from the flue gas and dewatering lower rank coals to improve the calorific value, and thus the efficiency of the conversion into electricity.

3. Clean coal technology usually addresses atmospheric problems resulting from burning coal. Historically, the primary focus was on sulfur dioxide and particulates, since it is the most important gas in the causation of acid rain. More recent focus has been on carbon dioxide as well as other pollutants. Concerns exist regarding the economic viability of these technologies and the timeframe of delivery, potentially high hidden economic costs in terms of social and environmental damage, and the costs and viability of disposing of removed carbon and other toxic matter.

4. Coal, which is primarily used for the generation of electricity, is the second largest domestic contributor to carbon dioxide emissions in the USA. The public has become more concerned about global warming which has led to new legislation. The coal industry has responded by running advertising touting clean coal in an effort to counter negative perceptions and claiming more than \$50 billion towards the development and deployment of «traditional» clean coal

technologies over the past 30 years; and promising \$500 million towards carbon capture and storage research and development.

VII. Просмотрите 3-й абзац и ответьте на вопрос: *What were ecologists first focused on: sulfur dioxide or carbon dioxide?* Запишите и переведите вопрос и ответ.

Вариант 5

I. Запишите предложения. Выпишите из них сказуемые, определите их видо-временные формы и залог. Переведите.

1. The scientist was speaking of the new instruments used for geodetic surveying.

2. The situation in the sphere of environment protection is regularly reported in the regional paper.

3. Chemists and physicists make a wide use of minerals for developing new sources of power.

4. The act of mining requires different methods of extraction depending on the mineralogy, geology, and location of the resources.

II. Запишите и переведите предложения, обращая внимание на функцию инфинитива (Infinitive).

1. The first step in discovering an ore body is to determine what minerals to test for.

2. One can use different means to measure temperatures underground.

3. The machine to be inspected by the operator is located in the mechanical shop of our enterprise.

4. To design and develop automatic control systems is the responsibility of an engineer.

III. Перепишите и переведите предложения, содержащие субъектный и объектный инфинитивные обороты, инфинитив в функции определения.

1. First Kuzbass coal deposit is known to have been discovered about 200 years ago.

2. The designers believe their new device to be able to maintain a desired rate of operation for a long time.

3. There are a great many of interesting things to be said about coke properties.

IV. Запишите предложения. Выпишите из них причастия, укажите их вид (Participle I или Participle II) и определите их самостоятельную функцию (определение или обстоятельство). Переведите.

1. Doing the research you must follow the recommendations given in this handbook.

2. The figures mentioned in his report will be published in the next issue of this scientific journal.

3. When measured the seam thickness was much higher than it was expected.

4. A mining engineer must pay special attention to safety, following all federal, state, and local mine safety laws.

V. Перепишите и переведите предложения, содержащие зависимый и независимый (самостоятельный) причастные обороты.

1. Having developed large scale mining methods, Romans were able to raise the amount of coal output.

2. Prospective deposit being located, the mining engineer determines the ore properties.

3. The new underground mine being built near the Arctic Circle is to use a special technological scheme.

4. Anthracite being of higher quality, it generally costs two to three times as much as regular coal.

VI. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 3, 4, 5.

Stoping

1. Stoping is the removal of the wanted ore from an underground mine leaving behind an open space known as a stope. Stoping is used when the country rock is sufficiently strong not to cave into the stope, although in most cases artificial support is also provided. As mining

progresses, the stope is often backfilled with tailings, or when needed for strength, a mixture of tailings and cement.

2. In the past stoping took place with manual tools or by fire-setting; later gunpowder was used, and from the 19th century various other explosives and power-tools came into use. In old mines, stopes frequently collapse at a later time, leaving craters at the surface. They are an unexpected danger when records of underground mining have been lost with the passage of time.

3. A stope can be created in a variety of ways, depending on the geology of the ore body being mined. It is common to dig shafts vertically downwards to reach the ore body and then drive horizontal levels through it. Stopping then takes place from these levels, in its simplest form as overhand and underhand stoping, which refer to the removal of ore from above or below the level, respectively. In steeply-dipping ore bodies, such as lodes of tin, the stopes become long narrow near-vertical spaces, which, if one reaches the surface is known as a gunnis or coffen.

4. Stull stoping is a form of stoping used in hardrock mining that uses systematic or random timbering («stulls») placed between the foot and hanging wall of the vein. In shrinkage stoping, mining proceeds from the bottom upwards, in horizontal slices, with the broken ore being left in place for miners to work from.

5. Underhand stoping, also known as horizontal-cut underhand or underbreaking stoping, is the working of an ore deposit from the top downwards. Long-hole stoping can be the lowest cost method when large ore bodies are located in strong country rock. In operation, it is similar to an underground version of quarrying.

VII. Просмотрите 1-й и 2-й абзацы и ответьте на вопрос: *Why old stopes are dangerous for miners?* Запишите и переведите вопрос и ответ.

КОНТРОЛЬНАЯ РАБОТА № 3

Вариант 1

I. Перепишите и переведите предложения, обращая внимание на различные значения глаголов *should, would*.

1. The engineer's assistant should regularly control the state of machinery.

2. Engineers would be unable to calculate and correct the action of machinery without electronic computers.

3. If you came to our mine next week, we should show you our new equipment.

II. Перепишите и переведите предложения, обращая внимание на инфинитивные и причастные обороты, которым в русском языке обычно соответствуют придаточные предложения.

1. The choice of the material to be used depends upon many factors.

2. M. Lomonosov is known to have pointed out that rock and minerals undergo constant changes.

3. There being no higher schools specializing in geology, the number of geologists in pre-revolutionary time was very small.

4. We believe this process to be introduced on a wide scale in two decades.

5. If improved this technique may be used to manufacture modern mining machinery.

III. Перепишите и переведите предложения, обращая внимание на значения выделенных слов и словосочетаний.

1. The information of this article is interesting *as well as* useful for our research.

2. We had to replace the device used *for* inputting data to the computer *for* it had some drawbacks.

3. *As* a designer he should know *both* the advantages *and* disadvantages of the material used for his project.

IV. Перепишите и переведите предложения, содержащие условные предложения и сослагательное наклонение.

1. A part of the fire will be converted into carbon monoxide if there is no enough amount of air.

2. If technological advancements had not been made coal mining would not have been as productive as it is today.

3. If hazardous gas monitoring was not introduced, it would be impossible to continue underground operations.

V. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 3 и 4.

Tunnel boring machine

1. A tunnel boring machine (TBM) also known as a «mole», is a machine used to excavate tunnels with a circular cross section through a variety of soil and rock strata. They can bore through anything from hard rock to sand. Tunnel diameters can range from a meter to 19.25 m to date. Tunnels of less than a meter or so in diameter are typically done using trenchless construction methods or horizontal directional drilling rather than TBMs.

2. Tunnel boring machines are used as an alternative to drilling and blasting (D&B) methods in rock and conventional «hand mining» in soil. TBMs have the advantages of limiting the disturbance to the surrounding ground and producing a smooth tunnel wall. This significantly reduces the cost of lining the tunnel, and makes them suitable to use in heavily urbanized areas. The major disadvantage is the upfront cost. TBMs are expensive to construct, and can be difficult to transport. However, as modern tunnels become longer, the cost of tunnel boring machines versus drill and blast is actually less – this is because tunneling with TBMs is much more efficient and results in a shorter project.

3. In hard rock, either shielded or open-type TBMs can be used. All types of hard rock TBMs excavate rock using disc cutters mounted in the cutter head. The disc cutters create compressive stress fractures in the rock, causing it to chip away from the rock in front of the machine, called the tunnel face. The excavated rock, known as muck, is transferred through openings in the cutter head to a belt conveyor,

where it runs through the machine to a system of conveyors or muck cars for removal from the tunnel.

4. In soft ground, there are three main types of TBMs: Earth Pressure Balance Machines (EPB), Slurry Shield (SS) and open-face type. Both types of closed machines operate like Single Shield TBMs, using thrust cylinders to advance forward by pushing off against concrete segments. Earth Pressure Balance Machines are used in soft ground with less than 7 bar of pressure. The cutter head does not use disc cutters only, but instead a combination of tungsten carbide cutting bits, carbide disc cutters, and/or hard rock disc cutters.

VI. Прочитайте 2-й абзац текста и составьте три вопроса к его содержанию. Запишите вопросы.

Вариант 2

I. Перепишите и переведите предложения, обращая внимание на различные значения глаголов *should, would*.

1. If he knew that the test was dangerous he would take some special measures.

2. It should be mentioned that nearly everything that we do in the modern world is helped, or even controlled, by computers.

3. It would be impossible for the engineers to examine the machines' damages without the help of special equipment.

II. Перепишите и переведите предложения, обращая внимание на инфинитивные и причастные обороты, которым в русском языке обычно соответствуют придаточные предложения.

1. The chief engineer wanted his team to install the device next week.

2. All the details having been discussed, they decided to test the new method.

3. Computers to be used for controlling the production will be delivered in a month.

4. When tested the new cutter-loader showed capacity which the previous one did not possess.

5. Everyone knows engineers to master new methods of utilizing coal energy.

III. Перепишите и переведите предложения, обращая внимание на значения выделенных слов и словосочетаний.

1. Operation began *as soon as* the machines had been installed.
2. Coal is extracted *both* in mines *and* in quarries; *either* of these methods is being widely used in our region.
3. *Because of* its tiny size this computer is called *either* minicomputer *or* microcomputer.

IV. Перепишите и переведите предложения, содержащие условные предложения и сослагательное наклонение.

1. If they did not use remote-controlled equipment, they would no be able to prevent cave-ins.
2. Without application of electronic equipment modern mining would be impossible.
3. The production rate of this mine will be greatly improved if it is equipped with «continuous miners».

V. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 2 и 3.

Hard rock tunnel boring machines

1. A tunnel boring machine (TBM) also known as a «mole», is a machine used to excavate tunnels with a circular cross section through a variety of soil and rock strata. They can bore through anything from hard rock to sand. Tunnel diameters can range from a meter to 19.25 m to date. Tunnels of less than a meter or so in diameter are typically done using trenchless construction methods or horizontal directional drilling rather than TBMs.

2. Open-type TBMs have no shield, leaving the area behind the cutter head open for rock support. To advance, the machine uses a gripper system that pushes against the side walls of the tunnel. Not all machines can be continuously steered while gripper shoes push on the side-walls, as in the case of a Wirth machine which will only steer while ungripped. The machine will then push forward off the grippers gaining thrust, At the end of a stroke, the rear legs of the machine are lowered, the grippers and propel cylinders are retracted.

3. The retraction of the propel cylinders repositions the gripper assembly for the next boring cycle. The grippers are extended, the rear legs lifted, and boring begins again. The open-type, or Main Beam, TBM does not install concrete segments behind it as other machines do. Instead, the rock is held up using ground support methods such as ring beams, rock bolts, shotcrete, steel straps, ring steel and wire mesh.

4. In fractured rock, shielded hard rock TBMs can be used, which erect concrete segments to support unstable tunnel walls behind the machine. Double Shield TBMs have two modes; in stable ground they can grip against the tunnel walls to advance. In unstable, fractured ground, the thrust is shifted to thrust cylinders that push off against the tunnel segments behind the machine. This keeps the significant thrust forces from impacting fragile tunnel walls. Single Shield TBMs operate in the same way, but are used only in fractured ground, as they can only push off against the concrete segments.

VI. Прочитайте 4-й абзац текста и составьте три вопроса к его содержанию. Запишите вопросы.

Вариант 3

I. Перепишите и переведите предложения, обращая внимание на различные значения глаголов *should, would*.

1. It would be impossible to fulfil this task if we did not take into consideration the results of the last experiment.

2. Without lighting equipment we should not be able to work underground.

3. Automation should cover most of the production processes in various branches of mining.

II. Перепишите и переведите предложения, обращая внимание на инфинитивные и причастные обороты, которым в русском языке обычно соответствуют придаточные предложения.

1. When supplied with good raw material the plant has greatly improved the quality of its products.

2. Coal is considered to have been formed on the Earth millions of years ago.

3. We know mining to affect environment.
4. The electronic devices having improved the control, we could ensure regular production processes.

III. Перепишите и переведите предложения, обращая внимание на значения выделенных слов и словосочетаний.

1. When there is sound there is movement *as* all sounds are produced by something that vibrates.

2. *As* the work was progressing the team of researchers was achieving better results *because* they applied new and precise instruments.

3. *As for* this installation it did not operate *because of* poor fuel.

IV. Перепишите и переведите предложения, содержащие условные предложения и сослагательное наклонение.

1. Engineers would be unable to reach deep coal seams without the use of modern underground equipment and sophisticated mining techniques.

2. If 75 percent of the coal section is removed, the roof is allowed to collapse in a safe manner.

3. If the shearers had not been invented, a great number of mines would have never been opened.

V. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 3 и 4.

Soft rock tunnel boring machines

1. In soft ground, there are three main types of TBMs: Earth Pressure Balance Machines (EPB), Slurry Shield (SS) and open-face type. Both types of closed machines operate like Single Shield TBMs, using thrust cylinders to advance forward by pushing off against concrete segments. Earth Pressure Balance Machines are used in soft ground with less than 7 bar of pressure. The cutter head does not use disc cutters only, but instead a combination of tungsten carbide cutting bits, carbide disc cutters, and/or hard rock disc cutters.

2. The EPB gets its name because it is capable of holding up soft ground by maintaining a balance between earth and pressure. The

TBM operator and automated systems keep the rate of soil removal equal to the rate of machine advance. Thus, a stable environment is maintained. In addition, additives such as bentonite, polymers and foam are injected into the ground to further stabilize it.

3. In soft ground with very high water pressure and large amounts of ground water, Slurry Shield TBMs are needed. These machines offer a completely enclosed working environment. Soils are mixed with bentonite slurry, which must be removed from the tunnel through a system of slurry tubes that exit the tunnel. Large slurry separation plants are needed on the surface for this process, which separate the dirt from the slurry so it can be recycled back into the tunnel.

4. Open face TBMs in soft ground rely on the fact that the face of the ground being excavated will stand up with no support for a short period of time – this makes them suitable for use in rock types with strength of up to 10MPa or so, and with low water inflows. Face sizes in excess of 10 metres can be excavated in this manner. The face is excavated using a backactor arm or cutter head to within 150 mm of the edge of the shield. The shield is jacked forwards and cutters on the front of the shield cut the remaining ground to the same circular shape. Ground support is provided by use of precast concrete segments that are bolted or supported until a full ring of support has been erected. A final segment, called the key, is wedge-shaped, and expands the ring until it is tight against the circular cut of the ground left behind by cutters on the TBM shield. Many variations of this type of TBM exist.

VI. Прочитайте 4-й абзац текста и составьте три вопроса к его содержанию. Запишите вопросы.

Вариант 4

I. Перепишите и переведите предложения, обращая внимание на различные значения глаголов *should*, *would*.

1. The chief engineer said that new cutter-loader would be tested in a week.

2. If they had studied the problem in detail they would have explained this phenomenon earlier.

3. This apparatus should produce much more output than the previous one.

II. Перепишите и переведите предложения, обращая внимание на инфинитивные и причастные обороты, которым в русском языке обычно соответствуют придаточные предложения.

1. The engine being based on a quite new principle, the operator could not start it.

2. The data to be published in this magazine were found in our experimental work.

3. Mining engineering is known to comprise various activities concerning mineral extraction.

4. We expected our research to reveal the secret of this phenomenon.

5. When explored this seam was named after the famous Russian geologist.

III. Перепишите и переведите предложения, обращая внимание на значения выделенных слов и словосочетаний.

1. *As* a vector this parameter has direction *as well as* magnitude.

2. It is a well-known fact that gases have *neither* size *nor* shape of their own; liquids do not have them *as well*.

3. They could not start the mine construction *for* the water level was falling *for* more than a week.

IV. Перепишите и переведите предложения, содержащие условные предложения и сослагательное наклонение.

1. If coal seams are too deep underground they require underground mining.

2. If coal mining han't been a very dangerous activity the list of coal mining disasters wouldn't have been so long.

3. It would be impossible to supply far-off regions with heat and power without coal.

V. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 2 и 4.

Loader

1. A loader is a type of tractor, usually wheeled, sometimes on tracks, that has a front-mounted square wide bucket connected to the end of two booms (arms) to scoop up loose material from the ground, such as dirt, sand or gravel, and move it from one place to another without pushing the material across the ground. A loader is commonly used to move a stockpiled material from ground level and deposit it into an awaiting dump truck or into an open trench excavation.

2. The loader assembly may be a removable attachment or permanently mounted. Often the bucket can be replaced with other devices or tools – for example, many can mount forks to lift heavy pallets or shipping containers, and a hydraulically opening «clamshell» bucket allows a loader to act as a light dozer or scraper. The bucket can also be augmented with devices like a bale grapppler for handling large bales of hay or straw.

3. The largest loader in the world is LeTourneau L-2350. Currently these large loaders are in production in the Longview, Texas facility. The L-2350 uses a diesel electric propulsion system similar to that used in a locomotive. Each rubber tired wheel is driven by its own independent electric motor. Loaders are used mainly for uploading materials into trucks, laying pipe, clearing rubble, and digging. A loader is not the most efficient machine for digging as it cannot dig very deep below the level of its wheels, like a backhoe can. The capacity of a loader bucket can be anywhere from 0.5 to 36 m³ depending upon the size of the machine and its application. The front loader's bucket capacity is generally much bigger than a bucket capacity of a backhoe loader.

4. Unlike most bulldozers, most loaders are wheeled and not tracked, although track loaders are common. They are successful where sharp edged materials in construction debris would damage rubber wheels, or where the ground is soft and muddy. Wheels provide better mobility and speed and do not damage paved roads as much as tracks but provide less traction.

VI. Прочитайте 3-й абзац текста и составьте три вопроса к его содержанию. Запишите вопросы.

Вариант 5

I. Перепишите и переведите предложения, обращая внимание на различные значения глаголов *should, would*.

1. Scientists should calculate the exact seam thickness by means of computer devices.

2. If they used carbon, the new alloy would possess some special properties.

3. Scientists supposed that this experiment would give something fundamentally new for mining techniques.

II. Перепишите и переведите предложения, обращая внимание на инфинитивные и причастные обороты, которым в русском языке обычно соответствуют придаточные предложения.

1. The coal bed proves to extend several kilometres under the Earth.

2. We know mechanization to improve mining operation over the last 50 years.

3. A transformer having been used, it became possible to increase and to decrease the voltage in the electric circuit.

4. Unless improved this lubricant cannot reduce the frictional contact between the rotating parts of the machine.

5. The substance to be subjected to heating is to be carefully analysed in our laboratory.

III. Перепишите и переведите предложения, обращая внимание на значение выделенных слов и словосочетаний.

1. To use some structural material the designer must know *either* stresses *or* deformations under various operating conditions, *or both*.

2. *Since* coal deposits are of great amount no one should be afraid that we will exhaust them in 20-25 years.

3. *Since* that time only mechanized methods have been used in that region for *both* coal *and* gas extraction.

IV. Перепишите и переведите предложения, содержащие условные предложения и сослагательное наклонение.

1. A part of the fire will be converted into carbon monoxide if there is no enough amount of air.

2. Romans would have done much for the development of the mining, if they had had more advanced equipment.

3. It would be wrong to suppose that surface mining methods are more productive than the underground ones.

V. Прочитайте текст и постарайтесь понять его содержание. Перепишите и письменно переведите абзацы 1, 2 и 4.

Loaders

1. Loaders are used mainly for uploading materials into trucks, laying pipe, clearing rubble, and digging. A loader is not the most efficient machine for digging as it cannot dig very deep below the level of its wheels, like a backhoe can. The capacity of a loader bucket can be anywhere from 0.5 to 36 m³ depending upon the size of the machine and its application. The front loader's bucket capacity is generally much bigger than a bucket capacity of a backhoe loader.

2. Unlike most bulldozers, most loaders are wheeled and not tracked, although track loaders are common. They are successful where sharp edged materials in construction debris would damage rubber wheels, or where the ground is soft and muddy. Wheels provide better mobility and speed and do not damage paved roads as much as tracks but provide less traction.

3. Front loaders are commonly used to remove snow especially from sidewalks, parking lots, and other areas too small for using snowplows and other heavy equipment. They are sometimes used as snowplows with a snowplow attachment but commonly have a bucket or snow basket, which can also be used to load snow into the rear compartment of a snowplow or dump truck. High-tip buckets are suitable for light materials such as chip, peat and light gravel and when the bucket is emptied from a height.

4. Unlike backhoes or standard tractors fitted with a front bucket, many large loaders do not use automotive steering mechanisms. Instead, they steer by a hydraulically actuated pivot point set exactly

between the front and rear axles. This is referred to as «articulated steering» and allows the front axle to be solid, allowing it to carry greater weight. Articulated steering provides better maneuverability for a given wheelbase. Since the front wheels and attachment rotate on the same axis, the operator is able to «steer» his load in an arc after positioning the machine, which can be useful. The tradeoff is that when the machine is «twisted» to one side and a heavy load is lifted high, it has a greater risk of turning over to the «wide» side.

VI. Прочитайте 3-й абзац текста и составьте три вопроса к его содержанию. Запишите вопросы.

СПИСОК ЛИТЕРАТУРЫ

Основная литература:

1. Агабекян, И. П. Английский язык для студентов энергетических специальностей=English for Power Engineering Students : учеб. пособие для студентов вузов / И. П. Агабекян. – Ростов н/Д : Феникс, 2012.

2. Журавлева, Н. Н. Английский для горняков = English for Mining Technology : учебное пособие / Н. Н. Журавлева. – М. : КноРус, 2011.

3. Графова, Л. Л. English for Miners. Профессионально-ориентированный курс английского языка : учеб. пособие для вузов [Электронный ресурс] / Л. Л. Графова, В. Т. Бабичев. – М. : Горная книга, 2010. – 496 с.

<http://www.biblioclub.ru/book/69824/>

Дополнительная литература:

4. Радовель, В. А. Английский язык для технических вузов : учеб. пособие / В. А. Радовель. – М. : Дашков и К*, 2010.

5. Полякова, Т. Ю. Английский язык для инженеров : учебник для студентов вузов, обучающихся по техн. специальностям / Т. Ю. Полякова. – М. : Высш. шк., 2007.

6. Полякова, О. В. Грамматический справочник по английскому языку с упражнениями [Электронный ресурс] / О. В. Полякова. – М. : Флинта, 2011.

<http://www.biblioclub.ru/book/69735/>

7. Аракин, В. Д. Англо-русский словарь : около 35000 слов / В. Д. Аракин, З. С. Выгодская, Н. Н. Ильина. – М. : Русский язык, 1990.