

МИНИСТЕРСТВО ОБРАЗОВАНИЯ РЕСПУБЛИКИ БЕЛАРУСЬ
Белорусский национальный технический университет

Кафедра «Английский язык № 1»

ENGLISH FOR MINING ENGINEERING STUDENTS

Пособие

для студентов специальности 7-07-0714-01
«Машины и оборудование для горнодобывающих
производств. Горная электромеханика» и 7-07-0724-01
«Разработка месторождений полезных ископаемых»

Qo'llanma

Tog'-kon sanoati kon mashinalari va uskunalari.
Kon elektromexanikasi (7-07-0714-01), Foydali qazilmalar
konlarini o'zlashtirish (7-07-0724-01) mutaxassisliklari
talabalari uchun mo'ljallangan

*Рекомендовано учебно-методическим объединением по образованию
в области горнодобывающей промышленности*

Минск
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English for Mining Engineering Students: пособие для студентов специальности 7-07-0714-01 «Машины и оборудование для горнодобывающих производств. Горная электромеханика» и 7-07-0724-01 «Разработка месторождений полезных ископаемых» / Е. И. Яловик [и др.]. – Минск : БНТУ, 2024. – 170 с.
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Данное пособие предназначено для студентов 1 и 2 курсов факультета горного дела и инженерной экологии специальностей 7-07-0714-01 «Машины и оборудование для горнодобывающих производств. Горная электромеханика», 7-07-0724-01 «Разработка месторождений полезных ископаемых».

Цель пособия – комплексное развитие у студентов коммуникативной компетенции, необходимой для осуществления профессионального общения на английском языке в письменной и устной форме, в соответствии с учебной программой. Пособие состоит из 11 уроков-тем, включающих лексические упражнения, аутентичный текст, послетекстовые упражнения, а также задания на развитие навыков устной и письменной речи, задания на реферирование текстов. Пособие рассчитано на 170 часов аудиторных занятий.

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Mazkur qo'llanma konchilik va muhandislik ekologiyasi fakulteti Tog'-kon sanoati mashinalari va uskunalari (7-07-0714-01), Kon elektromexikasi, Foydali qazilma konlarini o'zlashtirish (7-07-0724-01) mutaxassisliklarining 1- va 2-kurs talabalari uchun mo'ljallangan.

Qo'llanmadan maqsad – talabalarni kommunikativ malakaga har tomonlama o'rgatish, o'quv rejasiga muvofiq ingliz tilida yozma va og'zaki kasbiy muloqotni amalga oshirishni kompleks rivojlantirishga qaratilgan. Qo'llanma 11 ta darslardan iborat bo'lib, ularda leksik mashqlar, autentik matn, matndan keyingi mashqlar, shuningdek, og'zaki va yozma nutq ko'nikmalarini rivojlantirish bo'yicha topshiriqlar, shuningdek, matnlarni umumlashtirish bo'yicha topshiriqlar mavjud. Qo'llanma 170 soatlik auditoriya darslariga mo'ljallangan.

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Lesson 1

Higher Education in Great Britain

I. Прочитайте и запомните следующие слова:

Quyidagi so'zlarni o'qing va yodda saqlang:

1) leading	ведущий, передовой yetakchi, Ilg'or
2) to differ from	отличаться от dan farq qilmoq
3) internal government	внутреннее руководство (руководство университета) ichki hokimyat
4) entry requirements	вступительные требования kirish talablari
5) to take examinations	сдавать экзамены imtihon topshirmoq
6) society	общество jamiyat
7) passing mark	проходной балл o'tish balli
8) academic year	учебный год o'quv yili
9) term	семестр semestr
10) to receive	получать qabul qilmoq
11) fee	плата qabul qilmoq
12) to be in demand	быть востребованным talabga ega bo'lmoq
13) branch of study	направление обучения ta'lim yo'nalishi
14) experience	опыт tajriba

15) test mine	испытательный рудник или шахта sinov koni
16) lecture-based study	обучение на основе лекций ma'ruzaga asoslangan ta'lim
17) to secure	получать, обеспечивать saqlamoq, himoya qilmoq
18) field trip	поездка в поле (полевая практика) dala amaliyoti
19) graduate	выпускник bitiruvchi
20) to enter	поступать kirmoq
21) employment	трудоустройство xizmat, mashg'ulot, ish bilan band bo'lish
22) engineering	инженерное дело muhandislik
23) research degree	научная степень ilmiy daraja
24) on completion	по окончании tugallanganligiga asosan, tugallanganda

II. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

O'ng ustunda quyidagi iboralarning o'zbekcha tarjimalarini toping:

- | | |
|-------------------------------------|---------------------------------------|
| 1) comparatively small | a) аттестат об общем образовании |
| 2) international reputation | umumiy ta'lim to'g'risidagi guvohnoma |
| 3) rather complicated | b) степень бакалавра |
| 4) General Certificate of Education | bakalavr darajasi |
| 5) to get a scholarship | c) спортивная деятельность |
| 6) Bachelor's degree | sport faoliyati |
| 7) the degree of Master | |

- | | |
|--|--|
| 8) the degree of Doctor | d) общие курсы по горному делу |
| 9) sporting activity | konchilik bo'yicha umumiy kurslar |
| 10) summer industrial placement | e) сравнительно небольшой nisbatan katta bo'lmagan |
| 11) general mining engineering courses | f) довольно сложный juda murakkab |
| | g) международный авторитет xalqaro obro'-e'tibor |
| | h) степень магистра magistr |
| | i) ученая степень доктора наук ilmiy fan doktori |
| | j) летняя производственная практика yozgi amaliyot |
| | k) получать стипендию stipendiya olish |

**III. Из следующих слов составьте пары синонимов:
Quyidagi so'zlardan sinonimlarni aniqlang:**

- | | |
|----------------|------------------|
| 1) general | a) complex |
| 2) complicated | b) many |
| 3) small | c) semester |
| 4) numerous | d) payment |
| 5) to receive | e) little |
| 6) fee | f) field |
| 7) branch | g) to obtain |
| 8) to offer | h) top |
| 9) research | i) rank |
| 10) degree | j) to suggest |
| 11) leading | k) investigation |
| 12) term | l) common |

**IV. Из следующих слов составьте пары антонимов:
Quyidagi so'zlardan antonimlarni aniqlang:**

- | | |
|-------------------|---------------------|
| 1) complicated | a) poor |
| 2) excellent | b) low |
| 3) internal | c) uninteresting |
| 4) to get | d) to exclude |
| 5) high | e) simple |
| 6) to include | f) external |
| 7) small | g) to be unable to |
| 8) to differ from | h) to give back |
| 9) to divide into | i) large |
| 10) interesting | j) to be similar to |
| 11) to be able to | k) to stop |
| 12) to continue | l) to link |

**V. Переведите на русский язык следующие прилагательные, образованные от существительных при помощи суффикса -al:
-al qo'shimchasi qo'shilishi yordamida hosil bo'lgan quyidagi sifatlarni o'zbek tiliga tarjima qiling:**

professional, environmental, industrial, practical, dynamical, central, emotional, seasonal, statical, accidental, additional, classical, continental, global, logical, original, political, traditional, digital, mechanical, statistical

**VI. Образуйте существительные от следующих глаголов:
Quyidagi fe'llardan otlar hosil qiling:**

to differ, to organize, to lead, to govern, to examine, to divide, to educate, to complete, to employ, to improve, to apply, to demonstrate, to transport, to convert, to move, to agree, to conduct, to supply, to heat, to resist, to read, to make, to appear, to attend, to disturb, to ventilate, to erupt, to arrive, to refuse, to inform, to translate, to depend, to include, to secure

VII. Переведите существительные из правой колонки, совпадающие по форме с глаголами. Обратите внимание на изменение место-положения ударения:

O'ng ustundagi fe'llarning shakliga mos keladigan otlarni tarjima qiling. Urg'u joylashuvi o'zgarishiga e'tibor bering:

Глагол Fe'l		Существительное Ot so'z turkumi
1) to study –	<i>изучать</i> <i>o'qitmoq</i>	study –
2) to mine –	<i>добывать</i> <i>qazitmoq</i>	mine –
3) to graduate –	<i>закончить</i> <i>университет</i> <i>tatovlatmoq</i>	graduate –
4) to test –	<i>проверять,</i> <i>тестировать</i> <i>sinatmoq</i>	test –
5) to offer –	<i>предлагать</i> <i>taklif qilmoq</i>	offer –
6) to hammer –	<i>бить молотком</i> <i>bolg'a bilan urmoq</i>	hammer –
7) to extract –	<i>извлекать,</i> <i>добывать</i> <i>ajratib olmoq</i>	extract –
8) to record –	<i>записывать</i> <i>qayd etmoq</i>	record –
9) to import –	<i>импортировать</i> <i>import qilmoq</i>	import –
10) to transport –	<i>транспортиро-</i> <i>вать, перевозить</i> <i>yetkazib bermoq</i>	transport –
11) to export –	<i>экспортировать</i> <i>eksport qilmoq</i>	export –
12) to increase –	<i>увеличивать(ся)</i> <i>oshirmoq</i>	increase –

VIII. Переведите следующие предложения. Определите, какой частью речи являются выделенные слова:

Quyidagi gaplarni tarjima qiling. Ajratib ko'rsatilgan so'zlar qaysi so'z turkumiga tegishli ekanligini aniqlang:

1. We **study** English at university with great pleasure. His university **study** was the best time of his life.

2. It is much cheaper to **mine** coal by an open-pit method. Miners are not allowed to be in the **mine** without appropriate equipment.

3. It is not easy at all to **graduate** from university and join a master's degree program. He is one of the most famous **graduates** of our university.

4. The students have to **record** their field observations. Petrov has set a **record** in the high jump.

5. It is cheaper to **transport** coal by railway. City **transport** works without interruptions all year round.

IX. Используя словарь, переведите следующие слова и словосочетания на русский язык:

Lug'at yordamida quyidagi so'zlarni va so'z birikmalarini o'zbek tiliga tarjima qiling:

blasting, drilling, rock mechanics, materials handling, mine safety, mine cost, mine ventilation, civil engineering, mechanical engineering, geology, metallurgy, economics, environmental management, field trips, surveying, geotechnical engineering

X. Прочитайте и переведите текст на русский язык:
Matnni o'qing va o'zbek tiliga tarjima qiling:

There are more than 60 universities in Great Britain but Cambridge, Oxford and London are the leading ones. British universities differ from each other in traditions, general organization, and internal government. Most of them are comparatively small and have fewer than 3000 students.

Entry requirements for British universities are rather complicated. Student must secure a General Certificate of Education by taking examinations in various subjects and receiving passing marks in them. After three years of study students can pass on to a Bachelor's degree, and later to the degree of Master and Doctor.

It has become a tradition that the courses at universities are based on an intensive tutorial system¹ and the academic year is divided into three terms. There are many societies and clubs at British universities. Sporting activities are also numerous. Some students get a scholarship but the number of these students is comparatively small. Education at British universities is not free and the fees at some universities are very high.

Mining Engineering is one of the most in-demand and interesting branches of study in technology and sciences in Great Britain. The Universities for Mining Engineering offer general mining engineering courses along with professional classes in mining, blasting, drilling, rock mechanics, materials handling, mine safety and health, mine cost, and mine ventilation.

The Mining Engineering degree in Britain is taught by Camborne School of Mines (CSM)², University of Exeter, which has over 120 years' experience in training mining engineers and an excellent international reputation. It is the only university in the UK to have its own test mine for teaching and research. University degree program includes elements of civil and mechanical engineering, geology, metallurgy, economics, environmental management, health and safety. In addition to lecture-based study, the program also includes field trips, summer industrial placement and practical classes in surveying and in test mines.

On completion of a mining engineering or minerals engineering degree, a high proportion of graduates enter employment related to their studies in the minerals industry either in the UK or overseas. Alternatively, some graduates opt to continue their training³ by undertaking post-graduate Master's courses in geotechnical engineering and computing or work towards research degrees.

¹tutorial system

*система преподавания, которая принята в университетах Британии
бууик Британиянинг олиу о'қув yurtlarida
qabul qilingan ta'lim tizimi*

²Camborne School of Mines (CSM)

*горная школа Кэмборн (CSM)
Камборн қoшидаги кончиллик instituti
(CSM)*

³opt to continue their training

*решают продолжить обучение
о'қishini davom ettirishga qaror qilmoq*

XI. Выразите несогласие со следующими утверждениями. Подтвердите свою точку зрения фактами из текста. Используйте предлагаемые разговорные формулы:

Quyidagi fikrlarga qo'shilmaligingizni bildiring. O'z nuqtai nazariningizni matndagi faktlar bilan tasdiqlang. Tavsiya etilgan suhbat formulalaridan foydalaning:

*to my mind; in my opinion; as is known; I don't think so;
on the contrary; as far as I know; according to the text;
I'm afraid that's wrong*

1. There are more than 100 universities in Great Britain.
2. The requirements for admission to universities in Britain are very simple.
3. All universities in Britain have the same traditions and customs.
4. The academic year at British universities is divided into two terms.
5. All students at the UK universities receive a scholarship.
6. British university students don't play sports.
7. Students can study for free at all universities in the UK.
8. The profession of a mining engineer is not in demand in Britain at all.
9. Every university in Britain has its own test mine.
10. Graduates from British mining universities apply for jobs abroad only.

**XII. Соедините части предложений:
Gap qismlarini bog'lang:**

- | | |
|---|---|
| 1. Cambridge, Oxford and London are | a) by taking examinations in various subjects. |
| 2. Entry requirements for British universities are | b) students can pass on to a Bachelor's degree. |
| 3. Student must secure a General Certificate of Education | c) at British universities. |
| 4. After three years of study | d) the leading universities in Great Britain. |
| 5. The courses at universities are based on | e) but the number of these students is comparatively small. |

- | | |
|--|--|
| 6. There are many societies and clubs | f) rather complicated. |
| 7. Mining Engineering is | g) general mining engineering courses along with professional classes in mining, blasting, drilling. |
| 8. Some students get a scholarship | |
| 9. The Universities for Mining Engineering offer | h) enter employment either in the UK or overseas. |
| 10. On completion of a mining engineering degree, a high proportion of graduates | i) an intensive tutorial system.
j) one of the most in-demand branches in Great Britain. |

XIII. Закончите предложения подходящими по смыслу словами из текста:

Gaplarni matndagi kerakli so'zlar bilan yakunlang:

1. British universities differ from each other
2. Most British universities are comparatively small
3. Students must secure a General Certificate of Education
4. It has become a tradition that the courses at universities are based on
5. Education at British universities is not free and
6. The Universities for Mining Engineering offer general mining engineering courses
7. The Mining Engineering degree in Britain is taught by
8. A University degree program includes
9. In addition to lecture-based study, the program also includes
10. Some graduates opt to continue their training by

XIV. Ответьте на поставленные вопросы:

Quyidagi savollarga javob bering:

1. What are the leading universities in Britain?
2. What are the entry requirements for British universities?
3. When can students apply for a Master's degree?
4. Entry requirements for British universities are rather complicated, aren't they?
5. Is the academic year at university divided into two or three terms?
6. Are there many societies and clubs at British universities?

7. Is studying at universities paid or free?
8. Mining Engineering is one of the most in-demand and interesting branches of study in technology and sciences in Great Britain, isn't it?
9. What training courses are offered by mining universities in Britain?
10. What courses does Camborne University School of Mines program include?
11. Where can graduates of British mining institutions work?

XV. Используя информацию из текста и активную лексику урока, дополните следующий диалог:

Matndagi ma'lumotlar va darsning faol lug'atidan foydalanib, quyidagi dialogni yakunlang:

A.: Have you read anything about higher education in Great Britain?

B.: Of course. I know that ... universities in Britain are Oxford and Cambridge.

A.: I see. But, have you heard that ... requirements are very complicated?

B.: Yes, students must ... a General Certificate of Education by ... examinations in various subjects and receiving ... in them.

A.: Is it possible to study at the university for free?

B.: Unfortunately, not. In Britain, students have to pay for tuition and the annual ... is quite high.

A.: Is there mining ... in Britain?

B.: Of course. Mining education is the most in ... of mining educational institutions can work both in Britain and abroad.

XVI. Используя активную лексику урока, письменно переведите на английский язык следующие предложения:

Darsning faol lug'atidan foydalanib, quyidagi jumalarni ingliz tiliga yozma tarjima qiling:

1. Требования к поступлению в британские университеты довольно сложные.

2. Учебный год в университетах Британии делится на три семестра.

3. Некоторые студенты университетов получают стипендию, но их число сравнительно невелико.

4. Горное дело – одна из самых востребованных и интересных технических областей в Великобритании.

5. Университетская программа обучения включает элементы геологии, металлургии, экономики, экологического менеджмента и техники безопасности.

6. В дополнение к лекционному обучению программа также включает летнюю производственную практику и практические занятия по маркшейдерскому делу в испытательных шахтах.

7. После получения степени в области горного дела значительная часть выпускников поступает на работу как в Великобритании, так и за рубежом.

1. Britaniya universitetlariga kirish talablari yetarlicha murakkab.

2. Britaniya universitetlarida o'quv yili 3 semestrda bo'linadi.

3. Universitetning ba'zi talabalari stipendiya olishadi, ammo ularning soni nisbatan kam.

4. Konchilik Buyuk Britaniyadagi eng ko'p izlanadigan va qiziqarli texnik sohalardan biridir.

5. Universitetning o'quv dasturi geologiya, metallurgiya, iqtisodiyot, atrof-muhitni boshqarish va xavfsizlik muhandisligi elementlarini o'z ichiga oladi.

6. Dastur ma'ruza mashg'ulotlariga qo'shimcha ravishda yozgi ishlab chiqarish amaliyoti hamda sinov konlarida o'tkaziladigan marksheyderlik ish bo'yicha amaliy mashg'ulotlarni ham qamrab oladi.

7. Konchilik bo'yicha diplom olganidan so'ng, bitiruvchilarning sezilarli qismi Buyuk Britaniyada ham, chet elda ham ishlashadi.

Lesson 2

Higher Engineering Education in Belarus

I. Прочитайте и запомните следующие слова:

Quyidagi so'zlarni o'qing va yodda saqlang:

1) to be in great demand	пользоваться большим спросом katta talabga ega bo'lish
2) to provide	обеспечивать ta'minlash
3) field	область, сфера mintaqa, soha
4) applicant	кандидат, претендент nomzod, talabnoma beruvchi
5) to pass	сдать, пройти topshirish, uzatish
6) full-time student	студент дневной формы обучения kunduzgi talaba
7) part-time student	студент заочной формы обучения sirtqi talaba
8) curriculum	учебный план reja
9) academic year	учебный год o'quv yili
10) term	семестр semestr
11) term paper	курсовая работа kurs ishi
12) to receive a scholarship	получать стипендию stipendiya olish
13) hostel	общежитие yotoqxona
14) employment	трудоустройство bandlik, ishga joylashish
15) department	факультет fakultet

16) to graduate from	заканчивать университет universitetni tugatish
17) graduation paper	дипломная работа diplom ishi
18) to get education	получать образование ta'lim olish
19) compulsory	обязательный majburiy

II. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

O'ng ustundan quyidagi iboralarning o'zbekcha ekvivalentlarini toping:

- | | |
|--------------------------------------|-----------------------------------|
| 1) higher technical education | a) гражданское строительство |
| 2) civil engineering | qurilish ishi |
| 3) mining engineering | b) горное дело |
| 4) to study for free | konchilik ishi |
| 5) higher educational establishment | c) высшее техническое образование |
| 6) centralized test | oliy texnik ta'lim |
| 7) teaching process | d) учебный процесс |
| 8) desired field of study | ta'lim jarayoni |
| 9) to get mining education | e) бакалавр |
| 10) bachelor of science | bakalavr |
| 11) natural resources | f) проходить практику |
| 12) to go through practical training | amaliyot o'tkazish |
| 13) good knowledge | g) высшее учебное заведение |
| | oliy ta'lim muassasasi |
| | h) желаемая область обучения |
| | kerakli ta'lim sohasi |
| | i) получить горное образование |
| | konchilik ma'lumotiga ega bo'lish |
| | j) учиться бесплатно |
| | berpul o'qish |
| | k) хорошие знания |
| | uxshi bilim |

- l) природные ресурсы
tabiiy resurslar
- m) централизованное
тестирование
markazlashtirilgan test

**III. Из следующих слов составьте пары синонимов:
Quyidagi so'zlardan juft sinonimlar hosil qiling:**

- | | |
|----------------------|---------------|
| 1) field | a) term |
| 2) to graduate | b) faculty |
| 3) to offer | c) to get |
| 4) semester | d) branch |
| 5) department | e) diploma |
| 6) to receive | f) to finish |
| 7) curriculum | g) demand |
| 8) to provide | h) plan |
| 9) need | i) to give |
| 10) graduation paper | j) term paper |
| 11) basis | k) to suggest |
| 12) coursework | l) foundation |

**IV. Из следующих слов составьте пары антонимов:
Quyidagi so'zlardan juft antonimlar hosil qiling:**

- | | |
|-------------------------------|------------------------------|
| 1) to enter | a) non-compulsory |
| 2) to be in great demand | b) to pay for study |
| 3) compulsory | c) to disapprove |
| 4) to study for free | d) poor knowledge |
| 5) good knowledge | e) to be out of demand |
| 6) limited | f) inexperienced specialists |
| 7) important | g) to make it worse |
| 8) highly skilled specialists | h) unimportant |
| 9) to improve | i) low-paid job |
| 10) to approve | j) unlimited |
| 11) well-paid job | k) to graduate |

- V. Переведите следующие слова, обозначающие название профессий, обратите внимание на характерный для них суффикс *-ist*:
Kasb nomlarini bildiruvchi quyidagi so'zlarni tarjima qiling, kasb-hunar otlarini yasovchi *-ist* qoshimchasiga e'tibor bering:

scientist, ecologist, geologist, economist, physicist, journalist, pianist, chemist, psychologist, artist, machinist, biologist

- VI. Переведите на русский язык существительные, обращая внимание на словообразовательные суффиксы *-tion*; *-ment*:
-tion; *-ment* ot yasovchi qo'shimchalariga e'tibor berib, otlarni o'zbek tiliga tarjima qiling:

education, examination, transportation, graduation, specification, organization, production, employment, government, movement, requirement, agreement, equipment

- VII. Используя англо-русский словарь, переведите следующие слова и словосочетания на русский язык:
Inglizcha-o'zbekcha lug'atdan foydalanib, quyidagi iboralarni o'zbek tiliga tarjima qiling:

computer engineering, civil engineering, chemical engineering, architecture engineering, mining engineering, electrical engineering, geology, surveying, geodesy, mineralogy, environmental engineering, oil and gas engineering, transportation, well-drilling, oil and natural gas, peat deposits, gravel, limestone, chalk, dolomite, potash, rock salt, clay

- VIII. Дополните рассказ старшеклассника недостающими словами из предложенного списка:
O'rta maktab o'quvchisining hikoyasini berilgan ro'yxatdagi yetishmayotgan so'zlar bilan to'ldiring:

getting; highly skilled specialists; qualified; entrance exams; secondary school; applicants; enter; improve; opportunities; graduation; mining engineer; exams

After finishing the 11th form of a ..., a lyceum or a gymnasium one can ... a higher educational establishment. The average age for ... higher education in our country is 17. All ... must take competitive examinations. At universities, students are trained to become teachers, engineers, doctors, architects and other

At the moment, I am studying in the tenth form. I want to become a ... mining engineer. In our country to become a ..., you need to study for 4 years. Next year, I am going to prepare for I will have to ... my knowledge in physics, mathematics and the Russian language. If I do well in the ..., I will be very happy. Higher education opens up many ... in the future. It gives you a chance to find an interesting and well-paid job after

IX. Подберите к следующим словам определения, выбирая из предложенных:

Ta'riflarni quyida berilgan so'zlarning biriga moslang:

specialist, demand, to provide, applicant, full-time (adj), curriculum, academic year, semester, scholarship, term paper

- a) an amount of money given by a school, college, university, or other organization to pay for the studies of a person with great ability but little money;
- b) the main research paper written by a student for a particular class or subject during the academic year;
- c) a person who specializes in a particular field of study, professional workhaving;
- d) one of the periods into which a year is divided at a college or university, especially in the US and Australia;
- e) a person who formally requests something, especially a job, or to study at a college or university;
- f) to ask for something forcefully, in a way that shows that you do not expect to be refused;
- g) (of work or education) done for the whole of a working week;
- h) the subjects studied in a school, college, etc. and what each subject includes;

- i) the time during the year when there is teaching at school, colleges, and universities;
- j) to give someone something that they need.

X. Переведите предложения на русский язык. Обратите внимание на перевод выделенных слов:

Gaplarni o'zbek tiliga tarjima qiling. Ajratib ko'rsatilgan so'zlarning tarjimasiga e'tibor bering:

- 1. After graduating from the university, Alex became a **qualified** mining engineer.
- 2. He **has** always **demand**ed the highest standards of behavior from his children.
- 3. The course is popular so it has five **applic**ants for every place.
- 4. This booklet **provid**es useful information about local services.
- 5. I'm a **full-time** student right now.
- 6. She demanded to see the school's **curricul**um.
- 7. She will spend a **sem**ester abroad during the next **acad**emic year.
- 8. Full-time students with **posit**ive grades receive a monthly **schol**arship.
- 9. By the end of the **term**, all students should have completed their **term** papers.
- 10. The results of the test will be discussed at the end of the **sem**ester.

XI. Прочитайте и переведите текст на русский язык:

Matnni o'qing va o'zbek tiliga tarjima qiling:

Highly qualified engineering specialists are in great demand all over the world. Higher engineering education in Belarus is provided by a number of universities, including the Belarusian National University of Technology (BNUT), the Belarusian State University of Informatics and Radioelectronics, the Belarusian State Technological University, the Belarusian State University of Transport, Brest State Technical University and others. These engineering universities offer higher technical education in the fields of computer engineering, civil engineering, chemical engineering, architecture engineering, mining engineering, electrical engineering, etc.

In our country to enter a higher educational establishment applicants must finish secondary school and pass centralized tests. Maths and Physics tests are compulsory for all applicants to engineering courses. Engineering and technology education is offered on full-time and part-time basis. At university students can study for free, but some of them have to pay for their studies. Each university should work according to a curriculum approved by the Ministry of Education of the Republic of Belarus. An academic year begins in autumn and is divided into two terms. The teaching process consists of practical and lecture courses. As a rule, students write their term papers on the problems of their research work and at the end of each semester, they have to pass tests and examinations. If a student demonstrates good knowledge in all subjects at the end of the term, they receive a scholarship. Each university has its own hostels where students can live during their course of study. After 4 or 5 years of study graduates of universities receive a diploma of Bachelor of Science and after that they may go into employment or join one-year Master's programme.

Foreign students can also enter Belarusian higher educational institutions. They can join different engineering programs at different universities according to their desired field of study.

There are not many higher educational institutions or university departments in Belarus where students can get mining education. As the natural resources of the country are limited and include small quantities of oil and natural gas, peat deposits, gravel, limestone, chalk, dolomite, potash, rock salt and clay therefore there is no need to train a large number of engineers for the mining industry. At the faculty of mining and environmental engineering of BNUT the students specialize in traditional mining disciplines – geology, surveying, geodesy, mining engineering, mineralogy, environmental engineering, oil and gas engineering, transportation and well-drilling. Laboratory work is an important part in training mining specialists at BNUT. Students can also go through practical training at mines, plants and other industrial enterprises. Here they get practical knowledge and experience necessary for their graduation papers.

Students graduate from the faculty of mining and environmental engineering of BNUT as mining engineers, mining mechanical engineers, ecologists, mining electrical engineers, geologists, economists and managers for mining industry. Graduates of the faculty can work for “Belaruskali”, “Belorusneft”, “Granit”, “Dolomit”, “Drilling company Delta”,

“Trust Shakhtospetsstroy”, “Managing Company of BELAZ Holding” and other industrial enterprises.

XII. Согласитесь либо не согласитесь со следующими утверждениями. Обоснуйте свое мнение, используя предложенные фразы: Berilgan jumalarga qo'shiling yoki qo'shilmang. Quyidagi iboralar yordamida fikringizni asoslang:

I agree with this statement

That's true

I think so

I suppose so

I don't agree

I disagree

I don't think so

I'm afraid that's not true

1. Highly qualified engineering specialists are not needed all over the world.
2. In order to enter a higher educational institution in this country, applicants need to finish a secondary school.
3. An academic year at Belarusian higher educational institutions is divided into three semesters.
4. Students receive a scholarship only if they pass all their examinations successfully.
5. After 4 or 5 years of study graduates of universities may go into employment or join one year Master's programme.
6. Foreign students cannot study at Belarusian universities.
7. As the natural resources of the country are limited there is a great need to train a large number of engineers for the mining industry.
8. Students can get practical skills at mines, plants and other industrial enterprises.

**XIII. Соедините части предложений:
Gap qismlarini bog 'lang**

- | | |
|---|--|
| 1. Higher engineering education in Belarus is provided by | a) as mining mechanical engineers. |
| 2. Engineering and technology education is offered | b) receive a diploma of bachelor of science. |
| 3. An academic year begins in autumn and | c) on the problems of their research work. |

4. As a rule, students write their term papers
5. After 4 or 5 years of study graduates of universities
6. Foreign students can join
7. At the faculty of mining and environmental engineering of BNUT
8. Students graduate from the Faculty of Mining and Environmental Engineering of BNUT
- d) a number of universities.
- e) on full-time and part-time basis.
- f) is divided into two terms.
- g) different engineering programs at different universities according to their desired field of study.
- h) the students specialize in traditional mining disciplines.

**XIV. Ответьте на поставленные вопросы:
Berilgan savollarga javob bering:**

1. Where can students in Belarus get higher engineering education?
2. What are the requirements for admission to a technical university in our country?
3. Is engineering and technology education offered on full-time and part-time basis?
4. An academic year consists of three semesters, doesn't it?
5. When do students have to take their exams?
6. When do students receive a scholarship?
7. For how long do students study at university in Belarus?
8. Each university has to work according to a curriculum approved by the Ministry of Education of the Republic of Belarus, doesn't it?
9. What can students do after they have graduated from university?
10. Foreign students can also study at Belarusian universities, can't they?
11. Where can students get mining education in Belarus?
12. What subjects do students study at the Faculty of Mining and Environmental Engineering of BNUT?
13. Where can students get practical training?
14. Where can graduates of the faculty work?

XV. Составьте план текста.
Matnga reja tuzing.

XVI. Расскажите о высшем техническом образовании в нашей стране, используя свой план и следующие выражения:
Mamlakatingizdagi oliy texnik ta'lim haqida o'z rejalarinigiz va quyidagi iboralar yordamida gapirib bering:

to be in great demand; to be provided by; to enter a higher educational establishment; full-time and part-time basis; the teaching process consists of; to pass tests and examinations; to receive a diploma; to get mining education; to specialize in traditional mining disciplines; to go through practical training; graduation papers; graduates can work

XVII. Используя активную лексику урока, письменно переведите на английский язык следующие предложения:
Darsdagi faol lug'atdan foydalanib, quyidagi jummalarni ingliz tiliga tarjima qiling:

1. Высококвалифицированные инженерно-технические специалисты востребованы во всем мире.
2. Тесты по математике и физике являются обязательными для всех поступающих на инженерные специальности.
3. В университете студенты могут учиться бесплатно, но некоторым из них приходится платить за обучение.
4. Учебный год начинается осенью и делится на два семестра.
5. Учебный процесс состоит из практических и лекционных курсов.
6. По окончании университета студенты получают степень бакалавра наук.
7. Лабораторные занятия являются важной частью подготовки специалистов горного дела в БНТУ.
8. После окончания университета студенты обеспечиваются первыми рабочими местами.
9. В шахтах и на промышленных предприятиях студенты могут получить практические знания и опыт, которые необходимы для написания дипломной работы.

1. Yuqori malakali texnik-muhandis mutaxassislari butun dunyoda talabga ega.
2. Muhandislik mutaxassisliklari uchun barcha abituriyentlarga matematika va fizika fanlaridan test sinovlari majburiydir.
3. Universitetda talabalar bepul o'qishlari mumkin, ammo ularning ba'zilar o'qish uchun pul to'lashlari kerak.
4. O'quv yili kuzda boshlanadi va ikki semestr davom etadi.
5. O'quv jarayoni amaliy va ma'ruza kurslaridan iborat.
6. O'qishni tugatgandan so'ng, talabalar bakalavr darajasini oladilar.
7. Laboratoriya ishlari BNTUda konchilik mutaxassislarini tayyorlashning muhim qismidir.
8. O'qishni tamomlagandan so'ng talabalar birinchi ish o'rinlari bilan ta'minlanadi.
9. Konlarda va sanoat korxonalarida talabalar dissertatsiya yozish uchun zarur bo'lgan amaliy bilim va tajribaga ega bo'lishlari mumkin.

Lesson 3

Earth's Structure

- I. Прочитайте и запомните следующие слова:
Quyidagi so'zlarni o'qing va yodda saqlang:

1) universe	вселенная koinot
2) to stick	прилипать, приставать yopishtirmoq; sanchmoq, qadamoq
3) to support	поддерживать qo'llab quvvatlamoq
4) to divide	разделять ajratmoq
5) crust	кора (земли) ustki qatlam; qobiq (yer)
6) outer core	внешнее ядро tashqi yadro
7) inner core	внутреннее ядро ichki yadro
8) layer	слой qatlam
9) to impact	оказывать влияние, воздействовать ta'sir o'tkazmoq
10) brittle	хрупкий mo'rt
11) relative to	относительно чего-либо nimagadir bog'liq
12) movement	движение harakat
13) oceanic	океанический ummonga oid
14) seafloor	морское дно dengiz tubi
15) distinctive	отличительный o'ziga xos

16) to be composed of	состоять из ...dan tashkil topmoq
17) to erupt	извергаться otilib chiqmoq
18) to create	создавать yaratmoq
19) seashell	ракушка dengiz chig'anog'i
20) to coat	покрывать qoplamoq
21) density	плотность zichlik
22) to sink	тонуть, опускаться cho'kmoq
23) approximately	приблизительно taxminan
24) to melt	расплавлять erimoq
25) to extend	распространяться tarqalmoq

II. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

O'ng ustundan quyidagi so'z birikmalarining o'zbekcha ekvivalentini topping:

- | | |
|----------------------------|-------------------------|
| 1) solar system | a) континентальная кора |
| 2) continental crust | continental qobiq |
| 3) oceanic crust | b) осадочные породы |
| 4) upper mantle | cho'kindi jinslar |
| 5) lower mantle | c) нижняя мантия |
| 6) intrusive igneous rocks | quyi mantiya |
| 7) metamorphic rocks | d) солнечная система |
| 8) sedimentary rocks | quyosh sistemasi |
| 9) plate tectonics | e) океаническая кора |
| 10) convection currents | ummon qobig'i |
| 11) seismic velocity | f) тектоника плит |
| 12) fold belts | plitalar tektonikasi |

- g) конвекционные потоки
konveksik oqimlar
- h) верхняя мантия
yuqori mantiya
- i) метаморфические породы
metamorfik jinslar
- j) интрузивные магматические породы
intruziv magmatik jinslar
- k) складчатые зоны
qatlamli hududlar
- l) сейсмическая скорость
seysmik tezlik

**III. Переведите следующие интернациональные слова:
Quyidagi internasional so'zlarni tarjima qiling:**

planet, system, structure, mantle, chemical, physical, radius, oceanic, continental, magma, basalt, metamorphic, basin, fact, kilometer, lithosphere, asthenosphere, isostatic, temperature, tectonic

**IV. Используя словарь, переведите следующие атрибутивные словосочетания:
Lug'atdan foydalanib, quyidagi atributiv iboralarni tarjima qiling:**

unique chemical composition, physical state, solar system, continental crust, intrusive igneous rock, basalt lava flows, tiny sea creatures, sedimentary rock, outer core, solid rock, constant motion, convection currents, plate tectonics, uppermost layer, upper mantle, plate tectonic movement, sharp increase, isostatic adjustment

**V. Переведите словосочетания на русский язык. Обратите внимание на перевод существительных в притяжательном падеже:
So'z birikmalarini o'zbek tiliga tarjima qiling. Egalik holiday otlarning tarjimasiga e'tibor bering:**

the earth's surface, the earth's outermost layer, the earth's structure, the earth's core, the earth's crust, the earth's volume, the planet's

oceans, the planet's crust, the planet's radius, Belaruskali's production, area's flora, bog's acidity, Bachelor's degree, Master's degree, the country's president, the world's major events, the world's organization, the world's oil reserves, the company's sales, somebody's things, someone's work, nobody's field, yesterday's meeting, yesterday's accident, London's university, university's library, library's book, the sun's surface

**VI. Из следующих слов составьте пары синонимов:
Quyidagi so'zlarning juft sinonimlarini topping:**

- | | |
|----------------|---------------------------|
| 1) to support | a) seam |
| 2) component | b) to come to the surface |
| 3) layer | c) dirt |
| 4) brittle | d) to uphold |
| 5) property | e) border |
| 6) to erupt | f) constituent |
| 7) to create | g) to keep |
| 8) mud | h) fragile |
| 9) to sink | i) feature |
| 10) boundary | j) to include |
| 11) to stick | k) to form |
| 12) to involve | l) to drown |
| 13) seafloor | m) small |
| 14) to cover | n) seabed |
| 15) tiny | o) to coat |

**VII. Из следующих слов составьте пары антонимов:
Quyidagi so'zlarning juft antonimlarini topping:**

- | | |
|--------------------|----------------|
| 1) outer core | a) extrusive |
| 2) outermost layer | b) inner shell |
| 3) cold | c) large |
| 4) thin | d) inner core |
| 5) outer shell | e) high |
| 6) different | f) thick |
| 7) intrusive | g) above |
| 8) deep | h) solid |

- | | |
|---------------|-------------------|
| 9) tiny | i) rapidly |
| 10) low | j) internal layer |
| 11) liquid | k) upper side |
| 12) slowly | l) hot |
| 13) underside | m) shallow |
| 14) below | n) similar |

VIII. Назовите существительные, от которых образованы следующие прилагательные:

Quyidagi yasama sifatlarning ot so'z turkumidagi shakllarini ayting:

chemical, physical, cultural, national, natural, financial, continental, dangerous, famous, powerful, harmful, beautiful, playful, waterless, weightless, brainless, friendly, lovely, scientific, academic, oceanic, energetic, earthen, funny, rainy, introductory, advisory, goldish, British

IX. Подберите к следующим словам определения, выбирая из предложенных:

Quyidagi so'zlarga mos ta'rifni topping:

core, crust, magma, seafloor, mud, shell, boundary, igneous (adj.), metamorphic (adj.), sedimentary (adj.)

- very hot liquid rock found below the earth's surface;
- wet earth that is soft and sticky;
- the material that forms the hard outer covering of many animals;
- the centre of a planet or something else;
- the outer layer of rock that forms the surface of the earth or another planet;
- the ground at the bottom of the sea;
- connected with or formed from the sand, stones, mud, etc. that settle at the bottom of lakes, etc.;
- formed when magma becomes solid, especially after it has poured out of a volcano;
- a real or imagined line that marks the edge or limit of something;
- formed by the action of heat or pressure.

X. Переведите предложения на русский язык. Обратите внимание на перевод выделенных слов:

Gaplarni o'zbek tiliga tarjima qiling. Ajratib ko'rsatilgan so'zlarning tarjimasiga e'tibor bering:

1. Earth's **core** is a hot, molten mix of iron and nickel.
2. During the flood streams of water and **mud** hit the city.
3. The Ural Mountains mark the **boundary** between Europe and Asia.
4. When **magma** cools and solidifies beneath the earth's surface, it forms intrusive rocks.
5. It is common knowledge that the most exciting geologic discoveries related to plate tectonics happened deep on the ocean **seafloor**.
6. The hard outer part of eggs, nuts, some seeds, and some animals is called **shell**.

XI. Переведите предложения на русский язык. Обратите внимание на перевод сравнительных конструкций *as ... as – такой же ... как; так же ... как; as well as – так же, как и...; также:*

Gaplarni o'zbek tiliga tarjima qiling. *As ... as – xuddi ... kabi; shu qatorda; shu bilan birga; as well as – xuddi ... kabi; shuningdek* qiyosiy konstruksiyalarning tarjimasiga e'tibor bering:

1. Oil is just as popular as gas.
2. This lake is as deep as that one.
3. Many students attended the conference, as well as teachers.
4. The working conditions in this mine are as good as those in the neighbouring mine.
5. The vegetation of our forests is as rich and diverse as that of central Russia.
6. The boundary between the inner and outer core is approximately as hot as the surface of the sun.
7. The lithosphere is formed from the crust as well as the uppermost layer of the mantle.
8. The oceanic crust consists of magma that erupts onto the seafloor as well as sediments that cover the seafloor.
9. During the excursion to the mine, we got acquainted with modern machines, as well as with the working conditions of the miners.

XII. Переведите предложения на русский язык. Обратите внимание на перевод союза *either or* – или ... или; либо ... либо и местоимения *both* – оба:

Gaplarni o'zbek tiliga tarjima qiling. *Either ... or* – *yoki ...yoki*; *yo...yo bog'lovchisi va both* – *ikkalasi ham* olmoshlarining tarjimasiga e'tibor bering:

1. The teacher asked the student to answer either in writing form or orally.
2. Coal can be extracted either by open pit or by underground mining.
3. The lithosphere can't be classified neatly as either crust or mantle.
4. Both methods of exploration are used to find new mineral deposits.
5. There were two questions in the task, both were too difficult.
6. Either the chief engineer or the head of the mine is responsible for any accident in the mine.
7. The accident in the mine was caused either by the release of methane or by a violation of safety rules. Both reasons are being investigated.
8. Both miners were saved after the accident at the mine.

XIII. Переведите предложения на русский язык. Обратите внимание на перевод следующих выражений:

Gaplarni o'zbek tiliga tarjima qiling. Quyidagi iboralarning tarjimasiga e'tibor bering:

to consist of – *состоять из*;
...dan tashkil topgan; ...dan iborat

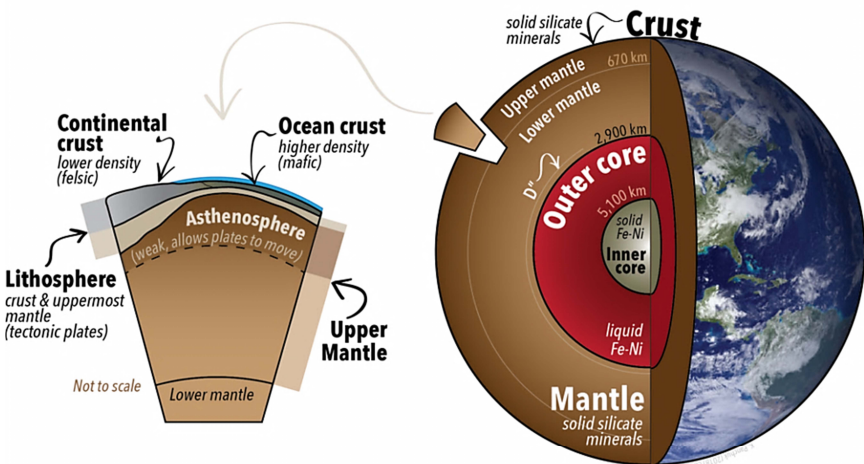
to be made of – *быть сделанным из, состоять из*;
dan yasalgan

1. Our university consists of 15 faculties and each faculty consists of a number of departments.
2. The continental crust consists of many different types of igneous, metamorphic and sedimentary rocks.
3. In order not to pollute the environment, packaging should be made of recyclable materials.
4. The oceanic crust consists of magma that erupts onto the sea-floor, forming basalt lava flows.

5. Bronze is an alloy that consists of copper and tin.
6. All the monuments in the center of our city are made of bronze.
7. This drilling instrument must be made of very hard alloy.
8. Belarus consists of six regions and each region consists of several districts.
9. The core of Earth is made mainly of iron, nickel, and oxygen.
10. Continental crust is about 50 kilometers thick and consists of low-density igneous and sedimentary rocks.
11. Most things seem to be made of plastic these days.

**XIV. Прочитайте и переведите текст на русский язык:
Matni o'qing va o'zbek tiliga tarjima qiling:**

Earth is the planet we live on, the third of eight planets in our solar system and the only known place in the universe to support life. The structure of the earth is divided into four major components: the crust, the mantle, the outer core, and the inner core. Each layer has a unique chemical composition, physical state and can impact life on the earth's surface.



The earth's outermost layer, its crust, is a cold, thin, brittle outer shell made of rocks. The crust is very thin relative to the radius of the planet. There are two very different types of the earth's crust: **oceanic** and **continental**, each with its own distinctive physical and chemical properties.

The oceanic crust consists of magma that erupts onto the seafloor, forming basalt lava flows, or cools deeper, forming an intrusive igneous rock gabbro¹, as well as sediments, primarily of mud and seashells of tiny sea creatures that cover the seafloor.

The continental crust is made up of many different types of igneous, metamorphic and sedimentary rocks. Because it is thick and has relatively low density, continental crust rises higher on the mantle than oceanic crust, which sinks into the mantle to form basins. When filled with water, these basins form the planet's oceans.

Earth's core is the very hot and the very dense center of our planet. It is divided into an inner core and an outer core. Primarily composed of iron it is extremely hot (~3500 to more than 6000 °C). But, despite the fact that the boundary between the inner and outer core is approximately as hot as the surface of the sun, only the outer core is liquid. The inner core is solid because the pressure at that depth is so high that it keeps the core from melting.

The boundary between the crust and the mantle is the Mohorowitsch boundary², or Moho for short. This boundary has a sharp increase in seismic velocity³, from 7 to 8–8.2 km/sec. This boundary is located at a depth of 7 (under oceans) to 70 kilometres (under fold belts).

The mantle makes up 84 % of the earth's volume. It extends from 35–2980 kilometers below the earth's surface and is almost entirely solid rock. The mantle is in constant motion, flowing very slowly. It is hot mostly because of heat conducted from the core. The mantle ranges in temperatures from 200 to 4000 degrees Celsius. Convection currents in the mantle drive plate tectonics. The earth's mantle is divided into an upper mantle and a lower mantle.

The lithosphere can't be classified neatly as either crust or mantle because it consists of both. It is formed from the crust as well as the uppermost layer of the mantle which is stuck to the underside of the crust.

The asthenosphere is a part of the upper mantle just below the lithosphere that is involved in plate tectonic movement and isostatic adjustments.

¹gabbro (*italian*)

габбро (горная порода темного цвета, имеющая магматическое происхождение)
gabbro (to'q rangdagi tog' jinsi, kelib chiqishi magmatik)

²Mohorowitsch
boundary

граница Мохоровичича (поверхность в литосфере, на которой происходит резкий скачок сейсмических волн. Эта граница примерно совпадает с нижней границей земной коры. Названа в честь А. Мохоровичича, установившего ее существование в 1909 году)

Mohorovich chegarasi (litosferada seysmik to'liqlarning keskin tebranishi sodir bo'ladigan sirt. Bu chegara taxminan er qobig'ining pastki chegarasiga to'g'ri keladi. 1909 yilda uning mavjudligini kashf qilgan A. Mohorovichich sharafiga nomlangan)

³sharp increase in seismic velocity *резкое увеличение сейсмической скорости*
seysmik tezlikning keskin oshishi

XV. Выразите согласие со следующими утверждениями. Подтвердите свою точку зрения фактами из текста. Используйте предлагаемые разговорные формулы:

Quyidagi gaplar bilan roziligingizni bildiring. O'z nuqtai nazariningizni matndagi faktlar bilan tasdiqlang. Tavsiya etilgan suhbat formulalaridan foydalaning:

*yes, certainly; yes, that's true; I think so too;
right you are; I quite agree with you;
I'm exactly of the same opinion*

1. Earth, our home planet, is a world unlike any other.
2. The earth is divided into a series of layers.
3. There are two types of crust – continental and oceanic.
4. The core is at the center and it is extremely hot.
5. The mantle is made of solid rock.
6. The lithosphere and asthenosphere have the same chemical composition, but different mechanical properties.

XVI. Соедините части предложений.

Gap qismlarini bog'lang:

- | | |
|---|--|
| 1. The structure of the earth is divided into four major components: | a) many different types of igneous, metamorphic and sedimentary rocks. |
| 2. The earth's crust is | b) erupts on the seafloor to create basalt lava flows. |
| 3. The oceanic crust is composed of magma that | c) the very dense center of our planet. |
| 4. The continental crust consists of | d) the crust, the mantle, the outer core, and the inner core. |
| 5. The earth's core is the very hot and | e) a cold, thin, brittle outer shell made of rocks. |
| 6. The inner core is solid because the pressure at that depth is so high that | f) it consists of both. |
| 7. The mantle extends from 35–2980 kilometers below the earth's surface and | g) it keeps the core from melting. |
| 8. The lithosphere can't be classified neatly as either crust or mantle because | h) is almost entirely solid rock. |

XVII. Ответьте на поставленные вопросы:

Quyidagi savollarga javob bering:

1. Earth is the only known place in the universe to support life, isn't it?
2. What are the main components of the earth?
3. What are the two main types of the earth's crust?
4. What does the oceanic crust consist of?
5. The continental crust is made up of many different types of igneous, metamorphic and sedimentary rocks, isn't it?
6. Is Earth's core the very hot and the very dense center of our planet?
7. Is the outer core liquid or solid? What can you say about the inner core?
8. The mantle makes up 90 % of the earth's volume, doesn't it?
9. What does the lithosphere consist of?
10. Where is the asthenosphere located?

XVIII. Дополните текст недостающими словами из предложенного списка:

Quyidagi so'zlardan foydalanib matnni to'ldiring:

*crust, oceanic, continents, structure, layers, continental,
inner core, planet, core, lithosphere, upper part,
asthenosphere, mantle*

Earth is the ... we live on. The ... of the earth is divided into four major components: the crust, the mantle, the outer core, and the inner core. The ... is the outermost layer of the earth. It is very thin relative to the radius of the planet.

There are two very different types of the earth's crust oceanic and The ... crust is a type of crust found in the oceans. The continental crust is the crust of the ..., which consists of sedimentary, granite and basalt

The earth's ... is the internal layer of the earth with the highest levels of pressure and temperature. It is divided into an ... and an outer core. The ... is the part of the earth located directly under the crust and above the core.

The ... is the earth's solid shell. It consists of the earth's crust and the ... of the mantle. The ... is a layer of reduced hardness, strength and toughness in the earth's upper mantle.

XIX. Используя информацию из видефрагмента по ссылке <https://www.youtube.com/watch?v=IWZky7mXoO0>, а также рисунок в тексте, расскажите о структуре земли по следующему плану:

Ushbu havoladagi <https://www.youtube.com/watch?v=IWZky7mXoO0> videofragmentda va su'ratda berilgan ma'lumotlardan foydalanib, yerning tuzilishi haqida quyidagi reja asosida gapirib bering:

1. General characteristics of the structure of the earth.
2. The earth's crust and its types.
3. The earth's core.
4. Characteristics of the earth's mantle.
5. The lithosphere and the asthenosphere.

XX. Исползуя активную лексику урока, письмененно переведите на английский язык следующие предложения:

Darsning faol lug'atidan foydalanib, quyidagi gaplarni yozma ravishda ingliz tiliga tarjima qiling:

1. Земля – это планета солнечной системы, на которой есть жизнь.

2. Кора – это внешний слой земли, который состоит из твердых пород.

3. Существует два типа земной коры: океаническая и континентальная.

4. Континентальная кора состоит из множества различных типов магматических, метаморфических и осадочных пород.

5. Океаническая кора состоит из магмы, которая извергается на морском дне.

6. Мантия находится под корой и состоит из горячей, плотной, твердой породы.

7. Ядро – это центр земли. Оно состоит из жидкого внешнего ядра и твердого внутреннего ядра.

8. Литосфера – это скалистая внешняя часть земли.

9. Астеносфера – это относительно пластичная (*plastic*) оболочка в верхней мантии земли.

1. Yer Quyosh tizimidagi hayotga ega sayyoradir.

2. Yer qobig'i – qattiq jinslardan tashkil topgan Yerning tashqi qatlami.

3. Yer qobig'ining ikki turi mavjud: okeanik va kontinental.

4. Materik qobig'i ko'plab turdagi magmatik, metamorfik va cho'kindi jinslardan tashkil topgan.

5. Okean qobig'i dengiz tubida otilib chiqadigan magmadan iborat.

6. Mantiya qobiq ostida yotadi va issiq, zich, qattiq jinslardan iborat.

7. Yadro – Yerning markazi. U suyuq tashqi yadro va qattiq ichki yadrodan iborat.

8. Litosfera – Yerning toshli tashqi qismi.

9. Astenosfera Yerning yuqori mantiyasidagi nisbatan plastik (plastmassa) qobiqdir.

Lesson 4

Prospecting and Exploration Activities

I. Прочитайте и запомните следующие слова:

Quyidagi so'zlarni o'qing va yodda saqlang:

1) prospecting	поисковые работы, геолого-разведочные работы qidiruv ishlari, razvedka
2) exploration	геологоразведка, исследование местности geologiya qidiruvi, hududni o'rganish
3) mineral deposit	месторождение полезных ископаемых foydali qazilmalar koni
4) extraction	добыча qazib olish
5) impact	воздействие, влияние ta'sir
6) mapping	картографирование haritalash
7) rock chip	обломок породы tosh parchasi
8) sample	образец, проба namuna
9) sign	знак, признак belgi, belgisi
10) to restore	восстанавливать tiklash
11) to hide	прятать, скрывать yashirish
12) survey	поиск, разведка qidiruv, razvedka
13) to dig	копать qazish
14) pit	шахта, карьер, котлован kon, karer, chuqur

15) feasibility	целесообразность maqsadga muvofiqlik, amalga oshirish mumkinlik
16) to search for	искать qidirmoq
17) borehole	буровая скважина quduq
18) to identify	определять aniqlash
19) investigation	исследование o'rganish, tadqiq etish
20) to initiate	инициировать, начинать, вводить boshlash, kirishmoq
21) evaluation	оценка baholash, o'rganib chiqish
22) to carry out	проводить o'tkazish

II. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

O'ng ustundan quyidagi iboralarning o'zbekcha ekvivalentlarini toping:

- | | |
|------------------------------------|---|
| 1) mineral deposit | a) брать обломок горной породы (в качестве образца) |
| 2) the search for mineral deposits | tosh bo'lagini oling (namuna sifatida) |
| 3) to take rock chip | b) этап отбора проб |
| 4) seismic survey | namuna olish bosqichi |
| 5) field investigation | c) месторождение полезных ископаемых |
| 6) sampling phase | foydali qazilmalar koni |
| 7) surface exploration | d) полевая разведка |
| 8) subsurface exploration | dala razvedkasi |
| 9) preliminary exploration | e) поиск месторождений полезных ископаемых |
| 10) detailed exploration | foydali qazilma konlarini |
| 11) exploitation exploration | qidirish |
| 12) geological structure | |

- | | |
|------------------------------------|---|
| 13) commercial mineralization | f) разведка недр
yer qa'rini o'rganish |
| 14) commercial development | g) полевые исследования
dala tadqiqotlari |
| 15) field survey | h) промышленная минерализация
sanoat minerallashuvi |
| 16) direct method of exploration | i) разведка поверхности
yer yuzasini o'rganish |
| 17) indirect method of exploration | j) геологическая структура
geologik tuzilishi |
| 18) exploratory tunnels | k) детальная разведка
batafsil razvedka |
| 19) exploration phase | l) прямой метод разведки
to'g'ridan-to'g'ri razvedka usuli |
| 20) remote sensing | m) коммерческая разработка
tijorat rivojlanishi |
| | n) предварительная разведка
dastlabki razvedka |
| | o) сейсмическая разведка
seysmik qidiruv ishlari |
| | p) разведочные туннели
qidiruv tunnellari |
| | q) дистанционное зондирование
masofadan zondlash |
| | r) этап разведки
qidiruv bosqichi |
| | s) косвенный метод разведки
bilvosita razvedka usuli |
| | t) эксплуатационная разведка,
разведка месторождений
operativ razvedka, konlarni qidirish |

**III. Из следующих слов составьте пары синонимов:
Quyidagi so'zlardan juft sinonimlar hosil qiling:**

- | | |
|------------------|-----------------|
| 1) deposit | a) dimension |
| 2) to identify | b) site |
| 3) location | c) sediment |
| 4) size | d) influence |
| 5) extraction | e) to recognize |
| 6) area | f) exploration |
| 7) impact | g) position |
| 8) investigation | h) probe |
| 9) to restore | i) research |
| 10) survey | j) feature |
| 11) sample | k) to recover |
| 12) sign | l) mining |
| 13) grade | m) succession |
| 14) sequence | n) cracking |
| 15) splitting | o) quality |

**IV. Из следующих слов и словосочетаний составьте пары антонимов:
Quyidagi so'zlardan juft antonimlar hosil qiling:**

- | | |
|-------------------------|---------------------------|
| 1) the very first stage | a) high impact work |
| 2) to include | b) subsurface exploration |
| 3) low impact work | c) indirect |
| 4) permitted area | d) faulting |
| 5) surface exploration | e) to widen |
| 6) to narrow | f) low accuracy |
| 7) direct | g) restricted area |
| 8) high accuracy | h) to exclude |
| 9) folding | i) the very last stage |

**V. Переведите на русский язык цепочки производных слов, обращая внимание на словообразовательные суффиксы:
So'z yasovchi qo'shimchalarga e'tibor berib, yasama so'zlar qatorini o'zbek tiliga tarjima qiling:**

- 1) to explore – explorer – exploratory – exploration;
- 2) to investigate – investigation – investigator;

- 3) to specify – specific – specification;
- 4) geology – geologic – geological – geologist;
- 5) mineral – mineralogy – to mineralize – mineralization;
- 6) to develop – developer – development;
- 7) to prepare – preparatory – preparation;
- 8) to collect – collector – collection;
- 9) commerce – commercial – commercially;
- 10) science – scientist – scientific.

**VI. Заполните пропуски. Переведите предложения на русский язык:
Bo'sh joylarni to'ldiring. Gaplarni o'zbek tiliga tarjima qiling:**

a) *geological, geologists, geologic, geology:*

1. Prospecting is the first stage of the ... analysis of a territory.
2. ... is the study of the earth, the materials which it consists of, the structure of those materials, and the processes acting upon them.
3. ... work to understand the history of our planet.
4. Scientists have divided the ... history of Earth into five ... eras: Archean, Proterozoic, Paleozoic, Mesozoic and Cenozoic.

b) *exploratory, explore, explorers, exploration:*

1. If a resource discovered during the ... phase is considered to be commercially viable, operators will begin the process of commercial mining.
2. Mineral ... often use planes or helicopters to view large areas efficiently.
3. The information gathered during the ... is used to estimate the location, size and quality of the deposit.
4. All modern ... methods are now used in combination with the study of geological maps.
5. Geologists used the most modern equipment to ... the mineral deposit.

c) *solid, solidification, solidifies:*

1. Magma is formed at the depth of the earth and rises to the surface, where it cools and

2. ... is a process in which atoms are converted into an ordered ... state from a liquid disordered state.
3. Igneous rocks are those formed by the ... of molten rock.

d) *minerals, mineralogy, mineralization:*

1. The ... of water is influenced by both natural factors and human influence.
2. The most common ... in the oceanic crust are silicate and magnesium.
3. ... is one of the oldest geological sciences which studies the composition, properties, structures and formation of minerals.

VII. Переведите на русский язык следующие отглагольные существительные с суффиксом *-ing*:

Quyidagi *-ing* qo'shimchasi bilan hosil bo'lgan otlarni o'zbek tiliga tarjima qiling:

reading, smoking, singing, writing, studying, buying, closing, breathing, meeting, mapping, sampling, digging, mining, taking, prospecting, planning, applying, crossing, working, travelling, extracting, tunneling

VIII. Переведите предложения на русский язык. Обратите внимание на перевод *-ing* форм:

Gaplarni o'zbek tiliga tarjima qiling. *-ing* shakllarining tarjimasiga e'tibor bering:

1. Planning is one of the most important steps in the work of geologists.
2. Prospecting is often the very first stage in the search for mineral deposits.
3. The meeting with the management of the mine led to an improvement in working conditions and an increase in the salaries of miners.
4. Breathing in dust particles produced by mining can lead to lung diseases.
5. At the first stage of exploration, the work of geologists includes mapping and sampling.
6. The latest equipment was used during the tunneling.

7. Scientists are working on applying new exploration methods to search for oil deposits.

8. Mining is the process of extracting useful materials from the earth.

9. The process of finding a concentration of minerals is called mineral exploration.

10. Weathering describes the breaking down or dissolving of rocks and minerals on the surface of the earth.

IX. Переведите следующие интернациональные слова на русский язык:

Quyidagi xalqaro so'zlarni o'zbek tiliga tarjima qiling:

activity, gravity, location, mineralization, resource, to identify, to collect, to test, to focus, to examine, to analyze, seismic, phase, detailed, group, commercial, geological, geochemical, geobotanical, electrical, tunnel, magnetic, planning, technique, structure, operator

X. Прочитайте и переведите текст А на русский язык:

A matnini o'qing va o'zbek tiliga tarjima qiling:

Text A

Prospecting and exploration activities are used to identify the location and size of a mineral deposit before the possible resource extraction begins.

Prospecting is often the very first stage in the search for mineral deposits, which includes low impact work in a permitted area. These investigations are carried out by geologists and can involve mapping, taking rock chip and soil samples by hand, aerial and seismic surveys. After the first mapping and sampling phase, which usually takes several years, all the collected data is analyzed. If nothing of interest is found, the research area is restored. If there are signs that some valuable can be hidden in the ground, the next phase of field investigations is initiated.

Exploration involves more detailed prospecting and evaluation of mineral resources, including the collection of data on smaller, more specific areas to test whether the resource is commercially viable. The exploration methods are divided into two main groups, namely: a) surface exploration; b) subsurface exploration.

Surface exploration includes two preplanning stages: preliminary and detailed. *Preliminary exploration* determines the location of the geological structure, the total extent of commercial mineralization, the average grade of minerals in the subsurface, and the feasibility and sequence of commercial development of the deposit. *Detailed exploration* is carried out at the deposits that will be developed first. Various surface exploration methods such as geological, geochemical, geobotanical, photogeology and remote sensing are carried out during preliminary and detailed survey. These methods include preparation of geological maps based on data collected through field survey.

After a preliminary survey, the study area is narrowed down and focused **exploration of the subsurface** begins. There are two methods of subsurface exploration such as direct and indirect. The direct methods involve collection of samples from subsurface rock strata by drilling boreholes, digging trenches, pits and exploratory tunnels. These rock samples are examined and tested in the laboratory. The indirect methods are widely used in subsurface exploration by applying various geophysical techniques to determine the location of mineral ore bodies.

If a resource discovered during the exploration phase is considered commercially viable, operators will begin the process of commercial mining.

XI. Соедините части предложений: Gap qismlarini bog'lang:

- | | |
|--|---|
| 1. Prospecting and exploration activities are used | a) the research area is restored. |
| 2. After the first mapping and sampling phase | b) the next phase of field investigations is initiated. |
| 3. If nothing of interest is found | c) all the collected data is analyzed. |
| 4. If there are signs that some valuable can be hidden in the ground | d) more detailed prospecting and evaluation of mineral resources. |
| 5. Exploration involves | e) to identify the location and size of a mineral deposit. |
| 6. Surface exploration includes | f) that will be developed first. |
| | g) preparation of geological maps. |

- | | |
|--|---|
| 7. Preliminary exploration determines | h) the feasibility and sequence of commercial development of the deposit. |
| 8. Detailed exploration is carried out at the deposits | i) two preplanning stages: preliminary and detailed. |
| 9. Surface exploration methods include | j) by applying various geophysical techniques. |
| 10. Direct methods of surface exploration involve | k) collection of samples from subsurface rock strata. |
| 11. The indirect methods are widely used in subsurface exploration | |

**XII. Выразите несогласие со следующими утверждениями. Подтвердите свою точку зрения фактами из текста, используя следующие разговорные формулы:
 Quyidagi gaplarga qo'shilmasligingizni bildiring. Quyidagi so'zlashuv formulalaridan foydalanib, o'z nuqtai nazariningizni matndagi faktlar bilan tasdiqlang:**

*to my mind; in my opinion; as far as I know;
 I'd like to stress that; I'd like to say that;
 it seems to be wrong; as is known*

1. Prospecting is the last stage in the search for mineral deposits.
2. Prospecting is carried out by miners and involves the extraction of minerals.
3. Exploration can involve mapping, taking rock chip and soil samples by hand, aerial and seismic surveys.
4. The exploration methods are divided into three main groups, namely: a) aerial survey; b) surface exploration; c) subsurface exploration.
5. Surface exploration methods include topographical mapping and taking rock samples.
6. After the preliminary survey, the study area is extended and the detailed surface exploration continues.
7. Rock samples taken during direct exploration methods are sent to the Museum of Geology.

8. If a resource discovered during the exploration phase is considered commercially viable, operators will begin the process of building a mine.

XIII. Подберите к глаголам из списка А соответствующее продолжение из списка В. Переведите полученные словосочетания на русский язык:

А ro'yxatidagi fe'llar uchun В ro'yxatidan mos davomini tanlang. Olingan iboralarni o'zbek tiliga tarjima qiling:

- | А | В |
|-----------------|---|
| 1) to identify | a) rock chip and soil samples |
| 2) to carry out | b) the location and size of a mineral deposit |
| 3) to take | c) investigations |
| 4) to analyze | d) the next phase of field investigations |
| 5) to restore | e) the collected data |
| 6) to initiate | f) data |
| 7) to collect | g) the research area |
| 8) to determine | h) the location of the geological structure |
| 9) to involve | i) rock samples |
| 10) to examine | j) collection of samples |
| 11) to apply | k) the process of commercial mining |
| 12) to begin | l) various geophysical techniques |

**XIV. Придумайте вопросы к следующим ответам:
Quyidagi javoblar uchun savollarni o'ylab ko'ring:**

1. Prospecting is often the very first stage in the search for mineral deposits. (*What...?*)

2. Yes, it does. Prospecting includes low impact work in a permitted area. (*Does...?*)

3. Prospecting can involve mapping, taking rock chip and soil samples by hand, aerial and seismic surveys. (*What...?*)

4. If there are signs that something valuable can be hidden in the ground, the next phase of field investigations is initiated. (*When...?*)

5. Yes, it does. Exploration involves more detailed prospecting and evaluation of mineral resources. (*Does...?*)

6. Yes, they are. The exploration methods are divided into two main groups, namely: a) surface exploration; b) subsurface exploration. (*Are...?*)

7. Preliminary exploration determines the feasibility and sequence of commercial development of the deposit. (*What...?*)

8. Yes, it is. Detailed exploration is carried out at the deposits that will be developed first. (*Is...?*)

9. There are two methods of subsurface exploration such as direct and indirect. (*альтернативный вопрос / tanlov savol*)

10. Yes, they do. The direct methods involve collection of samples from subsurface rock strata. (*разделительный вопрос / ajratilgan savol*)

11. The indirect methods are widely used in subsurface exploration by applying various geophysical techniques. (*How...?*)

12. If a resource is considered commercially viable, operators will begin the process of commercial mining. (*In which case...?*)

XV. Дополните текст В недостающими словами из предложенного списка. Переведите текст на русский язык:

Berilgan ro'yxatdagi etishmayotgan so'zlar bilan В matnini to'ldiring. Matnni o'zbek tiliga tarjima qiling:

raw materials, detailed exploration, mineral exploration, preliminary exploration, provide, mineral body, shape, highest accuracy, exploitation exploration, finishing works, folding

Text B

Minerals ... resources for our life. They are the ... necessary for building our world, caring for it and maintaining it. The process of determining the concentration of minerals is called The exploration phase of a mineral deposit is divided into three stages: 1) preliminary exploration; 2) ...; and 3) exploitation exploration.

The purpose of ... is to determine the general dimensions of the deposit and obtain an approximate idea of the ..., and quality of the mineral body. At the stage of detailed exploration, the contours of each ... are

outlined with a high degree of accuracy and the elements of its occurrence are determined, taking into account any possible changes caused by ... and faulting.

Exploitation exploration is characterized by the On the basis of ... data, current production is planned, preparatory and ... are carried out, and the balance of reserves and production is compiled.

XVI. Просмотрите еще раз текст А. Расположите пункты приведенного ниже плана в соответствии с содержанием текста:

A matni ko'zdan kechiring. Quyidagi rejaning bandlarini matn mazmuniga mos ravishda joylashtiring:

1. What does exploration involve?
2. Some facts of surface exploration.
3. The reason for starting the process of commercial mining.
4. Characteristic features of prospecting.
5. Some facts of subsurface exploration.

XVII. Суммируйте содержание текста А в соответствии с планом, используя предложенные слова и словосочетания:

Taklif etilgan so'z va iboralar yordamida ushbu rejaga muvofiq А matnining mazmunini umumlashtiring:

prospecting; the search for mineral deposits; to involve; exploration; more detailed prospecting; surface exploration; to include; preliminary exploration; to determine; detailed exploration; to carry out; two methods; subsurface exploration; direct; indirect; collection of samples; to apply; geophysical techniques; to consider; commercially viable; commercial mining

XVIII. Используя активную лексику урока, письменно переведите на английский язык следующие предложения:

Darsning faol lug'atidan foydalanib, quyidagi jummalarni yozma ravishda ingliz tiliga tarjima qiling:

1. Поисковые работы являются самым первым этапом в обнаружении месторождений полезных ископаемых.
2. Поисковые работы могут продолжаться в течение нескольких лет.

3. Геологоразведка включает в себя более детальный поиск и оценку минеральных ресурсов.

4. Разведка поверхности включает два этапа: предварительный и детальный.

5. Предварительная разведка определяет целесообразность и последовательность промышленной разработки месторождения.

6. Детальная разведка проводится на месторождениях, которые будут разрабатываться в первую очередь.

7. Существует два метода разведки недр – прямой и косвенный.

8. Процесс промышленного производства начинается только в том случае, если месторождение представляет коммерческий интерес.

1. Qidiruv ishlari foydali qazilmalar konlarini ochishning eng birinchi bosqichidir.

2. Qidiruv ishlari bir necha yil davom etishi mumkin.

3. Geologik razvedka foydali qazilma boyliklarini batafsilroq qidirish va baholashni o'z ichiga oladi.

4. Yer yuzasini o'rganish ikki bosqichni o'z ichiga oladi: dastlabki va batafsil.

5. Dastlabki razvedka ishlari konni sanoat yo'li bilan o'zlashtirishning maqsadga muvofiqligi va ketma-ketligini belgilaydi.

6. Birinchi navbatda o'zlashtiriladigan konlarda batafsil qidiruv ishlari olib boriladi.

7. Yer qa'rini o'rganishning ikkita usuli mavjud – to'g'ridan-to'g'ri va bilvosita.

8. Sanoat ishlab chiqarish jarayoni faqat omonat tijorat manfaatiga ega bo'lgan taqdirdagina boshlanadi.

Lesson 5

Sedimentary Rocks

I. Прочитайте и запомните следующие слова:

Quyidagi so'zlarni o'qing va yodda saqlang:

1) sedimentary rocks	осадочные горные породы cho'kindi jinslar
2) igneous rocks	магматические (изверженные) породы magmatic jinslar
3) melting	плавление erish
4) cooling	охлаждение sovitish
5) compacting	уплотнение zichlash
6) weathering	выветривание shamollatish
7) dissolution	растворение eritish
8) precipitation	осаждение yog'ingarchilik
9) lithification	литификация, окаменение toshga aylanish
10) grain	зерно urug'
11) sandstone	песчаник qumtosh
12) mudstone	аргиллит argillit
13) limestone	известняк ohaktosh
14) to lead to	приводить к ...ga eltuvchi

15) flint	кремень chaqmoqtosh
16) lignite	лигнит, бурый уголь qo'ng'ir ko'mir
17) oil shale	горючий сланец neft slanetsi
18) shell	раковина po'st, qobiq
19) clast	обломок qoldiqlar
20) to contain	содержать o'z ichiga olmoq

II. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

Quyidagi so'z birikmalarining o'zbekcha ekvivalentini o'ng ustundan topping:

- | | |
|--|--|
| 1) to be compacted under high pressure | a) состоять из органического материала |
| 2) Earth's surface | organic materiallardan tashkil topgan |
| 3) creation of sedimentary rocks | b) обломочные осадочные породы |
| 4) clastic sedimentary rocks | qoldiq cho'kindi jinslar |
| 5) weathered rocks | c) уплотняться под высоким давлением |
| 6) cementing material composition | yuqori bosim ostida qattiqlashmoq |
| 7) to dissolve in water | d) поверхность Земли |
| 8) precipitation of calcium carbonate | Yer yuzasi |
| 9) the remains of marine animals | e) растворяться в воде |
| 10) to contain significant amounts | suvda erib ketish |
| 11) to be made up of organic material | f) образование осадочных пород |
| 12) organic sedimentary layer | cho'kindi jinslarning hosil bo'lishi |

- g) состав вяжущего (цементирующего) материала
biriktiruvchi (sementlovchi)
materialning tarkibi
- h) подвергшиеся выветриванию породы
yemirilgan jinslar
- i) осаждение карбоната кальция
kalsiy karbonatning cho'kishi
- j) останки морских животных
dengiz hayvonlarining
qoldiqlari
- k) органический осадочный
слой
organic qoldiq qatlamlari
- l) содержать значительное
количество
sezilarli miqdorni o'z ichiga
oladi

**III. Из следующих слов составьте пары синонимов:
Quyidagi so'zlarning juft sinonimlarini topping:**

- | | |
|------------------|------------------|
| 1) common | a) important |
| 2) to lead to | b) to contract |
| 3) to happen | c) to result in |
| 4) to contain | d) quantity |
| 5) amount | e) area |
| 6) significant | f) mainly |
| 7) to compress | g) form |
| 8) location | h) primarily |
| 9) predominantly | i) to consist of |
| 10) shape | j) formation |
| 11) originally | k) to occur |
| 12) creation | l) general |
| 13) clasts | m) hard |
| 14) solid | n) broken pieces |

**IV. Из следующих слов составьте пары антонимов:
Quyidagi so'zlarning juft antonimlarini toping:**

- | | |
|-----------------------|------------------|
| 1) to be full of smth | a) soft |
| 2) approximate | b) to destroy |
| 3) high | c) precise |
| 4) to create | d) insignificant |
| 5) at the bottom | e) to lack smth |
| 6) hard | f) low |
| 7) important | g) common |
| 8) cooling | h) poor |
| 9) specific | i) heating |
| 10) rich | j) at the top |

**V. Переведите на русский язык цепочки производных слов, обращая внимание на словообразовательные суффиксы:
So'z yasovchi qo'shimchalarga e'tibor bergan holda, yasama so'zlar qatorini o'zbek tiliga tarjima qiling:**

- 1) to differ – different – difference;
- 2) to compress – compression – compressor;
- 3) to create – creation – creator;
- 4) to compose – compose – composition;
- 5) to locate – location – local;
- 6) significant – significance – significantly;
- 7) to predominate – predominant – predominantly;
- 8) class – to classify – classification;
- 9) hard – hardness – to harden;
- 10) origin – to originate – originally;
- 11) deep – depth – to deepen.

**VI. Дополните следующие предложения подходящими по смыслу словами из упражнения V. Используйте подсказки в скобках. Переведите предложения на русский язык:
Quyidagi jumalarni V mashqdagi tegishli so'zlar bilan to'ldiring. Qavs ichidagi maslahatlardan foydalaning. Jumalarni o'zbek tiliga tarjima qiling:**

1. One can ... (8) rocks into three ... (1) types.
2. The three ... (8) of rocks are constantly being transformed from one to another.

3. The ... (1) between sedimentary and igneous rocks is explained in the article.

4. Weathering is one of the most ... (6) geological processes which leads to the ... (3) of sedimentary rocks.

5. The... (8) of clastic sedimentary rocks is based on the shape and size of their grains, texture, etc.

6. Lake Baikal is extremely ... (11). Its ... (11) is about 1,700 meters.

7. Each layer of the earth has a unique chemical ... (4).

8. The ... (5) sedimentary rocks can provide us with some information about their age.

**VII. Из следующих слов составьте словосочетания:
Quyidagi so'zlardan so'z birikmalari hosil qiling:**

- | | |
|----------------|--------------|
| 1) the earth's | a) type |
| 2) significant | b) surface |
| 3) oil | c) materials |
| 4) marine | d) amounts |
| 5) organic | e) rocks |
| 6) iron | f) carbonate |
| 7) calcium | g) ore |
| 8) sedimentary | h) animals |
| 9) specific | i) shale |

VIII. Дополните следующие предложения полученными словосочетаниями из упражнения VII. Переведите предложения на русский язык:

VII mashqda hosil bo'lgan so'z birikmalari yordamida quyidagi gaplarni to'ldiring. Jummalarni o'zbek tiliga tarjima qiling:

1. ... are one of three main types of rocks which are formed on or near the

2. Coal can contain ... of cadmium.

3. Calcium and carbonate ions react to form ... which precipitates leaving fresh water.

4. ... is a ... of sedimentary rock formation that can be used to produce oil and gas.

5. The primary use of ... is to make steel.
6. ... like plant fibers and animal bones haven't preserved well in acidic soils.
7. Many ... that float near the surface are highly transparent.

IX. Подберите к следующим словам определения, выбирая из предложенных:

Quyidagi so'zlarni berilgan ta'riflarga moslang:

rock, melting, cooling, layer, organic, deforming, clast, composition, limestone, solution

- a) the action or process of making or becoming less hot or warm;
- b) the hard solid substance that forms part of the earth's surface;
- c) a fragment of rock broken off from a larger rock;
- d) connected with, produced by, or obtained from living things;
- e) a homogeneous mixture of two or more substances;
- f) the combination of elements or parts that make up something;
- g) the process by which a substance changes from the solid phase to the liquid one;
- h) an amount or sheet of a substance that covers surface or that lies between two things or two other substances;
- i) changing something so that it no longer has its normal or original shape;
- j) a type of carbonate sedimentary rock used for building or making cement.

X. Прочитайте и переведите текст на русский язык:

Matni o'qing va o'zbek tiliga tarjima qiling:

In the rock cycle, there are three different types of rocks: **sedimentary**, **igneous**, and **metamorphic**. Each of these rocks is formed by physical changes such as melting, cooling, eroding, compacting or deforming.

Sedimentary rocks were originally sediments, which were compacted under high pressure. Sedimentary rocks are formed on or near Earth's surface from pieces of other existing rocks or organic materials. The most important geological processes that lead to the creation of sedimentary rocks are erosion, weathering, dissolution, precipitation and lithifi-

cation. There are three different types of sedimentary rocks: *clastic*, *organic* (biological) and *chemical*.

Clastic sedimentary rocks are rocks composed predominantly of broken pieces or clasts of older weathered and eroded rocks. Clastic sedimentary rocks are classified based on the shape and size of their grains, clast, cementing material composition and texture. Examples of clastic rocks are sandstone and mudstone.

Unlike most other sedimentary rocks, *chemical sedimentary rocks* are not made of pieces of sediments. Instead, they have mineral crystals made of elements that are dissolved in water. The water in the oceans, lakes and ground is often full of dissolved elements. Chemical sedimentary rocks are formed when dissolved materials precipitate from solution. For instance, most limestone forms at the bottom of the ocean from the precipitation of calcium carbonate and the remains of marine animals with shells. Examples of chemical sedimentary rocks are some dolomites, flint, chert, iron ore, limestones and rock salt.

Organic-rich sedimentary rocks are a specific type of sedimentary rock that contains significant amounts (>3 %) of organic carbon. The most common types include coal, lignite, oil shale or black shale. Organic sedimentary rocks are formed from hard biological materials like plants, shells and bones that are compressed into rock. Organic sedimentary rocks can give us a record of what happened in the area they are found in. Because they are made up of organic material, they can tell us what plants lived and died in that area. The location in which the sedimentary rock is found can also tell us what time period the plants were growing in that region or an approximate duration of time in which the organic sedimentary layer was created. Generally speaking, the lower the depth of the sedimentary rock layer, the older it is.

XI. Согласитесь либо не согласитесь со следующими утверждениями. Обоснуйте свое мнение, используя следующие фразы:
Quyidagi gaplarga qo'shiling yoki qo'shilmang. Jadvalda berilgan iboralar yordamida fikringizni asoslang:

No doubt about it

I totally agree

I also think so

Exactly

Absolutely

That's not right

I disagree

I don't think so

I'm not so sure about it

That's not entirely true

1. Sedimentary rocks are one of three main types of rocks along with metamorphic and igneous rocks.

2. The only process which leads to the creation of sedimentary rocks is precipitation.

3. Sedimentary rocks can be classified into two different types: organic and chemical.

4. Iron ore, dolomites and rock salt are examples of clastic sedimentary rocks.

5. Like most other sedimentary rocks, chemical sedimentary rocks are made of pieces of sediments.

6. Clastic sedimentary rocks contain mineral crystals made of elements dissolved in water.

7. Examples of chemical sedimentary rocks are sandstone and mudstone.

8. Organic sedimentary rocks contain significant amounts of organic carbon.

9. Organic sedimentary rocks can provide us with some information about the area they are found in.

XII. Соедините части предложений:

Gap qismlarini bog'lang:

- | | |
|---|--|
| 1. Many important geological processes | a) clasts of older weathered and eroded rocks. |
| 2. Clastic, organic and chemical rocks | b) is full of dissolved elements. |
| 3. Clastic sedimentary rocks are composed of | c) are three main types of sedimentary rocks. |
| 4. The water in the oceans, lakes and grounds | d) coal, lignite and oil shale. |
| 5. When dissolved materials precipitate from solution | e) hard biological materials. |
| 6. The most common types of organic rocks include | f) chemical sedimentary rocks are formed. |
| 7. Organic sedimentary rocks are formed from | g) lead to the creation of sedimentary rocks. |
| 8. The lower the depth of the sedimentary rock, | h) the older it is. |

XIII. Исползуя информация из текста и активную лексику урока, дополните следующий диалог. Расположите слова в вопросах в правильном порядке:

Matndagi ma'lumotlar va darsning faol lug'atidan foydalanib, quyidagi dialogni yakunlang. So'roq gaplardagi so'zlarni to'g'ri tartibda qo'ying:

A.: types / What / you / do / of rocks / know?

B.: As far as I know, there are three types of rocks:

A.: I see. And how / sedimentary / are / formed / rocks?

B.: Well, sedimentary rocks were originally

A.: If I remember right, different / there / are / types of / rocks / sedimentary / aren't there?

B.: You are quite right. There are three... .

A.: By the way, the difference / what / is / clastic sedimentary rocks / between / chemical sedimentary rocks / and?

B.: You know, clastic sedimentary rocks are composed of ..., while chemical rocks are made of

A.: And / you / can / me / give / any / examples / organic / rocks / of / sedimentary?

B.: Yes, of course. The most common types include

XIV. Исползуя информация из текста, дополните следующие утверждения:

Matndagi ma'lumotlardan foydalanib, quyidagi gaplarni to'ldiring:

1. There are three different types of rocks.
2. Sedimentary rocks were originally sediments.
3. Clastic sedimentary rocks are composed of clasts of older rocks.
4. Chemical sedimentary rocks differ in their composition from most other sedimentary rocks.
5. Organic sedimentary rocks are a specific type of sedimentary rocks.
6. The location in which the sedimentary rock is found can give us a lot of information.

XV. Составьте план текста.
Matn rejasini tuzing.

XVI. Посмотрите видеофрагмент об осадочных горных породах (<https://www.youtube.com/watch?v=x0lauGbQWvQ>). Расскажите об осадочных породах, используя свой план, информацию из фрагмента и следующие выражения:

Quyidagi havola orqali cho'kindi tog' jinslari haqidagi videofragmentni tomosha qiling (<https://www.youtube.com/watch?v=x0lauGbQWvQ>). Rejangiz, video lavhadagi ma'lumotlar va quyidagi iboralar yordamida cho'kindi tog' jinslari haqida aytib bering:

to be formed by physical changes; to be compacted under high pressure; to lead to the creation; to be composed of; to be classified; to be made of; to precipitate from solution; to contain significant amounts; to be compressed into rock; to give a record

XVII. Используя активную лексику урока, письменно переведите на английский язык следующие предложения:

Darsning faol lug'atidan foydalanib, quyidagi gaplarni yozma ravishda ingliz tiliga tarjima qiling:

1. Осадочные породы изначально представляли собой отложения, которые уплотнялись под высоким давлением.

2. Такие геологические процессы, как эрозия, выветривание, растворение, осаждение и литификация, приводят к образованию осадочных пород.

3. Обломочные осадочные породы состоят преимущественно из обломков более древних пород, подвергшихся выветриванию и эрозии.

4. В отличие от большинства других осадочных пород, химические осадочные породы содержат минеральные кристаллы, состоящие из элементов, растворенных в воде.

5. Наиболее распространенными примерами химических осадочных пород являются некоторые доломиты, кремль, железная руда, известняки и каменная соль.

6. Известняк, например, образуется на дне океана в результате осаждения карбоната кальция и останков морских животных с раковинами.

7. Богатые органикой осадочные породы содержат значительное количество органического углерода.

8. Органические осадочные породы могут предоставить нам информацию о том, что происходило в той местности, где они были найдены.

1. Cho'kindi jinslar dastlab yuqori bosim ostida siqilgan konlar edi.

2. Eroziya, nurash, erish, cho'kindi va toshlanish kabi geologik jarayonlar cho'kindi jinslarning paydo bo'lishiga olib keladi.

3. Yengil cho'kindi jinslar, asosan, eskirgan jinslarning parchalanib, yemirilib ketgan bo'laklaridan iborat.

4. Ko'pchilik boshqa cho'kindi jinslardan farqli o'laroq, kimyoviy cho'kindi jinslar tarkibida suvda erigan elementlardan tashkil topgan mineral kristallar mavjud.

5. Kimyoviy cho'kindi jinslarning eng ko'p uchraydigan misollari – ba'zi dolomitlar, chaqmoq toshlari, temir rudalari, ohaktoshlar va tosh tuzlari.

6. Masalan, ohaktosh okean tubida kaltsiy karbonat va qobiqli dengiz hayvonlarining qoldiqlari yog'ishi natijasida hosil bo'ladi.

7. Organik moddalarga boy cho'kindi jinslar sezilarli miqdorda organik uglerodni o'z ichiga oladi.

8. Organik cho'kindi jinslar bizga ular topilgan hududda nima sodir bo'lganligi haqida ma'lumot berishi mumkin.

Lesson 6

Metamorphic Rocks

I. Прочитайте и запомните следующие слова:

Quyidagi so'zlarni o'qing va yodda saqlang:

1) to undergo	претерпевать, подвергаться, испытывать boshdan kechirmoq
2) plate boundaries	границы плит plitalar chegarasi
3) to collide	сталкиваться to'qnashmoq
4) to remain	оставаться qolmoq
5) feldspar	полевоы шпат dala shpati
6) mica	слюда slyuda
7) foliated	слоистый qatlamli
8) non-foliated	неслоистый qatlamsiz
9) foliation	расслоение (слоистость) qatlamlanish
10) flat	плоский yassi
11) elongated	удлиненный, вытянутый cho'zilgan
12) hornblende	роговая обманка shox aldamchisi
13) platy mineral	пластинчатый минерал qatlamli minerallar
14) to align	выравнивать, выстраивать tekislatmoq

15) bituminous coal	битуминозный уголь bitumli ko'mir
16) marble	мрамор marmar
17) uplift	поднятие ko'tarilish

II. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

O'ng ustundan quyidagi iboralarning o'zbekcha ekvivalentlarini toping:

- | | |
|--|--|
| 1) to undergo changes | a) существующая порода
mavjud jinslar |
| 2) existing rock | b) подвергаться сильному давлению
kuchli bosim ostida bo'lish |
| 3) to result in the formation | c) выстраиваться слоями
qatlamlanadi |
| 4) to be subjected to intense pressure | d) выравнивание пластинчатых минералов
qatlamli minerallarning tekislanishi |
| 5) to line up in layers | e) граница тектонической плиты
tektonik plitalar chegarasi |
| 6) weathering processes | f) привести к образованию
ta'limga olib kelish |
| 7) aligning of platy minerals | g) запустить весь цикл заново
butun siklni qayta ishga tushirish |
| 8) tectonic plate boundary | h) процессы выветривания
ob-havo jarayonlari |
| 9) to cool relatively slowly | i) претерпевать изменения
o'zgarishlarga bardosh bermoq |
| 10) to start the entire cycle anew | j) относительно медленно остывать
nisbatan sekin sovimoq |

**III. Из следующих слов составьте пары синонимов:
Quyidagi so'zlardan juft sinonimlar hosil qiling:**

- | | |
|-----------------------|---------------------|
| 1) to refer to | a) elevation |
| 2) to line up | b) conditions |
| 3) to indicate | c) to relate to |
| 4) to consider | d) to be exposed to |
| 5) circumstances | e) to align |
| 6) to be subjected to | f) to show |
| 7) to change into | g) huge |
| 8) boundary | h) to be compacted |
| 9) to be compressed | i) border |
| 10) immense | j) to turn into |
| 11) uplift | k) to deal with |

**IV. Из следующих слов составьте пары антонимов:
Quyidagi so'zlardan juft antonimlar hosil qiling:**

- | | |
|--------------|----------------|
| 1) vital | a) solid |
| 2) intense | b) shallow |
| 3) elongated | c) different |
| 4) fluid | d) incomplete |
| 5) deep | e) finally |
| 6) same | f) unimportant |
| 7) entire | g) quickly |
| 8) initially | h) narrow |
| 9) broad | i) shortened |
| 10) slowly | j) moderate |

**V. Найдите слова со схожим значением, переведите их на русский язык. Определите лишнее слово:
O'xshash ma'noli so'zlarni toping, ularni o'zbek tiliga tarjima qiling.
Mos kelmaydigan so'zni toping:**

- 1) to align, to arrange, to disorder, to line up;
- 2) vital, essential, significant, meaningless;
- 3) to be composed of, to be exposed to, to be made up of, to consist of;
- 4) to collide, to undergo, to go through, to be subjected to;

- 5) circumstances, factors, conditions, grains;
- 6) huge, tiny, great, immense;
- 7) to be compressed, to be squeezed, to be extended, to be compacted;
- 8) intense, weak, powerful, strong;
- 9) to remain, to turn into, to convert, to change into;
- 10) entire, total, incomplete, full;
- 11) uplift, rise, fall, elevation.

VI. Переведите на русский язык цепочки производных слов, обращая внимание на словообразовательные суффиксы:

So'z yasovchi qo'shimchalarga e'tibor berib, yasama so'zlar qatorini o'zbek tiliga tiliga tarjima qiling:

- 1) to specify – specific – specification;
- 2) broad – broadly – to broaden;
- 3) to relate – relative – relatively;
- 4) to direct – direction – directly;
- 5) geology – geologist – geologic;
- 6) to apply – application – appliance;
- 7) to indicate – indication – indicative;
- 8) intense – to intensify – intensity;
- 9) immense – immensely – immensity.

VII. Дополните следующие предложения недостающими словами из предложенного списка. Переведите предложения на русский язык:

Quyidagi jumalarni berilgan ro'yxatdagi etishmayotgan so'zlar bilan to'ldiring. Gaplarni o'zbek tiliga tarjima qiling:

undergo, collide, foliated, conditions, are exposed to, result in, intense, boundary, is composed of, is referred to, line up

1. A metamorphic rock in which grains ... in layers is called a ... rock.
2. In general, metamorphic rocks do not ... significant changes in chemical composition during metamorphism.
3. Metamorphic rocks are formed when existing rocks ... high temperatures and/or ... pressures.

4. When a rock melts it ... as igneous, not metamorphic.
5. Metamorphism occurs where a rock is subjected to the ... unlike those in which it is formed.
6. If two tectonic plates ..., they form a convergent plate
7. Granite ... quartz and feldspar with minor amounts of mica and other minerals.
8. Changes to tectonic plates can also ... the formation of metamorphic rocks.

VIII. Подберите к следующим словам определения, выбирая из предложенных:

Quyidagi so'zlarga berilgan to'g'ri ta'rifni toping:

*foliation, fluid, granite, uplift, aligning, mica, weathering,
plate boundary*

- a) vertical elevation of the earth's surface in response to natural causes;
- b) a very hard, granular, crystalline igneous rock consisting mainly of quartz, mica and feldspar and often used as a building stone;
- c) a process in which rocks are divided into thin layers that can be separated (or the layers themselves);
- d) a substance which flows easily because of intermolecular spaces and doesn't have fixed shape;
- e) the edges where two plates meet;
- f) placing or arranging things in a straight line;
- g) the deterioration of rocks, soils and minerals through contact with water, atmospheric gases and biological organisms;
- h) a shiny silicate mineral with a layered structure used as a thermal or electrical insulator.

IX. Прочитайте и переведите текст на русский язык:

Matnni o'qing va o'zbek tiliga tarjima qiling:

The word “*metamorphosis*” is a broad term that indicates a change from one thing to another. Rocks that undergo changes to form a new rock are referred to as metamorphic rocks.

The conditions required to form a metamorphic rock are very specific. The existing rock must be exposed to high heat, high pressure or to a hot, mineral-rich fluid. Usually, all three of these circumstances are met. These conditions are most often found either deep in Earth's crust or at plate boundaries where tectonic plates collide. In order to create a metamorphic rock, it is vital that the existing rock remains solid and does not melt. If there is too much heat or pressure, the rock will melt. This will result in the formation of an igneous rock, not a metamorphic one.

Consider how granite changes its form. Granite is an igneous rock that is formed when magma cools relatively slowly underground. It is composed primarily of quartz, feldspar and mica. When granite is subjected to intense heat and pressure it is changed into a metamorphic rock called gneiss (pronounced "nice").

Metamorphic rocks have two classes: *foliated* and *non-foliated*. When a rock with flat or elongated minerals is put under immense pressure, the minerals line up in layers, creating foliation. Foliation is the aligning of elongated or platy minerals like hornblende or mica, perpendicular to the direction of pressure that is applied. For example, granite contains long and platy minerals that are not initially aligned, but when enough pressure is added, those minerals shift to all points in the same direction while getting squeezed into flat sheets. When granite undergoes this process, like at a tectonic plate boundary, it turns into gneiss.

Non-foliated rocks are formed the same way, but they do not contain the minerals that tend to line up under pressure and thus do not have the layered appearance of foliated rocks. Sedimentary rocks like bituminous coal, limestone, and sandstone, given enough heat and pressure, can be turned into non-foliated metamorphic rocks like anthracite coal, marble, and quartzite. Non-foliated rocks can also be formed by metamorphism, which happens when magma comes in contact with the surrounding rock.

Although metamorphic rocks typically are formed deep in the planet's crust, they are often exposed on the surface of the earth. This happens due to geologic uplift and the erosion of the rock and soil above them. At the surface, metamorphic rocks will be subjected to weathering processes and may break down into sediments. These sediments could then be compressed to form sedimentary rocks, which would start the entire cycle anew.

**X. Выберите верный вариант в скобках:
Qavsdagi to'gri javoblardan birini tanlang:**

1. Rocks that undergo changes to form a new rock are referred to as (*sedimentary / metamorphic / clastic*) rocks.
2. In order to create a metamorphic rock, the existing rock must be (*hot / soft / solid*).
3. Too much heat or pressure will result in the formation of a (*sedimentary / igneous / metamorphic*) rock.
4. When granite is subjected to intense heat and pressure it (*turns into gneiss / breaks down / melts*).
5. Granite is formed when magma (*cools quickly / rises gradually / cools slowly*) underground.
6. Foliation is created when a rock with flat or elongated minerals is put under (*continuous / low / immense*) pressure.
7. (*Non-foliated / all metamorphic / foliated*) rocks do not contain the minerals that line up under pressure.
8. Metamorphic rocks are often exposed on the surface of the earth due to (*foliation / geologic uplift / precipitation*).

**XI. Соедините части предложений:
Gap bo'laklarini bog'lang:**

- | | |
|--|---|
| 1. "Metamorphosis" indicates | a) to form a metamorphic rock. |
| 2. Metamorphic rocks are rocks that | b) it is vital for the existing rock to be solid. |
| 3. There are three conditions required | c) is referred to as foliation. |
| 4. To create a metamorphic rock | d) a change from one thing to another. |
| 5. Granite changes its form | e) undergo changes to form a new rock. |
| 6. The aligning of elongated or platy minerals | f) non-foliated metamorphic rocks. |
| 7. Sedimentary rocks can be turned into | g) deep in the planet's crust. |
| 8. Metamorphic rocks are formed | h) when it is subjected to intense heat and pressure. |

XII. Продолжите следующие предложения:

Quyidagi gaplarni davom ettiring:

1. The word “metamorphosis” is a broad term that
2. The conditions required to form a metamorphic rock are
3. In order to create a metamorphic rock it is vital that
4. Granite is an igneous rock which is
5. Metamorphic rocks can be classified as
6. Foliation is the process of
7. The difference between foliated and non-foliated rocks is that non-foliated rocks
8. At the surface metamorphic rocks can

XIII. Придумайте вопросы к следующим ответам:

Quyidagi javoblarga savol tuzing:

1. It indicates a change from one thing to another. (*What...?*)
2. The existing rock must be exposed to high heat, high pressure or to a hot, mineral-rich fluid. (*What...?*)
3. Yes, it is. Granite is an igneous rock. (*общий вопрос / umumiy so'roq*)
4. Granite is composed of quartz, feldspar and mica. (*What...?*)
5. Granite is changed into gneiss when it is subjected to intense heat and pressure. (*When...?*)
6. There are foliated and non-foliated metamorphic rocks. (*What...?*)
7. No, they don't. Non-foliated rocks don't have the layered appearance of foliated rocks. (*общий вопрос / umumiy so'roq*)
8. Metamorphic rocks are often exposed on the surface of the earth due to geologic uplift and the erosion of the rock and soil above them. (*Why...?*)

XIV. Кратко изложите содержание текста. Используйте следующие фразы:

Matn mazmunini qisqacha aytib bering. Quyidagi iboralardan foydalaning:

1. This text deals with...
2. The author defines...
3. Particular attention is given to...

4. The author explains...
5. The article also describes...
6. The author gives the examples of...
7. It is reported that...
8. The conclusion is that...

XV. Исползуя информация из текста и видеофрагмента (<http://www.youtube.com/watch?v=oFOIW0oaK0s&t=11s>), составьте небольшой рассказ о метаморфических горных породах. Matndagi va videolavhadagi (<http://www.youtube.com/watch?v=oFOIW0oaK0s&t=11s>) ma'lumotlardan foydalanib metamorfik to'g' jinslari haqida matn tuzing.

XVI. Исползуя активную лексику урока, письменно переведите на английский язык следующие предложения: Darsdagi faol lug'atdan foydalanib, quyidagi jummalarni ingliz tiliga yozma tarjima qiling:

1. Когда осадочные и магматические горные породы подвергаются воздействию высокой температуры, большого давления и горячей, богатой минералами жидкой среды, они начинают меняться.

2. Метаморфические породы формируются либо в глубинах земной коры, либо на границе столкновения тектонических плит.

3. Для формирования метаморфической породы крайне важно, чтобы существующая порода оставалась твердой и не плавилась.

4. Под действием слишком интенсивного тепла и давления горная порода начнет плавиться, что приведет к образованию магматической, а не метаморфической породы.

5. Гранит – это магматическая порода, которая образуется при относительно медленном остывании магмы под землей.

6. При каких условиях гранит превращается в гнейс?

7. Осадочные породы, такие как битуминозный уголь, известняк и песчаник, могут преобразовываться в неслоистые метаморфические породы, такие как антрацитовый уголь, мрамор и кварцит.

1. Cho'kindi va magmatik jinslar yuqori harorat, yuqori bosim va issiq, minerallarga boy suyuqlik muhitiga ta'sir qilganda, ular o'zgaraboshlaydi.

2. Metamorfik jinslar yoki yer qobig'ining chuqurligida yoki tektonik plitalarning to'qnashuvi chegarasida hosil bo'ladi.

3. Metamorfik tog' jinslarining hosil bo'lishi uchun mavjud tog' jinslarining mustahkamligi va erimasligi muhim ahamiyatga ega.

4. Haddan tashqari kuchli issiqlik va bosim ta'sirida tog' jinsi eriy boshlaydi, bu esa metamorfik emas, balki magmatik jinslarning paydo bo'lishiga olib keladi.

5. Granit magma jinsi bo'lib, yer ostidagi magmaning nisbatan sekin sovishi natijasida hosil bo'ladi.

6. Granit qanday sharoitda gneysga aylanadi?

7. Bitumli ko'mir, ohaktosh va qumtosh kabi cho'kindi jinslar antrasit ko'mir, marmar va kvartsit kabi qatlamlanmagan metamorfik jinslarga aylanishi mumkin.

Lesson 7

Igneous Rocks

I. Прочитайте и запомните следующие слова:
Quyidagi so'zlarni o'qing va yodda saqlang:

1) solidification	затвердевание qotish
2) to cause	заставлять; быть причиной, вызывать sababchi bo'lmoq
3) to be surrounded by	быть окруженным o'rab olish
4) molten	расплавленный erigan
5) coarse	крупный katta
6) fine	мелкий kichik
7) subterranean	подземный yer osti
8) core	ядро yadro
9) flow	поток oqim
10) sheet	пласт qatlam
11) plateau	плато plato
12) to rise	подниматься teraga chiqmoq
13) scoria	шлак shlak
14) stock	шток zahira
15) sill	силл ko'mir qatlami

16) dike	дайка dayka
17) tuff	туф tuf
18) quenched	затухающий (застывший) xiralashgan (muzlatilgan)
19) to be exposed to	подвергаться duchor bo'lish
20) composition	состав birikma

II. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

O'ng ustundan quyidagi iboralarning o'zbekcha ekvivalentlarini toping:

- | | |
|---------------------------|-----------------------------|
| 1) fine-grained texture | a) лавовые потоки |
| 2) quenched lava | lava oqimi |
| 3) subterranean layers | b) подвергаться воздействию |
| 4) to be exposed to water | воды suvga ta'sir qilish |
| 5) mountain ranges | c) мелкозернистая текстура |
| 6) molten rock | mayda donador tekstura |
| 7) Earth's mantle | d) расплавленная порода |
| 8) tectonic environment | eritma jinslari |
| 9) mineral grains | e) мантия Земли |
| 10) volcanic pipes | yer qobigi |
| 11) lava flows | f) подземные слои |
| | yer osti qatlamlari |
| | g) горные хребты |
| | tog tizmalari |
| | h) вулканические трубки |
| | vulqon quvurlari |
| | i) тектоническая среда |
| | tektonik muhit |
| | j) зерна минералов |
| | minerallar donalari |
| | k) застывшая лава |
| | muzlatilgan lava |

**III. Из следующих слов составьте пары синонимов:
Quyidagi so'zlardan juft sinonimlar hosil qiling:**

- | | |
|---------------------|-------------------------|
| 1) environment | a) flux |
| 2) to cause | b) composition |
| 3) rate | c) to be subjected to |
| 4) makeup | d) surroundings |
| 5) to learn | e) to originate from |
| 6) to derive from | f) speed |
| 7) to be exposed to | g) to find out |
| 8) underground | h) to be connected with |
| 9) to be related to | i) to recognize |
| 10) to identify | j) subterranean |
| 11) flow | k) to make |

**IV. Из следующих слов составьте пары антонимов:
Quyidagi so'zlardan juft antonimlar hosil qiling:**

- | | |
|------------|----------------|
| 1) to rise | a) fine |
| 2) cool | b) to solidify |
| 3) coarse | c) slow |
| 4) to melt | d) to fall |
| 5) fast | e) to enter |
| 6) major | f) warm |
| 7) to exit | g) rare |
| 8) common | h) minor |

**V. Переведите на русский язык цепочки производных слов, обращая внимание на словообразовательные суффиксы:
So'z yasovchi qo'shimchalarga e'tibor berib, yasama so'zlar qatorini o'zbek tiliga tarjima qiling:**

- 1) solid – to solidify – solidification;
- 2) to derive – derivation – derivative;
- 3) crystal – to crystallize – crystallization;
- 4) to identify – identification – identifiable;
- 5) to exist – existence – pre-existing;
- 6) to add – addition – additional;
- 7) to produce – production – productive;

- 8) to grow – growing – growth;
- 9) to depend – dependent – dependence.

VI. Переведите слова в скобках на английский язык, используя активную лексику урока:

Darsdning faol lug'atidan foydalanib, qavsdagi so'zlarni ingliz tiliga tarjima qiling:

1. As hot, (*расплавленная / eritilgan*) rock (*поднимается / ko'tariladi*) to the surface, it undergoes changes in temperature and pressure.

2. Igneous rocks are formed through the cooling and (*затвердевания / qotishi*) of magma or lava.

3. (*Вулканические трубки / vulqon naychalari*) are in (*подземных / yer osti*) layers, but can sometimes come to the surface as a result of tectonic activity.

4. The central (*ядра / yadrolari*) of major mountain ranges consist of large bodies of intrusive igneous rocks.

5. (*Лавовые потоки / lava oqimlari*) are the least hazardous of all processes in volcanic eruptions.

6. The most common types of plutonic igneous rocks are granite and diorite and they have (*крупные / yirik*) grains.

7. As this rock (*окружена / qamrab olingan*) by pre-existing rock, the magma cools slowly.

8. Hot gasses are often trapped in (*затухающей / so'nayotgan*) lava, forming bubbles.

9. Igneous rocks can be used to learn about (*состав / tarkib*), temperature and pressure within the earth's mantle.

VII. Подберите к следующим словам определения, выбирая из предложенных:

Quyidagi so'zlarga berilgan to'g'ri ta'rifni toping:

*molten, solidification, flow, lava, mantle,
subterranean, coarse, to rise, scoria*

- a) existing, occurring or done under the earth's surface;
- b) a dark-coloured rock containing a lot of small holes, formed by a lava from a volcano;
- c) a steady, continuous stream; flux;

- d) to move from a lower position to a higher one;
- e) rough in texture, structure; not fine;
- f) fused or liquefied by heat;
- g) the act or process of becoming a hard or compact mass or of changing from a liquid or gaseous state to a solid one;
- h) molten rock that flows from a volcano or from a crack in the earth;
- i) a thick layer of hot solid rock between the earth's crust and the molten iron core.

VIII. Прочитайте и переведите текст на русский язык:

Matnni o'qing va o'zbek tiliga tarjima qiling:

Igneous rocks are one of the three main types of rocks. Igneous rocks, also known as “fire rock” (derived from the Latin “ignus”), are the most common type of rocks in the earth's surface. There are over 700 types of igneous rocks. They are formed through the cooling and solidification of magma (or lava). As hot, molten rock rises to the surface, it undergoes changes in temperature and pressure that cause it to cool, solidify, and crystallize. Igneous rocks are divided into two groups, **intrusive** (plutonic) or **extrusive**, depending upon where the molten rock solidifies.

Intrusive or **plutonic igneous rocks** are formed when magma cools and solidifies within small pockets contained within the planet's crust. As this rock is surrounded by pre-existing rock, the magma cools slowly that is why mineral grains are big enough to be identified with the naked eye. The most common types of plutonic igneous rocks are granite and diorite and they are coarse grained. The central cores of major mountain ranges consist of large bodies of intrusive igneous rocks (also known as batholiths), since they are the result of magma cooling within preexisting solid rock on the surface. In addition to batholiths, other types of igneous rock structures include stocks, laccoliths, lopoliths, phacolith, chonliths, sills, dikes, and volcanic pipes (or necks). All of them are in underground (subterranean) layers, but can sometimes come to the surface as a result of tectonic activity.

Extrusive or **volcanic igneous rocks** are produced when magma exits and cools as lava at or near the earth's surface. Compared to intrusive rock, this type of igneous rock cools and crystallizes at a much faster rate due to it being exposed to air or water. Exposed to the relatively cool temperatures of the atmosphere, the lava cools quickly meaning that

mineral crystals don't have much time to grow. This results in rocks with a very fine-grained or even glassy texture. Hot gasses are often trapped in the quenched lava, forming bubbles. Basalt is a common form of extrusive igneous rock and forms lava flows, lava sheets and lava plateaus. Extrusive igneous rocks include andesite, basalt, obsidian, rhyolite, scoria and tuff.

Igneous rocks are very important because their mineral and chemical makeup can be used to learn about the composition, temperature and pressure within Earth's mantle. They can also tell us much about the tectonic environment, since they are closely related to convection between tectonic plates.

IX. Выберите предложения, которые соответствуют содержанию текста:

Matnning mazmuniga mos keladigan jumlani tanlang:

1. Igneous rocks are the most common type of rocks in the earth's surface.
2. There are over 100 types of igneous rocks.
3. Weathering leads to the creation of igneous rocks.
4. There are three different types of igneous rocks: clastic, organic and chemical.
5. The most common types of plutonic igneous rocks are coarse grained.
6. Batholiths, stocks, laccoliths, lopoliths, phacolith, chonliths, sills, dikes are in underground (subterranean) layers.
7. Extrusive or volcanic igneous rocks cool and crystallize at a much slower rate than intrusive rocks.
8. Igneous rocks can be used to learn about composition, temperature and pressure within Earth's mantle, but they can't tell us about the tectonic environment.

X. Выберите верный вариант в скобках:

Qavsdagi to'gri javoblardan birini tanlang:

1. Igneous rocks are divided into extrusive or intrusive rocks depending where the molten rock (*melts / solidifies*).
2. Plutonic igneous rocks are coarse-grained because magma cools (*quickly / slowly*).

3. Granite and diorite are (*coarse-grained / fine-grained*).
4. (*Batholith / basalt*) is a common form of an extrusive igneous rock.
5. The central cores of major mountain ranges consist of large bodies of (*intrusive / extrusive*) igneous rocks.
6. Volcanic igneous rocks are produced when magma exits and cools as lava at (*the earth's surface / within the earth's crust*).
7. Unlike intrusive rock, extrusive rock cools and crystallizes at a much (*faster / slower*) rate due to it being exposed to air or water.
8. Extrusive igneous rocks are also called (*plutonic / volcanic*).

XI. Соедините части предложений:

Gap bo'laklarini bog'lang:

- | | |
|---|--|
| 1. Igneous rocks are the most common type of | a) intrusive (plutonic) or extrusive rocks. |
| 2. Igneous rocks are formed through | b) consist of large bodies of intrusive igneous rocks. |
| 3. Igneous rocks are divided into | c) extrusive igneous rock. |
| 4. Granite and diorite are | d) the rocks in the earth's surface. |
| 5. The central cores of major mountain ranges | e) andesite, obsidian, rhyolite, scoria and tuff. |
| 6. Basalt is a common form of | f) the most common types of plutonic igneous rocks. |
| 7. Extrusive igneous rocks also include | g) they can tell us much about the earth's mantle. |
| 8. Igneous rocks are very important because | h) the cooling and solidification of magma. |

XII. Используя информацию из текста и активную лексику урока, дополните следующий диалог. Расположите слова в вопросах в правильном порядке:

Matndagi foydali ma'lumotlardan va darsning faol lug'atidan foydalanib quyidagi diologni to'ldiring. So'roq gaplardagi so'zlarni to'g'ri tartibda joylashtiring:

A.: rocks / are / Igneous / type / of rocks / the most common / aren't / in the Earth's / surface / they?

B.: You are quite right, there are over

A.: I see. And how / igneous / are / formed / rocks?

B.: If I am not mistaken, igneous rocks are formed

A.: What / divided / groups / igneous / rocks / into / are?

B.: Well, there are

A.: By the way, the difference / what / is / intrusive igneous rocks / between / extrusive igneous rocks / and?

B.: You know, intrusive igneous rocks are formed when ..., while extrusive rocks are produced

A.: And / you / can / me / give / any / examples / intrusive / rocks / of / and / extrusive?

B.: Yes, of course. The most common types of intrusive igneous rocks include ... and ... are examples of extrusive igneous rocks.

XIII. Расположите предложения в той последовательности, в которой они находятся в тексте. Используя информацию из текста, дополните эти предложения:

Gaplarni matnda kelgan tartibda joylashtiring. Matndagi ma'lumotlardan foydalanib, ushbu jummalarni to'ldiring:

1. Igneous rocks are divided into two groups.
2. Igneous rocks are very important because they can give us a lot of information.
3. Igneous rocks are one of the three main types of rocks.
4. Extrusive igneous rocks have a very fine-grained or even glassy structure.
5. Igneous rocks are formed through the cooling and solidification of magma.
6. Intrusive igneous rocks are coarse-grained.

XIV. Используя активную лексику урока, письменно переведите на английский язык следующие предложения:

Darsning faol lug'atidan foydalanib, quyidagi jummalarni ingliz tiliga yozma tarjima qiling:

1. Магматические породы, также известные как «огненные породы» (от латинского «ignus»), являются наиболее распространенным типом горных пород на поверхности Земли.

2. Магматические породы образуются в результате охлаждения и затвердевания магмы (или лавы).

3. Магматические породы делятся на две группы: интрузивные (плутонические) и экструзивные (вулканические), в зависимости от того, где затвердевает расплавленная порода.

4. Плутонические магматические породы находятся в подземных слоях, но иногда могут выходить на поверхность в результате тектонической активности.

5. Вулканические магматические породы образуются, когда магма выходит и охлаждается в виде лавы на поверхности Земли или вблизи нее.

6. По сравнению с интрузивной породой, этот тип магматической породы остывает и кристаллизуется гораздо быстрее из-за воздействия воздуха или воды.

7. Экструзивные породы имеют мелкозернистую или стекловатую структуру, так как магма остывает быстро.

8. Экструзивные магматические породы включают андезит, базальт, обсидиан, риолит, шлак и туф.

1. “Olovli jinslar” (lotincha “ignus” dan) deb ham ataladigan magmatik jinslar Yer yuzasida eng keng tarqalgan jinslardir.

2. Magmatik jinslar magma (yoki lava) ning sovishi va qotib qolishi natijasida hosil bo'ladi.

3. Magmatik tog' jinslari erigan tog' jinslarining qotib qolish joyiga qarab ikki guruhga bo'linadi: intruziv (plutonik) va ekstruziv (vulqonli).

4. Plutonik magmatik jinslar yer osti qatlamlarida uchraydi, lekin ba'zan tektonik harakatlar natijasida yer yuzasiga chiqishi mumkin.

5. Vulqonli magma jinslar magmaning Yer yuzasida yoki uning yaqinida lava holida chiqib, sovishi natijasida hosil bo'ladi.

6. Intruziv jinslar bilan solishtirganda, bu turdagi magmatik jinslar havo yoki suv ta'sirida ancha tez soviydi va kristallanadi.

7. Otqindi jinslar nozik taneli yoki shishasimon tuzilishga ega, chunki magma tez soviydi.

8. Otqindi magmatik jinslarga andezit, bazalt, obsidian, riolit, shlak va tuf kiradi.

XV. Исползуя информация из текста и видеофрагмента (<http://www.youtube.com/watch?v=xfvSopGl2rg&t=2s>), составьте небольшой рассказ о магматических горных породах. Matndagi va videolavhadagi (<http://www.youtube.com/watch?v=xfvSopGl2rg&t=2s>) ma'lumotlardan foydalanib metamorfik to'g' jinslari haqida qisqacha matn tuzing.

Lesson 8

Weathering of Rocks

I. Прочитайте и запомните следующие слова:

Quyidagi so'zlarni o'qing va yodda saqlang:

1) weathering	выветривание ob-havo
2) to break down	разрушать yuq qilish, barbod qilish
3) to dissolve	растворять eritmoq
4) to contribute	способствовать, вносить вклад targ'ib qilish, hissa qo'shish
5) vulnerable	уязвимый zaif
6) to expose	выходить на поверхность, обнажаться yuzaga chiqarmoq, fosh etmoq
7) tiny bits	мелкие кусочки mayda bo'laklar
8) animal remains	останки животных hayvon qoldiqlari
9) to crumble	крошиться, рассыпаться parchalanish
10) to weaken	ослаблять zaiflashish
11) to sprout	прорастать unib chiqish
12) thermal stress	тепловое воздействие, термический стресс issiqlik ta'siri, termal stress
13) exfoliation	отшелушивание, отслаивание ko'chib tushish
14) carbonic acid	углекислота karbonat kislotasi

15) limestone	известняк ohaktosh
16) to release	высвобождать, выделять ozod, ajratmoq
17) moisture	влажность namlik
18) uninhabitable	непригодный для жизни yashash uchun yaroqsiz
19) precipitation	атмосферные осадки yog'ingarchilik

II. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

O'ng ustundan quyidagi iboralarning o'zbekcha ekvivalentlarini toping:

- | | |
|---|---|
| 1) to transport the bits of rock and mineral away | a) сопротивляться силам выветривания и эрозии |
| 2) to resist the forces of weathering and erosion | ob-havo va eroziya kuchlariga qarshi turish |
| 3) to burry beneath other rocks | b) перемещать куски горных пород и минералов в другое место |
| 4) to change the rocky landscape of Earth | tosh va minerallarning bo'laklarini boshqa joyga ko'chirish |
| 5) to wear away exposed surfaces | c) расширять трещину |
| 6) to seep into cracks and crevices in rock | yoriqni kengaytirish |
| 7) to split the rock | d) разрушать открытые поверхности |
| 8) to widen the crack | ochiq yuzalarni yo'q qilish |
| 9) to carry away the tiny rock fragments | e) раскалывать горную породу |
| 10) to undergo repeated stress | parchalangan tosh |
| 11) to flake off in thin sheets | f) изменить скалистый ландшафт Земли |
| 12) to sprout in soil | Yerning toshloq landshaftini o'zgartirish |
| 13) to break the rock into pieces | g) погребать (скрывать) под другими породами |
| | boshqa toshlar ostiga ko'mmoq (yashirish) |

- | | |
|--|---|
| 14) to enlarge tiny cracks | h) подвергаться постоянным воздействиям |
| 15) to break apart rock and soil | doimiy ta'sirga duchor bo'lish |
| 16) to trample rock aboveround | i) просачиваться в трещины и щели в скале |
| 17) to hollow out vast networks of caves | toshdagi yoriqlar va yoriqlarga singib ketish |
| 18) to tunnel underground | j) прорапать в почве tuproqda unib chiqadi |
| | k) раздробить породу на куски toshni maydalab maydalash |
| | l) увеличивать мелкие трещины kichik yoriqlarni ko'paytirish |
| | m) разрушать горные породы и почву toshlarni va tuproqni yo'q qilish |
| | n) трамбовать породу над поверхностью земли yer ustidagi toshni siqish |
| | o) пробивать (создавать) обширные сети пещер g'orlarning keng tarmoqlarini mushtlash (yaratish) |
| | p) прорывать туннель под землей yer ostidan tunnel qazish |
| | q) уносить мелкие обломки горной породы mayda tosh parchalarini olib ketish |
| | r) отслаиваться тонкими слоями uyrqa qatlamlarda tozalang |

III. Из следующих слов составьте пары синонимов и переведите их на русский язык:

Quyidagi so'zlardan juft sinonimlar hosil qiling va ularni o'zbek tiliga tarjima qiling:

- | | |
|---------------|------------------|
| 1) vulnerable | a) small |
| 2) tiny | b) to fall apart |

- | | |
|-------------------|-------------------|
| 3) to crumble | c) crevice |
| 4) crack | d) susceptible |
| 5) limestone | e) speed |
| 6) rate | f) shale |
| 7) to transport | g) pieces of rock |
| 8) bits of rock | h) to carry |
| 9) to resist | i) weathering |
| 10) to mix | j) disaggregation |
| 11) fragmentation | k) to sprout |
| 12) to grow | l) to withstand |
| 13) erosion | m) to blend |

IV. Из следующих слов и словосочетаний составьте пары антонимов и переведите их на русский язык:

Quyidagi so'zlardan juft antonimlar hosil qiling va o'zbek tiliga tarjima qiling:

- | | |
|-------------------------|------------------------|
| 1) surface | a) to burry |
| 2) hard | b) slowly |
| 3) to expose | c) solid |
| 4) rocky landscape | d) rise in temperature |
| 5) quickly | e) subsurface |
| 6) often | f) to melt |
| 7) living organisms | g) soft |
| 8) to crumble | h) flat landscape |
| 9) liquid | i) seldom |
| 10) drop in temperature | j) to stick together |
| 11) to freeze | k) to contract |
| 12) to expand | l) huge pieces of rock |
| 13) to widen | m) thick sheets |
| 14) tiny rock fragments | n) nonliving organisms |
| 15) thin sheets | o) to narrow down |
| 16) outer layer | p) to slow down |
| 17) to speed it up | q) ineffective |
| 18) effective | r) inner layer |

V. Переведите следующие интернациональные слова на русский язык:

Quyidagi internacional so'zlarni o'zbek tiliga tarjima qiling:

mineral, salt, temperature, process, to transport, erosion, lava, bacteria, stress, organism, mechanical, fragment, cryofracturing, thermal, to tunnel, molecule, structure, to combine, natural, atmosphere

VI. Переведите следующие атрибутивные словосочетания на русский язык:

Quyidagi atributiv so'z birikmalarini o'zbek tiliga tarjima qiling:

mechanical weathering, chemical weathering, biological weathering, frost weathering, physical weathering, once-living organism, exposed surfaces, tiny bits, weathered minerals, liquid water, key agent, tiny rock fragments, temperature changes, thermal stress, outer layer, desert rocks, thin sheets, cracked rock, huge cracks, molecular structure, carbon dioxide, weak acid, carbonic acid, nitrogen oxide, sulfur dioxide, rocky landscape, acid rain, vast networks, natural process, human activities, natural gas, cracked rock, entire environment, water bodies

VII. Переведите на русский язык цепочки производных слов, обращая внимание на словообразовательные суффиксы и префиксы. Определите, какой частью речи являются эти слова:

So'z yasovchi qo'shimchalarga e'tibor berib, yasama so'zlar qatorini o'zbek tiliga tiliga tarjima qiling. Ularni qaysi so'z turkumiga kirishini aniqlang:

- 1) to solve – to dissolve – solvent – soluble;
- 2) to produce – producer – production;
- 3) long – length – to lengthen;
- 4) acid – acidity – to acidify – acidification;
- 5) to pollute – pollutant – pollution;
- 6) new – renew – renewable;
- 7) harm – harmful – harmless;
- 8) solid – solidity – to solidify – solidification;
- 9) to corrode – corrosion – corrosive;
- 10) to contaminate – contaminant – contamination;

- 11) to move – movable – to remove – remover – removable;
- 12) stable – stability – to stabilize – to destabilize – stabilization.

VIII. Переведите на русский язык слова, которые образованы путем словосложения:

So'z qo'shilmasi orqali hosil bo'lgan so'zlarni o'zbek tiliga tarjima qiling:

limestone, pipeline, rainfall, dragline, roadway, wetland, sandstone, network, sunlight, peatland, someone, everyone, everywhere, into, groundwater, mineral-rich, open-pit, fine-grained, low-grade, peatland, airborne, airplane

IX. Переведите отглагольные существительные с окончанием *-ing* на русский язык. Назовите глаголы, от которых они были образованы:

Fe'l so'z turkumiga *-ing* qo'shimchasi qo'shilishi orqali yasalgan otlarni o'zbek tiliga tarjima qiling. Ular qaysi fe'llardan yasalganligini ayting:

weathering, changing, transporting, making, splitting, cracking, breaking, dissolving, decomposing, leaking, burning, shaking, crumbling, reading, speaking, building, processing, transforming, exposing

X. Переведите предложения на русский язык. Определите, какой частью речи являются выделенные слова:

Gaplarni o'zbek tiliga tarjima qiling. Ajratib ko'rsatilgan so'zlar qaysi so'z turkumiga oid ekanligini aniqlang:

1. Heavy-duty dump trucks **transport** sand from the quarry. The airplane is the safest mode of **transport**. Now we are **transporting** potassium only by land. **Transporting** peat in the briquetted form is much easier.

2. **Changing** the temperature greatly affects the weathering of rocks. In our climatic conditions, the air temperature is constantly **changing**. High in the mountains, sudden temperature **changes** are common. The higher you climb the mountain, the more the landscape **changes**.

3. **Splitting** rocks is common high in the mountains. High in the mountains, the rocks are constantly **splitting** into pieces. When water freezes, it increases in volume and slowly widens the cracks and **splits** the rock. High in the mountains, rock **splits** are formed due to strong and frequent temperature changes.

4. Weathering is often divided into the **processes** of mechanical weathering and chemical weathering. This enterprise **processes** ore in various ways. Mineral ores that are extracted from the ground, in most cases, cannot be used in the economy and industry without **processing**. Today, concentration plants are **processing** mineral ores in a number of ways.

XI. Подберите к следующим словам определения, выбирая из предложенных:

Quyidagi so'zlarga berilgan to'g'ri ta'rifni toping:

weathering, landscape, mechanical weathering, chemical weathering, to crumble, to expand, to contract, rock, soil

- a) everything you can see when you look across a large area of land, especially in the country;
- b) any of the various weathering processes that cause physical disintegration of exposed rock without any change in the chemical composition of the rock;
- c) to increase in size, number, or importance, or to make something increase in this way;
- d) the action of sun, rain or wind on rocks, making them change shape or colour;
- e) the material on the surface of the ground in which plants grow;
- f) any of the various weathering processes that cause exposed rock to undergo chemical decomposition, changing the chemical and mineralogical composition of the rock;
- g) to break into a lot of small pieces;
- h) to make or become shorter or narrower or generally smaller in size;
- i) the dry solid part of the earth's surface, or any large piece of this that sticks up out of the ground or the sea.

**XII. Переведите предложения на русский язык. Обратите внимание на перевод слова *once* – как *только; один раз; сразу же*:
Gaplarni o'zbek tiliga tarjima qiling. *Once* – *bir marotaba, bir marta; darhol* so'zining tarjimasiga e'tibor bering:**

1. The operation of the underground mine ventilation system is checked once a day.
2. Once computer systems appeared in the world, they were widely used in the mining industry.
3. After the accident, an ambulance arrived at once.
4. Once a rock has been broken down, a process called erosion transports the bits of rock and mineral away.
5. Once there was a methane release in the mine, all the workers were lifted to the surface.

**XIII. Переведите предложения на русский язык. Обратите внимание на перевод слова *over* – *снова, через, над, более, повсюду*:
Gaplarni o'zbek tiliga tarjima qiling. *Over* – *yuqorida, tepada; uzra, ustida, hamma joyda; bo'ylab; ..dan ko'p, yuqori* so'zining tarjimasiga e'tibor bering:**

1. As this happens over and over again, the structure of the rock weakens.
2. Over time, the rock becomes more vulnerable and crumbles.
3. Over time, trees can break apart even large rocks.
4. A new bridge over the river will be built next year.
5. A helicopter with a group of geologists circled over the landing site.
6. The students discussed the trip to the mine over two hours.
7. Over 50 students attended Professor Smirnov's lecture.
8. Potash deposits can be found all over the world.
9. Over time, the formation of peat is often the first step in the geological formation of fossil fuels such as coal, particularly low-grade coal such as lignite.

XIV. Переведите предложения на русский язык. Обратите внимание на способы выражения отрицания в английском языке:

Gaplarni o'zbek tiliga tarjima qiling. Ingliz tilida inkor gaplarning yasalish usullariga e'tibor bering:

1. No rock on Earth is hard enough to resist the forces of weathering and erosion.
2. Unlike most other sedimentary rocks, chemical sedimentary rocks are not made of pieces of sediments.
3. None of the exploration methods gave accurate results about the size of this deposit.
4. In order to create metamorphic rock it is vital that the existing rock remains solid and does not melt.
5. Neither surface exploration nor aerial photography can fully assess all the risks of upcoming mining operations.
6. If there is too much heat or pressure, the rock will melt. This will result in the formation of an igneous rock, not a metamorphic one.
7. No mining method is environmentally friendly.

XV. Прочитайте и переведите текст на русский язык:

Matnni o'qing va o'zbek tiliga tarjima qiling:

Weathering describes the breaking down or dissolving of rocks and minerals on the surface of the earth. Water, ice, acids, salts, plants, animals, and changes in temperature are all agents of weathering.

Once a rock has been broken down, a process called erosion transports the bits of rock and mineral away. No rock on Earth is hard enough to resist the forces of weathering and erosion. Weathering is often the first step in the production of soils. Tiny bits of weathered minerals mix with plants, animal remains, fungi¹, bacteria and other organisms. Weathering is divided into the processes of *mechanical weathering*, *chemical weathering* and *biological weathering*.

Mechanical weathering, also called physical weathering and disaggregation², causes rocks to crumble. Water, in either liquid or solid form, is often a key agent of mechanical weathering. For instance, liquid water can seep into cracks and crevices in rock. If temperatures drop low enough, the water will freeze. When water freezes, it expands and slowly widens the cracks and splits the rock. When ice melts, liquid water

performs the act of erosion by carrying away the tiny rock fragments lost in the split. This specific process is called frost weathering. Temperature changes can also contribute to mechanical weathering in a process called thermal stress. Changes in temperature cause rock to expand (with heat) and contract (with cold). As this happens over and over again, the structure of the rock weakens. Over time, it becomes even more vulnerable and crumbles. The outer layer of desert rocks undergo repeated stress as the temperature changes from day to night. Eventually, outer layers flake off in thin sheets and this process is called exfoliation.

Biological weathering is the weathering that occurs under the influence of plants and living organisms. Where there is rich vegetation, biological weathering is especially active. The seed³ of a tree may sprout in soil that has collected in a cracked rock. As the roots grow, they widen the cracks, eventually breaking the rock into pieces. Over time, trees can break apart even large rocks. Small plants, such as mosses⁴, can enlarge tiny cracks as they grow. Animals that tunnel underground, such as moles⁵ and prairie dogs⁶, also work to break apart rock and soil. Other animals dig and trample rock aboveground⁷, causing rock to slowly crumble. Biological weathering can be part of both mechanical and chemical weathering.

Chemical weathering changes the molecular structure of rocks and soil. For instance, carbon dioxide from the air or soil sometimes combines with water in a process called carbonation. This produces a weak acid, called carbonic acid that can dissolve rock. Carbonic acid is especially effective at dissolving limestone. When carbonic acid seeps through limestone underground, it can open up huge cracks or hollow out vast networks of caves.

Weathering is a natural process, but human activities can speed it up. Certain kinds of air pollution increase the rate of weathering. For example, burning coal, natural gas, and petroleum releases chemicals such as nitrogen oxide and sulfur dioxide into the atmosphere. When these chemicals combine with sunlight and moisture, they change into acids. They then fall back to Earth as acid rain. Acid rain is harmful to the entire environment. Such precipitation can change the composition of the soil and pollute water bodies, making them uninhabitable.

¹fungi

грибы
qo'ziqorinlar

² disaggregation	<i>дезагрегация (разрушение, раздробление) parchalanish (halokat)</i>
³ seed	<i>семя urug'</i>
⁴ moss	<i>мох тох, уо'sin</i>
⁵ mole	<i>крот ko'rsichqon</i>
⁶ prairie dog	<i>стенная собака dasht iti</i>
⁷ rock aboveground	<i>порода, которая находится на поверхности земли yer yuzasida joylashgan tosh</i>

XVI. Соедините части предложений:

Gap bo'laklarini bog'lang:

- | | |
|---|--|
| 1. Weathering describes the breaking down or dissolving | a) with plants, animal remains, fungi, bacteria and other organisms. |
| 2. No rock on Earth is hard enough | b) mechanical weathering and chemical weathering. |
| 3. Tiny bits of weathered minerals mix | c) is often a key agent of mechanical weathering. |
| 4. Weathering is often divided into the processes of | d) the molecular structure of rocks and soil. |
| 5. Mechanical weathering | e) in a process called thermal stress. |
| 6. Water, in either liquid or solid form | f) of rocks and minerals on the surface of the earth. |
| 7. Temperature changes can also contribute to mechanical weathering | g) to resist the forces of weathering and erosion. |
| 8. When water freezes | h) causes rocks to crumble. |
| 9. Biological weathering occurs | i) limestone-based land surfaces. |

- | | |
|--|---|
| 10. Chemical weathering changes | j) with water in a process called carbonation. |
| 11. Carbon dioxide from the air or soil combines | k) under the influence of plants and living organisms. |
| 12. Acid rain can erode | l) it expands and slowly widens the cracks and splits the rock. |

XVII. Согласитесь либо не согласитесь с утверждениями. Подтвердите свою точку зрения фактами из текста, используя следующие разговорные формулы:

Quyidagi gaplarga qo'shilish yoki qo'shilmaligingizni bildiring. Quyidagi so'zlashuv formulalaridan foydalanib, o'z nuqtai nazingizni matndagi faktlar bilan tasdiqlang:

That is true

I do not think so

Exactly

I'm afraid you are wrong

I agree with you

I'm not sure

No doubt

I should not say so

1. Weathering and erosion constantly change the rocky landscape of Earth.
2. Weathering is the last step in the production of soils.
3. Weathering is divided into the processes of physical weathering and chemical weathering.
4. Water is a key agent of mechanical weathering.
5. Changes in temperature do not influence the destruction of rocks.
6. Where vegetation is the poorest, biological weathering is especially active.
7. Biological weathering can be part of both mechanical and chemical weathering.
8. Chemical weathering occurs because of constant temperature changes.
9. Human activity does not affect the process of rock weathering in any way.
10. Acid rain is very harmful both to humans and to the entire environment.

XVIII. Дайте ответы на поставленные вопросы:

Berilgan savollarga javob bering:

1. What factors influence the weathering of rocks?
2. Weathering is often the first step in the production of soils, isn't it?
3. What weathering processes do you know?
4. How does water influence the destruction of rocks?
5. How do temperature changes affect the destruction of rocks?
6. Biological weathering is the weathering that occurs under the influence of plants and living organisms, isn't it?
7. Do plant roots facilitate the cracking of rocks? In what way?
8. Do animals and living organisms influence the decomposition of rocks? In what way?
9. What is chemical weathering?
10. Does human activity accelerate or slow down the processes of weathering?

XIX. Дополните предложения недостающими словами из предложенного списка. Переведите предложения на русский язык:

Gaplardagi nuqtalar o'rnini berilgan so'zlarning mosini qo'yib to'ldiring. Ularni o'zbek tiliga tarjima qiling:

chemical weathering, contract, chemical change, expand, accelerate, penetrate, breaking down, fracture, biological weathering, weathering, destroy

1. The ... of rocks is known as weathering.
2. Physical weathering is a number of processes that cause rocks to break up without
3. ... changes the composition of rocks, often transforming them when water interacts with minerals to create various chemical reactions.
4. High temperatures cause rocks to ..., then as temperatures cool the rocks This continual expansion and contraction weakens the rock, eventually causing the rock to
5. Human activities can ... the natural process of weathering.
6. When the roots of plants ... into the cracks of rocks, they ... them and the rocks split.

7. Plants and living organisms can cause the destruction of rocks and this process is called

8. Burning fossil fuels also increases the rate of ... by adding carbon dioxide into the atmosphere.

XX. Посмотрите видеотрегмент о процессах выветривания (https://www.youtube.com/watch?v=skB_A2sfBcY&t-25s). Используя полученную информацию и опираясь на следующую схему, расскажите о процессах и видах выветривания:

Ob-havo haqidagi video lavhani tomosha qiling (https://www.youtube.com/watch?v=skB_A2sfBcY&t-25s). Olingan ma'lumotlar va quyidagi jadvaldan foydalanib ob-havo jarayonlari va ularning turlari haqida aytib bering:

Weathering

mechanical	biological	chemical
<p>– the influence of water (<i>to seep into cracks; to freeze; to expand; to widen</i>)</p> <p>– the influence of temperature (<i>to expand; to contract; to weaken</i>)</p>	<p>– the influence of plants (<i>to grow; to widen; to break</i>)</p> <p>– the influence of living organisms (<i>to dig; to crumble</i>)</p>	<p>– the influence of carbon dioxide from the air or soil (<i>to dissolve; to seep through; to open up</i>)</p>

The influence of human activity on weathering processes

XXI. Используя активную лексику урока, письменно переведите на английский язык следующие предложения:

Darsning faol lug'atidan foydalanib, quyidagi jumalarni yozma ravishda ingliz tiliga tarjima qiling:

1. Выветривание – это ряд процессов, в ходе которых разрушаются горные породы, почва и минералы.

2. В результате выветривания образуются осадочные породы.

3. Под воздействием солнца, воды и воздуха горные породы могут разрушаться на мелкие куски, этот процесс называется механическим выветриванием.

4. Когда вода заполняет небольшие трещины в породе, замерзает и расширяется, скалы трескаются и крошатся.

5. Биологическое выветривание – это выветривание, которое вызвано растениями и живыми организмами.

6. Химическое выветривание – это процесс изменения химического состава горных пород под воздействием воды, воздуха и живых организмов.

7. Кислотные дожди могут разрушать известняк, мрамор и другие виды горных пород.

8. Процессы выветривания могут ускоряться из-за активного влияния человека на окружающую среду.

1. Ob-havo – tog' jinslari, tuproq va minerallarni parchalaydigan jarayonlar ketma-ketligi.

2. Ob havoning ta'siri natijasida cho'kindi jinslar hosil bo'ladi.

3. Quyosh, suv va havo ta'sirida tog' jinslari mayda bo'laklarga bo'linishi mumkin, bu jarayon mexanik nurash deb ataladi.

4. Tog' jinslarining mayda yoriqlarini suv to'ldirib, muzlab, kengayganda, toshlar yorilib, parchalanadi.

5. Biologik nurash – bu o'simliklar va tirik organizmlar tomonidan yuzaga keladigan ob-havo.

6. Kimyoviy parchalanish – suv, havo va tirik organizmlar ta'sirida tog' jinslarining kimyoviy tarkibini o'zgartirish jarayoni.

7. Kislota yomg'irlari ohaktosh, marmar va boshqa turdagi jinslarni yo'q qilishi mumkin.

8. Insonning atrof-muhitga faol ta'siri tufayli ob-havo jarayonlari tezlashishi mumkin.

Lesson 9

Mining

I. Прочитайте и запомните следующие слова:

Quyidagi so'zlarni o'qing va yodda saqlang:

1) mining	ведение горных работ, добыча; горная промышленность konchilik ishi
2) underground mining	подземная добыча yer osti konchilik ishi
3) surface mining	добыча открытым способом ochiq kon ishi
4) placer mining	разработка россыпи, прииск sochma konlarni qazib olish
5) in-situ mining	разработка на месте залегания etqiziqqlarni joyda qazib olish
6) to extract	добывать chiqarib olish
7) to acquire	получать egallash
8) to fabricate	производить, изготавливать ishlab chiqarish
9) fossil fuel	ископаемое топливо qazilma yoqilg'isi
10) prospecting	поисково-разведочные работы qidiruv-razvedka ishlari
11) ore body	рудное тело ruda tanasi
12) reclamation	мелиорация, восстановление melioratsiya
13) to target	намечать, планировать nishonga olmoq
14) location	местонахождение, положение joylashgan o'rni

15) profit	польза, выгода, прибыль foyda, naf, daromad
16) capacity	возможность; объем, мощность imkoniyat; sig'im
17) impact on	воздействие, влияние ga ta'sir qilmoq
18) to sift	просеивать, фильтровать elakdan o'tkazish, filtrlash
19) to dissolve	растворять erimoq
20) heavy machinery	тяжелая техника og'ir texnika
21) processing	обработка, переработка qayta ishlash
22) to explore	разведывать, исследовать, зондировать kashf qilmoq
23) site	место, участок, площадка o'rin, joy, maydon
24) to stockpile	укладывать в штабеля zahiraga solmoq
25) overburden	покрывающая порода, вскрыша ortiqcha yuk
26) toughness	прочность, плотность qattqlik, mustahkamlik

II. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

Quyidagi so'z birikmalarining o'zbekcha ekvivalentini o'ng ustundan topping:

- | | |
|-----------------------------|-----------------------------|
| 1) valuable resources | a) невозобновляемые ресурсы |
| 2) through artificial means | qayta tiklanmas resurslar |
| 3) non-renewable resources | b) очистка промышленных вод |
| 4) pre-historic times | sanoat suvlarini tozalash |
| 5) waste water reclamation | |
| 6) geological prospecting | |

- | | |
|----------------------------|---|
| 7) to make profit | c) извлекать прибыль
foyda olish |
| 8) degree of safety | d) окружающая среда
atrof-muhit |
| 9) surrounding environment | e) ценные ресурсы
qimmatli resurslar |
| 10) to acquire knowledge | f) степень безопасности
xavfsizlik darajasi |
| | g) приобретать знания
bilim olish |
| | h) искусственным способом
sun'iy tarzda |
| | i) геологическая разведка
geologiya razvedkasi |
| | j) доисторические времена
tarixdan oldingi davrlar |

III. Из следующих слов составьте пары синонимов:

Quyidagi so'zlarning juft sinonimlarini topping:

- | | |
|------------------|-------------------------------|
| 1) to acquire | a) old, ancient |
| 2) to fabricate | b) first of all |
| 3) pre-historic | c) technique |
| 4) target | d) generally, commonly |
| 5) method | e) to get |
| 6) safety | f) procedure |
| 7) impact | g) security |
| 8) usually | h) aim, goal |
| 9) primarily | i) to conduct |
| 10) operation | j) to produce, to manufacture |
| 11) to carry out | k) effect, influence |

IV. Из следующих слов составьте пары антонимов:

Quyidagi so'zlarning juft antonimlarini topping:

- | | |
|----------------|------------|
| 1) artificial | a) surface |
| 2) renewable | b) shallow |
| 3) underground | c) soft |

- | | |
|--------------|------------------|
| 4) closed | d) positive |
| 5) expensive | e) non-renewable |
| 6) deep | f) light |
| 7) heavy | g) open |
| 8) hard | h) old, ancient |
| 9) negative | i) natural |
| 10) modern | j) cheap |

V. Укажите способ словообразования следующих однокоренных слов и переведите их на русский язык:

Quyidagi turdosh so'zlarning so'z yasalish usulini ko'rsating va ularni o'zbek tiliga tarjima qiling:

- 1) mine – miner – mining – minable – mined – undermining;
- 2) to machine – machine – machinery – machinable – machined – mismachined – machinability;
- 3) to depend – dependent – independent – dependence – independence – interdependence – dependable;
- 4) to use – user – usage – useful – useless – unusable – multiuse – to reuse – to misuse;
- 5) to extract – extraction – extractive – extractable – extracted – extractor.

VI. Определите, какой частью речи являются выделенные слова. Переведите предложения на русский язык:

Ajratib ko'rsatilgan so'zlarning qaysi gap bo'lagi ekanligini aniqlang. Gaplarni o'zbek tiliga tarjima qiling:

1. Choosing a mining method one should **process** and analyze the information concerned all the stages of the mining **process**. Weathering is a **process** of breaking down rocks and minerals on the earth's surface. The **processes** of mechanical and chemical weathering are described in this chapter. A geologist **processes** data obtained with the help of measuring instruments.

2. In recent years exploration geophysics has set new **targets** of subsurface mapping. Research and development department decided to **target** new areas of study. Narrow your experiment to **target** a particular change. Now we are right on **target** of getting more optimistic results.

3. The word *metamorphosis* **means** a change from one thing to another. Weathering is done by such **means** as water, ice, acids, salts, plants and animals. These two examples are by **no means** unique. Saying that he is good at chemistry he **means** he can explain how chemical processes take place.

4. The **potential** economic profit of a chosen mining method must outweigh the cost of prospecting, extracting and further reclamation. Many renewable energy technologies have enormous **potential**. This mining company has a lot of **potential** for further development and growth. We understand the **potential** problems and have taken all safety measures.

5. We can apply the same methods and technologies as they **use**. In his lecture the professor spoke about the **use** of heavy machinery in mining. We **use** this information for better understanding of how the device works. The **use** of reclamation projects after the closure of the mine is very important.

**VII. Дополните предложения, используя предложенные слова:
Berilgan so'zlardan foydalanib gaplarni to'ldiring:**

a) *to equip, equipped, equipment:*

1. The geophysical laboratory is ... with most modern measuring devices.
2. Underground mining ... is used when rocks or minerals are located at a fair distance beneath the ground.
3. The company offered ... the mine with heavy machinery.

b) *vary, varying, various, variations, variety:*

1. The exhibition demonstrated a ... of mining methods and techniques.
2. The most common types of mining equipment ... depending whether the work is being carried out above or below ground.
3. Each mining method has ... degrees of security and influence on the environment.
4. Ore bodies have ... sizes, shapes, structures and depth of occurrence.
5. There are several ... of surface mining that depend on the minerals being extracted.

- c) *to explore, explorers, exploration, explored, exploring:*
1. The aim of this geophysical expedition is ... the potential volume and quality of the mineral resources.
 2. The ... of igneous and sedimentary rocks has proved that heat and pressure convert them into metamorphic rock.
 3. Mining activities include prospecting and ... a mineral deposit.
 4. The ... solutions will help to reduce emissions at underground and open-pit mines.
 5. ... are engaged in the study of Earth's crust, natural geological processes and anthropogenic influence on underground resources.
- d) *specify, specifics, specific, specified (2), specifically:*
1. The conditions required to form a metamorphic rock are very
 2. Earth's crust can be ... either as oceanic or continental one.
 3. Temperature changes ... the expansion or contraction of the rock.
 4. He ... the goals of the experiment.
 5. Some of the data was ... excluded from the report.
 6. Taking into account the ... of the work a geodesist must possess such qualities as endurance (*выносливость / chidamlilik*), carefulness and patience.
- e) *dissolve (2), dissolution, dissolvable, dissolvent, dissolved, dissolving:*
1. Weathering describes the ... of rocks and minerals on the surface of the earth.
 2. This substance is ... only in gasoline.
 3. Limestone can easily ... in slightly acidic rainwater.
 4. The ... of gasses and liquids in water is accompanied by the release of energy.
 5. Any underground water contains ... salts, gases, minerals and many chemical elements.
 6. Due to its ability to ... a lot of substances water is sometimes called the universal

VIII. Переведите следующие словосочетания на русский язык, обращая внимание на перевод слов в функции определения:

Quyidagi soʻz birikmalarini oʻzbek tiliga tarjima qiling. Aniqlovchi vazifasida kelgan soʻzlarning tarjimasiga eʼtibor bering:

mining industry, mining engineer, solid fossil fuels, fossil fuel power station, mining processes, surface mine, profit potential, material extraction, land reclamation, deposit location, existing mineral resource, Earth's surface, underground mine, valuable metals, river channel, uranium mining, reclamation project, beach sands, mining operations

**IX. Прочитайте и переведите текст на русский язык:
Matnni oʻqing va oʻzbek tiliga tarjima qiling:**

Mining is the process used to extract valuable resources from the earth. It is done to acquire any resource that cannot be grown or fabricated through artificial means. More specifically, mining is used to extract non-renewable resources like fossil fuels, minerals and even water.

Mining of stone and metal has been done since pre-historic times. Modern mining processes involve prospecting for ore bodies, analysis of the profit potential of a proposed mine, extraction of the desired materials, and final reclamation of the land after the mine is closed.

The type of mining method used depends on the kind of resource that is being targeted for extraction, the deposit's location below or on the earth's surface and the capacity of each method to profitably extract the resource. Each mining method also has varying degrees of safety and impacts on the surrounding environment.

There are four main methods of mining: **underground**, **surface**, **placer** and **in-situ**. *Underground mines* are more expensive and often used to reach deposits that are deeper. *Surface mines* are usually used for deposits that are shallower and less valuable. *Placer mining* is used in river channels, beach sands or other environments to sift valuable metals from sediments. *In-situ mining*, primarily used in uranium mining, involves dissolving the existing mineral resource and then processing it on the surface without moving rock from the ground.

The fact is that heavy machinery is used in mining to explore and develop sites, to remove and stockpile overburden, to break and remove

rocks of various hardness and toughness, to process the ore, and to carry out reclamation projects after the mine is closed.

It should be noted that the nature of mining processes creates a potential negative impact on the environment both during the mining operations and for years after the mine is closed.

**X. Сoгласитесь либо не согласитесь со следующими утверждениями. Подтвердите свою точку зрения фактами из текста:
Quyidagi fikrlarga o'z munosabatingizni bildiring. Matndagi iboralar bilan o'z nuqtai nazaringizni tasdiqlang:**

No doubt about it

I totally agree

I also think so

Exactly

Absolutely

That's not right

I disagree

I don't think so

I'm not so sure about it

That's not entirely true

1. Mining is an ancient art practised by people.
2. Mining is the main method of obtaining man-made materials.
3. Only renewable resources can be extracted by mining.
4. Final reclamation of the land after the mine is closed is as important as all other mining processes.
5. Only the structure of the earth's surface influences the type of mining method.
6. Placer mining is applied to sift useful metals from sediments.
7. There are two basic types of mineral extraction.
8. Underground mining is cheap and mostly used to extract non-valuable deposits.
9. Heavy machinery is widely used at all phases of any mining process.
10. Mining doesn't have any negative effect on the environment and surrounding landscape.

**XI. Сoедините части предложений:
Gap qismlarini bog'lang:**

1. To extract valuable mineral resources from the earth a) is used not to move rock from the ground.

2. Modern mining processes
 3. Each method of mining takes into account
 4. Shallow and not so valuable deposits
 5. Dissolving of the existing mineral and its processing on the surface
 6. Any prospected ore body
 7. Heavy machinery used at mines
 8. Nowadays much attention is paid to
 9. New deposits are hard to find
 10. Geophysical measurements are made
- b) are extracted by surface mining.
 - c) mine reclamation projects as a means of recovering land, water and air components.
 - d) mining is used.
 - e) should be analyzed in terms of volume, shape, structure and depth.
 - f) and prospecting takes a long time.
 - g) by prospecting specialists with specific measuring devices and instruments.
 - h) include several stages.
 - i) can break and remove rocks of different hardness and toughness.
 - j) degrees of safety and impacts on the environment.

**XII. Ответьте на поставленные вопросы:
Berilgan savollarga javob bering:**

1. How can mining be defined?
2. What do modern mining processes involve?
3. What factors influence the type of mining method used for mineral extraction?
4. How many techniques of mining are distinguished? What are they?
5. What are the differences between underground and surface mines?
6. Placer mining is used for dissolving the found mineral resource, isn't it?
7. What is in-situ mining mostly suitable for?
8. What is heavy machinery applied for?
9. Why is it important to carry reclamation after the mine is closed?

10. What negative impacts of mining on the environment can you name?

11. What measures should be taken to minimize the negative influences of mining?

XIII. Дополните предложения подходящими по смыслу словами из предложенных ниже:

Quyida berilgan so'zlarni ma'no jihatidan mosini tanlab, gaplarni to'ldiring:

<i>deposits</i>	<i>machinery</i>	<i>valuable</i>	<i>analyzing</i>
<i>reclamation</i>	<i>effects</i>	<i>surface (2)</i>	<i>mining</i>
<i>involves</i>	<i>mineral</i>	<i>targets</i>	<i>extraction</i>
<i>surrounding</i>	<i>pre-historic</i>	<i>mined</i>	<i>useful</i>
<i>geologists</i>	<i>resources</i>	<i>underground</i>	<i>environment</i>
<i>prospecting</i>	<i>ore body</i>	<i>destructive</i>	<i>profit</i>
<i>location</i>	<i>discoveries</i>	<i>techniques</i>	<i>characteristics</i>

1. ... is the industry and activities connected with getting ... and ... minerals from the ground.

2. Mining deals with the ... of elements and ... of economic interest from the earth's

3. Modern mining uses specialized ... to dig for resources which are identified by ... and geophysicists.

4. The two most widely used types of mining are ... and ... mining.

5. Underground mining ... mineral ... reaching up to 3 km below the surface.

6. Surface mining can be ... to the ... landscape as huge open pits are left behind.

7. When ... a mineral deposit it is extremely important to keep potential ... in mind.

8. Archeological ... have proved that mining was already conducted in ... times.

9. ... is an activity that uses various ... in the search for a ... deposit.

10. Important ... of the deposit include its size, shape, ... with respect to the surface. The quality and quantity of the ... must also be considered.

11. ... or post mining ... at restoring land that has been ... to create useful landscape and safe Modern mine reclamation reduces environmental ... of mining.

XIV. Исползуя активную лексику урока, письменно переведите на английский язык следующие предложения:

Darsning faol lug'atidan foydalanib gaplarni o'zbek tiliga tarjima qiling:

1. Почти все невозобновляемые минералы и полезные ископаемые, необходимые человеку для повседневной жизни, добываются из земной коры.

2. Добыча – это процесс извлечения твердых, жидких, газообразных полезных ископаемых с помощью технологического оборудования.

3. Расположение месторождения, объем и качество рудного тела определяют метод добычи.

4. Твердые минералы добывают открытым или закрытым способом в зависимости от глубины залегания.

5. Открытый способ дешевле закрытого, но он наносит больший ущерб окружающей среде, поэтому требует дорогостоящей рекультивации площадей добычи.

6. Одним из способов добычи поваренной соли является ее подземное растворение водой, с последующей обработкой и выпариванием (*evaporating*) на поверхности.

7. Тяжелое оборудование используется для разлома и перемещения пород разной толщины и твердости.

8. Увеличение добычи полезных ископаемых приводит к ухудшению экологической обстановки.

1. Odamlarning kundalik hayoti uchun zarur bo'lgan deyarli barcha qayta tiklanmaydigan minerallar va minerallar yer qobig'idan qazib olinadi.

2. Qazilmalar-qattiq, suyuq, gazsimon foydali qazilmalarni texnologik asbob-uskunalar yordamida qazib olish jarayonidir.

3. Konning joylashuvi, ruda tanasining hajmi va sifati qazib olish usulini belgilaydi.

4. Qattiq foydali qazilmalar paydo bo'lish chuqurligiga qarab ochiq yoki yopiq usulda qazib olinadi.

5. Ochiq usul yopiq usulga qaraganda arzonroq, lekin u atrof-muhitga ko'proq zarar etkazadi va shuning uchun tog'-kon maydonlarini qimmat melioratsiya qilishni talab qiladi.

6. Oddiy tuzni olish usullaridan biri uning suv bilan er ostida erishi, so'ngra uni qayta ishlash va sirtida bug'lanish (bug'lanish) hisoblanadi.

7. Turli qalinlik va qattqlikdagi jinslarni sindirish va harakatlantirish uchun og'ir uskunalar ishlatiladi.

8. Kon qazib olishning ko'payishi atrof-muhitning buzilishiga olib keladi.

XV. Используя рекомендацию по составлению аннотации текста (прил. 1), составьте план текста и выпишите ключевые слова и словосочетания.

Matnning izohini tuzish bo'yicha tavsiyalardan foydalanib, matn rejasini tuzing va asosiy so'z va iboralarni yozing (Gap 1).

XVI. Опираясь на план и выписанные выражения, используя речевые клише, кратко расскажите о горных работах.

Reja va yozma iboralar asosida nutq qurilmalaridan foydalanib, konchilik haqida qisqacha gapiring.

Lesson 10

Types of Mining

- I. Прочитайте и запомните следующие слова:
Quyidagi so'zlarni o'qing va yodda saqlang:

1) extraction	добыча, извлечение, выемка qazib olish
2) to drill	сверлить, бурить burg'ulash
3) to blast	взрывать, подрывать portlamoq
4) to dig	выкапывать, вынимать qazimoq
5) to handle	транспортировать ishlov bermoq
6) to process	обрабатывать, перерабатывать qayta ishlamoq
7) to grind	размалывать, шлифовать maydalamoq
8) to crush	дробить, толочь ezib tashlamoq
9) to smelt	плавить, выплавлять erimoq
10) to refine	очищать, рафинировать tozalamoq
11) quarry	карьер kager
12) open-pit	рудник с открытыми работами, открытый рудник ochiq qazilma
13) strip	полоса, полоска tasma
14) gravel	гравий shag'al

15) hilltop	вершина холма teralik
16) explosive	взрывчатое вещество portlovchi modda
17) to expose	выходить (на поверхность), обнажать(ся) yuzaga chiqmoq
18) to hold	удерживать, поддерживать ushlamoq
19) shovel	экскаватор, механическая лопата ekskavator
20) dozer	бульдозер buldozer
21) dragline	драглайн, тянуша tortgich
22) scraper	скрепер, волокуша, грейдер qirg'ich
23) room	очистная камера xona, yetarli joy
24) pillar	столб, целик tirgovich, tirgak, tayanch
25) retreat	отступающая выемка chekinish
26) ceiling	потолок, верхнее перекрытие shift
27) to loosen	разрыхлять bo'shashmoq

**II. Соотнесите виды горных работ с их английскими эквивалентами:
Kon turlarini inglizcha ekvivalentlari bilan moslang:**

- | | |
|--|---------------------------|
| 1) карьерная добыча
karer qazish | a) room and pillar mining |
| 2) добыча открытым способом
ochiq qazib olish | b) retreat mining |
| | c) blast mining |
| | d) quarrying |

- | | |
|---|----------------------|
| 3) разработка открытым способом по контуру поверхности
sirt konturi bo'yulab ochiq qazib olish | e) continuous mining |
| 4) разработка месторождения взрывным способом
portlovchi moddalar bilan qazib olish | f) strip mining |
| 5) разработка от границ поля к стволу
dala chegaralaridan magistral-gacha qazib olish joyi | g) open-pit mining |
| 6) сплошная выемка
sidirgasiga qazib olish | h) contour mining |
| 7) вскрышные горные работы
qoplama jinslarni qazish | |
| 8) камерно-столбовая разработка
kamera ustunli qazib olish | |

III. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

O'ng ustundan quyidagi iboralarning o'zbekcha ekvivalentlarini topping:

- | | |
|----------------------------|--|
| 1) to remove materials | a) площадка для переработки
qayta ishlash maydoni |
| 2) waste area | b) добывать серебро
kumush qazib olish |
| 3) processing site | c) безопасное взрывчатое вещество |
| 4) to insert the explosive | d) хавфсиз portlovchi modda |
| 5) off-site plant | e) удалять / снимать материал
olib tashlamoq |
| 6) to extract silver | f) скальная порода
tog' jinsi |
| 7) rocky materials | |
| 8) rotary drill | |
| 9) permissive explosive | |
| 10) strips of overburden | f) турбобур
turbodrill |

- g) полоска вскрышных пород
ustki qatlam chizig'i
- h) завод за пределами площадки
maydon tashqarisida joylashgan zavod
- i) пустошь
bo'sh yer
- j) закладывать взрывчатое вещество
portlovchi moddalarni yotqizish

**IV. Из следующих слов составьте пары синонимов:
Quyidagi so'zlardan juft sinonimlar hosil qiling:**

- | | |
|-----------------|---------------|
| 1) type | a) to apply |
| 2) to require | b) alike |
| 3) equipment | c) to purify |
| 4) to use | d) stratum |
| 5) to remove | e) kind, sort |
| 6) to refine | f) technology |
| 7) amount | g) to finish |
| 8) to choose | h) facilities |
| 9) close | i) to support |
| 10) similar | j) to select |
| 11) technique | k) to demand |
| 12) layer | l) staff |
| 13) to hold | m) to replace |
| 14) personnel | n) quantity |
| 15) to complete | o) near |

**V. Из следующих слов составьте пары антонимов:
Quyidagi so'zlardan juft antonimlar hosil qiling:**

- | | |
|---------------|----------------|
| 1) final | a) rare |
| 2) to include | b) inside |
| 3) common | c) different |
| 4) close | d) thick |
| 5) similar | e) to minimize |
| 6) thin | f) initial |

- | | |
|----------------|-----------------|
| 7) outside | g) to reinforce |
| 8) ceiling | h) far |
| 9) to maximize | i) floor |
| 10) to loosen | j) to exclude |

VI. Определите часть речи по словообразующему суффиксу и переведите слова:

So'zlarning qaysi so'z turkumiga oid ekanligini so'z yasovchi qo'shimchalarga qarab aniqlang va so'zlarni tarjima qiling:

environment, equipment, extraction, numerous, miner, ornamental, occasionally, rotation, driller, initial, newly, harden, scraper, continuous, maximize, loosen, especially, physical, successive, production

VII. Укажите способ словообразования следующих однокоренных слов и переведите их на русский язык:

Quyidagi turdosh so'zlarning so'z yasalish usulini ko'rsating va ularni o'zbek tiliga tarjima qiling:

- 1) to refine – refined – refinement – refinery – refiner;
- 2) to refer – referable – referred – referring – reference;
- 3) to load – loaded – loader – loading – reload – unload – overload – underload;
- 4) to explode – exploded – exploder – explodable – explosive – inexplusive – explosively;
- 5) to move – moved – movable – moveless – movement – to remove – mover.

**VIII. Дополните предложения, используя предложенные слова:
Berilgan so'zlardan foydalanib gaplarni to'ldiring:**

- a) *to extract (2), extraction, extractive, extractor, extracted:*
1. Mineral ... is the procedure of mineral resource excavation from the earth crust to get profit.
 2. The technique of in-situ mining can be used ... materials that are dissolvable in water.
 3. Liquid minerals such as oil or gas may be ... by pumping.

4. Since the industrial revolution ... industries have been major drivers of economic growth.
5. The mineral ... is a mining device applied ... different ores.

b) *include, excluded, included, including, inclusion:*

1. The speakers at the conference will ... several experts on the subject of geophysics.
2. There were some reference materials ... in the textbook.
3. This brochure contains our latest information ... details of all new projects for students.
4. Some of the data was specifically ... from the report.
5. In mineralogy an ... is any material trapped inside a mineral during its formation.

c) *exposure, expose, exposed:*

1. It is very important to know what rocks ... in different areas.
2. Metamorphic rock ... is associated with deposits of such valuable minerals as iron ores.
3. There are no previous studies on the formation age of the ... rocks in the basin.

d) *to drill (2), driller, drilling (3), drillships, drill bits:*

1. ... are special purpose marine vessels used for on the ocean beds at deep seas.
2. Chances of getting a job as a ... are poor as coal mines are closed and opening of new ones is limited.
3. They had ... to the depth of 20 metres to reach the ore body.
4. Rotary ... is one of the most popular ... techniques for large surface mines.
5. Mining ... are utilized ... or dig the earth surface for mining operations.

IX. Подберите к следующим словам определения, выбирая из предложенных:

Quyidagi so'zlarga berilgan to'g'ri tarifni topping:

*surface, quarry, granite, gravel, pit, layer, scraper, ore,
dozer, process, stage*

- a) an open excavation in the earth's surface from which stone or other materials are extracted;
- b) rock or earth from which metal can be obtained;
- c) the outside part or uppermost layer of something;
- d) a machine for moving earth over short distances (over relatively smooth areas);
- e) a loose mixture of small stones and coarse sand;
- f) a sheet or thickness of material, covering a surface;
- g) a point, period, or step in a process or development;
- h) a very hard rock consisting mainly of quartz, mica;
- i) a large hole in the ground; a mine or excavation for coal, chalk;
- j) a series of actions or steps towards achieving a particular end;
- k) a powerful machine for pushing earth or rocks, used in road building, farming, construction, and mining.

**X. Переведите следующие словосочетания на русский язык, обращая внимание на перевод слов в функции определения:
Quyidagi so'z birikmalarini o'zbek tiliga tarjima qiling:**

mineral type, material mined, mine site, material handling, waste area, processing site, mined ore, off-site plant, finished products, non-fuel minerals, ornamental purposes, building granite, underground silver mining, overburden strips, surface material, ore content, material recovery

**XI. Прочитайте и переведите текст на русский язык:
Matnni o'qing va o'zbek tiliga tarjima qiling:**

Mining can happen at the surface or underground. The environment and type of material mined dictate the form of mining required and the equipment used. Both surface and underground mining have three main steps: **extraction** (this involves drilling, blasting, or digging to remove materials from the mine site); **material handling** (this includes sorting and loading materials to either go to a waste area or the processing site); **material processing** (the final step involves grinding, separating, crushing, refining, and smelting mined ore or other goods at an off-site plant to turn them into finished products).

Surface mining includes numerous techniques and is the most common method for non-fuel minerals, producing 97 % of the amount mined. Miners choose surface extraction for minerals located close to the surface. There are three main ways to mine on the surface. These methods include **quarrying**, **open-pit mining**, and **strip mining**.

In **quarrying**, miners may cut blocks of hard stone for ornamental purposes, such as granite for building. However, quarrying can also refer to extracting gravel, crushed stone, and sand using similar techniques to open-pit mining.

Open-pit mining requires creating a large pit in the ground from which the miners extract the needed material. This is one method miners may use to extract silver from the earth. The other technique is underground silver mining. Occasionally, removing a hilltop with explosives to expose the rocky materials beneath is the first step in creating an open pit. Rotary drills create the holes used for inserting the explosives for this process.

The third type of surface mining is **strip mining**, which primarily extracts thin layers of coal from near the surface. This form of mining starts with removing large strips of surface material, known as overburden. The first strips of overburden go outside the mine site. After extracting mined products from the initial strip, the newly created hole will hold the deposits of future strips of overburden removed from the mine. For hilly sites, contour strip mining requires using shovels or dozers to remove strips of overburden around the hill in terraces. For flat surfaces, area strip mining using equipment such as draglines or scrapers will suffice.

Types of underground mining include the following: **room and pillar mining** (Miners create pillars of ore to support the ceiling as they dig out the rest of the desired material from the space. This system may also use a continuous mining system for extracting material instead of personnel.); **retreat mining** (This type follows room and pillar mining until mining completes in the room. This method removes the pillars for their ore content to maximize material recovery.); **blast mining** (Blast mining uses explosives to loosen rocks and open mining spaces, especially to remove hard rock from both underground or surface mines.).

XII. Исползуя предлагаемые разговорные формулы, выразите согласие со следующими утверждениями. Подтвердите свое мнение фактами из текста:

Tavsiya etilgan suhbat formulalaridan foydalanib, quyidagi gaplar bilan roziligingizni ifoda eting. Matndagi faktlar bilan fikringizni tasdiqlang:

yes, certainly; yes, that's true; I think so too;

right you are; I quite agree with you;

I'm exactly of the same opinion

1. A form of mining depends on some factors.
2. Both types of mining have three main stages.
3. Surface mining is very popular for extracting minerals found near the surface.
4. Sometimes quarrying can be similar to open-pit mining.
5. Large pits in the ground during open-pit mining can be created with explosives.
6. The surface type dictates the choice of a strip mining method and the use of different equipment.
7. Miners distinguish three types of underground mining.
8. Retreat mining allows to extract the maximum of the deposit.

XIII. Соедините части предложений:

Gap bo'laklarini bog'lang:

- | | |
|--|--|
| 1. Mining can be carried out | a) sorting minerals. |
| 2. Extraction involves activities aimed at | b) is produced by surface mining. |
| 3. Material handling concentrates on | c) for extracting thin layers of coal. |
| 4. Material processing includes | d) is to remove a hilltop to expose the materials. |
| 5. About 97 % of the mined minerals | e) to make hard rocks softer for easier extraction. |
| 6. In quarrying different techniques for cutting | f) at the surface or underground. |
| 7. The first stage in creating an open pit | g) to hold the ceiling as they extract the rest of the material. |

- | | |
|-----------------------------------|---|
| 8. Strip mining is mainly applied | h) turning mined ores and other goods into finished products. |
| 9. Miners create pillars of ore | i) blocks of hard stone are used. |
| 10. Blast mining uses explosives | j) removing materials from the mine site. |

**XIV. Ответьте на поставленные вопросы:
Berilgan savollarga javob bering:**

1. What are the basic steps of any mining method?
2. What procedures does material processing involve?
3. Where are minerals to be extracted by surface mining located?
4. There are four main techniques to mine on the surface, aren't there?
5. What minerals can be mined by quarrying?
6. What is the initial step in creating an open-pit?
7. How can overburden be defined?
8. What does the choice of the equipment used in strip mining depend on?
9. How many methods of underground mining can you name? What are they?
10. What is the main difference between rom-pillar and retreat mining?

XV. Дополните текст подходящими по смыслу словами из предложенных ниже:

Quyida berilgan so'zlarning mosini tanlab matnni to'ldiring:

<i>thousands</i>	<i>copper</i>	<i>raw</i>	<i>to choose</i>
<i>quarrying</i>	<i>defined</i>	<i>target</i>	<i>rocks</i>
<i>processed</i>	<i>removed</i>	<i>waste</i>	<i>material</i>
<i>Miners</i>	<i>surface</i>	<i>iron ore</i>	<i>quality</i>
<i>process</i>	<i>techniques</i>		

Surface mining has been known to people for ... of years. Surface mining can be ... as a method of extracting minerals or ... from just

under the ... of the earth. Open-pit mining and quarrying are two main ... of this type of mining.

Quarrying is mostly used in the production of construction and building materials, such as solid stone or crushed rock, or for ... materials for processes such as cement manufacture. As a technique, ... is only used where raw materials of adequate ... and size cannot be obtained economically by other means. In quarrying the ... substance is the very rock itself. This can be broken down and ... in various ways, such as to make gravel for example. Little... is created as everything is processed and used.

In open-pit mining a large amount of the ... which is removed from the mine is processed and then discarded. ... are searching for minerals such as, ..., gold or The rock and earth ... from the mine is not the target for the miners, but the above mentioned minerals that can be extracted from it. This ... is also referred to as selective mining as miners have ... what to keep and what to discard.

XVI. Используя активную лексику урока, письменно переведите на английский язык следующие предложения:

Darsdagi faol lug'atdan foydalanib, quyidagi jumalarni ingliz tiliga yozma tarjima qiling:

1. Геологические характеристики поверхности и тип добываемой горной породы помогают горнякам выбрать наиболее эффективный метод добычи.

2. Любой способ добычи включает три основных этапа: извлечение минерала, его транспортировку и переработку.

3. Переработка означает шлифование, отделение, дробление, очистку и плавление добытой руды.

4. Открытая добыча лучше всего подходит для извлечения полезных ископаемых вблизи поверхности земли и является более экономичной по сравнению с подземными горными работами.

5. Карьер и открытый рудник – два основных типа открытых горных разработок.

6. Вскрышные горные работы связаны с удалением больших полосок покрывающего материала, известного как вскрыша.

7. Характер поверхности определяет тип механизмов и оборудования, используемого при проведении вскрышной добычи. Для

холмистой местности применяются экскаваторы и бульдозеры, а для ровной – драглайны и скреперы.

8. Камерно-столбовая система отличается от сплошной выемки тем, что порода вынимается отдельными камерами, между которыми оставляют опорные целики.

9. При разработке от границ поля к стволу большие столбы руды сначала оставляют на месте во время добычи, чтобы поддержать вес вскрышной породы, а затем столбы также извлекают для увеличения количества добытой руды.

10. Взрывные работы широко применяются в различных отраслях промышленности, прежде всего при добыче полезных ископаемых.

1. Er yuzasining geologik xususiyatlari va qazib olinayotgan jinslarning turi konchilarga eng samarali qazib olish usulini tanlashga yordam beradi.

2. Har qanday qazib olish usuli uchta asosiy bosqichni o'z ichiga oladi: foydali qazilmani qazib olish, uni tashish va qayta ishlash.

3. Qayta ishlash deganda qazib olingan rudani maydalash, ajratish, maydalash, tozalash va eritish tushuniladi.

4. Ochiq usulda qazib olish yer yuzasiga yaqin bo'lgan foydali qazilmalarni qazib olish uchun eng qulay hisoblanadi va yer osti qazib olishga qaraganda ancha tejamkor.

5. Karer va ochiq karer ochiq usulda qazib olishning ikkita asosiy turi hisoblanadi.

6. Haddan tashqari konlarni qazib olish yuqori qatlam deb ataladigan katta qatlamli materialning katta chiziqlarini olib tashlashni o'z ichiga oladi.

7. Er yuzasining tabiati yuk ostida qazib olishda ishlatiladigan mashina va jihozlarning turini belgilaydi. Tepalikli erlar uchun ekskavatorlar va buldozerlar, tekis erlarda esa draglinlar va qirg'ichlar qo'llaniladi.

8. Kamera ustunli tizimi uzluksiz qazish ishlaridan farq qiladi, chunki tosh alohida kameralar bilan chiqariladi, ular orasida tayanch ustunlari qoladi.

9. Dala chegaralaridan shaxtaga qadar qazib olishda, qazib olish jarayonida avvalo katta ruda ustunlari o'z o'rnida qoldirib, ustki qatlamning

og'irligini ushlab turadi, so'ngra qazib olinadigan ruda miqdorini oshirish uchun ustunlar ham olib tashlanadi.

10. Portlash ishlari turli sanoat tarmoqlarida, birinchi navbatda foydali qazilmalarni qazib olishda keng qo'llaniladi.

XVII. Используя информацию из текста и видеофрагмента (<https://www.youtube.com/watch?v=K6FasptWdeU&t=6s>), составьте план аннотации, выпишите ключевые слова и словосочетания по теме *Types of Mining*.

Matndagi ma'lumotlardan va videotasvirdan (<https://www.youtube.com/watch?v=K6FasptWdeU&t=6s>) foydalanib annotasiya rejasini tuzing. *Types of Mining* mavzusiga oid kalit so'zlarni va so'z birikmalarini yozib oling.

XVIII. Расскажите об этапах добычи минеральных ресурсов и видах горных работ.

Foydali qazilmalarni qazib olish bosqichlari va kon ishlarining turlari haqida gapirib bering.

Lesson 11

Mining Equipment

- I. Прочитайте и запомните следующие слова:
Quyidagi so'zlarni o'qing va yodda saqlang:

1) vehicle	транспортное средство transport vositasi
2) to haul	откатывать, вытаскивать tortmoq
3) haul truck	внедорожный самосвал yuk mashinasi
4) to crush	дробить, толочь ezib tashlamoq
5) primary crusher	дробилка для первичного крупного дробления birlamchi maydalagich
6) drill	бур burg'ulash
7) to load	грузить на транспортер yuklamoq
8) to push	продвигать, перемещать surmoq, itarmoq
9) to excavate	вынимать грунт qazib olmoq
10) productivity	производительность, продуктивность mahsuldorlik
11) costs	расходы, издержки harajatlar
12) to convey	перевозить, транспортировать yetkazmoq

II. Соотнесите разновидности оборудования для проведения горных работ с их определениями:

Kon uskunalari turlarini ularning ta'riflari bilan moslang:

*excavator, haul truck, crusher, bulldozer, drill, loader,
shovel, dragline, digger, scraper*

- 1) a large, motorized machine equipped with a metal blade to the front for pushing material;
- 2) a machine used in mines for loading cars and transporting ore or waste for short distances;
- 3) an off-highway, rigid dump truck specifically engineered for use in high-production mining and heavy-duty construction environments;
- 4) a bucket-equipped electrically powered machine, commonly used for digging, loading, and extracting earth minerals;
- 5) a machine for transporting minerals and other extracted ores and rock waste;
- 6) a tool used in mining to make holes in the rock;
- 7) a pieces of heavy machinery used for earth moving to dig soil out to make the extraction of the materials easier;
- 8) a type of excavating equipment that casts a rope-hung bucket a considerable distance, collects the dug material by pulling the bucket toward itself on the ground with a second rope;
- 9) a machine designed to reduce large rocks into smaller rocks, gravel, sand or rock dust;
- 10) a type of heavy machinery used to dig raw material in mining operations.

III. Найдите в правой колонке русские эквиваленты следующих словосочетаний:

O'ng ustundan quyidagi iboralarning o'zbekcha ekvivalentlarini topping:

- | | |
|----------------------------|--------------------------------|
| 1) to achieve a goal | a) делать отверстия / скважины |
| 2) to haul to the surface | teshik ochmoq |
| 3) to create holes | b) требовать специальных |
| 4) to serve as an entrance | навыков |

- | | |
|----------------------------------|--|
| 5) to play an important role | mahsus mahorat talab qiladi |
| 6) to require specialized skills | c) дробить твердую породу qattiq toshlarni maydalash |
| 7) waste material | d) отработанный материал chiqindilar; foydalanilgan mahsulaotlar |
| 8) the mineral of interest | e) достигать цели maqsadga erishmoq |
| 9) to break down hard rock | f) интересующий минерал qiziqtirgan mineral |
| 10) to reduce the costs | g) передовая технология ilg'ori texnologiyalar |
| 11) cutting edge technology | h) служить входом kirishga xizmat qilmoq |
| | i) сокращать расходы harajatlarni qisqartirmoq |
| | j) вытаскивать на поверхность yuzaga chiqarmoq |
| | k) играть важную роль muhim rol o'ynamoq |

**IV. Из следующих слов составьте пары синонимов:
Quyidagi so'zlardan juft sinonimlar hosil qiling:**

- | | |
|---------------------|------------------|
| 1) synonymous | a) to advance |
| 2) application | b) various |
| 3) to progress | c) to transport |
| 4) to assist | d) to get |
| 5) to ensure | e) to help |
| 6) to carry | f) to consist of |
| 7) location | g) similar |
| 8) to achieve | h) to decrease |
| 9) different | i) to depend on |
| 10) to reduce | j) to guarantee |
| 11) to be made from | k) site |
| 12) to rely on | l) use |

**V. Из следующих слов составьте пары антонимов:
Quyidagi so'zlardan juft antonimlar hosil qiling:**

- | | |
|----------------|----------------|
| 1) to progress | a) dense |
| 2) large | b) minimum |
| 3) loose | c) antonymous |
| 4) specialized | d) to increase |
| 5) maximum | e) same |
| 6) variety | f) waste |
| 7) different | g) to regress |
| 8) to decrease | h) to separate |
| 9) necessary | i) general |
| 10) synonymous | j) small |
| 11) to combine | k) sameness |

VI. Определите часть речи по словообразующему суффиксу и переведите слова на русский язык:

So'zlarning qaysi so'z turkumiga oid ekanligini so'z yasovchi qo'shimchalarga qarab aniqlang va so'zlarni tarjima qiling:

significantly, innovative, crucial, synonymous, loader, normally, unmanned, entrance, digger, dislocation, unimportant, specifically, impractical, operator, normally, excavator, productivity, reduction, different, manageable, transportation, critical, crusher, nearly, unreliable, overproduction, successful

VII. Укажите способ словообразования следующих однокоренных слов и переведите их на русский язык:

Quyidagi turdosh so'zlarning so'z yasaliş usulini ko'rsating va ularni o'zbek tiliga tarjima qiling:

- 1) to produce – to reproduce – to overproduce – to underproduce – producing – produced – producer – production – productive – productivity;
- 2) to transport – transportable – transporter – transportation – transportational;
- 3) to crush – crusher – crushing – crushed – crushproof;

- 4) to combine – to recombine – combining – combined – combination – recombination – combinational;
- 5) to cut – cutter – cutting – uncut – undercut – cuttable.

**VIII. Дополните предложения, используя предложенные слова:
Berilgan so'zlardan foydalanib gaplarni to'ldiring:**

- a) *achieve, achievable, achievements, achieved, achievers:*
 1. All the candidates interviewed for this job were ... in the field of geology.
 2. Their ... in the question of staff safety were great.
 3. With much practice students can ... a high level of skill.
 4. Before you set your targets make sure that they are
 5. The results ... demonstrated their desire to succeed.

- b) *apply, misapplied, applied, application, applying, applicable:*
 1. The ... of heavy duty mining equipment will be discussed during the lecture.
 2. In this case the basic concepts of the theory have been You have to make some corrections.
 3. Geophysicists ... the principles of physics, mathematics, geology and engineering to study physical characteristics of the earth.
 4. What's the procedure for ... for a job of a coal miner?
 5. An ... discipline focuses on practical tasks ... in the everyday life.

- c) *norms, normal, normally, to normalize:*
 1. Haul trucks are ... use for removing waste material.
 2. They need another 24 hours ... the situation with the gas eruption.
 3. A ... working shift of a miner is 6 hours.
 4. The International Mine Action Standards (MAS) establish the ... for all mine action operations.

- d) *assist, assistance, assistants, assisted, assistless:*
 1. The committee offers financial ... to students engaged in research projects.

2. In preparing for the conference the professor was ... greatly by her team of researchers.
3. They were absolutely ... in the force of danger caused by the earthquake.
4. Mining ... perform routine duties in mining and quarrying operation. They ... the miners with equipment servicing, pipe and cable laying.

**IX. Переведите следующие словосочетания на русский язык, обращая внимание на перевод слов в функции определения:
Quyidagi so'z birikmalarini o'zbek tiliga tarjima qiling. Aniqlovchi vazi-fasida kelgan so'zlarning tarjimasiga e'tibor bering:**

drilling machine, drilling applications, underground specialized mining equipment, further processing, unmanned machinery, specifically designed equipment, material removal, production costs, application range, heavy duty machinery, maximum productivity, reduction rate, crushing equipment, rock material, strip mining operation, time-tested mechanism, technology application

**X. Прочитайте и переведите текст на русский язык:
Matnni o'qing va o'zbek tiliga tarjima qiling:**

The mining industry has advanced significantly in the last 50 years, as tools and technology have provided new and innovative new ways to achieve the same goals. Here are so crucial machines and vehicles used in modern mining: drilling machines; haul trucks; crushing tools.

Drilling Machines

Drills are synonymous with mining, making them one of the most common pieces of mining equipment for most drilling applications. Underground mining is carried out when rocks or minerals are located far beneath the ground. Underground specialized mining equipment such as haul trucks, loaders, and diggers are used to excavate the material and are normally hauled to the surface for further processing. Underground mining techniques have progressed significantly in recent years, introducing unmanned machinery. Drills can also assist in creating holes underground. If miners are required to work below drills can also be used to ensure the holes are large enough to serve as an entrance for miners.

Haul Trucks

For above ground mining, haul trucks are used to carry loose soil and earth from one location to another. They play an important role in the mining industry because the equipment is specifically designed for faster and more practical material removal. Used for digging, pushing and transporting the earth, they require the specialized skills of an operator. Haul trucks are heavy duty mining equipment that work hand in hand with bulldozers. They're normally used for removing waste material, enabling excavators to remove the material or minerals of interest.

Crushing Tools

Crushing equipment is used to move and crush rock and stone. Designed to achieve maximum productivity and high reduction rate, this kind of equipment can come in a variety of different types for a range of jobs. Crushing equipment is specially designed to break down hard rock matter or gravel to a manageable size for transportation. They are critical pieces of equipment in the industry because they reduce the costs associated with handling larger materials. In a strip mining operation, the run of mine material is normally transported to the primary crusher by haul trucks, and in underground mining operations, it's conveyed to the primary crusher.

Nearly everything humans depend on is either made from minerals or relies on minerals for its production. From oil and gas to metals and beyond, mining is a necessary and integral part of life. In order to ensure a successful mining project, your equipment must combine cutting edge technology and time-tested mechanisms.

XI. Выразите свое согласие либо несогласие со следующими утверждениями. Подтвердите свою точку зрения фактами из текста:

Quyidagi gaplarga o'z munosabatingizni bildiring. Matnda berilgan faktatlar bilan fikringizni tasdiqlang:

No doubt about it

I totally agree

I also think so

Exactly

Absolutely

That's not right

I disagree

I don't think so

I'm not so sure about it

That's not entirely true

1. The mining industry is an absolutely new branch that appeared only a few years ago.

2. The introduction of unmanned machinery into underground mining techniques has revolutionized the methods of mining.
3. Drills are used only for surface mining.
4. Haul trucks are easy to operate and they do not need any specific skills of an operator.
5. Haul trucks are designed to perform a number of material removing operations.
6. Crushing mechanisms are applied for breaking down hard rock and stone.
7. In a strip mining operations the mined material is usually conveyed to the primary crusher.
8. All the types of crushing equipment help to achieve the highest productivity and substantially reduce the costs of mining.
9. The range and functionality of mining equipment is constantly changing and improving.
10. Nowadays people are completely independent on the minerals extracted from the earth.

**XII. Дополните предложения информацией из текста:
Matnda berilgan faktlardan foydalanib gaplarni to'ldiring:**

1. The mining industry has greatly improved over the last 50 years thanks to
2. Underground mining is mostly preferable when
3. For excavating materials and rocks ... are used.
4. Drills are applied by miners
5. Haul trucks are designed to carry loose soil and earth
6. Haul trucks require the specialized skills of an operator because
7. The purpose of the crushing equipment is
8. Crushing mechanisms are very important in the mining industry as they help
9. Practically everything people use their everyday lives
10. Every successful mining project requires the combination of

XIII. Ответьте на следующие вопросы:

Quyidagi savollarga javob bering:

1. What are the main groups of modern mining mechanisms?
2. Why do drilling machines still play an important role in mining?
3. Haul trucks, loaders and diggers are used mainly for surface mining, aren't they?
4. What has contributed to the advancement of underground mining techniques?
5. Why are haul trucks so significant in the mining industry?
6. What operations are haul trucks used for?
7. Crushing equipment is designed for moving and breaking down hard rock, isn't it?
8. What is the difference of carrying the mined material to the primary crusher in a strip and underground mining?
9. Why can't people do without mining?
10. Can the mining equipment be further improved?

XIV. Дополните текст подходящими по смыслу словами и словосочетаниями из предложенных ниже:

Matnni quyida berilgan so'z va so'z birikmalarining mosini qo'yib to'ldiring:

<i>difference</i>	<i>mining site</i>	<i>uranium</i>	<i>drills</i>
<i>holes</i>	<i>Mined minerals</i>	<i>techniques</i>	<i>coal</i>
<i>extracting</i>	<i>automated</i>	<i>resources</i>	<i>Mining tools</i>
<i>surface</i>	<i>machines</i>	<i>Crushers</i>	<i>hard rock</i>
<i>minerals</i>	<i>gravel</i>	<i>equipment</i>	<i>rock dust</i>
<i>Haul trucks</i>	<i>explosive</i>		

... can be found in almost every product produced by people. Minerals like ... and ... are main energy sources. All of these ... are obtained through the use of various types of mining tools.

... is a term that refers to all mining... and mining ... used for ... minerals from the earth. Different mining tools are used for different types of ... and mining The basic ... between soft rock mining and ... mining is that the latter requires the use of an ..., and the former doesn't.

Blasthole ... are mining machines that drill ... into the earth's ... for placing explosives. ... are heavy duty trucks used for mining. New technology has developed fully ... mining trucks that use both LIDAR and radar to freely move around a

... of various types break down large rocks into small rocks, ..., sand and

XV. Используя активную лексику урока, письменно переведите на английский язык следующие предложения:

Darsning faol lug'atidan foydalanib, quyidagi jumlalarni ingliz tiliga yozma tarjima qiling:

1. Работа в горнодобывающей промышленности требует использования различных видов техники, помогающей выполнять различные задачи по добыче полезных ископаемых с точностью и эффективностью.

2. Для добычи сырья используется специализированное подземное горно-шахтное оборудование, такое как экскаваторы, погрузчики и грузовики.

3. Для установки зарядов взрывчатого вещества необходимы буровые установки, освобождающие полезные ископаемые от вскрышного материала.

4. Землеройные машины используются для добычи полезных ископаемых на поверхности земли. Этот тип техники используется для транспортировки рыхлого грунта из одного места в другое.

5. Помимо транспортировки большого количества земли, землеройные машины также используются для удаления пустых и вскрышных пород.

6. Железородный материал загружается экскаваторами в огромные самосвалы для перевозки на близлежащие перерабатывающие заводы.

7. Самые большие самосвалы могут вмещать до 450 метрических тонн и могут иметь колеса диаметром до четырех метров.

8. Как следует из названия, дробильное оборудование используется для измельчения крупных материалов, таких как горная порода и камень.

9. Дробильное оборудование бывает разных форм и размеров, чтобы удовлетворить широкий спектр потребностей дробления.

10. Инновационные технологии добычи полезных ископаемых используют информацию о местоположении рудного тела, машинное обучение, робототехнику, что позволяет горнодобывающим компаниям автоматизировать многие из своих процессов. Это не только помогает снизить затраты, но и повысить безопасность проведения горных работ.

1. Tog'-kon sanoatida ishlash turli xil kon ishlarini aniq va samarali bajarishga yordam beradigan har xil turdagi uskunalardan foydalanishni talab qiladi.

2. Xom ashyoni qazib olish uchun ekskavator, yuk ko'taruvchi va yuk mashinalari kabi ixtisoslashtirilgan yer osti kon uskunolari qo'llaniladi.

3. Portlovchi zaryadlarni o'rnatish uchun burg'ulash qurilmalari foydali qazilmalarni ortiqcha yuklardan ozod qilish uchun kerak.

4. Tuproq ishlovchi mashinalar yer ustidagi foydali qazilmalarni qazib olish uchun ishlatiladi. Ushbu turdagi mashinalar bo'shashgan tuproqni bir joydan ikkinchi joyga tashish uchun ishlatiladi.

5. Tuproqni ko'p miqdorda tashish bilan bir qatorda, tuproqqa ishlov berish mashinalari chiqindilarni va ortiqcha yuklarni olib tashlash uchun ham qo'llaniladi.

6. Temir rudasi yaqin atrofdagi qayta ishlash korxonalariga tashish uchun ekskavatorlar orqali ulkan samosvallarga ortiladi.

7. Eng katta samosvallar 450 metrik tonnagacha yuk ko'tarishi mumkin va diametri to'rt metrgacha bo'lgan g'ildiraklarga ega bo'lishi mumkin.

8. Nomidan ko'rinib turibdiki, maydalagich tosh va tosh kabi yirik materiallarni maydalash uchun ishlatiladi.

9. Maydalash uskunolari turli xil shakl va o'lchamlarga ega bo'lib, turli xil maydalash ehtiyojlarini qondirish uchun.

10. Innovatsion kon texnologiyalari ma'danlarning joylashuvi haqidagi ma'lumotlardan, mashinalarni o'rganishdan, robototexnikadan foydalanadi, bu esa tog'-kon korxonalariga ko'plab jarayonlarni avtomatlashtirish imkonini beradi. Bu nafaqat xarajatlarni kamaytirishga yordam beradi, balki konchilik operatsiyalari xavfsizligini ham oshiradi.

XVI. Ипользуя информацию из текста, составьте план аннотации, выпишите ключевые слова и словосочетания по теме *Mining Equipment*.

Matndagi ma'lumotlardan foydalanib annotasiya rejasini tuzing, *Mining Equipment* mavzusiga doir so'z va so'z birikmalarini ko'chirib yozing.

XVII. Расскажите о технологиях и технике, которые используются во время проведения горнодобывающих работ.

Tog'-kon ishlarida qo'llaniladigan texnologiyalar va uskunalar haqida aytib bering.

СОСТАВЛЕНИЕ АННОТАЦИИ TUZILGA ANNOTASIYA

Аннотированием называется процесс переработки информации первичного текста, целью которого является получение обобщенных сведений о содержании изложенного материала. В результате данного процесса формируется вторичный документ – *аннотация*.

Методика аннотирования включает в себя ряд последовательных действий, на основе которых можно составить следующий алгоритм:

- прочитайте текст несколько раз, постарайтесь понять не только основную идею, но и важные детали;
- разберите незнакомую лексику и грамматику; новые слова и фразы необходимо выписать и перевести, ориентируясь на тематику текста и контекст;
- выделите для себя самое главное: тему, основные определения, классификации, характеристики, проблемные вопросы;
- составьте план аннотации, в основе которого лежит классическая структура «введение – основная часть – заключение»;
- тезисно выпишите главные факты, определив причинно-следственные и структурно-логические связи;
- потренируйтесь представлять аннотацию.

При составлении аннотации рекомендуется использовать стандартный набор речевых клише (устойчивые конструкции и выражения):

1. Заголовок текста:

The paper / article / text is head-lined... – *Статья / Текст озаглавлен...*

The head-line of the article / text under discussion is... – *Заголовок обсуждаемого текста...*

2. Главная идея текста:

The main idea of the article is... – *Главной идеей статьи является...*

The article is about... – *Статья рассказывает о...*

The paper deals with... – *В статье рассматривается вопрос о...*

The paper touches upon... – *Статья затрагивает вопрос о...*

The purpose of the text is to give the reader some information on... – *Цель текста – дать читателю некоторую информацию о...*

3. Содержание текста:

The author writes (states, thinks) that... – *Автор пишет (утверждает, думает), что...*

According to the article... – *В соответствии со статьей...*

The author refers to... – *Автор упоминает...*

The author gives a review of... – *Автор приводит обзор...*

There are several solutions of the problem... – *Проблема имеет несколько вариантов решения...*

There is some interesting information in the paper concerning... – *В статье приводится интересная информация касательно...*

Further the author says that... – *В дальнейшем автор пишет, что...*

In conclusion... – *В заключении...*

The author comes to the conclusion that... – *Автор делает вывод, что...*

4. Ваше мнение относительно прочитанного:

I find the article (the text) interesting (important, informative, too hard to understand, of great value)... – *По-моему, статья интересна (важна, информативна, слишком сложна для понимания, имеет большое значение)...*

From my point of view... – *С моей точки зрения...*

Annotatsiya – asosiy matnning ma'lumotlarini qayta ishlash jarayoni bo'lib, uning maqsadi taqdim etilgan materialning mazmuni haqida umumiy ma'lumot olishdir. Ushbu jarayon natijasida ikkinchi darajali hujjat – *annotatsiya shakllanadi*.

Annotatsiya texnikasi bir qator ketma-ket harakatlarni o'z ichiga oladi, ular asosida quyidagi algoritmi tuzish mumkin:

- matnni bir necha marta o'qing, nafaqat asosiy fikrni, balki muhim tafsilotlarni ham tushunishga harakat qiling;
- notanish lug'at va grammatikani qismlarga ajratish, yangi so'z va iboralarni matn va kontekst mavzusiga qaratgan holda yozish va tarjima qilish kerak;
- o'zingiz uchun eng muhimlarini ajratib ko'rsatish: mavzu, asosiy ta'riflar, tasniflar, xususiyatlar, muammoli masalalar;
- “kirish – asosiy qism – xulosa” klassik tuzilmasi asosidagi reja tuzing;
- sabab-natija va tizimli-mantiqiy munosabatlarni aniqlagan holda asosiy faktlarni qisqacha yozish;
- Annotatsiyani taqdim etishni mashq qiling.

Annotatsiyani tuzishda standart nutq qurilmalaridan (barqaror tuzilmalar va iboralar) foydalanish tavsiya etiladi:

1. **Matn sarlavhasi:**

The paper / article / text is head-lined... – *Maqola / matn sarlavhlangan...*

The head-line of the article / text under discussion is... – *Muhokama qilinayotgan matnning sarlavhas...*

2. **Bosh g'oya:**

The main idea of the article is... – *Maqolaning asosiy g'oyasi...*

The article is about... – *Maqolada ... haqida so'z boradi*

The paper deals with... – *Maqolada ... masala ko'rib chiqiladi*

The paper touches upon... – *Maqola ... muammolarga bag'ishlangan*

The purpose of the text is to give the reader some information on... – *Matnning maqsadi o'quvchiga ... haqida ma'lumot berishdir*

3. **Tarkibi:**

The author writes (states, thinks) that... – *Muallif yozadi (ta'kidlaydi, o'ylaydi)...*

According to the article... – *Maqolaga muvofiq....*

The author refers to... – *Muallif ta'kidlab o'tadiki...*

The author gives a review of... – *Muallif umumiy fikrni taqdim etadi...*

There are several solutions of the problem... – *Muammoni echishning bir necha usullari mavjud...*

There is some interesting information in the paper concerning... – *Maqolada ... ga oid bir qancha qiziqarli ma'lumotlar mavjud*
Further the author says that... – *Shuningdek, muallif aytadiki...*
In conclusion... – *Xulosa o'rnida...*
The author comes to the conclusion that... – *Muallif xulosa qilib shuni aytadiki...*

4. Oqib chiqqanlaringizga ko'ra fikringiz:

I find the article (the text) interesting (important, informative, too hard to understand, of great value)... – *Menimcha, maqola qiziqarli (muhim, ma'lumotli, tushunish juda qiyin, katta ahamiyatga ega)*
From my point of view... – *Mening nuqtai nazarimcha...*

Прочитайте текст о природных ресурсах и ознакомьтесь с вариантами составленных аннотаций:

Tabiiy resurslar haqidagi matnni o'qing va tuzilgan annotasiya variantlari bn tanishib chiqing:

Natural Resources

Natural resources are materials or things that people use from the earth. There are two types of natural resources. The first are renewable natural resources. They are called renewable because they can grow again or never run out. The second are called nonrenewable natural resources. These are things that can run out or be used up. They usually come from the ground.

Let's look more closely at renewable natural resources. They are the ones that can grow again. Trees are a good example. If cut down, they can regrow from seeds and sprouts. Animals are another example. Baby animals are born and grow up. They replace older animals that die.

Trees are one of the most useful renewable natural resources. We use trees to produce almost 8,000 different things. Air and water are renewable natural resources, too. They don't regrow like trees or have babies like animals. But, they are always being renewed. They move in cycles. They go from one place to another, and often back where they started, again and again. This is a good thing, because all living things need air

and water to survive. There is one other type of renewable natural resource. It includes sources of power like sun and wind energy.

Now, let's look at nonrenewable natural resources. They are found in the ground. There are fixed amounts of these resources. They are not living things, and they are sometimes hard to find. They don't regrow and they are not replaced or renewed. They include the fossil fuels we burn for energy (natural gas, coal, and oil). Minerals, used for making metals, are also nonrenewable natural resources.

Fossil fuels such as oil, coal, and gas will not last forever. They are nonrenewable. People are trying hard to find new fuels that are clean and will provide the power we need. Wind, solar, and hydrogen power are renewable resources that offer hope for the future.

So what can you do to take care of natural resources?

You can reduce, reuse, and recycle! For example, turn off the lights when you are not in a room. This will reduce the use of fossil fuel used to make electricity. Ride your bicycle and walk more, to reduce the amount of gasoline used to transport you. You can reuse things. Things like plastic jugs, jars, paper, and bags can be reused. Each time you reuse something, you conserve the natural resources that would have been used to make new ones.

Finally, you can recycle. Recycle means to reuse a natural resource or product to make something new. It also means to collect and send these things for reuse. Items that can be easily recycled include: glass, some plastics, paper, cardboard, aluminum, and steel. Some plastics and metals are hard to recycle. They are often made from mixtures of materials. Mixtures can be hard to separate. Try to buy and use things that you can recycle.

Natural resources, both renewable and nonrenewable, are important to all of us. We must conserve and carefully use natural resources.

Вариант 1 / Variant 1

The article is head-lined *Natural Resources*. The purpose of the text is to give the reader some information on two types of natural resources: renewable and non-renewable ones. Much attention is given to the examples of renewable resources and how they can be renewed and replaced. Also the author enumerates non-renewable resources and names the problems caused by their exhaustion. According to the article this

problem can be solved by reducing, reusing and recycling. In conclusion the author states that natural resources, both renewable and nonrenewable, are important to all of us and we must conserve and carefully use them. From my point of view, the article is of particular interest for the students studying natural resources and environmental problems.

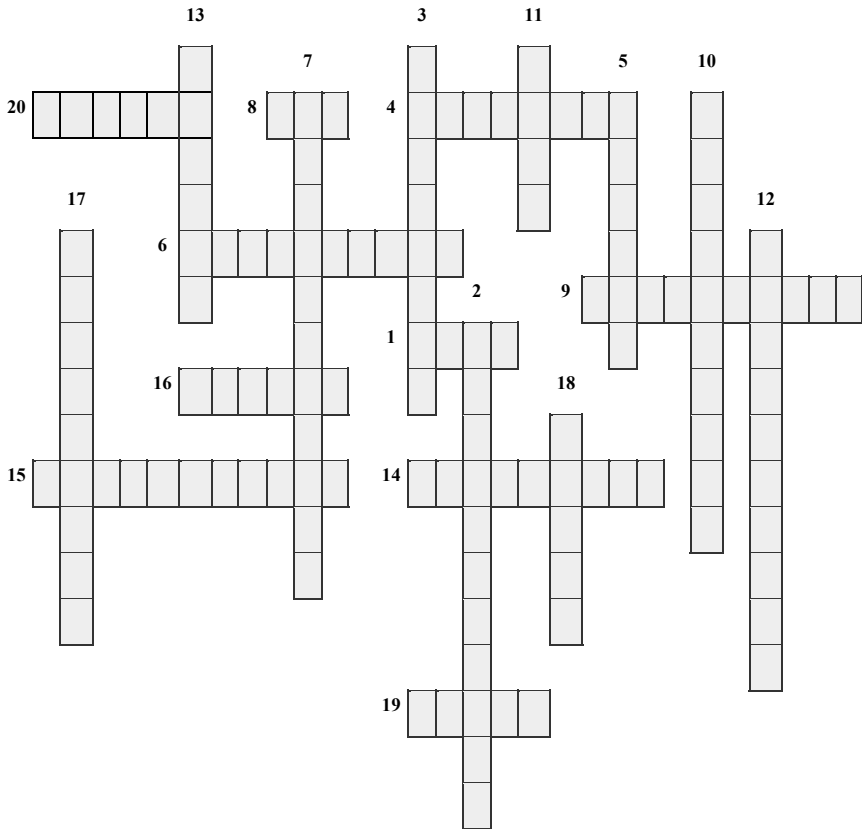
Вариант 2 / Variant 2

The given text informs the reader of natural resources. The text can be divided into three logical parts. Types of renewable resources and ways of their restoration are considered in the first part. The second part draws our attention to the examples of non-renewable natural resources. Data on the methods of saving exhaustible resources is given in the third part. The author arrives at the conclusion that all types of natural resources must be carefully used as they play a very important role in our lives. The text is of interest to the students engaged in nature studying.

ДОПОЛНИТЕЛЬНЫЕ ЛЕКСИЧЕСКИЕ ЗАДАНИЯ
QO'SHIMCHA LUG'AT MASHQLARI

Lessons 1, 2. Higher Engineering Education

Разгадайте кроссворд, переводя слова с русского на английский:
So'zlarni o'zbek tilidan Ingliz tiliga tarjima qilib krossvordni yeching:



По горизонтали: 1. Семестр. 4. Исследование. 6. Учебный план. 8. Плата. 9. Факультет. 14. Образование. 15. Стипендия. 16. Степень. 19. Область, сфера. 20. Магистр.

Gorizontal: 1. Semestr. 4. Tadqiqot. 6. O'quv rejasi. 8. To'lov. 9. Fakultet. 14. Ta'lim. 15. Stipendiya. 16. Daraja. 19. Yo'nalish, soha. 20. Magistr.

По вертикали: 2. Требование. 3. Выпускник. 5. Общежитие. 7. Инженерное дело. 10. Опыт. 11. Отметка. 12. Трудоустройство. 13. Направление. 17. Кандидат, претендент. 18. Обучение.

Vertikal: 2. Talab. 3. Bitiruvchi. 5. Yotoqxona. 7. Muhandislik. 10. Tajriba. 11. Belgisi. 12. Ish joyi. 13. Yo'nalish. 17. Nomzod, Abituriyent. 18. Ta'lim.

Lesson 3. Earth's Structure

Из букв в столбце **A** составьте слова, подберите к ним подходящие слова из столбца **B**, чтобы получились словосочетания по теме **Структура Земли**:

A ustundagi so'zlarga **B** ustundagi so'zlardan mosini qoyib, **Yerning tuzilishiga** oid so'z birikmalarini hosil qiling:

A	B	C
<i>ouret</i>	crust	<i>outer core</i>
irnen	<i>core</i>	
salor	mantel	
connitentla	properties	
oacicne	properties	
uprep	movement	
lewor	core	
sesicim	surface	
thear	mantel	
phisylac	system	
chimelac	velocity	
tecincot	crust	

Lesson 4. Prospecting and Exploration Activities

Найдите и обведите 12 английских терминов, которые соответствуют следующим русским словам:

Quyidagi o'zbek so'zlariga mos keladigan 12 ta inglizcha atamani toping va aylanaga oling:

РАЗВЕДКА / QIDIRUV

ДОБЫЧА / QAZIB OLISH

ГЕОЛОГОРАЗВЕДКА /
GEOLOGIK QIDIRUV

КАРТОГРАФИРОВАНИЕ /
XARITALASH

МИНЕРАЛ / MINERAL

ПОИСК / IZLOV

МЕСТОРОЖДЕНИЕ / KON

ПРИЗНАК / BELGI

ОБРАЗЕЦ / NAMUNA

ОЦЕНКА / VAHO

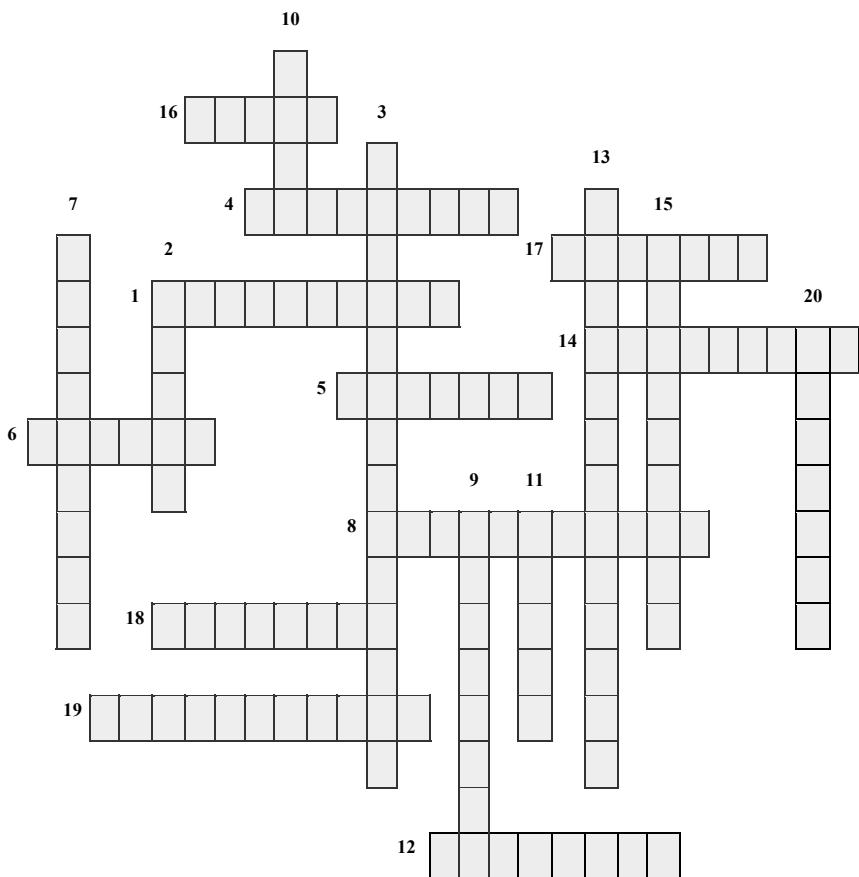
ИССЛЕДОВАНИЕ / TADQIQOT

СТРУКТУРА / TUZILISH

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

Lessons 5, 6, 7. Rock Types

- I. Разгадайте кроссворд, переводя слова с русского на английский:
So'zlarni o'zbek tilidan Ingliz tiliga tarjima qilib krossvordni yeching:



По горизонтали: 1. Уплотнение. 4. Батолит. 5. Бурый уголь. 6. Мрамор. 8. Состав. 12. Полевой шпат. 14. Условие; состояние. 16. Зерно. 17. Эрозия, размывание. 18. Отложение, осадочная порода. 19. Растворение.

Горизонтал: 1. Zichlashish. 4. Batolit. 5. Tosh ko'mir. 6. Marmar. 8. Tarkib. 12. Dala shpati. 14. Sharoit; holat. 16. Don. 17. Yemirilish. 18. Cho'kma, cho'kindi jins. 19. Eritma.

По вертикали: 2. Цикл. 3. Затвердевание. 7. Расслоение. 9. Давление. 10. Слюда. 11. Пласт. 13. Осаждение. 15. Песчаник. 20. Органический.

Vertikal: 2. Sikl. 3. Qotish. 7. Qatlamlanish. 9. Bosim. 10. Slyuda. 11. Qatlam. 13. Cho'kish. 15. Qumtosh. 20. Organik.

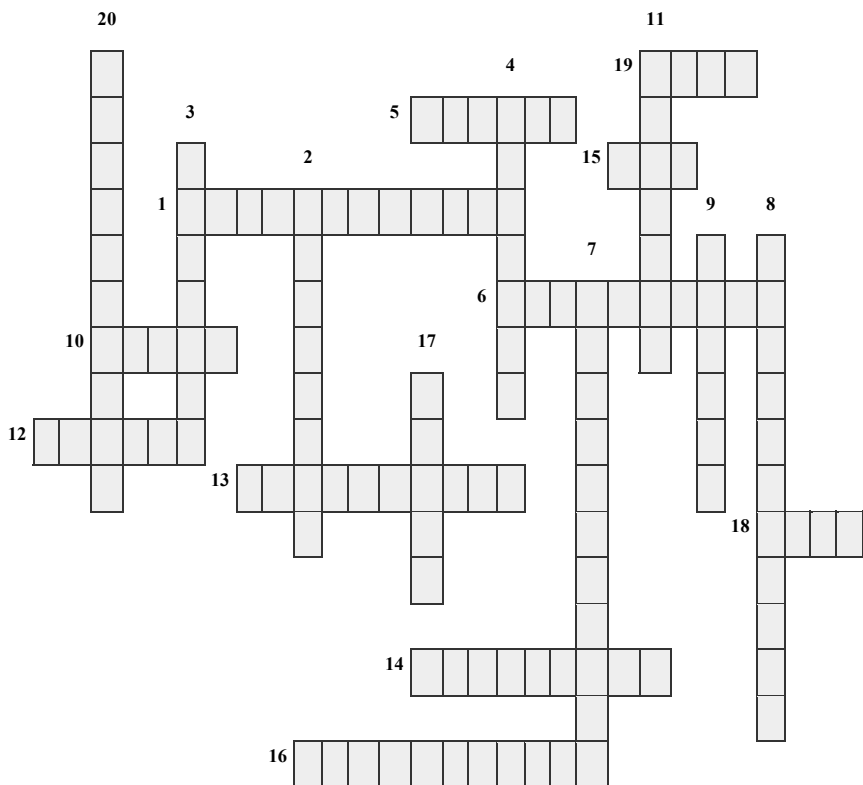
II. Из букв в столбце **A** составьте слова, подберите к ним подходящие слова из столбца **B**, чтобы получились словосочетания по теме *Типы горных пород*:

A ustundagi so'zlarga **B** ustundagi so'zlardan mosini qoyib, *Tog' jinslarining turlariga oid so'z birikmalarini hosil qiling*:

A	B	C
<i>inosueg</i>	material	<i>igneous rock</i>
<i>eteignrhaw</i>	rock	
<i>yialcshp</i>	fluid	
<i>cmnigntee</i>	crust	
<i>milcacu</i>	<i>rock</i>	
<i>nrsveiuti</i>	lava	
<i>feni-gandeir</i>	eye	
<i>mileran-cihr</i>	of sediments	
<i>misenem</i>	composition	
<i>onn-ofaildet</i>	plate	
<i>lntpae's</i>	texture	
<i>tcoicnte</i>	change	
<i>nekad</i>	pressure	
<i>qunhdece</i>	rock	
<i>chimelac</i>	carbonate	

Lesson 9, 10. Mining

Разгадайте кроссворд, переводя слова с русского на английский:
So'zlarni o'zbek tilidan Ingliz tiliga tarjima qilib krossvordni yeching:



По горизонтали: 1. Окружающая среда. 5. Карьер. 6. Извлечение, добыча. 10. Полоса. 12. Горные работы. 13. Техника, технология. 14. Взрывчатое вещество. 15. Руда. 16. Покрывающая порода. 18. Очистная камера. 19. Участок, площадка.

Gorizonta: 1. Atrof-muhit. 5. Karyer. 6. Ajratib olish, qazib olish. 10. Yo'l yo'l chiziq. 12. Kon ishlari. 13. Uskunalar, texnologiya. 14. Portlovchi moddalar. 15. Ruda. 16. Qoplovchi tog' jinsi. 18. Qazib olish kamerasi. 19. Maydon, uchastka.

По вертикали: 2. Ресурс. 3. Верхнее перекрытие, потолок. 4. Отступающая выемка. 7. Мелиорация, восстановление. 8. Подземный. 9. Столб, целик. 11. Поверхность. 17. Бур. 20. Переработка.

Vertikal: 2. Resurs. 3. Yuqori qavat, ship. 4. Teskari yo'nalishda qazib olish. 7. Melioratsiya, Rekultivatsiya. 8. Yer osti. 9. Ustun, selik. 11. Yuza. 17. Burg'i. 20. Qayta ishlash.

Lesson 11. Mining Equipment

Найдите и обведите 12 английских терминов, которые соответствуют следующим русским словам:

Quyidagi o'zbek so'zlarga mos keladigan 12 ta inglizcha atamani toping va aylanaga oling:

САМОСВАЛ / SAMOSVAL	ДРАГЛАЙН / DRAGLAYN
ЭКСКАВАТОР / EKSKAVATOR	БУЛЬДОЗЕР / BULDOZER
ТРАНСПОРТЕР / KONVEYER	КОВШ / SHO'MICH
ОБОРУДОВАНИЕ / USKUNALAR	БУР / BURG'I
ВОЛОКУША / QIRG'CH	ПОГРУЗЧИК / YUKLOVCHI
ДРОБИЛКА / MAYDALAGICH	ЗЕМЛЕЧЕРПАЛКА / EKSKAVATOR

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

АУДИРОВАНИЕ TINGLASH

Natural Gas

- I. Подберите слова, подходящие друг другу по смыслу, и переведите полученные словосочетания на русский язык:
Ma'no jihatidan bir-biriga mos bo'lgan so'zlarni tanlang va hosil bo'lgan so'z birikmalarini o'zbek tiliga tarjima qiling:

- | | |
|------------------|---------------|
| 1) sedimentary | a) fuels |
| 2) greenhouse | b) gases |
| 3) fossil | c) emissions |
| 4) carbon | d) pollutants |
| 5) air | e) advances |
| 6) technological | f) change |
| 7) climate | g) rocks |

- II. Потренируйтесь произносить новые слова и обратите внимание на их перевод:
Yangi so'zlarni talaffuz qilishga harakat qilib ko'ring va ularning tarjimasiga e'tibor bering:

1) to sink – sank – sunk	тонуть cho'kmoq
2) shale gas	сланцевый газ slanes gazi
3) tight gas	газ в плотных породах qattiq gaz
4) sour gas	сернистый газ oltingugurt dioksidi
5) coalbed methane	метан угольных пластов ko'mir qatlamli metan

6) associated gas	попутный газ bog'langam gaz
7) impermeable rock	непроницаемая горная порода o'tkazmaydigan tog' jinsi
8) caprock	покрывающая порода ortiqcha yuk
9) refrigerant	хладагент sovutish suvi
10) well drilling	бурение скважин quduqni burg'ulash
11) pipeline	трубопровод quvur liniyasi
12) liquified natural gas	сжиженный природный газ suuultirilgan gaz
13) feedstock	сырьевой материал xom ashyo
14) hydraulic fracturing	гидро разрыв пласта gidravlik sindirish

**III. Переведите следующие словосочетания на русский язык:
Quyidagi so'z birikmalarini o'zbek tiliga tarjima qiling:**

oil and condensate removal, water removal, separation of natural gas liquids, sulfur and carbon dioxide removal, distribution centers, natural gas development, greenhouse gas emissions

**IV. Назовите английские эквиваленты слов и словосочетаний:
Quyidagi so'z va so'z birikmalarining inglizcha ekvivalentini ayting:**

природный газ, нефть, вырабатывать электричество, ископаемые виды топлива, выбросы углерода, преобразовывать, соединение, отходы, удалить примеси, разработка газа, добыча

tabiiy gaz, neft, elektr energiyasini ishlab chiqarish, qazilma yoqilg'ilar, uglerod chiqindilari, o'zgartirish, birikma, nopokliklar olib tashlang, gaz rivojlanishi, qazib olish

V. **Перед просмотром видефрагмента ознакомьтесь со следующими вопросами:**

Videoni tomosha qilishingizdan avval quyidagi savollar bilan tanishib chiqing:

1. What is the video about?
2. How can natural gas be categorized?
3. What unconventional forms of natural gas are mentioned in the text?
4. Does natural gas influence the climate change?

VI. **Посмотрите видефрагмент (<https://youtu.be/-njmj0diWu8>), дайте ответы на вопросы из упражнения V.**

Video fragmentni tomosha qiling (<https://youtu.be/-njmj0diWu8>), V mashqdagi savollarga javob bering.

VII. **Посмотрите видеоматериал еще раз, обращая внимание на детали и делая пометки.**

Video tomoshani qayta ko'ring, detallarga e'tibor bering va eslatmalarni yozib oling.

VIII. **Заполните пропуски подходящими словами и словосочетаниями:**
Nuqta joylarini mos so'zlar va iboralar bilan to'ldiring:

electricity, impermeable rock, sank, hydraulic fracturing, drilling wells, wet, pipelines, liquefied natural gas, dry

1. Natural gas was formed millions of years ago when dead organisms ... to the bottom of the ocean and were buried under deposits of sedimentary rock.

2. The natural gas is trapped underground by ... (called caprock), and stays there until it is extracted.

3. Conventional natural gas can be extracted through

4. Natural gas can be categorized as ... or

5. Once extracted natural gas is sent through small ... called gathering lines to processing plants.

6. In some cases, gas is further liquefied for shipping in large tankers across oceans; this type of gas is called

7. Natural gas is mostly used for domestic or industrial heating and to generate

8. Natural gas development has increased as a result of technological advances in horizontal drilling and

IX. Соедините начало предложения с его продолжением:

Gaplarning boshini davomi bilan moslang:

- | | |
|---|--|
| 1. Natural gas is primarily methane | a) in underground rocks called reservoirs. |
| 2. Natural gas is found | b) and used to fuel vehicles. |
| 3. Processing involves four main steps | c) a source of greenhouse gases. |
| 4. Natural gas can be compressed | d) with smaller quantities of other hydrocarbons. |
| 5. Natural gas is still | e) to remove various impurities. |
| 6. Natural gas leaks are dangerous | f) and contribute to climate change. |
| 7. Natural gas can escape into the atmosphere | g) because it's highly toxic and highly explosive. |

X. В парах обсудите следующие вопросы:

Quyidagi savollarni juft bo'lib muhokama qiling:

1. What is natural gas?
2. How was natural gas formed?
3. What are two general types of natural gas?
4. In what way can conventional natural gas be extracted?
5. What unconventional forms of natural gas do you know?
6. What do you know about natural gas processing?
7. Where is natural gas used?
8. How can natural gas influence climate changes?

XI. Работая в парах, дополните диалог:

Juft bo'lib diogni to'ldiring:

A: Have you read this article? What does it deal with?

B: So, this article is about natural gas.

A: Oh, it seems to be very interesting. As far as I know natural gas is

B: Yes, you are quite right. And do you know that it formed millions of years ago when

A: Really? And where is natural gas found.

B: Well, it's found in

A: Do you happen to know how natural gas is processed?

B: As far as I know it is sent through Processing involves four main steps to remove impurities.

A: I see. And I've heard that natural gas is dangerous.

B: Yes, it's highly

A: Moreover it influences

XII. Посмотрите видеофрагмент еще раз. Письменно составьте аннотацию. В случае затруднений используйте приведенный ниже текст:

Video fragmentni qayta ko'ring. Yozma annotasiyasini tuzing. Qiyinchilik bo'lsa, quyidagi matndan foydalaning:

Natural gas is primarily methane (CH₄) with smaller quantities of other hydrocarbons. It was formed millions of years ago when dead organisms sunk to the bottom of the ocean and were buried under deposits of sedimentary rock. Subject to intense heat and pressure, these organisms underwent a transformation in which they were converted to gas over millions of years.

Natural gas is found in underground rocks called reservoirs. The rocks have tiny spaces (called pores) that allow them to hold water, natural gas and sometimes oil. The natural gas is trapped underground by impermeable rock (called caprock), and stays there until it is extracted.

Natural gas can be categorized as dry or wet. Dry gas is essentially gas that contains mostly methane. Wet gas on the other hand contains compounds such as ethane and butane, in addition to methane. These natural gas liquids (NGLs for short) can be separated and sold individually for various uses, such as refrigerants and to produce petrochemical products, like plastics.

Conventional natural gas can be extracted through drilling wells. Unconventional forms of natural gas like shale gas, tight gas, sour gas, coalbed methane have specific extraction techniques. Natural gas can

also be found in reservoirs with oil and is sometimes extracted alongside oil; this type of natural gas is called associated gas. In the past, this gas was commonly flared or burned as a waste product but in most places today is captured and used.

Once extracted natural gas is sent through small pipelines called gathering lines to processing plants, which separate the various hydrocarbons and fluids from the pure natural gas, to produce what is known as pipeline quality dry natural gas before it can be transported. Processing involves four main steps to remove the various impurities:

- Oil and Condensate Removal;
- Water Removal;
- Separation of Natural Gas Liquids;
- Sulfur and Carbon Dioxide Removal.

Gas is then transported through pipelines called feeders to distribution centers or stored in underground reservoirs for later use. In some cases, gas is further liquefied for shipping in large tankers across oceans; this type of gas is called Liquefied Natural Gas (LNG).

Natural gas is mostly used for domestic or industrial heating and to generate electricity. It can also be compressed and used to fuel vehicles, and as a feedstock for fertilizers, hydrogen fuel cells and other chemical processes.

Natural gas development (especially in the United States) has increased as a result of technological advances in horizontal drilling and hydraulic fracturing. When natural gas is burned, there are fewer greenhouse gas emissions and air pollutants when compared to other fossil fuels. In fact, when used to produce electricity, natural gas emits approximately half the carbon emissions of coal.

Despite fewer emissions, natural gas is still a source of CO₂. In addition, methane is a potent greenhouse gas itself, having nearly thirty-four times the impact of CO₂. During the extraction and transportation process natural gas can escape into the atmosphere and contribute to climate change. Natural gas leaks are also dangerous to nearby communities because it is colorless, odorless, highly toxic and highly explosive gas.

- 9) mercury
- 10) bituminous

- i) dioxide
- j) dioxide

**IV. Переведите следующие словосочетания на русский язык:
Quyidagi so'z birikmalarini o'zbek tiliga tarjima qiling:**

a combustible dark-colored rock, strip mines, swampy water, coal scenes, coal-fired power plant sites, coal energy generation, to spin turbines, carbonization, shafts and tunnels, to remove impurities

**V. Соотнесите слова и словосочетания с их определениями:
So'z va so'z birikmalarini ularga berilgan to'g'ri ta'rif bilan bog'lang:**

- | | |
|---------------------------|---|
| 1) lignite | a) coming after something in time; following |
| 2) anthracite | b) a soft brownish coal showing traces of plant structure, intermediate between bituminous coal and peat |
| 3) sediment | c) coal of a hard variety that contains relatively pure carbon and burns with little flame and smoke |
| 4) peat | d) matter that settles to the bottom of a liquid |
| 5) to ignite | e) catch fire or cause to catch fire |
| 6) to become contaminated | f) is any significant accumulation of water on the surface of Earth or another planet |
| 7) subsequent | g) a brown deposit resembling soil, formed by the partial decomposition of vegetable matter in the wet acidic conditions of bogs and fens, and often cut out and dried for use as fuel and in gardening |
| 8) bodies of water | h) having been made impure by exposure to or addition of a poisonous or polluting substance |

VI. Просмотрите видеофрагмент, используя ссылку <https://www.youtube.com/watch?v=J0GY4FpRx7g>, и дайте ответы на следующие вопросы:

Quyidagi havola orqali Video lavhani tomosha qiling <https://www.youtube.com/watch?v=J0GY4FpRx7g> va quyidagi savol-larga javob bering:

1. What is coal?
2. What purposes is coal used for?
3. Is coal a renewable natural resource?
4. What are the four main types of coal?
5. How is coal mined? Who does this?
6. Can coal mining and the subsequent burning of coal have many negative effects on both humans and the environment?

VII. Дополните предложения предложенными словами и словосочетаниями:

Nuqta joylarini mos so'zlar va iboralar bilan to'ldiring:

fossil fuel, remains, combustible dark-colored rock, energy, turbines and generators, complex hydrocarbon compounds, shafts and tunnels, coal scenes, to remove impurities, power plants, subsequent, effects, energy resource, impact

1. Coal is a ... that formed from the ... of plants that died millions of years ago.
2. Coal is a ... that can be ignited and burned to produce
3. In coal burning power plants steam from boiling water spins ... to create electricity.
4. The continued burial and combination of heat time and pressure caused the ... in the peat to break down and change.
5. One way we get coal from the earth is underground mining where ... are dug down to
6. The coal is often washed at the mine ... before it is transported to the ... and other places that use it.
7. Coal mining and the ... burning of coal can have many negative ... on both humans and the environment.

8. Coal is an important ... and new technologies are being created to protect human health and the environmental ... of coal energy generation.

VIII. Работайте в парах. Задайте собеседнику вопросы, чтобы получить информацию, необходимую для заполнения пробелов в предложениях:

Juft bo'lib ishlang. Suhbatdoshingizga savollar berib, olingan ma'lumotlar asosida gaplardagi bo'sh joylarni to'ldiring:

Student A:

1. Coal was formed from ... that fell into swampy water.
2. Coal is classified into ... main types depending on the amount and types of carbon it contains and the amount peat of heat energy it can produce.
3. Bituminous coal contains 45 to 86 percent carbon and was formed under

Student B:

1. Coal was formed from dead plant matter that fell into
2. Coal is classified into four main types depending on ... it contains and the amount peat of heat energy it can produce.
3. ... contains 45 to 86 percent carbon and was formed under high heat and pressure.

IX. Работая в парах, дополните диалог:

Juft bo'lib ishlang va diologni to'ldiring:

A: Do you find this video interesting and useful?

B: Yes, I do. By the way, I was interested in the question of coal a few days ago.

A: Really? Why?

B: My father is closely connected with this mineral that is why it would be great to learn more about coal.

A: And what essential things have you found out?

B: Hmm, according to the video, now I know that

A: Nice! I got it.

B: What pros and cons of coal would you name?

A: If my memory serves me right, on the one hand ..., but on the other hand

B: Exactly! Moreover, there was some information about Can you describe the process of coal mining?

A: It's quite simple: firstly you need to ..., then One way we get coal from the earth is

X. Посмотрите видеофрагмент еще раз. Письменно составьте краткий рассказ о происхождении и видах угля. В случае затруднений используйте информацию из текста:

Video lavhani yana bir bor tomosha qiling. Ko'mirning kelib chiqishi va uning turlari haqida qisqacha hikoya tuzing. Qiyinchilik bo'lsa, matndagi ma'lumotlardan foydalaning:

In this program we're going to learn about coal. What is coal? Coal is a fossil fuel that formed from the remains of plants that died millions of years ago. It is a non-renewable resource. Coal is a combustible dark-colored rock that can be ignited and burned to produce energy. 41 % of all electricity is produced by coal. It is the world's largest source of energy used for the production of electricity. In coal burning power plants steam from boiling water spins turbines and generators to create electricity.

Coal was formed from dead plant matter that fell into swampy water. It formed a thick layer of decomposing plant material called peat. To become coal, the peat must be buried by sediment. The continued burial and combination of heat time and pressure caused the complex hydrocarbon compounds in the peat to break down and change. Coal goes through different phases of carbonization over millions of years and can be found at all stages of development in different parts of the world. Coal is classified into four main types depending on the amount and types of carbon it contains and the amount of heat energy it can produce.

Lignite is the lower rank of coal with the lowest energy content. Then sub-bituminous coal that contains 35 to 45 percent carbon. Bituminous coal contains 45 to 86 percent carbon and was formed under high heat and pressure. Then anthracite: anthracite contains 86 to 97 percent carbon and has a heating value slightly higher than bituminous coal. One

way we get coal from the earth is underground mining where shafts and tunnels are dug down to coal scenes. Miners are then transported down the shafts to run machines that dig out the coal.

Once the coal is dug out, conveyors bring the coal to the surface. Some coal is dug out from surface mines also called strip mines. These are large holes and can be up to hundreds of meters deep in order to get the coal. Once the dirt is removed equipment is used to remove the coal. The coal is often washed at the mine to remove impurities before it is transported to the power plants and other places that use it. Coal mining and the subsequent burning of coal can have many negative effects on both humans and the environment.

The burning of coal emits carbon dioxide, sulfur dioxide, nitrogen dioxide and mercury compounds that pollute the air. The mining and burning of coal typically requires the use of water. Pollutants build up in the water used contaminating bodies of water. Land resources are affected by coal mining and processing too. We've seen that surface mining disturbs large areas of land while the soil at coal-fired power plant sites can also become contaminated with various pollutants from the coal. Coal is an important energy resource and new technologies are being created to protect human health and the environmental impact of coal energy generation.

Coal: Benefits and Concerns

- I. **Просмотрев видеофрагмент (https://youtu.be/iN6LvH_4Q3g), дополните утверждения новой информацией:
Video lavhani (https://youtu.be/iN6LvH_4Q3g) tomosha qilganingizdan so'ng, gaplarni yangi ma'lumotlar bilan to'ldiring:
 1. Coal is a rock made primarily of carbon.
 2. Coal is classified based on carbon and heat content.
 3. Coal is extracted from the earth through underground mining.
 4. Coal can be burned for heating.
 5. Coal is highly abundant.**

II. После повторного просмотра письменно ответьте на следующие вопросы:

Videoni takroran tomosha qilganingizdan so'ng, quyidagi savollarga yozma javob bering:

1. What is coal?
2. When did coal formation begin?
3. How was coal formed?
4. What types of coal do you know?
5. What is coal used for?
6. What are the major concerns with coal?

III. Заполните пропуски в тексте словами и словосочетаниями, соответствующими содержанию видеофрагмента:

Matndagi bo'shliqlarni video lavhaning mazmuniga mos keladigan so'z va so'z birikmalari bilan to'ldiring:

*carbon and heat content, underground mining, raw material,
pollution problems, energy resource, combustible rock,
has powered, heating*

Coal is a black or dark brown ... made primarily of carbon.

It was formed millions of years ago and is classified into four main types based on Coal is extracted from the earth through ... or surface mining. It can be burned for ... or to produce electricity. High quality coal is a useful Coal is a highly abundant and cheap It ... the industrialization of many nations over history and continues to today. Coal is composed largely of carbon but it also contains other elements that cause ... including sulfur, nitrogen, mercury and heavy metals.

IV. Выберите предложения, не соответствующие содержанию видеофрагмента:

Video lavhaning mazmuniga mos keladigan gaplarni tanlang:

1. Coal was formed millions of years ago when ferns, plants and trees died and fell into swamps.
2. Coal is classified into three main types or ranks based on nitrogen and heat content.

3. The choice of mining method is largely determined by the geology of the coal deposit and its distance from the surface.

4. Surface mining currently accounts for a larger share of world coal production than underground mining.

5. The hot gases and heat energy produced from combustion converts water into steam to run a turbine and generator.

6. Coal is a big player in today's energy system providing 40 % of the world's electricity.

7. Nitrogen is a leading cause of acid rain and NO_x emissions contribute to smog.

8. Particulates from coal combustion can be harmful to human health.

V. Дополните следующие предложения, выбирая подходящий по смыслу вариант:

Quyidagi gaplarni mazmunan mos keladigan so'zlarni tanlab to'ldiring:

1. Coal is a black or dark brown combustible rock made primarily of *nitrogen / sulfur / carbon*.

2. It was formed millions of years ago when ferns, plants and trees died and fell into *holes / swamps / pits*.

3. The hot gases and heat energy produced from combustion converts water into steam to run a *car / train / turbine and generator*.

4. High quality coal is also a useful raw material for example, it can be converted to coke for *steelmaking / heating houses / refueling cars*.

5. Coal is a highly abundant and *expensive / cheap / hard to get* energy resource.

VI. Прочитайте текст, составленный на основе информации из видеофрагмента. Найдите информацию, относящуюся к следующим пунктам:

Video lavha asosida tuzilgan matnni o'qing. Quyidagi punktlarga mos keluvchi ma'lumotlarni toping:

- Coal formation
- Different types of coal
- Coal extraction
- The use of coal
- Ecological impacts of coal

Coal is a black or dark brown combustible rock made primarily of carbon. It was formed millions of years ago when ferns, plants and trees died and fell into swamps. The swamp conditions prevented the organisms from decaying completely and after millions of years of intense heat and pressure coal was formed.

Coal is classified into four main types or ranks based on carbon and heat content: lignite, sub-bituminous, bituminous, anthracite. The general rule is that the higher the grade of coal the cleaner it burns and the more versatile its uses.

Coal is extracted from the earth through underground mining or surface mining. The choice of mining method is largely determined by the geology of the coal deposit and its distance from the surface. Underground mining currently accounts for a larger share of world coal production than surface mining.

Coal can be burned for heating or to produce electricity to convert thermal coal to electricity. It is first milled to a fine powder which increases the surface area and allows it to burn more quickly. The hot gases and heat energy produced from combustion converts water into steam to run a turbine and generator.

High quality coal is also a useful raw material for example it can be converted to coke for steelmaking. Coal can also be converted to liquid or synthetic gas by advanced chemical processes making it a possible but costly replacement for natural gas or liquid fuels for transportation.

Coal is a highly abundant and cheap energy resource. Coal has powered the industrialization of many nations over history and continues to today. It is a big player in today's energy system providing 40 % of the world's electricity.

One major concern with coal is the mining practices used to extract the resource. Ecological impacts and human safety issues both for workers and neighboring communities are growing concerns for the industry. Coal is the most CO₂ intensive fossil fuel when combusted because it is composed largely of carbon. Coal also contains other elements that cause pollution problems including sulfur, nitrogen, mercury and heavy metals. SO_x is a leading cause of acid rain and NO_x emissions contribute to smog. In addition, particulates from coal combustion can be harmful to human health. Concerns about climate change from greenhouse gas emissions have put a spotlight on coal plants and have prompted the development of clean coal technologies like carbon capture and storage.

VII. Письменно составьте 6 разных типов вопросов к содержанию текста.

Matn mazmuniga mos 6 xil turdagi so'roq gaplar tuzing.

VIII. Задайте вопросы, ответами на которые являются следующие утверждения:

Quyidagi gaplarga javob beradigan savollar tuzing:

1. Coal is a black or dark brown combustible rock made primarily of carbon.

2. Coal is extracted from the earth through underground mining or surface mining.

3. It was formed millions of years ago.

4. Yes, it is. Coal is the most CO₂ intensive fossil fuel when combusted because it is composed largely of carbon.

5. The choice of mining method is largely determined by the geology of the coal deposit and its distance from the surface.

IX. Составьте из букв слова:

Quyidagi harflardan so'zlar hosil qiling:

mgiiing, fsaceru, epodsti, calo, roe, rcaonb, urbn, spawnm, ckor

X. Исправьте ошибки в написании слов:

So'zlarning yozilishidagi xatoliklarni tuzating:

diposit, resourse, karbon, compasition, combustable, pollution, lickuid, tubine, presure, lignit

XI. Вставьте пропущенные буквы:

Tushurib qoldirilgan harflarni qo'ying:

extr__ction, e__uipment, s__bstance, techni__ue, __mission, ste__m, bit__minous, ant__racite, conve__t, ab__ndant, che__p, s__lfur, nitr__gen, mer__ury

XII. Составьте подробный план текста.

Matnga reja tuzing.

XIII. Письменно подготовьте аннотацию текста (6 предложений).

Matnga yozma annotasiya tayyorlang (6 ta jumla).

**ДОПОЛНИТЕЛЬНЫЕ ТЕКСТЫ ДЛЯ ЧТЕНИЯ
И ПЕРЕВОДА
O'QISH VA TARJIMA QILISH UCHUN QO'SHIMCHA
MATNLAR**

Types of Heavy Equipment Used in Mining

Large mining trucks are used to move materials around a mine site. These mining vehicles have extra-large tires to support the heavy loads over uneven terrain commonly found around surface mines. Additionally, these trucks can carry high payload capacities to accommodate the need for moving weighty mined minerals or ore out of the site.

Applications for hydraulic mining shovels, sometimes called excavators, include: moving earth or mined materials; digging; scooping material into a loader; removing rock or dirt, also known as overburden, from surface mines to open the site and transporting some mined materials.

Large mining dozers move materials easily around a mining site. Additional attachments can change the dozers' uses to include the following applications: building mine sites by pushing the surface material away to expose the ground beneath; maintaining a mine site by pushing dirt away from working areas; reclaiming the land around mining sites and ripping plant matter out of the ground; raking the land around a mine site.

Rotary drill rigs create holes through rock or soil, allowing placement of charges for blasting open mines. For a rotary drill rig, the drill bit turns under pressure to cut into the rock. As the bit turns, the rock grinds down while compressed air sends it back up the drill to the top to keep the hole and bit clean. Rotary and rock drills have the following uses: creating holes for blasting charges for surface mining; production drilling to make wells; presplit rock drilling and expanding mines.

Mines rarely have ready access to roads. Even those near major roadways still need roads built within the area for moving material and hauling mined goods out. **Motor graders** are used for surface operations around mines to create and maintain these roads. Common uses for grad-

ers include: pushing surface material to clear roads; creating proper grades to allow water to drain away from roads; constructing haul roads.

Large wheel loaders can take on many tasks, such as: loading materials onto trucks for transport; digging; supporting jobs of other loading and transport vehicles on-site.

Draglines are large excavators with a bucket supported by ropes and wires at the end of a boom. Surface mining heavily uses draglines. These excavators have numerous functions, including: moving tons of overburden to prepare a surface mine; removing exposed material, such as tar sand, from a strip mine; reducing emissions compared to other overburden removal methods and cutting into high wall surfaces and removing material.

Wheel tractor scrapers have a design similar to motor graders. However, the scrapers typically have an attached bin that collects the material removed from the ground's surface rather than pushing it to the side as a grader does.

What is the Environmental Impact of the Mining Industry?

Mines are known to cause severe environmental problems. Mining is the extraction of minerals and other geological materials of economic value from deposits on the Earth. Mining adversely affects the environment by inducing loss of biodiversity, soil erosion, and contamination of surface water, groundwater, and soil. Mining can also trigger the formation of sinkholes. The leakage of chemicals from mining sites can also have detrimental effects on the health of the population living at or around the mining site. Mining activities can harm the environment in several ways. These are as follows: air pollution, water pollution, damage to land, loss of biodiversity.

Air quality is adversely affected by mining operations. Unrefined materials are released when mineral deposits are exposed on the surface through mining. Wind erosion and nearby vehicular traffic cause such materials to become airborne. Lead, arsenic, cadmium, and other toxic elements are often present in such particles. These pollutants can damage the health of people living near the mining site. Diseases of the respiratory system and allergies can be triggered by the inhalation of such airborne particles.

Mining also causes water pollution which includes metal contamination, increased sediment levels in streams, and acid mine drainage. Pollutants released from processing plants, tailing ponds, underground mines, waste-disposal areas, active or abandoned surface or haulage roads, etc., act as the top sources of water pollution. Sediments released through soil erosion cause siltation or the smothering of stream beds. It adversely impacts irrigation, swimming, fishing, domestic water supply, and other activities dependent on such water bodies. High concentrations of toxic chemicals in water bodies pose a survival threat to aquatic flora and fauna and terrestrial species dependent on them for food. The acidic water released from metal mines or coal mines also drains into surface water or seeps below ground to acidify groundwater. The loss of normal pH of water can have disastrous effects on life sustained by such water.

The creation of landscape blots like open pits and piles of waste rocks due to mining operations can lead to the physical destruction of the land at the mining site. Such disruptions can contribute to the deterioration of the area's flora and fauna. There is also a huge possibility that many of the surface features that were present before mining activities cannot be replaced after the process has ended. The removal of soil layers and deep underground digging can destabilize the ground which threatens the future of roads and buildings in the area.

Often, the worst effects of mining activities are observed after the mining process has ceased. The destruction or drastic modification of the pre-mined landscape can have a catastrophic impact on the biodiversity of that area. Mining leads to a massive habitat loss for a diversity of flora and fauna ranging from soil microorganisms to large mammals. Endemic species are most severely affected since even the slightest disruptions in their habitat can result in extinction or put them at high risk of being wiped out. Toxins released through mining can wipe out entire populations of sensitive species.

A landscape affected by mining can take a long time to heal. Sometimes it never recovers. Remediation efforts do not always ensure that the biodiversity of the area is restored. Species might be lost permanently.

Environmental Damages Caused by Mining

Open pit mining, where material is excavated from an open pit, is one of the most common forms of mining for strategic minerals. This type of

mining is particularly damaging to the environment because strategic minerals are often only available in small concentrations, which increases the amount of ore needed to be mined.

Environmental hazards are present during every step of the open-pit mining process. Hardrock mining exposes rock that has lain unexposed for geological eras. When crushed, these rocks expose radioactive elements, asbestos-like minerals, and metallic dust. During separation, residual rock slurries, which are mixtures of pulverized rock and liquid, are produced as tailings, toxic and radioactive elements from these liquids can leak into bedrock if not properly contained.

Underground mining involves large-scale movements of waste rock and vegetation, similar to open pit mining. Additionally, like most traditional forms of mining, underground mining can release toxic compounds into the air and water. As water takes on harmful concentrations of minerals and heavy metals, it becomes a contaminant. This contaminated water can pollute the region surrounding the mine and beyond. Mercury is commonly used in as an amalgamating agent to facilitate the recovery of some precious ores. Mercury tailings then become a major source of concern, and improper disposal can lead to contamination of the atmosphere and neighboring bodies of water. Most underground mining operations increase sedimentation in nearby rivers through their use of hydraulic pumps and suction dredges; blasting with hydraulic pumps removes ecologically valuable topsoil containing seed banks, making it difficult for vegetation to recover. Deforestation due to mining leads to the disintegration of biomes and contributes to the effects of erosion.

In situ leach (ISL) mining has environmental and safety advantages over conventional mining in that the ore body is dissolved and then pumped out, leaving minimal surface disturbance and no tailings or waste rock. There is no ore dust or direct ore exposure to the environment and a lower consumption of water is needed in the mining process. However, the strong acids used to dissolve the ore body commonly dissolve metals in the host rock as well. The fluids remaining after the leaching process commonly contain elevated concentrations of metals and radioactive isotopes, posing a significant risk to nearby ground and surface water sources. Additionally, the low pH of ISL mining wastewater can result in acidification of the surrounding environment.

Environmental issues with heap leaching are centered on the failure to keep process solutions within the heap leaching circuit. Release of

toxic heap leaching fluids into the environment can affect the health of both the surrounding ecosystem and human population. Water balance is crucial in heap leaching projects because of the possibility of the overflow of solutions containing toxic concentrations of heavy metals after a heavy rainfall or rapid snowmelt. In some cases cyanide is used to extract metals from oxidized ores and the resulting leach ponds have caused significant wildlife mortality, including the deaths of about 7,613 animals between 1980 and 1989 at cyanide-extraction ponds in California, Nevada, and Arizona.

Brine mining involves extracting and evaporating the brine solutions to remove harmful elements and compounds, potentially releasing them into the environment. The drilling and transport of brine solutions can disrupt existing ecosystems and well casings, pipelines, and storage tanks are subject to corrosion due to the high salinity content of the solutions that they are exposed to, which can lead to leaks and contamination of adjacent bodies of water. Currently, there is no economically plausible plan to clean up contamination of an aquifer by sodium chloride and harmful concentrations of chloride inhibit plant growth and can cause fish kills.

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