**Unit 1 Earth’s Major Resources (Mineral Resources,**

**Water Resources, Energy Resources)**

***Text 1.1 Rocks. Identification of Rocks***

*Ex. 1. Study the vocabulary.*

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| ***alluvial fan*** – аллювиальный веерообразный конус выноса, конус из осыпавшихся пород у основания склона  ***angular*** - неокатанный, угловатый, угловой  ***breccias*** - брекчия  ***brittle*** - ломкий, хрупкий  ***to bury*** - закапывать, хоронить, зарывать(ся) в землю, погрузить(ся)  ***cap-rock*** - порода-покрышка  ***chert*** - роговик  ***clay*** - глина  ***coal*** - уголь  ***composition*** - состав  ***content*** - содержание, содержимое, состав  ***curved surface*** - криволинейная поверхность  ***to deposit*** - отложиться, отлагаться, осаждаться, выделяться  ***desert*** - пустыня  ***to distinguish*** - различать, отличать  ***to drill*** - бурить, пробурить  ***edge*** - край, грань, кромка, граница, острие  ***flint*** - кремень, халцедоновая разновидность кварца  ***floodplain*** - пойма реки, пойменная долина  ***foliated rock*** - слоистая порода  ***fossil shells*** - ископаемые раковины | ***glassy*** - зеркальный, гладкий, глянцевитый, хрупкий, прозрачный  ***grain*** - зерно, песчинка  ***heat*** - жара  ***layer*** - слой  ***limestone*** - известняк  ***mountain stream*** - горная река, горный поток  ***mud*** - грязь, мелкая порода, ил  ***mudstone*** - глинистый сланец, аргиллит, иловый известняк  ***particle*** - частица  ***pebble*** - галька  ***petroleum trap*** – нефтяная ловушка  ***plant remains*** – остатки растений  ***platy*** - плоский, с крупносланцеватой или пластинчатой структурой  ***precipitation*** - осадки, выпадение, выделение, увеличение  ***pressure*** - давление  ***reservoir rock*** – порода-коллектор  ***shale*** - сланец  ***silt*** - ил, осадок, наносы, грязь  ***size*** - размер  ***source rock*** – материнская порода  ***subsurface*** - нижний горизонт, подземный пласт, подпочва  ***texture*** - строение, структура  ***well-rounded*** - хорошо окатанный  ***with the naked eye*** - невооруженным глазом |

*Ex. 2. Read and translate the text.*

Rock is one of the solid materials of which the earth’s crust is mainly composed.

Rocks are classified and identified by their textures and mineral compositions. Igneous rock textures are based on the size of the mineral crystals. The grain sizes range from large enough to see with the naked eye to glassy with no crystals. Metamorphic rock textures are based on the size and orientation of the mineral crystals. A foliated metamorphic rock has parallel, platy crystals. Nonfoliated metamorphic rock has either uniform-sized crystals or a non-parallel orientation of platy crystals. Sedimentary rock textures are based on the nature, size, and shape of the grains and how they are bound together.

Sedimentary rocks.

Conglomerate is a clastic rock with a wide range of pebble- to claysize grains. The course grains distinguish it from other clastic sedimentary rocks. The particles are all well-rounded. A conglomerate is commonly deposited in a river channel or on an alluvial fan formed where a mountain stream empties into desert. If the particles are angular, the rock is called breccias.

Sandstone is composed primarily of sand grains that have been naturally cemented together. The sand grains can be broken off if the rock is loosely cemented. Sandstone is rough to touch. The rock can be white to buff to dark in colour.

Sandstones are commonly deposited on beaches, river channels, or dunes. It is a common reservoir rock for gas and oil and is the most important reservoir rock in North America.

Shale is composed of clay-sized particles and is the most common sedimentary rock. It is usually well-layered and relatively soft. Shale breaks down into mud when exposed to water. The colour of shale ranges from green and grey to black, depending on the organic content. The darker the shale, the higher the organic content. Shale is commonly deposited on river floodplains and on the bottom of oceans, lakes, or lagoons. Black shales are common source rocks for gas and oil.

A grey shale can be a cap-rock on a reservoir rock in a petroleum trap. Mudstone is similar to shale but is composed of both silt- and clay-sized grains.

Coal is brown to black in colour and very brittle. It has few, if any layers. Coal is composed of plant remains that were buried in the subsurface and transformed by heat and time. Lignite, bituminous, and anthracite and varieties of coal formed by increasing heat that causes the coal to become harder and change in texture and composition.

Chert or flint is amorphous quartz. It is very hard and cannot be scratched by a knife. Being amorphous (without crystals), chert breaks along smooth, curved surfaces, forming sharp edges and points. American Indians used chert to make arrowheads. Coloured varieties of chert include jasper, chalcedony, and agate. Chert can be formed by precipitation directly out of ground water or by recrystallization of fossil shells composed of SiO2 by heat and pressure. Chert is the hardest of all sedimentary rock to drill.

Ninety-nine percent of the sedimentary rocks that make up the earth’s crust are shales, sandstones, and limestones. Many sedimentary rocks are a combination of these three types. Sedimentary rock mixtures are described as sandy, shaly, and limey or calcareous.

*Ex. 3. Answer the following questions on the text.*

1. What are the tree main types of rocks according to their origin?

2. What are the most widespread sedimentary rocks?

3. What is the colour of sandstones?

4. Where is shale deposited?

5. What is the composition of coal?

6. What are the main characteristics of flint?

***Text 1.2 Water Resources. Ground Water***

*Ex. 1. Study the vocabulary.*

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| ***absorb*** - поглощать  ***capillarity*** - капиллярная система  ***circulation*** - циркуляция, распространение, круговорот  ***to evaporate*** - испарять(ся)  ***to fall*** - падать, выпадать  ***ground water*** – грунтовые воды  ***to penetrate*** - проникать просачиваться | ***plant root*** - корень растения  ***pores*** - поры  ***rainfall*** - дождь, количество атмосферных осадков  ***to run off*** - стекать, сбегать  ***to sink*** - оседать, проходить, проникать, впитывать(ся)  ***soil*** - почва  ***stream*** - ручей, поток, струя |

*Ex. 2. Read and translate the text.*

Ground water is the water contained underground in the pores of soil and rock. When rain falls on the earth some evaporates, some is absorbed by plants, some runs off in streams and the remainder sinks into the earth to become ground water. The amount that sinks into the ground depends on various factors.

It is much to the point to inquire how much of the rainfall soaks into the ground, how much evaporates, how much is used by plant life, and how much runs off into the streams. It is certain that there is water in the ground in some places and there are good reasons to suppose that water may penetrate the rocks to a depth of a dozen miles.

The total amount of water varies greatly from place to place, and even from time to time in the same place.

Water which sinks into the earth moves not merely downward, but sideways and even back to the surface. Thus, there is a sort of circulation of underground water which is kept up fundamentally by gravity, and assisted by such agencies as capillarity and plant roots.

*Ex. 3. Answer the following questions on the text.*

1. What is ground water?

2. What happens to the rain water when it reaches the ground?

3. In what direction does water move when it sinks into the earth?

4. What agencies make the circulation of ground water possible?