###### EXERCISES

**5.4. According to the passage, which of the following statements are “true” or “false”? Insert “T” or “F” in the boxes at the right.**

1. Minerals are artificial substances with a characteristic crystal structure.

1. Hardness of a knife blade is about 5.

1. Sapphire and ruby have similar composition.

1. Glass is a mineral.

1. Conchoidal fracture is characteristic of quartz and olivine.

1. Lead has more specific gravity than the gold.

1. Scintillometer is used for detection of phosphorescence property in minerals.

1. Color is commonly more reliable than the streak of the mineral itself for identification.

**5.5. Choose a, b, c, or d which best completes each item.**

1. Geologists can distinguish any mineral from all others by chemical composition and ………………..
	1. specific gravity b) crystalline structure

c) physical properties d) color and streak

1. What is named the tendency of some minerals to break along flat surfaces?
	1. fracture b) cleavage

c) crystal shape d) hardness

1. A small quantity of iron or titanium turns corundum into the

………………..

* 1. Ruby b) glass

c) spinel d) sapphire

1. materials emit visible light when they are exposed

to ultraviolet light.

* 1. Silicate b) Radioactive

c) Fluorescent d) Conchoidal

1. The equivalent name for shiny luster is ………………..
	1. metallic b) dull

c) vitreous d) glassy

**5.6. Write the answers to the following questions in your own words.**

1. If you were given a crystal of diamond and another of quartz, how would you tell which is diamond?

………………………………………………………………………….

.…………………………………………………………………………

…………………………………………………………………….……

…………………………………………………………………….……

……………………………………………………………………….…

……………………………………………………………………….…

……………………………………………………………………….…

1. List and explain the physical properties of minerals most useful for identification.

………………………………………………………………………….

.…………………………………………………………………………

…………………………………………………………………….……

…………………………………………………………………….……

……………………………………………………………………….…

……………………………………………………………………….…

……………………………………………………………………….…

1. Why do some minerals have cleavage and others do not?

………………………………………………………………………….

.…………………………………………………………………………

…………………………………………………………………….……

…………………………………………………………………….……

……………………………………………………………………….…

……………………………………………………………………….…

……………………………………………………………………….…

1. Why is color often an unreliable property for mineral identification?

………………………………………………………………………….

.…………………………………………………………………………

…………………………………………………………………….……

…………………………………………………………………….……

……………………………………………………………………….…

……………………………………………………………………….…

……………………………………………………………………….…

**5.7. Note the following technical words and their definitions**

|  |  |
| --- | --- |
| **Technical words** | **Definitions** |
| Mineral (noun) | natural substance belonging to a group ofinorganic (often crystalline) compounds which are found in the earth |
| Mineralogy (noun) | branch of science dealing with minerals and classification of minerals |

|  |  |
| --- | --- |
| Mineralization (noun) | transformation into mineral form |
| Mineralogic (adjective) | pertaining to mineralogy |
| Mineralogical (adjective) | of the study of minerals, of mineralogy |
| Minralogically (adverb) | according to the study of minerals |
| Mineralize (verb) | transform into mineral form |
| Mineralogist (noun) | A geologist whose field of study is mineralogy |

**Now, fill in the blanks with the appropriate words.**

1. ........................., saline ground waters have been pumped to the surface during earthquakes.
2. It is clear that the of igneous rocks have crystallized

out of a melt.

1. Chemical sediments are subdivided into several groups by

......................... composition.

1. Two parameters are used to name and classify sandstones: chemical

......................... and physical texture.

1. Granites composed of quartz and feldspar.
2. ........................., pure chalks are composed of low magnesium calcite.
3. Manganese occur in oceans.
4. The maturity of sandstones is commonly expressed

by the quartz/feldspar ratio.

1. When igneous rocks undergo deep burial, and

textural changes occur as they metamorphose.

1. To the ........................., ‘clay’ is the term describing a

......................... family characterized by its crystal structure.

**5.8. Fill in the blanks with the following words**

“cleavage”, “crystal form”, “colorless”, “hardness”, “glass”, “grains”, “luster” and “pyramid”.

##### The Silicate “Quartz”

Its chemical formula is SiO2. Quartz has a vitreous ……….**1** ,

a ……….**2**………. of 7, and when pure, is completely clear and

……….**3**………. It looks like frozen water. It lacks ……….**4** ,

but it commonly fractures conchoidally. Should quartz grow free from interferences it crystallizes customarily in a six-sided ……….**5** ,

which is terminated by a sharp-pointed pyramid at each end. If quartz grows into cavities, as it commonly grows, it will possess only one

……….**6**………. on the end of crystal that extends into the opening. Crystal that grows into openings may sometimes reach length of 0.3 m or more. Usually quartz occurs in association with other minerals as tiny ……….**7**………. two to three millimeters across that generally lack crystal faces. Where fresh and unweathered the disseminated grains often sparkle like tiny fragments of ……….**8**……….

.................................................................................................................

.................................................................................................................

.................................................................................................................

.................................................................................................................

.................................................................................................................

.................................................................................................................

.................................................................................................................

.................................................................................................................

.................................................................................................................

.................................................................................................................

.................................................................................................................

.................................................................................................................

................................................................................................

**5.9. The most common minerals can be identified by** “luster”, “hardness”, “cleavage and fracture”, “color and streak”, “transparency”, “magnetism”, “specific gravity or density” and “crystal form”. **Match the definitions or description to the properties.**

1. is the property of breaking easily at random lines.
2. is the measure of the ease with which the surface of

a mineral can be scratched.

1. ......................... is the characteristic of a mineral that tells how the mineral reflects light, i.e. how shiny it is.
2. ......................... is the characteristic that tells you if you can see through it.
3. can be seen; i.e. it is visual perception.
4. is the shape in which the individual crystals grow.
5. is the splitting of minerals along planes.
6. the color of a mineral under the top layer or coating

of the mineral.

1. ......................... is the property of a mineral which depends on the atomic weight.
2. ......................... if a mineral has this property, it contains a high quantity of iron.