MINERALS REVIEW

1. Quartz mineral samples are best identified by their
   (1) hardness  (3) size
   (2) color     (4) mass

2. The diagrams below represent samples of five different minerals found in the rocks of the Earth’s crust.

   Which physical property of minerals is represented by the flat surfaces in the diagrams?
   (1) magnetism  (2) hardness  (3) cleavage  (4) crystal size

3. Scratching a mineral against a glass plate is a method used for determining the mineral’s
   (1) hardness  (2) color  (3) luster  (4) cleavage

4. Minerals are identified on the basis of
   (1) the method by which they were formed  (2) the size of their crystals
   (3) the type of rock in which they are found  (4) their physical and chemical properties

5. Which property is most useful in distinguishing pyroxene from amphibole?
   (1) sample size  (2) hardness
   (3) type of luster  (4) angles of cleavage

6. Which mineral has a metallic luster, a black streak, and is an ore of iron?
   (an ore is a mineral mined for an element of economic value)
   (1) galena  (2) magnetite
   (3) pyroxene  (4) graphite

7. The table below shows some properties of four different minerals.

<table>
<thead>
<tr>
<th>Mineral Variety</th>
<th>Color</th>
<th>Hardness</th>
<th>Luster</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>flint</td>
<td>black</td>
<td>7</td>
<td>nonmetallic</td>
<td>SiO₂</td>
</tr>
<tr>
<td>chart</td>
<td>gray, brown, or yellow</td>
<td>7</td>
<td>nonmetallic</td>
<td>SiO₂</td>
</tr>
<tr>
<td>jasper</td>
<td>red</td>
<td>7</td>
<td>nonmetallic</td>
<td>SiO₂</td>
</tr>
<tr>
<td>chalcedony</td>
<td>white or light color</td>
<td>7</td>
<td>nonmetallic</td>
<td>SiO₂</td>
</tr>
</tbody>
</table>

The minerals listed in the table are varieties of which mineral?
   (1) garnet         (2) magnetite
   (3) quartz         (4) olivine
8. The diagram below shows the index minerals of Mohs hardness scale compared with the hardness of some common objects.

Which statement is best supported by the diagram?
(1) A fingernail will scratch calcite but not gypsum.
(2) Calcite will be scratched by a copper penny.
(3) The mineral apatite will scratch topaz.
(4) A steel file has a hardness of about 7.5.

9. The data table below shows the density of four different mineral samples.

A student accurately measured the mass of a sample of one of the four minerals to be 294.4 grams and its volume to be 73.6 cm$^3$.

Which mineral sample did the student measure?
(1) corundum
(2) galena
(3) hematite
(4) quartz

10. The mineral wollastonite has a hardness of 4.5 to 5. Which New York State mineral could easily scratch wollastonite?
(1) garnet
(2) halite
(3) talc
(4) gypsum

11. A student created the table below by classifying six minerals into two groups, A and B, based on a single property.

Which property was used to classify these minerals?
(1) color
(2) luster
(3) chemical composition
(4) hardness

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>olivine</td>
<td>pyrite</td>
</tr>
<tr>
<td>garnet</td>
<td>galena</td>
</tr>
<tr>
<td>calcite</td>
<td>graphite</td>
</tr>
</tbody>
</table>

12. Which two minerals have cleavage planes at right angles?
(1) biotite mica and muscovite mica
(2) quartz and calcite
(3) sulfur and amphibole
(4) halite and pyroxene

13. The mineral graphite is often used as
(1) a lubricant
(2) an abrasive
(3) a source of iron
(4) a cementing material
14. The table below shows some observed physical properties of a mineral.

<table>
<thead>
<tr>
<th>Physical Property</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>color</td>
<td>white</td>
</tr>
<tr>
<td>hardness</td>
<td>scratched by the mineral calcite</td>
</tr>
<tr>
<td>distinguishing characteristic</td>
<td>feels greasy</td>
</tr>
<tr>
<td>cleavage/fracture</td>
<td>shows some definite flat surfaces</td>
</tr>
</tbody>
</table>

Based on these observations, the elements that make up this mineral’s composition are
(1) sulfur and lead
(2) sulfur, oxygen, and hydrogen
(3) oxygen, silicon, hydrogen, and magnesium
(4) oxygen, silicon, aluminum, and iron

Base your answers to questions 15 and 16 on the photograph. The photograph shows several broken samples of the same colorless mineral.

15. Which physical property of this mineral is most easily seen in the photograph?
(1) fracture
(2) hardness
(3) streak
(4) cleavage

16. Which mineral is most likely shown in the photograph?
(1) quartz
(2) calcite
(3) galena
(4) halite

17. How are the minerals biotite mica and muscovite mica different?
(1) Biotite mica is colorless, but muscovite mica is not.
(2) Biotite mica contains iron and/or magnesium, but muscovite mica does not.
(3) Muscovite mica scratches quartz, but biotite mica does not.
(4) Muscovite mica cleaves into thin sheets, but biotite mica does not.

18. Which home-building material is made mostly from the mineral gypsum?
(1) plastic pipes
(2) window glass
(3) drywall panels
(4) iron nails

19. The internal atomic structure of a mineral most likely determines the mineral’s
(1) color, streak, and age
(2) origin, exposure, and fracture
(3) size, location, and luster
(4) hardness, cleavage, and crystal shape

20. Which is the hardest mineral on Moh’s scale?
(1) talc
(2) diamond
(3) quartz
(4) garnet
21. The mineral quartz breaks unevenly. This means that quartz must have
   (1) a high density  (3) cleavage
   (2) fracture  (4) a metallic luster

22. A student rubs a small sample of a mineral on a tile to see the color of its powder. The student is trying to determine the mineral’s
   (1) density  (3) streak
   (2) chemical composition  (4) luster

23. A mineral sample is embedded in a piece of clear plastic. Which of the following physical properties could not be used in its identification?
   (1) crystal shape  (3) color
   (2) hardness  (4) luster

24. The mineral that reacts to hydrochloric acid is
   (1) halite  (3) sulfur
   (2) quartz  (4) calcite

25. Which mineral is made up of only one element?
   (1) biotite mica  (3) olivine
   (2) quartz  (4) sulfur

26. The mineral that has a greasy feel and is used as pencil “lead” is
   (1) halite  (3) graphite
   (2) pyrite  (4) quartz

27. The mineral that is found in sheets and has cleavage in one direction is known as
   (1) olivine  (3) potassium feldspar
   (2) muscovite mica  (4) quartz

28. Which mineral has a different color than its streak, has a metallic luster, and is the ore of both iron and sulfur?
   (1) gypsum  (3) pyrite
   (2) galena  (4) magnetite

29. Which mineral is a compound made up of nine different elements? (make sure not to count the same chemical symbol twice …)
   (1) talc  (3) amphiboles
   (2) muscovite mica  (4) olivine

30. Which of the following resists scratching the most?
   (1) garnet  (3) hematite
   (2) potassium feldspar  (4) calcite
31. Which of the following is a silicate mineral? (a silicate mineral contains both silicon and oxygen)
   (1) magnetite  (3) fluorspar
   (2) halite     (4) plagioclase feldspar

32. Which mineral cleaves in two directions at 90°?
   (1) fluorite   (3) olivine
   (2) potassium feldspar  (4) quartz

33. Which mineral would be attracted to a magnet?
   (1) galena   (3) graphite
   (2) magnetite  (4) calcite

34. Which mineral contains iron, has a metallic luster, is hard, and has the same color and streak?
   (1) galena   (3) graphite
   (2) magnetite  (4) pyrite

35. Which mineral would most likely break down the most after being placed in a container and shaken for 5 minutes?
   (1) quartz   (3) halite
   (2) garnet  (4) pyroxene

36. Name the mineral known for its characteristic “blood red” (reddish brown) streak: ________________________________

37. Which mineral has rhombohedral cleavage? (this means it is shaped like a parallelogram) ________________________________

38. Which mineral has a density of 7.6 g/cm³ - a density almost 3X the average density of minerals found at the Earth’s surface?
   ________________________________

39. What is another term used for “density” when describing minerals? ________________________________

40. What is the hardness of glass? ________________________________
41. What element does the chemical symbol “Fe” stand for? _____________________________________________________________________

42. Under the Common Colors column, many minerals are listed as having a “variable” color. What is meant by the term “variable”? _____________________________________________________________________

43. Which non-metallic mineral is softer than a fingernail and displays fracture? _____________________________________________________________________

44. What is one difference between plagioclase and potassium feldspar? _____________________________________________________________________

45. Which mineral is also known as “fool’s gold”? _____________________________________________________________________

46. What is the chemical composition of calcite? _____________________________________________________________________

47. Which two minerals display cubic cleavage? _____________________________________________________________________

48. What is the mineral name of table salt? _____________________________________________________________________

49. Which mineral has water as part of its chemical composition? _____________________________________________________________________

50. The term “granular” means that a mineral has a grainy/sandy feel. Which mineral is commonly granular? _____________________________________________________________________