1. What is the color and type of rock that forms oceanic crust at mid-ocean ridges?
   - A) light colored and igneous
   - B) light colored and sedimentary
   - C) dark colored and igneous
   - D) dark colored and sedimentary

2. Obsidian's glassy texture indicates that it formed
   - A) slowly, deep below Earth's surface
   - B) slowly, on Earth's surface
   - C) quickly, deep below Earth's surface
   - D) quickly, on Earth's surface

3. Which igneous rock is dark colored, cooled rapidly on Earth's surface, and is composed mainly of plagioclase feldspar, olivine, and pyroxene?
   - A) obsidian
   - B) rhyolite
   - C) gabbro
   - D) scoria

4. Which igneous rock has a vesicular texture and contains the minerals potassium feldspar and quartz?
   - A) andesite
   - B) pegmatite
   - C) pumice
   - D) scoria

   What is the origin of fine-grained igneous rock?
   - A) lava that cooled slowly on Earth's surface
   - B) lava that cooled quickly on Earth's surface
   - C) silt that settled slowly in ocean water
   - D) silt that settled quickly in ocean water
Base your answers to questions 6 and 7 on the two tables below and on your knowledge of Earth science. Table 1 shows the composition, hardness, and average density of four minerals often used as gemstones. Table 2 lists the minerals in Moh’s Scale of Hardness from 1 (softest) to 10 (hardest).

<table>
<thead>
<tr>
<th>Gemstone Mineral</th>
<th>Composition</th>
<th>Hardness</th>
<th>Average Density (g/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>emerald</td>
<td>Be₂Al₂(Si₆O₁₈)</td>
<td>7.5-8</td>
<td>2.7</td>
</tr>
<tr>
<td>sapphire</td>
<td>Al₂O₃</td>
<td>9</td>
<td>4.0</td>
</tr>
<tr>
<td>spinel</td>
<td>MgAl₂O₄</td>
<td>8</td>
<td>3.8</td>
</tr>
<tr>
<td>zircon</td>
<td>ZrSiO₄</td>
<td>7.5</td>
<td>4.7</td>
</tr>
</tbody>
</table>

**KEY**

Al = aluminum  O = oxygen
Be = beryllium  Si = silicon
Mg = magnesium  Zr = zirconium

6. Sapphire is a gemstone variety of which mineral on Moh’s scale of hardness?
   A) corundum  B) diamond  C) fluorite  D) topaz

7. Part of a gemstone’s value is based on the way the gemstone shines in reflected light. The way a mineral reflects light is described as the mineral’s
   A) fracture  B) hardness  C) luster  D) streak

8. Rhyolite is an example of a
   A) monomineralic igneous rock  
   B) polyminalic igneous rock  
   C) monomineralic sedimentary rock  
   D) polyminalic sedimentary rock

9. Which substances could be found in the same igneous rock?
   A) pebbles and cobbles  
   B) sandstone and limestone  
   C) plagioclase feldspar and pyroxene  
   D) quartz and olivine

10. A coarse-grained rock contains 50% plagioclase, 45% pyroxene, and 5% hornblende. This rock should be identified as
    A) basalt  
    B) granite  
    C) rhyolite  
    D) gabbro

11. Large crystals in an igneous rock most likely form as a result of the
    A) mineral composition of the magma  
    B) cooling rate of the magma  
    C) fossil content of the rock  
    D) color of the rock

12. A fossil is not likely to be found in
    A) limestone  
    B) sandstone  
    C) basalt  
    D) shale

13. Rhyolite and granite are alike in that they both are
    A) fine-grained  
    B) dark-colored  
    C) mafic  
    D) felsic

14. Which property would be most useful for identifying igneous rocks?
    A) kind of cement  
    B) mineral composition  
    C) number of minerals present  
    D) types of fossils present
15. Compared to basalt, granite is
   A) lighter in color
   B) greater in density
   C) more mafic in composition
   D) more fine grained in texture

16. Which two mineral grains would most likely be found in soil formed from granite?
   A) olivine and pyroxene
   B) potassium feldspar and quartz
   C) plagioclase and pyroxene
   D) olivine and nepheline

17. Which statement best describes the percentage of plagioclase feldspars in a sample of gabbro?
   A) The percentage of plagioclase feldspars in gabbro can vary.
   B) Gabbro always contains less plagioclase than pyroxene.
   C) Plagioclase feldspars always make up 25% of a gabbro sample.
   D) Gabbro contains no plagioclase feldspars.

18. Which is a fine-grained igneous rock made up primarily of pyroxene and plagioclase feldspar?
   A) gabbro
   B) basalt
   C) granite
   D) rhyolite

19. Most igneous rocks form by which processes?
   A) melting and solidification
   B) heat and pressure
   C) erosion and deposition
   D) compaction and cementation

20. The diagram below shows the mineral composition of an igneous rock drawn actual size.

   [Diagram of mineral composition]

   This igneous rock is
   A) gabbro
   B) granite
   C) basalt
   D) rhyolite

21. Analysis of a granite pebble would probably show that the pebble consists mostly of the
   A) minerals quartz and feldspar
   B) minerals calcite and gypsum
   C) elements iron and magnesium
   D) elements carbon and hydrogen

22. Which two processes result in the formation of igneous rocks?
   A) solidification and evaporation
   B) melting and solidification
   C) crystallization and cementation
   D) compression and precipitation
Base your answers to questions 23 and 24 on the diagrams below of five rock samples.

23. Which sample is igneous and has a coarse texture?
   A) sandstone   B) conglomerate   C) basalt   D) granite

24. The basalt was most likely formed by
   A) heat and pressure
   B) melting and solidification
   C) compaction and cementation
   D) erosion and deposition

   igneous

25. Olivine and pyroxene are commonly found in igneous rocks that are
   A) felsic, with low density
   B) felsic, with high density
   C) mafic, with low density
   D) mafic, with high density