GEO1111 : Lecture 10 – Economic Resources

1. What are the three main (largest) metallic commodities produced by Canadian mines?

   3 largest metallic commodities produced by Canadian mines include:
   gold, copper, and nickel

2. What is the common aspect of the 5 ways in which ore minerals are precipitated?

3. What is an alloy?

   A mixture of >2 metals, such as bronze (copper and tin), brass (copper and zinc), or tumbaga (copper and gold). An alloy has properties superior to those of the individual metals.

4. Of the different rock types, which one(s) is(are) associated with metallic mineral deposits?

   Igneous rocks are associated with metallic mineral deposits.

5. What are the three essential requirements to making an ore deposit?

   Ore deposit must have these 3 requirements:
   Source, transport, and trap.

6. What are the potential sources for the origin of water in the oceans?

   Water-rich meteoroids colliding with earth
   H_2O vapour in atmosphere condensing when earth cooled
   Leakage of water from hydrous minerals in earth's rocks

7. Laterite deposits concentrate certain elements (such as Al) by:
   a) dissolving them near the surface and reprecipitating them at the water table
   b) gravitational settling of heavier elements in magmatic bodies
   c) mechanically separating the aluminum from other elements in streams
   d) leaching out other elements through deep weathering of the parent rock
   e) hydrothermally transporting and reprecipitating them in a new area

8. Porphyry deposits are associated with what setting?
   a) the root zones of volcanoes
   b) sinuous mountain streams
   c) rifting margins in the seabed
   d) Archean sedimentary basins
   e) diatreme pipes through the mantle

9. How are placer deposits of heavy metals formed?
   a) heavy metals sink to the base of igneous intrusions and are concentrated
   b) heavy metals are transported by hydrothermal fluids and precipitated
   c) heavy metals are mechanically transported and concentrated by rivers
   d) heavy metals invade fractures and form vein deposits
   e) heavy metals are concentrated by metamorphism of country rock

10. Volcanogenic massive sulphide (VMS) deposits are associated with black smoker and form:
    a) at the contact between an igneous intrusion and the country rock
    b) on the edges of streams and on stream beds
    c) in continental sedimentary basins
    d) in tropical areas from deep weathering of parent rock
    e) from hydrothermal vents on the seafloor

11. Where are diamonds most commonly formed?
    a) at the edge of lithospheric plates
    b) under cold and old lithosphere
    c) in the root zones of volcanoes
    d) above subduction zones
    e) in Africa and northern Canada

12. The hazards or dangers of fracking can include:
    a) earthquakes
    b) contamination of domestic water wells
    c) escape of methane from gas well head
    d) destruction of the landscape
    e) all of the above

13. What is acid mine drainage?
    a) leaching of native elements from mine tailings using strong acids
    b) application of strong acids in mining to create underground passages
    c) storm water drainage damage caused by the mining of acidic ores
    d) oxidation & hydrolysis of sulphide minerals which exist with ore minerals
    e) precipitation of sulphide minerals during the mining process

14. Why can fracking lead to micro-earthquakes?

Fracking - fractures in rocks below the earth's surface are opened and widened by injecting chemicals and liquids at high pressure: used especially to extract natural gas or oil.

This induces seismicity in pre-existing faults.