**Earth Systems Final Exam Study Guide**

1. **Chemistry**
   1. Electron Dot Diagram
   2. Period
   3. Dimitri Mendeleev
   4. Nucleus
   5. Electrons
   6. Protons
   7. Neutrons
   8. Atomic Number
   9. Mass Number
   10. Isotope
   11. Average Atomic Mass
   12. Electron cloud
   13. Periodic Table
   14. Atom
   15. Group
2. **Minerals**
   1. Silicates
   2. Non-silicates
   3. Streak
   4. Luster
   5. Cleavage
   6. Fracture
   7. Density
   8. Mineral
   9. Color
   10. Hardness
   11. Radioactivity
   12. What happens when magma cools at different rates? Size? Coarse or Fine?
   13. What property does the presence of iron in minerals produce?
3. **Rocks**
   1. Igneous
      1. Extrusive
      2. Intrusive
   2. Sedimentary
      1. Cementation
      2. Compaction
      3. Clastic
      4. Chemical
      5. Organic
   3. Metamorphic
      1. Regional Metamorphism
      2. Contact Metamorphism
   4. Rock Cycle
   5. Bowen’s Reaction Series
   6. 3 factors of rock formation
   7. Chemical Stability of rocks is determined by what?
   8. Extrusive vs. Intrusive (Structures, formations, etc.)
4. **Weathering and Erosion**
   1. Sheet Erosion
   2. Solifluction
   3. Mass Movement
   4. Erosion
   5. Weathering
   6. Mudflow
   7. Rockfall
   8. Landslide
   9. Hydrolysis
   10. Mechanical Weathering types
   11. Carbonation
   12. Oxidation
   13. Chemical Weathering types
   14. Types of landforms: Mountains, buttes, peneplains, mesas, etc.
   15. Types of Agricultural Methods to reduce soil erosion
   16. How does surface area of a rock relate to the rate at which it weathers
   17. What climate has the fastest rate of weathering
5. **Geologic Timeline**
   1. Law of Uniformitarianism
   2. Law of Inclusion
   3. Law of Superposition
   4. Law of Cross-Cutting
   5. Law of Unconformity
   6. Principle of Folding
   7. Have a general knowledge of the main Eras (Precambrian, Paleozoic, Mesozoic, and Cenozoic)
      1. When did they start?
      2. What major organisms lived during that time?
   8. Half-life
   9. Types of fossils (all)
   10. Geological Timeline (how is it divided-eons, eras, periods, epochs, etc.)
   11. How old is the Earth?
   12. Radiometric Dating
   13. Absolute Age
   14. Relative Age
   15. Dino pelvic bones – bird like vs lizard like
6. **Plate Tectonics, Continental Drift, Volcanoes, Earthquakes**
   1. All of the types of Wegener Evidences, before modern technology, that led to his theory of Continental Drift. What did he not have?
   2. Layers of the Earth
   3. Types of Plate boundaries
      1. What land forms are associated with each type of plate boundary
   4. Distinguish between the 3 types of volcanoes. What makes them different?
   5. Earthquakes
      1. Magnitude
      2. Intensity
      3. Body waves
         1. P
         2. S
      4. Surface waves
      5. Epicenter
      6. Fault
      7. Focus
7. **Atmosphere and Weather**
   1. Types of storms
      1. Thunderstorm
      2. Tornado
      3. Hurricane
      4. Snowstorm
      5. Flood
   2. Winds that affect North America (6 types)
   3. Fronts
   4. High vs. Low pressure
   5. Layers of the Atmosphere