

## Study Guide for Exam I

### **Episode #1: Down to Earth (Chapter 1 in text)**

- 1) The Earth's Heat Engines (Internal and External)
- 2) Major Geologic Concerns of our Planet
  - a) Oil
  - b) Groundwater
  - c) Geologic Hazards
    - 1) Volcanism
    - 2) Earthquakes

### **Episode #2: The Restless Planet (Chapter 2 in text)**

- 1) The Origin of the Oldest Rocks on the Planet
- 2) Composition of the Earth's early atmosphere
- 3) The Importance of Cyanobacteria (stromatolites) in the formation of our modern atmosphere
- 4) The Major Parts of the Earth

### **Episode#3: The Earth's Interior (Chapter 3 in text)**

- 1) Shadow Zones
- 2) Continental Crust and Oceanic Crust (Compare and Contrast)
- 3) Magnetism and Rocks
- 4) The Major Parts of the Earth Revisited (The Interior Structure)
  - a) Compositional View (Crust, Mantle, Core)
  - b) Geophysical View (Lithosphere, Asthenosphere, Mesosphere, Outer Core, Inner Core)
  - c) How do we know this? Where does our evidence come from?
    - 1) Compositional Evidence: Samples of Rock
      - a) Ocean Crustal Rocks
      - b) Continental Rocks
      - c) Ophiolites
      - d) Meteorites
    - 2) Geophysical Evidence: Seismic Waves

### **Episode#4: The Sea Floor (Chapter 3 in text)**

- 1) Origin of Water on Earth
- 2) Active and Passive Continental Margins
- 3) Origin and Features of Mid-Ocean Ridges
- 4) Other Sea Floor Features
  - a) Seamounts
  - b) Guyots
  - c) Aseismic Ridges
  - d) Volcanic Islands
  - e) Abyssal Floor

### **Episode 5: The birth of a Theory (Chapter 4 in the Text)**

- 1) The Contribution of Alfred Wegener
  - a) Continental Drift
  - b) Types of Evidence He found for his theory
- 2) Paleomagnetism
  - a) Polar Wandering
  - b) Magnetism of the seafloor
- 3) The Contribution of H. Hess: Sea Floor Spreading

#### **Episode 6: Plate Dynamics (Chapter 4 in your text)**

- 1) Plate Boundary Types
  - a) Divergent Boundaries
  - b) Convergent Boundaries
    - 1) Ocean-Ocean
    - 2) Ocean-Continental
    - 3) Continental-Continental
  - c) Transform Boundaries
- 2) Causes of Plate Motion
- 3) Examples of all Boundary Types

#### **Episode 7: Mountain Building (Chapter 5 in your text)**

- 1) Evolution of a Mountain Belt
- 2) Characteristics of a Mountain Belt
- 3) Terranes and the Growth of Continents
- 4) Two important Mountain Belts: The Cordillera and the Appalachians

#### **Episode 8: Earth's Structures (Chapter 6 in your text)**

- 1) Brittle and Ductile Behavior in Rocks
- 2) Faulting
  - a) Strike-Slip Faults
  - b) Dip-Slips Faults
- 3) Folding
  - a) Anticlines and Synclines
  - b) Domes and Basins
  - c) Monoclines
- 4) Jointing and Faulting

#### **Episode 9: Earthquakes (Chapter 7 in your text)**

- 1) Types of Seismic Waves
  - a) Body Waves
    - 1) P Waves
    - 2) S Waves
  - b) Surface Waves
    - 1) Rayleigh Waves
    - 2) Love Waves
- 2) Locating and Measuring Earthquakes
  - a) Magnitude (Richter and Moment Magnitude)
  - b) Intensity (Mercalli)
  - c) Calculating the Epicenter
- 3) Distribution and Effects of Earthquakes
  - a) Tsunamis
  - b) World Distribution
- 4) The Parkfield Experiment

**I will ask you eight essay questions from this list of topics. You will be only required to answer five of those questions. There will also be a bonus question. The essay section of the test is worth 50 points. The multiple choice part of the exam is also worth 50 points.**