Midterm #1 Study Guide

Chapter One:
Science and the Scientific Method:
   Hypothesis and Theory
Interior of the Earth:
   Core (inner/outer), Mantle, Crust (continental, oceanic)
   Lithosphere, asthenosphere
Plate Tectonics:
   Divergent, convergent, transform boundaries
History of Geology:
   Hutton and Uniformitarianism

Chapter Two:
Atoms: proton, neutron, electron
Elements: OSiAlFeCaNaKMg
Bonding: ionic, covalent, metallic, van der Waals
Oxygen-Silicon Tetrahedron:
   Silicate Structures: isolated, single and double chain, sheet, framework
Minerals: Silicate Rock Formers
Rock cycle

Chapter Three:
Magmas
Bowens Reaction Series: discontinuous, continuous
Partial Melting, fractional crystallization, crustal assimilation, bimodal volcanism
Igneous rock classification
Plutons: discordant, concordant; tabular and massive
   Dike, sill, batholith, stock, laccolith
Xenolith
Metamorphic roof pendant

Chapter Four:
Lavas: silica content, viscosity, explosiveness
Lava flows: pahoehoe, aa, pillow
Tephra: ash/tuff, cinders, blocks and bombs, volcanic breccia
Constructive Volcanic Landforms
   Lava plateaus, shield, stratovolcano (composite cone), plug dome (volcanic dome), cinder cone
Destructive Volcanic Landforms:
   Maar, calderas, volcanic neck, inverted stream
Historic eruptions:
   Vesuvius, Pelee, Krakatoa, Tambora, St. Helens, Pinatubo
Chapter Five:
Physical Weathering:
   Unloading: exfoliation and jointing
   Frost wedging, root wedging, fire spalling
Chemical weathering:
   Oxidation, hydrolysis, solution
Regolith and soil
Factors in soil formation: climate, time, parent material, organic activity, slope
Soil horizons: O, A, E (zone of leaching), B (zone of accumulation), C
Laterite, pedalf er, pedocal

Chapter Six:
Sedimentary classification system:
   Clastic, Biogenic (organic), Chemical
Sedimentary textures:
   Grain size, angularity, sorting, maturity
Sedimentary structures:
   Ripples (asymmetrical/oscillation), crossbedding, mudcracks,
   bioturbation, graded bedding/flame structure
   Geopetal indicators
   Paleocurrent indicators
Lithification of sediments
Sedimentary environments:
   Terrestrial, transitional, marine

Chapter Seven:
Factors in metamorphism:
   Heat, pressure, chemically active fluids
Types of metamorphism:
   Thermal (contact), Dynamic (cataclastic), Dynamothermal (regional)
Types of metamorphic rocks:
   Foliated:
      Slate, phyllite, schist, gneiss
   Non-foliated:
      Quartzite, marble, greenstone, serpentine

Chapter 22:
The Solar System
Origin of the Solar System:
   Nebular Hypothesis
   Supernova
   Nebula
   Planetary discs
   Solar Fusion
   Meteorites and Comets