Review

Geology 116 Hour Exam # 2

The purpose of this review is to help you prepare for the second hour exam. It is not meant to be comprehensive. You should study all the materials covered in the exercises, lectures, and film questions.

Week 6 Atmospheres of terrestrial planets

Concepts and Terms
Escape velocity, atmospheric column mass, volatile inventory, greenhouse effect, effective temperature, surface temperature, albedo, solar flux density

Knowledge and understanding
• The relationship between the mass, size, and atmospheric temperature of a planetary body and its ability to retain gases
• Similarities and differences between the atmospheric compositions of terrestrial planets
• The relationship between atmospheric surface pressure and atmospheric column mass
• Major greenhouse gases
• Greenhouse effect on Venus, Earth, and Mars.
• Main characteristics of weather on Venus, Earth, and Mars.

Week 7 The giant planets

Concepts and Terms
Surface of giant planets, icy material, polar and equatorial radii, self-compression

Knowledge and understanding
• Temperature and pressure conditions at the “surfaces” of giant planets
• Temperature and pressure conditions of the interiors of giant planets
• Major layers of giant planets
• Constraints on the compositions of giant planets
• Constraints on the internal structures of giant planets
• Magnetic fields of giant planets: relative strength, location and orientation of magnetic dipoles with respect to the planet, electrically-conducting fluid region
• Measuring the wind speed on giant planets

Week 8 Minor bodies of the solar system

Concepts and Terms
Aphelion, perihelion, orbital major axis, eccentricity, orbital period, orbital parameters, ecliptic plane, orbital inclination, retrograde, prograde, synchronous rotation, libration, asteroid, Kirkwood gaps, orbital resonance, main belt asteroids, NEAs, PHAS, orbital evolution, short-period comets, long-period comets, cometary nucleus, Kuiper Belt, Kuiper Belt Objects, Oort cloud

Knowledge and understanding
• Kepler’s Laws and their applications
• The relationship between tidal heating and synchronous rotation
• The relationship between tidal heating and Kepler’s First Law
• Classifications of asteroids: compositions types based on albedo and reflectance spectrum
**Week 9 The origin of the solar system**

*Concepts and Terms*
Dense cloud, gravitational collapse, Solar nebula, protoSun, protoplanetary disc, condensation, condensation sequence, column mass of gas and dust in the Solar Nebula, molecular substances, ionic substances, refractory elements, volatile elements, solar wind, accretion, coagulation, planetesimals, T Tauri star, gravitational focusing, runaway growth, planetary embryo, giant impact, planetary migration

*Knowledge and understanding*
- Key stages in Solar System formation
- Key stages in planet formation (inner planets and outer planets)
- The significance of water condensation in planet formation
- The role of Jupiter in the origin of comets and asteroids
- Origin of satellites