

TEST
Planetology: an introduction GEO3-1327
June 25th 2009

- 1) How old is the solar system ? Explain how the age of the solar system was determined.
- 2) Provide two arguments for, and two arguments against finding fossil or extant (currently living) life on Mars.
- 3) What is thermal inertia ? Give examples of Mars surface materials with low and high thermal inertia.
- 4) Sketch the phase diagram of water and indicate the pressure and temperature condition at the surface of Mars and Earth. Why do we have liquid water on Earth, and not on Mars ?
- 5) How is primary (mafic) crust formed on rocky planets, and how is evolved, Si-rich (continental) crust formed ?
- 6) Explain how you can derive an estimate of the age of a planetary surface from the size-frequency distribution of craters.
- 7) Explain the significance of the terms 'pericenter', 'apocenter', and 'period' of an orbiting body. What is the 'period' of Earth ?
- 8) Make a sketch of a surface reflection spectrum. Show how you can derive mineralogical information from such a spectrum of the Martian surface.
- 9) Give 3 scientific reasons why a mission to the Jupiter system, and in particular the moons Europa and Ganymede, is of interest.
- 10) Give two examples of morphological or geological features found on the surface of Mars which are indicative of the action of liquid water at the surface. Discuss their significance.