Submit via e-mail (gelderman@wku.edu), due 12:40 on Monday, 29 March 2010

Chapter 3: Life on Mars --

1) Summarize the evidence suggesting that Mars was relatively warm and wet during the *Noachian* era. How must the Martian atmosphere been different during the *Noachian* era and what happened to those gases. What was different about the *Hesperian* era that accounts for the features of the geologic regions dating from that time period?

2) For the Martian atmosphere, calculate the relative speeds of the two most common constituents of the atmosphere.

3) In the ultraviolet part of the spectrum longward (increasing wavelength) of about 330 nm, by what factor (approximately) is the intensity of radiation at the Earth's surface higher than predicted at the Martian surface? Explain this factor in terms of the distance of the two planets from the Sun. Shortward (decreasing wavelength) of 330 nm, the situation is very different with the intensity at the Martian surface being many orders of magnitude higher than at the Earth's surface. Why is this and what is the significance for life on Mars?

4) Question 3.4, page 101, from Gilmour and Sephton.

5) Discuss any necessary assumptions and show all work for the calculation of the escape velocity of Venus, Earth, Moon, and Mars. Discuss these results and any other relevant factors to predict whether ejected rocks would be expected to travel from Venus to Earth, from the Moon to Earth, from Earth to the Moon, from Earth to Mars, or from Mars to Earth.