1. If the Earth's spin axis was not tilted with respect to the Earth's orbital plane (around the Sun), which of the following would be true, which false?:

_____The number of daylight hours in a day would not change through the year.

_____The length of a day would increase from 24 hours to 365 days

- _____The change of seasons would become more pronounced in the Northern Hemisphere.
- _____There would be no change in the pattern of the seasons compared to the real situation
- 2. Suppose you identified in a distant galaxy the Hydrogen emission line corresponding to an electron dropping from the second excited level to the first excited level. The "rest" wavelength of this photon is = 6365Å yet in the galaxy spectrum you measure it at 5365Å.
 - (a) Is this galaxy moving toward____or away____from the Earth?
 - (b) What is the relative speed between the Earth and the Galaxy?

3. What time does the new moon rise? Draw a picture to demonstrate your answer.

4. Given the speed of light c = 186,000 miles/second, how many miles is a "light-minute"?

5. Suppose you lived on the Moon where there is essentially no atmosphere. Label the following statements as (T)rue or (F)alse:

____The Sun would appear redder (compared to as seen from the Earth) during the day.

- _____The color of the sky (looking away from the Sun during the day) would be black.
- ____At sunset, the Sun would appear redder than it does at noon.
- ____The "green flash" would be a "red flash"
- 6. You measure the spectrum of a solid green sphere of aluminum and the highest intensity is at a wavelength of 2×10^{-4} cm. What is the temperature of this sphere?

7. What color does a red apple appear to be when illuminated with white light?

8. What is the frequency of light with a wavelength of 20cm?

9. What is $10^3 \times 10^5 \times 10^{-6}$?