

Chapter 8 questions

- 8-1. At what color is the Sun's radiation most intense?
- a) blue-green **X**
 - b) red-orange
 - c) yellow
 - d) red
- 8-2. What is the layer of the Sun that we normally see called?
- a) corona
 - b) chromosphere
 - c) photosphere **X**
 - d) radiative zone
- 8-3. What is the primary fusion process occurring inside the Sun?
- a) $C \rightarrow Fe$
 - b) $H \rightarrow He$ **X**
 - c) $He \rightarrow H$
 - d) $He \rightarrow C$
- 8-4. What fraction of the solar system's mass is in the Sun?
- a) about 2%
 - b) about 10%
 - c) about 50%
 - d) about 99% **X**
- 8-5. What is the length of the Sun's entire magnetic cycle?
- a) about 1 month
 - b) about 1 year
 - c) about 11 years
 - d) about 22 years **X**
- 8-6. Which of the following objects rotates most rapidly?
- a) the Sun
 - b) our Moon
 - c) Earth **X**
 - d) Venus
- 8-7. Which of the following phenomena on the active Sun are seen as loops of gas?
- a) prominences **X**
 - b) plage
 - c) spicules
 - d) filaments

- 8-8. How and where does the Sun make the energy we see?
- a) burning gas in its photosphere
 - b) burning gas in its core
 - c) thermonuclear fusion in its core **X**
 - d) molten lava in its photosphere
- 8-9. Which of the following best describes the surface of the Sun (that is, the level we normally see)?
- a) molten lava
 - b) burning gas
 - c) hot gas **X**
 - d) liquid water oceans
- 8-10. What is the solar wind?
- a) gases leaving the Sun forever **X**
 - b) flow of gases from space onto the Sun
 - c) the level of the Sun that we normally see
 - d) the particles flowing between the Sun's center and its visible surface
- 8-11. What pair of opposing effects keeps the Sun stable today?
- a) gravity versus rotation
 - b) gravity versus thermal energy from fusion **X**
 - c) rotation versus thermal energy from fusion
 - d) gravitation versus magnetic repulsion
- 8-12. Which statement about the Sun's emissions is correct?
- a) the Sun emits only yellow light
 - b) the Sun emits all wavelengths of light with equal intensity
 - c) the Sun emits all wavelengths, with one color emitted most intensely **X**
 - d) the Sun emits only visible wavelengths, all of which it emits with equal intensity
- 8-13. Seen from above, a prominence is called a:
- a) plage
 - b) flare
 - c) filament **X**
 - d) granule
- 8-14. What unexpected result is observed in the outer layers of the Sun's atmosphere?
- a) the temperature increases with altitude **X**
 - b) the density of the gas increases with altitude
 - c) fusion is occurring there
 - d) a planet was detected there

8-15. As normally seen from Earth, the Sun shows which of the following types of spectra?

- a) emission lines, only
- b) a continuum with absorption lines **X**
- c) a complete continuum

8-16. What element is *increasing* in quantity in the Sun's core?

- a) H
- b) He **X**
- c) C
- d) Fe

8-17. The *sunspot* cycle is approximately how many years long?

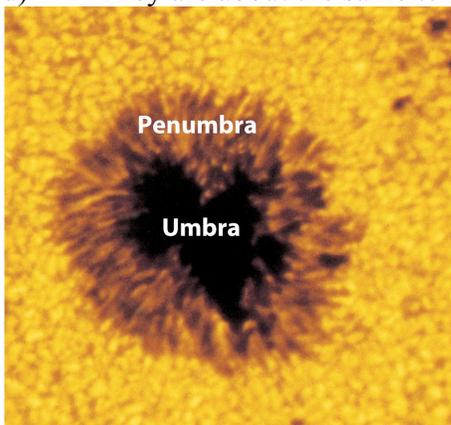
- a) 11 **X**
- b) 15
- c) 22
- d) 37

8-18. Which of the following best describes a positron?

- a) Another name for a proton
- b) A particle with no charge and little or no mass
- c) A very short wavelength photon
- d) A positively charged electron **X**

8-19. How does the temperature in the umbra of a sunspot compare to that of the photosphere outside the sunspot (see photo)?

- a) The umbra is about 1500 K cooler. **X**
- b) The umbra is about 800 K hotter.
- c) The umbra is about 4000 K cooler.
- d) They are about the same temperature.



8-20. The visible spectrum of the Sun

- a) contains dark absorption and bright emission lines on a continuous background.
- b) is a bright continuous spectrum, containing numerous absorption lines created by the atmosphere of the Sun. **X**
- c) consists of only a few bright emission lines.
- d) is a bright continuous spectrum with no absorption lines.

8-21. Solar flares are explosive eruptions on the Sun's surface associated with sudden movements of the Sun's magnetic field. At what places on the surface of the Sun do solar flares usually originate?

- a) Within an isolated pair of sunspots
- b) Within a large group of sunspots **X**
- c) At the north and south poles of the Sun
- d) Anywhere on the equator of the Sun

Thought/Writing Questions

8-23. In general terms (e.g., solid, liquid, gas, hot cold, etc), describe the Sun interior.

8-24. Why does the Sun glow?

Misconception-Based Questions

8-25. Does the Sun rotate? If so, how fast?

8-26. Does the Sun have an atmosphere? What evidence do you have for your conclusion?