1) From the center outward, which of the following lists the "layers" of the Sun in the correct order?
   A) core, convection zone, radiation zone, photosphere, chromosphere, corona
   B) core, radiation zone, convection zone, corona, chromosphere, photosphere
   * C) core, radiation zone, convection zone, photosphere, chromosphere, corona
   D) core, corona, radiation zone, convection zone, photosphere, chromosphere
   E) core, convection zone, radiation zone, corona, chromosphere, photosphere

2) Sunspots are cooler than the surrounding solar surface because
   A) they are regions where convection carries cooler material downward.
   B) magnetic fields trap ionized gases that absorb light.
   C) magnetic fields lift material from the surface of the Sun, cooling off the material faster.
   * D) strong magnetic fields slow convection and prevent hot plasma from entering the region.
   E) there is less fusion occurring there.

3) How do human-built nuclear power plants on Earth generate energy?
   A) chemical reactions
   B) converting kinetic energy into electricity
   * C) nuclear fission
   D) nuclear fusion
   E) converting gravitational potential energy into electricity

4) Studies of sunquakes, or helioseismology, have revealed that
   A) "sunquakes" are caused by similar processes that create earthquakes on the earth.
   B) neutrinos from the solar core reach the solar surface easily.
   C) the Sun vibrates only on the surface.
   D) the Sun generates energy by nuclear fusion.
   * E) our mathematical models of the solar interior are fairly accurate.

5) Why are neutrinos so difficult to detect?
   A) because they move at, or close to, the speed of light
   B) because there are so rare
   * C) because they rarely interact with matter
   D) because they have no mass
   E) We don’t know: this is the essence of the solar neutrino problem.
6) A star’s luminosity is the
   A) lifetime of the star.
   B) apparent brightness of the star in our sky.
   * C) total amount of light that the star radiates each second.
   D) surface temperature of the star.
   E) total amount of light that the star will radiate over its entire lifetime.

7) The spectral sequence sorts stars according to
   A) mass.
   B) radius.
   C) luminosity.
   * D) surface temperature.
   E) core temperature.

8) Suppose you see two main-sequence stars of the same spectral type. Star 1 is dimmer in apparent brightness than Star 2 by a factor of 100. What can you conclude? (Neglect any effects that might be caused by interstellar dust and gas.)
   A) The luminosity of Star 1 is a factor of 100 less than the luminosity of Star 2.
   B) Star 1 is 100 times more distant than Star 2.
   C) Without first knowing the distances to these stars, you cannot draw any conclusions about how their true luminosities compare to each other.
   * D) Star 1 is 10 times more distant than Star 2.
   E) Star 1 is 100 times nearer than Star 2.

9) On a Hertzsprung-Russell diagram, where would we find stars that are cool and luminous?
   A) lower left  B) upper right
   * C) upper left  D) lower right

10) Which of the following statements about an open cluster is true?
    * A) All stars in the cluster are approximately the same age.
    B) All stars in the cluster are approximately the same color.
    C) All stars in the cluster will evolve similarly.
    D) All stars in the cluster have approximately the same mass.
    E) There is an approximately equal number of all types of stars in the cluster.