1. At one phase in its lifetime after the Main Sequence, a star like the Sun produces a luminous cloud consisting of the matter that was once the outer layers of the star. The name for this class of objects is
   (a) planetary nebula
   (b) supernova remnant
   (c) Herbig-Haro object
   (d) spiral galaxy
   (e) supernova

2. What is the object that is the remnant of a supernova about 1000 years ago, and which contains a famous pulsar?
   (a) 18 Scorpii
   (b) M27, the Dumbbell Nebula
   (c) M31, the Andromeda Nebula
   (d) NGC 1342, an open star cluster
   (e) M1, the Crab Nebula

3. The objects called HII regions are
   (a) dark, cold regions in space between the stars
   (b) glowing clouds of gas around hot, luminous stars
   (c) white dwarf stars that have cooled to very low temperatures
   (d) distant objects similar in mass and content to the Milky Way
   (e) clouds of neutral hydrogen that will produce stars in the near future

4. In class and in the book, we discussed three main classes of binary stars. These are
   (a) visual, eclipsing, and spectroscopic
   (b) visual, gravitational, and radiational
   (c) eclipsing, radiation-dominated, and electromagnetic
   (d) giant, bright giant, and supergiant
   (e) spectroscopic, neutronic, and Alfvénic

5. The astronomical search for black holes consists of finding an object with one of the following sets of characteristics. Which is it?
(a) a binary star with a main sequence star and a red giant star possessing an apparent magnitude brighter than 5.0
(b) a binary star containing a nonluminous, nonstellar companion with a mass in excess of 3 solar masses
(c) a dark, roughly circular region of no light seen against a bright nebula such as the Orion Nebula
(d) a binary star containing a nonluminous, nonstellar companion with a mass less than 1.4 solar masses
(e) two solar-type stars surrounded by a cloud of intense radio emission

6. Physically, supernovas correspond to
(a) the collapse of a core of a massive star.
(b) a flaring of an accretion disk around a white dwarf.
(c) gigantic versions of solar flares that occur on RS Canum Venaticorum stars.
(d) release of energy by the gravitational collapse of a star cluster.
(e) annihilation of matter and antimatter in the center of the Milky Way.

7. The reason that HII regions are seen around hot, bright stars is that
(a) the gas comes in contact with the hot stellar surfaces and begins to glow
(b) the gas in the HII regions reflects the starlight and creates a halo around the star
(c) hot bright stars produces high energy proton radiation that ionizes the hydrogen
(d) such stars produce many photons that can ionize hydrogen
(e) these are the only places in the galaxy where there is gas as well as stars

8. An example of an HII region is
(a) the open star cluster NGC 1342
(b) the Orion Nebula
(c) the Andromeda Nebula
(d) the globular star cluster M13
(e) M27, the dumbbell nebula