1. By what factor is the amount of light gathered by the 10-m diameter Keck telescope on Mauna Kea, Hawaii, greater than that gathered by the 2.5-m diameter Mount Wilson telescope?
   A) 4
   B) 16
   C) 256
   D) 2

2. A particular reflecting telescope has an objective mirror with a focal length of 1.2 m and an eyepiece lens of focal length 6 mm. What is the magnifying power of this telescope?
   A) 5×
   B) 2000×
   C) 20×
   D) 200×

3. A Cassegrain reflecting telescope is constructed from a
   A) concave primary mirror and a convex secondary mirror that reflects light back through a hole in the primary mirror.
   B) series of mirrors that channel the light to a remote location.
   C) concave primary mirror and a concave secondary mirror that reflects light back through a hole in the primary mirror.
   D) concave primary mirror and a flat, diagonal secondary mirror.

4. If all effects caused by Earth's atmospheric variations (seeing) could be removed from the visible image of a star on one of the 10-m diameter Keck telescopes on Hawaii, what would be the angular resolution achievable by this telescope in arcseconds for light of wavelength 500 nm? (1 nm = 10⁻⁹ m)
   A) 0.00125 arcsec
   B) 0.125 arcsec
   C) 12.5 arcsec
   D) 0.0125 arcsec
5. What is a charge-coupled device (CCD)?
A) a very fine grained photographic film which can be “read” electronically
B) an extremely sensitive thermocouple which records the temperature increase every time a photon hits it
C) a spectrometer which has been made especially sensitive by using a grating with over one million lines per centimeter
D) an array of electronic sensors which record the charge buildup due to photon absorption

6. A spectrograph is usually used in astronomy to measure the
A) variation of the mass of an object as it moves through space.
B) distribution of light intensity among the various colors.
C) vibration of Earth following an earthquake.
D) brightness of light at one specific color.

7. The angular resolution attainable with a radio telescope, compared to that attainable with an optical telescope of the same diameter, is significantly inferior because
A) the wavelength of radio waves is larger than that of visible light.
B) it is difficult to make a reflector for radio waves since these waves penetrate most materials.
C) Earth's atmosphere disturbs radio waves from space much more than it does visible light.
D) radio wavelengths are smaller than visible wavelengths, making it difficult to produce a reflector sufficiently smooth to produce images.

8. The primary reason for spreading many radio telescopes across a large area and combining the signals at a central station is to
A) ensure that cloudy weather only affects a few of the telescopes, leaving the others to continue observing.
B) avoid interference between signals from the separate telescopes.
C) collect more radiation than would be possible with the same telescopes clustered together.
D) produce much sharper images of radio sources.

9. The main reason for placing astronomical telescopes and detectors on satellites is to
A) avoid dust and haze in Earth's atmosphere.
B) avoid light pollution from cities and other built-up areas.
C) get closer to the objects being viewed.
D) get above the absorption in Earth's atmosphere.