

1. Suppose that two identical stars (having the same total light output or luminosity) are located such that star A is at a distance of 5 pc and star B is at a distance of 25 pc. How will star B appear, compared to star A?
 - A) 1/2.2 as bright
 - B) 1/25 as bright
 - C) 1/20 as bright
 - D) 1/5 as bright

2. Two stars that differ from each other by five magnitudes have a ratio of brightness of
 - A) 5.
 - B) 25.
 - C) 10.
 - D) 100.

3. Where on the Hertzsprung-Russell diagram do most local stars in our universe congregate?
 - A) in the supergiant area, where the most massive stars spend a significant time
 - B) in the giants area, where most stars spend the longest time of their lives
 - C) in the white dwarf area, the “graveyard” of stars
 - D) on the main sequence where stars are generating energy by fusion reactions

4. What is the physical reason that astronomers can find the luminosity class (I, II, III, IV, or V) of a star using the star's spectrum?
 - A) The relative amounts of hydrogen, helium, and other elements are different for stars of different luminosity classes.
 - B) The absorption lines in the spectrum are affected by the density and pressure of the star's atmosphere.
 - C) The absorption lines in the spectrum are affected by the star's surface temperature.
 - D) The wavelength of maximum emission (given by Wien's law) is affected by the size of the star.

5. An important aspect of binary star systems, as distinct from single stars, is that they allow a
 - A) verification of the Doppler shift.
 - B) measurement of the overall shapes of stars.
 - C) measurement of the universal gravitational constant.
 - D) measurement of the masses of stars.

6. The radial-velocity curve of a star in a binary star system is a plot against time of the
- A) speed of the star in a direction perpendicular to the line of sight to the star.
 - B) temperature of the star as determined from the movement of the peak wavelength of its spectrum.
 - C) position of the star in celestial coordinates.
 - D) variation of Doppler shift of its spectral lines and hence of its speed toward or away from us.
7. Within a globular cluster, what would you expect to find in the population of stars?
- A) a full range of stars from bright blue to dim red, with no bright red giant stars but significant amounts of dust and gas
 - B) a full mixture of bright blue supergiant and red giant stars, in addition to white dwarfs and dim red stars
 - C) mainly white dwarf stars surrounded by the remnant dust and gas from the planetary nebular stages of dying stars but no faint red stars, red giants, or bright blue stars
 - D) many red giants, white dwarfs, and dim red stars but no bright blue stars or dust and gas
8. The age of a cluster of stars can be judged by the
- A) total number of stars within the cluster.
 - B) amount of radioactive elements detected on star surfaces.
 - C) turnoff point on the main sequence of its Hertzsprung-Russell diagram.
 - D) number of novae per year occurring within the cluster.