

## Astronomy Pre-Test

1. Which of the following statements is true about the Celsius and Kelvin (Absolute) temperature scales?

- a. Zero is at the same temperature on both scales.
- b. The size of one degree is the same on both scales.
- c. Zero degrees Celsius is the same temperature as -273 K
- d. The size of one Celsius degree is 5/9 that of a Kelvin.
- e. The size of one Kelvin is 5/9 that of a Celsius degree.

2. The temperature of a gas is a measure of the

- a. total amount of internal energy in the gas.
- b. amount of heat that flows out of the gas.
- c. total number of atoms in the gas.
- d. density of the gas.
- e. average motion of its atoms.

3. Which subatomic particle has a negative charge?

- a. The electron.
- b. The proton.
- c. The neutron.
- d. Both a and b above.
- e. Both a and c above.

4. Of the following, which color represents the lowest surface temperature for a star?

- a. Yellow
- b. Blue
- c. Orange
- d. Red
- e. White

5. An atom that is ionized must have

- a. more neutrons than protons.
- b. more protons than neutrons.
- c. more electrons than protons.
- d. more protons than electrons.
- e. Either c or d above.

6. What conditions produce a dark (absorption line) spectrum?

- a. A hot solid, liquid, or high density gas.
- b. A hot low density gas.
- c. Light from a continuous spectrum source passing through a cooler low density gas.
- d. Both a and b above.
- e. All of the above.

7. Which electron energy level transition corresponds to a hydrogen atom absorbing a visible light photon that has a wavelength of 656 nanometers?

- a. The electron makes the transition from energy level 1 to energy level 2.
- b. The electron makes the transition from energy level 2 to energy level 1.
- c. The electron makes the transition from energy level 2 to energy level 3.
- d. The electron makes the transition from energy level 3 to energy level 2.
- e. The electron makes the transition from energy level 3 to energy level 4.

8. What does the presence of molecular bands in the spectrum of a star indicate?

- a. The star has a low surface temperature.
- b. The star has a high surface temperature.
- c. The star is about to go supernova.
- d. The star is spectral type G.
- e. The star is spectral type TiO.

9. You research the star Sirius and find that its spectral lines are blue shifted. What does this tell you about Sirius?

- a. Its surface temperature is higher than that of the sun.
- b. It has a transverse velocity that is away from us.
- c. It has a transverse velocity that is toward us.
- d. It has a radial velocity that is away from us.
- e. It has a radial velocity that is toward us.