

Astronomy 4 - Introduction to Astronomy
Module 6 Quiz

1. What evidence do we have that interstellar space contains both gas and dust?
 - a. We have collected gas and dust particles from interstellar space using spacecraft
 - b. Dust is observed in optical pictures, while gas is detected with radio telescopes**
 - c. Gas and dust are very hot, and emit x-rays which are detected with telescopes on Earth
 - d. We have evidence that gas exists, but there is no evidence that dust exists in space
 - e. There is no evidence that either gas or dust exist in space

2. Why do astronomers rely heavily on infrared observations to learn how stars form?
 - a. When stars are forming, they are cool and emit most of their energy in the infrared
 - b. Infrared radiation has a longer wavelength than visible light and can penetrate the dusty regions where stars form
 - c. Infrared radiation has a shorter wavelength than visible light and can penetrate the dusty regions where stars form
 - d. a and b**
 - e. a and c

3. What are Herbig-Haro objects?
 - a. The visible effects of the bipolar jets that are ejected from newly forming stars**
 - b. The name first given to sunspots, since sunspots were discovered by Herbig and Haro
 - c. The name first given to white dwarfs, since they were discovered by Herbig and Haro
 - d. The name first given to pulsars, since they were discovered by Herbig and Haro
 - e. None of the above

4. Why does a star's lifetime depend on its mass?
 - a. The less massive a star is, the less fuel it has, and so its life is shorter
 - b. The more massive a star is, the quicker it uses its fuel, and so its life is shorter**
 - c. All stars are the same age, which is the age of the Universe itself
 - d. The lifetime of a star depends on its distance from the Sun, not on its mass
 - e. None of the above

5. The creation of what element in the interior of a star signals a critical stage in a star's life has been reached?
 - a. Hydrogen b. Helium c. Carbon **d. Iron** e. Uranium

6. What is a planetary nebula?
 - a. The name given to the atmospheres of the planets
 - b. The name given to the surface rock layer of a planet
 - c. The name given to the atmosphere of a main sequence star like the Sun
 - d. The name given to the slowly expanding lost atmosphere of a dying star**
 - e. The name given to the planets that survive in orbit around a supernova

7. What is the mass of a white dwarf star?
 - a. Less than 1.4 times the mass of the Sun
 - b. Between 1.4 and 3 times the mass of the Sun
 - c. Greater than 3 times the mass of the Sun
 - d. There is no constraint on the mass of a white dwarf star
 - e. White dwarfs are theoretical objects and have not been observed, hence their mass is pure speculation

8. What is the mass of a neutron star?
 - a. Less than 1.4 times the mass of the Sun
 - b. Between 1.4 and 3 times the mass of the Sun
 - c. Greater than 3 times the mass of the Sun
 - d. There is no constraint on the mass of a white dwarf star
 - e. Neutron stars are theoretical objects and have not been observed, hence their mass is pure speculation

9. What is a pulsar?
 - a. The name given to the jets that are ejected from newly forming stars
 - b. The name given to the flares that occur on stars like the Sun
 - c. The name given to the slowly expanding lost atmosphere of a dying star
 - d. Another name for a supernova explosion
 - e. Nothing more than a neutron star seen from the right direction

10. What evidence do we have that black holes actually exist?
 - a. X-rays around normal stars are detected
 - b. Normal stars are found orbiting around objects that cannot be seen
 - c. Normal stars are found orbiting objects with masses greater than 3x that of the Sun
 - d. When combined, all of the above information leads to the conclusion that black holes exist
 - e. Black holes are theoretical objects and have not been detected, hence their existence is pure speculation