

Fundamentals of Astrophysics

Astrophysics · Practice Test · 10 Questions

1. What is the primary process that powers a main-sequence star?

- A) Nuclear fission of uranium
- B) Gravitational contraction
- C) Nuclear fusion of hydrogen into helium
- D) Chemical combustion of carbon

2. Which classification describes the majority of stars found in the Milky Way?

- A) Red giants
- B) White dwarfs
- C) Main-sequence stars
- D) Neutron stars

3. What is the Schwarzschild radius associated with?

- A) The orbit of an exoplanet
- B) The event horizon of a non-rotating black hole
- C) The density limit of a white dwarf
- D) The distance to the Andromeda Galaxy

4. Which element is the most abundant by mass in the observable universe?

- A) Helium
- B) Oxygen
- C) Carbon
- D) Hydrogen

5. What defines the Chandrasekhar limit?

- A) The maximum mass of a stable white dwarf
- B) The distance at which a planet becomes tidally locked
- C) The temperature required for helium ignition
- D) The speed at which a galaxy rotates

6. Which of the following is considered the primary evidence for the Big Bang theory?

- A) The discovery of dark matter
- B) Cosmic microwave background radiation
- C) The existence of asteroid belts
- D) The rotation curve of galaxies

7. What type of celestial object is a pulsar?

- A) A rapidly rotating neutron star
- B) An active galactic nucleus
- C) A collapsing protostar
- D) A variable red giant

8. According to the Hertzsprung-Russell diagram, a star's luminosity is primarily a function of its temperature and what other property?

- A) Chemical composition
- B) Rotational velocity
- C) Radius
- D) Magnetic field strength

9. What phenomenon causes the observed redshift in light from distant galaxies?

- A) Gravitational lensing
- B) The expansion of space
- C) Interstellar dust obscuration
- D) Doppler shift due to galactic rotation

10. Which force is responsible for the collapse of an interstellar molecular cloud to form a star?

- A) Electromagnetism
- B) Strong nuclear force
- C) Gravity
- D) Weak nuclear force