Composition of Elements and Cosmic Evolution

Astronomy/Astrophysics · Practice Test · 20 Questions

1. What type of spectral signature does a continuous spectrum represent?

A) Hydrogen emission
B) High-temperature bodies
C) Scattering spectrum
D) Absorption spectrum

2. Which spectral signature is characterized by lines that are absorbed from a continuous spectrum?

A) Continuous spectrum
B) Emission spectrum
C) Scattering spectrum
D) Absorption spectrum

3. What is the primary element that forms the initial seed for star formation?

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

4. What are the main components that fuse to form heavier elements like Helium and Oxygen in early star formation?

A) Quark and electron
B) Proton and neutron
C) Photon and electron
D) Neutron and proton

5. What is the approximate ratio of Hydrogen to Helium in the formation of stellar envelopes?

A) 3:1
B) 1:3
C) 1:1
D) 30:1

6. What type of reaction occurs in stars when the temperature exceeds approximately 10 million K?

A) Nuclear fission
B) Radioactive decay
C) Hydrogen fusion
D) Helium fusion

7. In the context of stellar evolution, what is the primary process that occurs after hydrogen fusion?

A) Helium fusion
B) Carbon fusion
C) Oxygen fusion
D) Neutron capture

8. What is the most abundant element in the Earth's crust?

A) Iron
B) Silicon
C) Oxygen
D) Aluminum

9. What is the most abundant element in the universe?

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

10. What process is responsible for the formation of elements like Hydrogen, Helium, and Lithium in the early universe?

A) Stellar nucleosynthesis
B) Big Bang nucleosynthesis
C) Supernova explosion
D) Radioactive decay

11. What is the primary characteristic of a star with a temperature similar to the Sun?

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

12. What type of elements are formed through the fusion of hydrogen and helium in the core of a star?

A) Heavy metals
B) Light elements
C) Noble gases
D) Alkali metals

13. What is the relationship between the internal pressure of a star and its temperature?

A) Inversely proportional
B) Directly proportional
C) Exponentially proportional
D) Logarithmically proportional

14. What are the main elements that form the basis of life on Earth?

A) Silicon, Oxygen, Nitrogen
B) Carbon, Hydrogen, Oxygen
C) Iron, Carbon, Nitrogen
D) Hydrogen, Helium, Oxygen

15. What is the approximate temperature of the Sun's core?

A) 3000 K
B) 15 million K
C) 1000 million K
D) 3000 K

16. What forms the 'outer layer' of a star after the initial hydrogen fusion phase?

A) Helium and Hydrogen
B) Carbon and Oxygen
C) Nitrogen and Helium
D) Hydrogen and Helium

17. What is the primary element that forms the core of a star after it has exhausted its hydrogen fuel?

A) Oxygen
B) Carbon
C) Helium
D) Nitrogen

18. What are the main elements found in the Earth's crust, contributing to its structure?

A) Iron, Nickel, Gold
B) Silicon, Oxygen, Aluminum
C) Carbon, Hydrogen, Nitrogen
D) Helium, Hydrogen, Lithium

19. What is the primary element that makes up approximately 75% of the universe's mass?

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

20. What type of elements are formed when the Sun's temperature exceeds approximately 10 times that of the Sun?

A) Heavy elements
B) Light elements
C) Noble gases
D) Alkali metals