Milestones in Cosmological Discovery

Cosmology · Answer Key · 20 Questions

1. Who was the first astronomer to provide observational evidence that the universe is expanding by measuring the redshift of distant galaxies?

A) Edwin Hubble
B) Carl Sagan
C) Subrahmanyan Chandrasekhar
D) Fred Hoyle

2. In 1964, which two scientists accidentally discovered the Cosmic Microwave Background radiation while working at Bell Labs?

A) Guth and Linde
B) Penzias and Wilson
C) Hawking and Penrose
D) Einstein and de Sitter

3. The COBE satellite, launched in 1989, was the first mission to accurately measure the spectrum of what phenomenon?

A) Dark Matter distribution
B) The Cosmic Microwave Background
C) Black hole event horizons
D) Supernova expansion rates

4. Which cosmological principle states that the universe looks the same from any location, provided the scale is large enough?

A) The Steady State Principle
B) The Copernican Principle
C) The Cosmological Principle
D) The Anthropic Principle

5. Who first proposed the 'Big Bang' theory, originally referring to it as the 'hypothesis of the primeval atom'?

A) Georges Lemaître
B) Arthur Eddington
C) George Gamow
D) James Peebles

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6. What instrument was the first to provide high-resolution images of the early universe's temperature fluctuations in 2001?

A) Hubble Space Telescope
B) WMAP
C) James Webb Space Telescope
D) Kepler

7. Which element was the first to be synthesized in the early universe following the Big Bang, according to Big Bang Nucleosynthesis?

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

8. The concept of 'Dark Energy' was inferred from the observation of what objects in the late 1990s?

A) Type Ia Supernovae
B) Quasars
C) Pulsars
D) Neutron Stars

9. Which scientist first calculated the Schwarzschild radius, defining the event horizon of a non-rotating black hole?

A) Karl Schwarzschild
B) Enrico Fermi
C) Max Planck
D) Werner Heisenberg

10. What is the name of the first major telescope dedicated specifically to infrared astronomy, launched in 2021?

A) Chandra X-Ray Observatory
B) James Webb Space Telescope
C) Spitzer Space Telescope
D) Herschel Space Observatory

11. The 'Great Debate' of 1920 between Harlow Shapley and Heber Curtis centered on what astronomical mystery?

A) The existence of dark matter
B) The nature of spiral nebulae
C) The temperature of the sun
D) The composition of the moon

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12. Which astronomer is credited with the first discovery of a planet orbiting another sun-like star in 1995?

A) Michel Mayor and Didier Queloz
B) Clyde Tombaugh
C) Frank Drake
D) Vera Rubin

13. The first evidence for the existence of dark matter in galaxy clusters was observed by which astronomer in the 1930s?

A) Fritz Zwicky
B) Vera Rubin
C) Edwin Hubble
D) Subrahmanyan Chandrasekhar

14. What was the first major space telescope designed to study the composition and age of the universe by observing X-rays?

A) Chandra
B) Hubble
C) Fermi
D) Swift

15. Which theoretical model, later largely abandoned, proposed that the universe is constantly creating matter to maintain a constant density?

A) Steady State Theory
B) Inflationary Universe
C) Cyclic Model
D) Big Crunch

16. Who was the first to mathematically predict that the universe could be expanding or contracting based on General Relativity?

A) Alexander Friedmann
B) Albert Einstein
C) Niels Bohr
D) Stephen Hawking

17. In 1974, what object was discovered at the center of the Milky Way, later confirmed to be a supermassive black hole?

A) Sagittarius A*
B) Andromeda Galaxy
C) The Great Attractor
D) Messier 87

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18. The first detection of gravitational waves, confirming a major prediction of General Relativity, was achieved in what year?

A) 2005
B) 2015
C) 2010
D) 2020

19. What is the term for the first epoch of the universe, characterized by a rapid, exponential expansion?

A) Inflation
B) Recombination
C) Nucleosynthesis
D) The Dark Ages

20. Which astronomer identified the first 'standard candle' (Cepheid variables) used to measure extragalactic distances?

A) Henrietta Swan Leavitt
B) Annie Jump Cannon
C) Cecilia Payne-Gaposchkin
D) Maria Mitchell

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