Cosmological Philosophy and Astronomy

Philosophy Of Science · Answer Key · 15 Questions

1. Which philosopher is credited with the first known heliocentric model, predating Copernicus by nearly 1,800 years?

A) Aristarchus of Samos
B) Anaximander
C) Heraclitus
D) Empedocles

2. What is the name of the cosmological principle which states that the universe, on a large enough scale, looks the same from any location?

A) Copernican Principle
B) Anthropic Principle
C) Steady State Principle
D) Equivalence Principle

3. In the 17th century, which astronomer discovered that planetary orbits are elliptical rather than circular, directly challenging Aristotelian circular perfection?

A) Johannes Kepler
B) Tycho Brahe
C) Galileo Galilei
D) Christiaan Huygens

4. The 'Great Attractor' is a gravity anomaly in intergalactic space that is pulling our galaxy toward it; in which supercluster is it located?

A) Laniakea Supercluster
B) Virgo Supercluster
C) Perseus-Pisces Supercluster
D) Shapley Supercluster

5. Which phenomenon, observed by Edwin Hubble in 1929, provided the empirical basis for the Big Bang theory?

A) Redshift of galaxies
B) Cosmic Microwave Background
C) Stellar Parallax
D) Planetary Retrograde

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6. What is the chemical composition of the interstellar medium, which is predominantly made of two specific elements?

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

7. The 'Bode-Titius Law' attempted to predict the orbital distances of planets in our solar system; which planet was discovered as a result of searching for a missing body in this sequence?

A) Ceres
B) Neptune
C) Pluto
D) Eris

8. Which philosopher and mathematician proposed the 'Infinite Universe' theory, suggesting that the universe is composed of infinite suns and worlds?

A) Giordano Bruno
B) Baruch Spinoza
C) Gottfried Leibniz
D) René Descartes

9. What is the Chandrasekhar limit, a fundamental constraint in stellar evolution, expressed in solar masses?

A) 1.44
B) 2.50
C) 0.50
D) 3.20

10. The cosmic microwave background (CMB) radiation, discovered in 1964, acts as an echo of which stage of the universe?

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

11. Which law of planetary motion states that a line segment joining a planet and the Sun sweeps out equal areas during equal intervals of time?

A) Kepler's Second Law
B) Newton's Law of Gravitation
C) Bode's Law
D) The Titius-Bode Law

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12. What is the primary constituent of the dark matter that scientists hypothesize makes up approximately 27% of the universe's mass-energy content?

A) WIMPs
B) Baryons
C) Neutrinos
D) Photons

13. Which ancient Greek philosopher was the first to correctly explain that lunar eclipses are caused by the Earth's shadow falling on the Moon?

A) Anaxagoras
B) Thales of Miletus
C) Democritus
D) Parmenides

14. In 1974, Hawking radiation was proposed, suggesting that black holes emit particles due to quantum effects near which region?

A) Event horizon
B) Singularity
C) Accretion disk
D) Ergosphere

15. The 'Olbers' Paradox' poses a fundamental question regarding the nature of the universe; what does it ask?

A) Why is the night sky dark?
B) Why do planets move in ellipses?
C) Why does entropy increase?
D) Why is the speed of light constant?

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