

Milestones in Astrophysics

Astrophysics · Practice Test · 25 Questions

1. Who published the first theoretical evidence that a black hole could be formed by the gravitational collapse of a massive star, specifically in 1939?

- A) Subrahmanyan Chandrasekhar
- B) Robert Oppenheimer and Hartland Snyder
- C) Stephen Hawking and Roger Penrose
- D) Karl Schwarzschild

2. What was the first detected binary pulsar system, which provided the first indirect evidence for the existence of gravitational waves?

- A) PSR B1919+21
- B) PSR B1257+12
- C) PSR B1913+16
- D) PSR J0737-3039

3. In 1967, which instrument was used by Jocelyn Bell Burnell to detect the first radio pulsar?

- A) Arecibo Observatory
- B) Interplanetary Scintillation Array
- C) Green Bank Telescope
- D) Parkes Observatory

4. The 1930s theory of the 'Chandrasekhar Limit' identified that white dwarfs above this mass would inevitably collapse. What is that mass?

- A) 1.4 solar masses
- B) 2.2 solar masses
- C) 0.7 solar masses
- D) 3.0 solar masses

5. Which space telescope was the first to provide direct evidence of dark energy by observing distant Type Ia supernovae?

- A) James Webb Space Telescope
- B) Hubble Space Telescope
- C) Chandra X-ray Observatory
- D) Spitzer Space Telescope

6. What was the first molecule discovered in interstellar space via radio astronomy in 1963?

- A) Water
- B) Carbon Monoxide
- C) Hydroxyl radical (OH)
- D) Formaldehyde

7. Who proposed the first solution to Einstein's field equations that describes the geometry of spacetime outside a spherical, non-rotating mass?

- A) Arthur Eddington
- B) Karl Schwarzschild
- C) Hendrik Lorentz
- D) Georges Lemaître

8. What was the first X-ray source discovered outside our solar system in 1962?

- A) Cygnus X-1
- B) Scorpius X-1
- C) Crab Nebula
- D) Centaurus A

9. The COBE satellite, launched in 1989, provided the first measurement of what phenomenon, confirming the Big Bang's thermal history?

- A) Cosmic microwave background anisotropy
- B) The expansion rate of the universe
- C) Intergalactic dust density
- D) Dark matter halo distribution

10. What was the first exoplanet discovered orbiting a main-sequence star, found by Mayor and Queloz in 1995?

- A) HD 209458 b
- B) 51 Pegasi b
- C) Proxima Centauri b
- D) Kepler-186f

11. Which observatory was the first to detect neutrinos from a supernova (SN 1987A)?

- A) Super-Kamiokande
- B) Kamiokande-II
- C) SNO (Sudbury Neutrino Observatory)
- D) IceCube

12. What is the name of the first gravitational wave event ever detected by LIGO, occurring on September 14, 2015?

- A) GW170817
- B) GW150914
- C) GW190412
- D) GW200105

13. In 1929, Edwin Hubble published the first observation suggesting the universe is expanding. What was the core of this discovery?

- A) Redshift-distance relation of galaxies
- B) The existence of dark matter
- C) The rotation curve of spiral galaxies
- D) The luminosity of Cepheid variables

14. Which mission was the first to successfully land a probe on the surface of a comet (67P/Churyumov-Gerasimenko)?

- A) Deep Impact
- B) Stardust
- C) Rosetta/Philae
- D) Hayabusa

15. What was the first object to be definitively identified as a black hole candidate via X-ray observations in 1971?

- A) Sagittarius A*
- B) Cygnus X-1
- C) M87*
- D) V404 Cygni

16. The first direct image of a black hole's event horizon, released in 2019, was of a black hole in which galaxy?

- A) Andromeda
- B) Milky Way
- C) M87
- D) Sombrero

17. Who was the first person to propose the 'Big Bang' theory, originally calling it the 'hypothesis of the primeval atom'?

- A) Edwin Hubble
- B) Georges Lemaître
- C) Fred Hoyle
- D) George Gamow

18. What was the first successful space-based ultraviolet telescope, launched in 1968?

- A) OAO-2
- B) IUE
- C) FUSE
- D) GALEX

19. The first evidence of cosmic ray particles was discovered by Victor Hess in 1912 using what method?

- A) Deep-sea submersible
- B) High-altitude balloon flights
- C) Mountain top observatories
- D) Satellite sensors

20. Which telescope was the first to use the technique of 'adaptive optics' to correct for atmospheric turbulence in ground-based astronomy?

- A) Keck Observatory
- B) VLT (Very Large Telescope)
- C) Hale Telescope
- D) Subaru Telescope

21. What was the first galaxy confirmed to have a supermassive black hole at its center?

- A) M31
- B) M87
- C) NGC 4151
- D) Milky Way

22. In 1933, Fritz Zwicky used the virial theorem on the Coma Cluster to provide the first evidence for what?

- A) Black holes
- B) Dark matter
- C) The accelerating expansion of the universe
- D) Neutron stars

23. What was the first spacecraft to leave the heliosphere and enter interstellar space?

- A) Voyager 2
- B) Pioneer 10
- C) Voyager 1
- D) New Horizons

24. Which astronomical instrument was the first to utilize the principle of interferometry to measure the angular diameter of a star (Betelgeuse)?

- A) Mount Wilson Interferometer
- B) VLA
- C) VLTI
- D) ALMA

25. What was the first supernova observed with modern telescopes for which a progenitor star was identified in pre-explosion archival images?

- A) SN 1987A
- B) SN 1993J
- C) SN 2014J
- D) SN 1054