

SET-B

1. What is the temperature of the Sun's photosphere?

- A) Approximately 5,500 degrees Celsius
- B) Approximately 10,000 degrees Celsius
- C) Approximately 1,500 degrees Celsius
- D) Approximately 15,000 degrees Celsius

Answer: A) Approximately 5,500 degrees Celsius

2. Which telescope, launched in 1990, provided detailed space images?

- A) Keck Observatory
- B) Hubble Space Telescope
- C) Arecibo Observatory
- D) Chandra X-ray Observatory

Answer: B) Hubble Space Telescope

3. What does the term "Goldilocks zone" refer to in exoplanet studies?

- A) A region too hot for life
- B) A region too cold for life
- C) A zone with just the right conditions for liquid water to exist
- D) A region that contains only gas giants

Answer: C) A zone with just the right conditions for liquid water to exist

4. Which ancient civilization is credited with creating one of the earliest known models of the solar system?

- A) Ancient Egyptians
- B) Babylonians
- C) Ancient Greeks
- D) Mayans

Answer: C) Ancient Greeks

5. What major advancement did radio telescopes bring to astronomy in the 20th century?

- A) They allowed the observation of dark matter.
- B) They enabled the study of cosmic microwave background radiation.
- C) They facilitated the discovery of quasars and pulsars.
- D) They provided images of planets in the solar system.

Answer: C) They facilitated the discovery of quasars and pulsars.

6. What is thrust in the context of rocketry?

- A) The force that opposes the rocket's motion
- B) The force generated by the rocket's engines to propel it forward
- C) The weight of the rocket
- D) The gravitational pull on the rocket

Answer: B) The force generated by the rocket's engines to propel it forward

7. What type of electromagnetic radiation is associated with solar flares?

- A) Radio waves
- B) Ultraviolet light
- C) X-rays

D) Infrared radiation

Answer: C) X-rays

8. What is the significance of the cosmic microwave background (CMB) radiation?

A) It marks the beginning of star formation

B) It is the remnant radiation from the early universe

C) It is produced by supernova explosions

D) It indicates the presence of dark matter

Answer: B) It is the remnant radiation from the early universe

9. What type of solar activity can cause auroras on Earth?

A) Solar flares

B) Solar eclipses

C) Solar wind

D) Sunspots

Answer: C) Solar wind

10. Which force opposes the motion of a rocket as it ascends through the atmosphere?

A) Gravity

B) Thrust

C) Drag

D) Lift

Answer: C) Drag

11. Which of the following is NOT a type of light pollution?

A) Skyglow

B) Glare

C) Light trespass

D) Thermal pollution

Answer: D) Thermal pollution

12. What is the event horizon of a black hole?

A) The surface of the black hole where light can escape

B) The boundary beyond which nothing can escape the gravitational pull

C) The center point of a black hole

D) The region around a black hole where stars can form

Answer: B) The boundary beyond which nothing can escape the gravitational pull

13. What type of galaxy contains prominent spiral arms?

A) Elliptical galaxy

B) Spiral galaxy

C) Irregular galaxy

D) Lenticular galaxy

Answer: B) Spiral galaxy

14. Which of the following is a type of nebula formed by a supernova explosion?

A) Planetary nebula

B) Emission nebula

C) Reflection nebula

D) Supernova remnant

Answer: D) Supernova remnant

15. How do stars form within a nebula?

- A) Through the gravitational collapse of dense regions
- B) By the fusion of interstellar dust particles
- C) Through the explosion of existing stars
- D) By the collision of two galaxies

Answer: A) Through the gravitational collapse of dense regions

16. What phenomenon occurs when solar material erupts from the Sun's surface into space?

- A) Solar wind
- B) Coronal mass ejection
- C) Solar flare
- D) Sunspot cycle

Answer: B) Coronal mass ejection

17. What method is primarily used to detect exoplanets?

- A) Direct imaging
- B) Gravitational lensing
- C) Transit method
- D) Astrometry

Answer: C) Transit method

18. Which astronomer developed the laws of planetary motion that describe the orbits of planets around the Sun?

- A) Nicolaus Copernicus
- B) Galileo Galilei
- C) Johannes Kepler
- D) Isaac Newton

Answer: C) Johannes Kepler

19. What process primarily led to the first production of light in the universe?

- A) Nuclear fusion
- B) Cosmic inflation
- C) Recombination
- D) Photon emission

Answer: C) Recombination

20. What scale is used to classify the intensity of solar flares?

- A) Richter scale
- B) Fujita scale
- C) X-ray classification scale
- D) Beaufort scale

Answer: C) X-ray classification scale

21. What does the photoelectric effect demonstrate about light?

- A) Light can be reflected.
- B) Light can only behave as a wave.
- C) Light can emit electrons from a material when it shines on it.
- D) Light has no effect on matter.

Answer: C) Light can emit electrons from a material when it shines on it.

22. How does weight affect a rocket's launch?

- A) It has no effect on the launch.
- B) A lighter rocket requires less thrust to lift off.
- C) A heavier rocket always performs better.
- D) Weight increases the drag force only.

Answer: B) A lighter rocket requires less thrust to lift off.

23. Which organization promotes the reduction of light pollution?

- A) NASA
- B) International Dark-Sky Association (IDA)
- C) World Wildlife Fund (WWF)
- D) United Nations Environment Programme (UNEP)

Answer: B) International Dark-Sky Association (IDA)

24. What is an accretion disk?

- A) A disk-shaped region of empty space around a black hole
- B) A disk of gas and dust that spirals into a black hole
- C) A disk of stars orbiting a galaxy
- D) A disk of planets around a star

Answer: B) A disk of gas and dust that spirals into a black hole

25. What type of galaxy is characterized by a smooth, featureless light profile?

- A) Irregular galaxy
- B) Elliptical galaxy
- C) Lenticular galaxy
- D) Barred spiral galaxy

Answer: B) Elliptical galaxy

26. What is the phenomenon of light trespass?

- A) Light pollution caused by the moon
- B) Light that intrudes into areas where it is not needed or wanted
- C) Light that enhances the visibility of celestial objects
- D) The absence of artificial light in urban areas

Answer: B) Light that intrudes into areas where it is not needed or wanted

27. Which telescope played a role in observing the cosmic microwave background radiation?

- A) COBE (Cosmic Background Explorer)
- B) Planck Observatory
- C) WMAP (Wilkinson Microwave Anisotropy Probe)
- D) VLA (Very Large Array)

Answer: COBE (Cosmic Background Explorer)

28. In the context of the early universe, what role did the Higgs boson play?

- A) It was responsible for the formation of black holes.
- B) It gave mass to particles, enabling the formation of matter.
- C) It created light directly after the Big Bang.
- D) It was irrelevant to the conditions of the early universe.

Answer: It gave mass to particles, enabling the formation of matter.

29. What is the significance of gravitational waves in relation to black holes?

- A) They are produced by the merger of black holes
- B) They are used to detect black holes in other galaxies
- C) They provide information about the mass of black holes
- D) All of the above

Answer: All of the above

30. What was one of the first black hole mergers detected by LIGO?

- A) The formation of a neutron star
- B) A binary neutron star collision
- C) The merger of two stellar-mass black holes producing gravitational waves
- D) A supernova explosion near Earth

Answer: The merger of two stellar-mass black holes producing gravitational waves