

Set B

1. **What type of telescope uses lenses to gather and focus light?**
 - A) Refracting telescope
 - B) Reflecting telescope
 - C) Radio telescope
 - D) Gamma telescope
2. **Which rover confirmed the presence of water ice below Mars' surface?**
 - A) Viking 1
 - B) Spirit
 - C) Curiosity
 - D) Phoenix
3. **What is the solid, icy core of a comet called?**
 - A) Coma
 - B) Nucleus
 - C) Tail
 - D) Ion tail
4. **Which SpaceX rocket is designed for missions to Mars?**
 - A) Falcon 9
 - B) Starship
 - C) Dragon
 - D) Falcon Heavy
5. **What is the shape of a comet's orbit around the Sun?**
 - A) Circular
 - B) Elliptical
 - C) Parabolic
 - D) Hyperbolic
6. **What advantage does a space telescope have over ground-based telescopes?**
 - A) Larger mirrors
 - B) Less exposure to cosmic rays
 - C) Reduced atmospheric interference
 - D) Longer observation time
7. **How does SpaceX plan to refuel Starship in orbit for Mars missions?**
 - A) Refueling with solar power
 - B) Docking with a space station
 - C) In-orbit refueling by another Starship tanker
 - D) Refueling on the surface of the Moon
8. **What temperature is required to initiate nuclear fusion?**
 - A) Around 1,000°C
 - B) Around 1 million °C
 - C) Around 10 million °C
 - D) Around 1 billion °C

- 9. Which two stars in Ursa Major are known as the "pointer stars" because they help locate Polaris?**
- A) Mizar and Alcor
 - B) Alioth and Megrez
 - C) Dubhe and Merak
 - D) Phecda and Dubhe
- 10. What material is primarily used to construct the SpaceX Starship's exterior for thermal protection?**
- A) Titanium
 - B) Stainless steel
 - C) Aluminum alloy
 - D) Carbon fiber
- 11. What is the primary purpose of Perseverance's MOXIE instrument?**
- A) Detecting life
 - B) Analyzing soil composition
 - C) Converting carbon dioxide into oxygen
 - D) Measuring radiation
- 12. Which type of asteroid is rich in carbon and darker in appearance?**
- A) S-type
 - B) C-type
 - C) M-type
 - D) D-type
- 13. What is the goal of nuclear fusion research on Earth?**
- A) To create helium
 - B) To produce clean and limitless energy
 - C) To power nuclear weapons
 - D) To reduce global warming
- 14. SpaceX's Mars colony plan includes using local resources to create which essential gas?**
- A) Helium
 - B) Methane
 - C) Nitrogen
 - D) Argon
- 15. Which mission was launched by NASA to collect a sample from an asteroid?**
- A) Cassini
 - B) Juno
 - C) OSIRIS-REx
 - D) Voyager
- 16. At approximately what altitude does the boundary between the troposphere and stratosphere, called the tropopause, occur?**
- A) 10 km
 - B) 15 km
 - C) 20 km
 - D) 30 km

17. Which phase of the Moon comes approximately one week after the New Moon?

- A) Full Moon
- B) First Quarter
- C) Third Quarter
- D) Waxing Crescent

18. What is the primary reason Mars experiences much colder temperatures compared to Earth?

- A) Higher distance from the Sun
- B) Lack of volcanic activity
- C) Low atmospheric pressure
- D) Lack of oxygen in the atmosphere

19. What phenomenon, observed by Edwin Hubble, provides key evidence for the Big Bang Theory?

- A) The redshift of galaxies
- B) Black hole radiation
- C) Planetary orbits
- D) The rotation of galaxies

20. What is the primary purpose of using winglets at the tips of an aircraft's wings?

- A) To increase lift
- B) To reduce drag caused by wingtip vortices
- C) To improve fuel storage capacity
- D) To stabilize the aircraft during takeoff

21. In which layer of the atmosphere is the coldest temperature experienced, decreasing with altitude?

- A) Troposphere
- B) Stratosphere
- C) Mesosphere
- D) Thermosphere

22. Which process, if feasible, would allow Mars' atmosphere to become denser and potentially warmer, making it more Earth-like?

- A) Terraforming through greenhouse gas release
- B) Removing carbon dioxide from the atmosphere
- C) Increasing the planet's rotation speed
- D) Building large space mirrors

23. What is the phase of the Moon called when less than half of it is illuminated, and it is visible as a slim shape after a New Moon?

- A) Waxing Crescent
- B) Waning Crescent
- C) Waxing Gibbous
- D) Waning Gibbous

24. What is a primary advantage of using a delta wing design, particularly for supersonic aircraft?

- A) Improved low-speed maneuverability
- B) High lift generation at low speeds

- C) Better performance and stability at supersonic speeds
- D) Reduced landing speed requirements

25. Which skill is critical for astronauts to perform during prolonged missions, particularly for maintaining mental well-being in isolation?

- A) High-intensity fitness routines
- B) Communication and teamwork
- C) Language skills
- D) Robotic repair skills

26. Which layer of Earth's atmosphere gradually transitions into outer space, making it difficult to define a clear boundary?

- A) Mesosphere
- B) Stratosphere
- C) Thermosphere
- D) Exosphere

27. Which technology is essential for converting Mars' atmospheric CO₂ into oxygen?

- A) Solar cells
- B) Nuclear reactors
- C) MOXIE (Mars Oxygen In-Situ Resource Utilization Experiment)
- D) Hydroponics

28. What natural resource could potentially be mined from the polar ice caps on Mars to support human colonization?

- A) Hydrogen
- B) Carbon
- C) Water ice
- D) Sulfur

29. Who first proposed the concept that would later develop into the Big Bang Theory, based on the idea of an expanding universe?

- A) Albert Einstein
- B) Georges Lemaître
- C) Edwin Hubble
- D) Carl Sagan

30. What is the main challenge in using nuclear propulsion for space travel to Mars?

- A) Insufficient energy generation
- B) Excessive cost of nuclear material
- C) Thermal management and shielding from radiation
- D) Low speed compared to chemical rockets