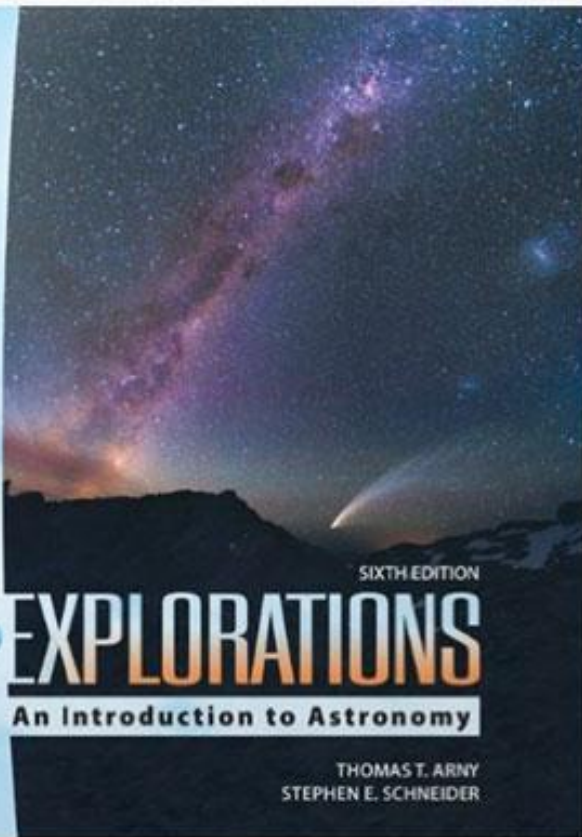


TEST BANK



Chapter 02 The Rise of Astronomy

Multiple Choice Questions

1. The moon appears larger when it rises than when it is high in the sky because
 - A. You are closer to it when it rises (angular-size relation).
 - B. You are farther from it when it rises (angular-size relation).
 - C.** It's an illusion from comparison to objects on the horizon.
 - D. It's brighter when it rises.

2. Kepler's third, or harmonic, law states that the
 - A. Period of an orbit cubed equals the semi-major axis squared.
 - B.** Semi-major axis of an orbit cubed equals the period squared.
 - C. Planets move fastest when they are closest to the Sun.
 - D. Semi-major axis of an orbit is inversely proportional to the period.

3. The paths of the planets on the sky are tilted with respect to the celestial equator by about
 - A. 5 degrees
 - B.** 23 degrees
 - C. 45 degrees
 - D. 90 degrees

4. Copernicus' heliocentric model failed to work as well as it might to predict the positions of planets because Copernicus insisted the orbits were
 - A.** Circular.
 - B. Elliptical.
 - C. Circular, mounted on epicycles.
 - D. Hyperbolic.

5. One of Tycho Brahe's major contributions to astronomy was to prove that _____ was _____.

- A. A supernova (exploding star), much farther away than the planets.
- B. A comet, outside the Earth's atmosphere.
- C. The Sun, the center of the solar system.
- D.** Both A and B were accomplishments of Tycho Brahe.
- E. A, B and C were accomplishments of Tycho Brahe.

6. _____ was the first person to measure the circumference of the Earth.

- A. Ptolemy
- B. Copernicus
- C.** Eratosthenes
- D. Galileo
- E. Aristarchus

7. One of the methods used to date supernova remnants (the remains of exploded stars) today is by using

- A. The notebooks of Galileo
- B.** The records of ancient Chinese, Japanese, and Korean astronomers
- C. The works of Ptolemy
- D. Kepler's laws

8. Which of the following objects passes through the zodiac?

- A. Sun
- B. Planets
- C. Earth and Moon
- D.** All of the above
- E. None of the above

9. Which of the following statements regarding the motion of objects on the celestial sphere is true?

- A. The Sun moves along the celestial equator
- B. The Moon moves along the celestial equator
- C. The planets move parallel to the celestial equator
- D. The stars move along the zodiac
- E.** The stars move parallel to the celestial equator

10. What is retrograde motion?

- A. East to west motion of the Sun
- B. East to west motion of the Moon relative to the stars
- C.** Occasional east to west motion of the planets relative to the stars
- D. Occasional west to east motion of the planets relative to the stars

11. What is the size of an object located at a distance of 1 km and that has angular size $A = 2^\circ$?

- A. About 10 meters
- B.** About 35 meters
- C. About 2 meters
- D. About 360 meters

12. Which of the following was a crucial contribution of Galileo in rejecting the geocentric system?

- A. The observation of parallax
- B. The fact that Venus shows a gibbous phase
- C.** The fact that Venus shows a crescent phase
- D. All of the above
- E. Only B and C above

13. In _____ models, the Sun is assumed as the center of the solar system.

- A.** Heliocentric
- B. Geocentric

14. During retrograde motion, a planet moves from _____ to _____ relative to the stars.

A. East, west (moves westward)

B. West, east (moves eastward)

15. During retrograde motion, a planet moves from _____ to _____ relative to the horizon.

A. East, west (moves westward)

B. West, east (moves eastward)

16. During retrograde motion, a planet rises in the _____ and sets in the _____.

A. East, west (moves westward)

B. West, east (moves eastward)

17. Galileo was the first to observe the phases of _____.

A. The Moon

B. Venus

C. Earth

18. In Copernicus' model of the solar system, the planets orbited the _____ in _____ orbits.

A. Earth, circular

B. Sun, elliptical

C. Sun, circular

19. _____ major contribution to astronomy is his extensive series of measurements of planetary positions.

A. Tycho Brahe's

B. Galileo's

C. Kepler's

20. _____ used the extensive records of planetary positions measured by _____ to discover that the orbits of the planets are _____.

- A. Tycho, Kepler, circular
- B. Kepler, Tycho, elliptical**
- C. Kepler, Galileo, elliptical

21. Kepler's _____ law states that the orbits of planets are elliptical, with the Sun in one focus.

- A. First**
- B. Second
- C. Third

22. From Kepler's _____ law, we conclude that the planets do not move with constant speed.

- A. First
- B. Second**
- C. Third

23. From Kepler's _____ law, we conclude that Mars completes a full orbit much faster than Pluto.

- A. First
- B. Second
- C. Third**

True / False Questions

24. The paths of the planets' orbits lie in all different directions on the sky.

FALSE

25. Copernicus' model was significantly better at predicting future positions of planets than Ptolemy's.

FALSE

26. Galileo deduced many empirical laws of motion before Newton was even born.

TRUE

27. The inability to observe parallax of stars led ancient Greek astronomers to reject the idea that the Earth revolves around the Sun.

TRUE

28. The motion of the Sun with respect to the stars is retrograde, i.e., east to west relative to the stars.

FALSE

29. During the month of December, the Earth goes through the point of closest approach to the Sun. Using Kepler's Second law we can conclude that the Earth moves faster in December than in June.

TRUE

30. During retrograde motion, the planet Mars rises in the West and sets in the East.

FALSE

31. Parallax is the shift in a star's apparent position due to the Earth's motion around the Sun.

TRUE

32. In geocentric theories, the Earth is assumed to be the center of the solar system.

TRUE

33. The Sun is located at the center of the Earth's elliptical orbit.

FALSE

34. The Sun is located at one of the foci of the Earth's orbit.

TRUE

35. The angular size of an object decreases as the distance to the observer increases.

TRUE

36. The angular size of the Sun as observed from Earth is about 0.5 degrees.

TRUE

37. The angular size of the Moon as observed from Earth is about 0.5 degrees.

TRUE

38. The concept of the epicycle was introduced in the heliocentric model to explain the retrograde motion of the planets.

FALSE

39. In the heliocentric model, the retrograde motion of the planets was explained as the consequence of the different orbital speeds of the planets, without the use of epicycles.

TRUE