TEST QUESTIONS

Multiple Choice Questions

1. Seen from the northern latitudes, the star Polaris
   a. is never above the horizon during the day.
   b. always sets directly in the west.
   * c. is always above the northern horizon.
   d. is never visible during the winter.
   e. is the brightest star in the sky.

2. An observer on Earth's equator would find
   a. Polaris directly overhead.
   b. Polaris 40° above the northern horizon.
   c. the celestial equator coincides with the horizon.
   * d. the celestial equator passing directly overhead.
   e. that the ecliptic coincides with the horizon.

3. The apparent visual magnitude of a star is a measure of the star's
   a. size.
   * b. intensity.
   c. distance.
   d. color.
   e. temperature.

4. Which star in the table to the right would appear the brightest to an observer on Earth?
   a. α Cet
   * b. α CMa
   c. Nim
   d. ρ Per
   e. δ Dra

Star Name	Apparent Visual Magnitude
δ Dra	3.07
α Cet	2.53
ρ Per	3.98
Nim	8.07
α CMa	-1.46

5. Based on the information in the table to the right, what is the ratio of the intensity of δ Dra to that of Nim?
   a. 2.512
   b. 5
   c. 8.07
   d. 11.14
   * e. 100

Star Name	Apparent Visual Magnitude
δ Dra	3.07
α Cet	2.53
ρ Per	3.98
Nim	8.07
α CMa	-1.46

6. Which star in the table to the right would not be visible to the unaided eye of an observer on Earth?
   a. α Cet
   b. α CMa
   * c. Nim
   d. ρ Per
   e. δ Dra

Star Name	Apparent Visual Magnitude
δ Dra	3.07
α Cet	2.53
ρ Per	3.98
Nim	8.07
α CMa	-1.46

7. The apparent visual magnitude of a star is 7.3. This tells us that the star is
   a. one of the brighter stars in the sky.
   b. bright enough that it would be visible even during the day.
* c. not visible with the unaided eye.
   d. very far from Earth.
   e. very close to Earth.

8. An observer in the Northern Hemisphere watches the sky for several hours. Due to the motion of Earth, this observer notices that the stars near the north celestial pole appear to move
* a. counter clockwise.
   b. clockwise.
   c. from left to right.
   d. from right to left.
   e. nearly vertically upward.

9. You live at a latitude of 73° N. What is the angle between the northern horizon and the north celestial pole?
* a. 73°
   b. 27°
   c. 17°
   d. 23½°
   e. 5°

10. You live at a latitude of 39° S. What is the angle between the southern horizon and the south celestial pole?
   a. 45°
   b. 23.5°
* c. 39°
   d. 51°
   e) The answer depends on the day of the year.

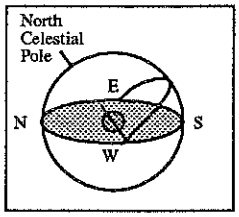
11. The celestial equator is
   a. a line around the sky directly above Earth's equator.
   b. the dividing line between the north and south celestial hemispheres.
   c. the path that the sun appears to follow on the celestial sphere as Earth orbits the sun.
* d. a and b.
   e. a and c.

12. The _____ is the point on the celestial sphere directly above any observer.
   a. north celestial pole
   b. south celestial pole
* c. zenith
   d. celestial equator
   e. asterism

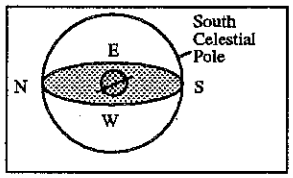
13. The star Vega has an apparent visual magnitude of 0.03 and the star HR 4374 has an apparent visual magnitude of 4.87. It has been determined that both stars are at the same distance from Earth. What does this information tell us about the two stars?
   a. Vega must be closer to Earth than HR 4374.
   b. Vega must be farther from Earth than HR 4374.
   c. Vega must produce less energy than HR 4374.
* d. Vega must produce more energy than HR 4374.
   e. Vega will appear fainter to us than HR 4374.

14. If the north celestial pole appears on your horizon, what is your latitude?
    a. 90° N
    b. 90° S
* c. 0°
    d. 45° N
    e. The latitude of the observer can not be determined from the information given.

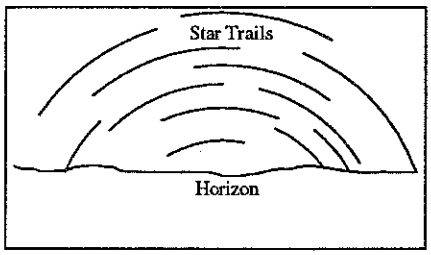
15. What is the approximate latitude of the observer in the diagram to the right?
    a. 90° N
    b. 90° S
* c. 50° N
    d. 50° S
    e. 0°



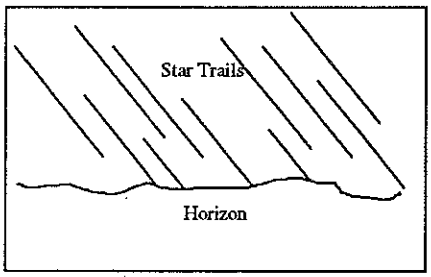
16. What is the approximate latitude of the observer in the diagram to the right?
    a. 20° N
* b. 20° S
    c. 70° N
    d. 70° S
    e. 0°



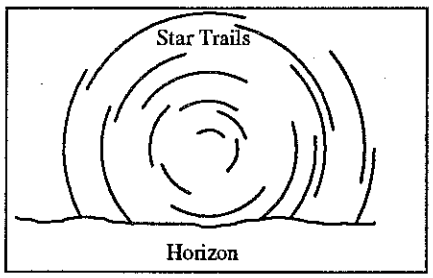
17. An observer in the Northern Hemisphere takes a time exposure photograph of the night sky. If the illustration to the right depicts the photograph taken by the observer, which direction was the camera pointing?
    a. straight north
    b. straight east
* c. straight south
    d. straight west
    e. straight up, directly overhead



18. An observer in the Northern Hemisphere takes a time exposure photograph of the night sky. If the illustration to the right depicts the photograph taken by the observer, which direction was the camera pointing?
    a. straight north
    b. straight east
    c. straight south
* d. straight west
    e. straight up, directly overhead



19. An observer in the Southern Hemisphere takes a time exposure photograph of the night sky. If the illustration to the right depicts the photograph taken by the observer, which direction was the camera pointing?
    a. straight north
    b. straight east
* c. straight south
    d. straight west
    e. straight up, directly overhead



20. Precession of the rotation axis of Earth is caused by
* a. the force of gravity from the sun and moon on Earth's equatorial bulge.
b. the force of gravity from the sun and Jupiter on the Earth-moon system.
c. the magnetic field of Earth.
d. the formation and subsequent melting of glaciers during the ice-ages.
e. the impact of asteroids.

21. Most star names, such as Aldebaran and Betelgeuse are
a. Latin.
b. Greek.
* c. Arabic.
d. English.
e. Italian.

22. Constellation names are
* a. Latin.
b. Greek.
c. Arabic.
d. English.
e. Italian.

23. The magnitude scale
a. originated just after the telescope was invented.
* b. can be used to indicate the apparent intensity of a celestial object.
c. was devised by Galileo.
d. is no longer used today.
e. was used to determine the rate of precession.

24. Star A has an apparent visual magnitude of 13.4 and star B has an apparent visual magnitude of 15.4. Star A is _____ than star B.
a. 2 times fainter
b. 2 times brighter
c. 6.3 times fainter
* d. 6.3 times brighter
e. 29.8 times fainter

25. Polaris is a second magnitude star, and Phi Pegasi is about 16 times fainter than Polaris. What is the approximate magnitude of Phi Pegasi?
a. 18
b. -14
c. 3
d. -3
* e. 5

Fill in the Blank Questions

1. _____ is a measure of the light energy that hits one square meter in one second.

** Intensity

2. The _____ is the point on the celestial sphere directly above an observer, regardless of where the observer is located on Earth.

** Zenith

3. Star A has an apparent visual magnitude of 6.3 and star B has an apparent visual magnitude of 5.3. Star A is _____ times _____ than star B.

** 2.5 fainter

4. Earth's rotation axis _____ slowly so that in a few thousand years Polaris will no longer be the North Star.

** precesses

5. The full moon has an angular diameter of approximately _____ arc minutes for an observer located on the surface of Earth.

** 30

True-False Questions

F 1. The constellations were created by the Greeks.

T 2. A second magnitude star in Ursa Major is brighter than a fourth magnitude star in Orion.

T 3. The Greek letter designation conveys information about a star's location and brightness.

F 4. The celestial equator always passes directly overhead.

T 5. The celestial equator always crosses the horizon at the east point and west point.

T 6. Navigators can find their latitude by measuring the angle from the northern horizon to the north celestial pole.

T 7. A scientific model is a mental conception that provides a framework that helps us think about some aspect of nature.

F 8. The constellation of Orion is currently visible in the evenings in January. Precession will not affect this and Orion will still be visible in January 13,000 years from now.

Essay Questions

1. Describe the path that a star on the celestial equator follows from the time it rises until it sets for a person at a latitude of 60° N and a person at the equator.

2. Describe the location of Polaris in the sky relative to the horizon as seen by observers in Alaska (lat. = 60° N), Texas (lat. = 33° N), Ecuador (lat. = 0°), and Australia (lat. = 30° S)

3. What information does a star's Greek letter designation convey?

4. How are the celestial poles and equator defined by Earth's rotation?

5. How is a constellation different from an asterism?