Finish | Help

Name: Leslie Looney (Preview)

HomeWork #2

Number of Questions: 20

Question 1: (5 points)

Which of the following lines or points is always directly over your head, no matter where on the Earth you go?

- 1. The celestial equator.
- 2. The ecliptic.
- 3. The zenith.
- 4. 90° north declination.

Save answer

Question 2: (5 points)

Which of the following points REMAINS FIXED in the sky relative to an observer's horizon over a time scale of 100 years?

- 1. The direction to a distant star (e.g., Betelgeuse, in Orion).
- 2. The north celestial pole.
- 3. The winter solstice.
- 4. The vernal equinox.

Save answer

Question 3: (5 points)

For an observer at a fixed location on the Earth, the angle between the north celestial pole and an observer's horizon depends on

- 1. the observer's longitude (east or west of Greenwich).
- 2. the time of day.
- 3. the time of year.
- 4. the observer's latitude (north or south of the equator).

Save answer

Question 4: (5 points)

The reason that leap years have an extra day is to account for the fact that

- 1. the Earth's rotation period is slowly increasing because of tidal effects.
- 2. the year is not exactly equal to an integral number of days.
- 3. the day is not exactly 24 hours because of Earth's periodically varying rotation period.
- 4. the length of the year varies with a period of four years because of precession.

Save answer

Question 5: (5 points)

The ecliptic can be defined as

- 1. the extension of the Earth's equator onto the sky.
- 2. the plane which is perpendicular to the Earth's spin axis.
- 3. the path traced out by the Moon in our sky in one month against the background stars.
- 4. the path traced out by the Sun in our sky over one year against the background stars.

Save answer

Question 6: (5 points)

Seasonal variations on a planet's surface are caused by

- 1. clouds which periodically form and disappear as the planet orbits the Sun.
- 2. the tilt of the planet's spin axis with respect to the perpendicular to its orbital plane.
- 3. volcanoes which erupt periodically because of tidal interactions and obscure the atmospheres of planets.
- 4. the variation of the planet's distance from the Sun during its passage around its elliptical orbit.

Save answer

Question 7: (5 points)

How often does the Sun cross the celestial equator in a given year?

- 1. Never, because it is always ON the celestial equator and follows it throughout the year.
- 2. Only once.
- **3. Twice.**
- 4. 365 times, because it does this every day.

Save answer

Question 8: (5 points)

Precession is

- 1. the occasional reversal in geological time of the direction of the spin axis of Earth.
- 2. the motion of the Earth along its orbital path.
- 3. the daily rotational motion of the Earth.
- **4. a very slow coning motion ("wobble") of the Earth's axis of rotation.**

Save answer

Question 9: (5 points)

The lowest amount of solar energy per square meter is incident upon the surface of Earth in the northern hemisphere on or about

- **1. December 21, the beginning of winter.**
- 2. March 21, the end of winter.
- 3. September 21, the beginning of fall or autumn.
- 4. January 5, mid-winter.

Save answer

Question 10: (5 points)

Why do we see different phases of the Moon?

- 1. Because the Moon's distance from the Earth changes as it moves in its elliptical orbit, thereby changing its apparent brightness.
- **2. Because the illuminated half of the Moon becomes more or less visible from Earth as the Moon orbits the Earth.**

- 3. Because the Earth's shadow gradually moves over the Moon's surface as the Moon orbits the Earth.
- 4. Because Moon's rotation brings more or less of the illuminated hemisphere into view from Earth.

Save answer

Question 11: (5 points)

When will the first-quarter Moon rise, approximately?

- 1. 6 AM
- 2. midnight.
- 3. 6 PM
- **4. noon.**

Save answer

Question 12: (5 points)

The phase of the Moon at the time of solar eclipse

- 1. will be full.
- 2. can be any phase: new, quarter, or full.
- **3. will be new.**
- 4. will be third quarter.

Save answer

Question 13: (5 points)

A lunar eclipse does not occur at every full Moon because

- 1. a lunar eclipse cannot occur after sunset.
- **2. the plane of the Moon's orbit is at an angle to the plane of the Earth's orbit.**
- 3. the path of the Sun is inclined at an angle of 5° to the ecliptic plane.
- 4. the orbit of the Moon is not a perfect circle.

Save answer

Question 14: (5 points)

During a particular solar eclipse (when the Moon and Sun are precisely in line), the eclipse can be either total (Sun completely covered) or annular (Sun not quite covered) when viewed from the eclipse center line, because

○ 1. the Moon has deep valleys on its surface.

○ 2. the Moon's orbit is inclined at several degrees to that of the Earth.

○ 3. the Moon's distance from Earth varies from eclipse to eclipse.

○ 4. of the time of day at the viewing site; annular eclipses always occur in early mornings and early evenings.

Save answer

Question 15: (5 points)

The motions of the planets against the background stars in our sky can best be described as

○ 1. regular patterns with general eastward motion interrupted by periods of westward motion.

○ 2. regular and uniform eastward motion.

○ 3. general eastward motion but with occasional stationary periods, with no motion at all.

○ 4. regular patterns with general westward motion interrupted by periods of eastward motion.

Save answer

Question 16: (5 points)

The reason why Copernicus' heliocentric theory soon came to be regarded as preferable to the geocentric theory of Ptolemy is that

○ 1. the heliocentric theory used complex constructions called epicycles and deferents to account for the observed motions of the planets, and so was considered more reliable than the geocentric theory.

○ 2. the heliocentric theory accounted for the same observed motions of the planets as the geocentric theory, but did so in a much simpler way.

○ 3. the heliocentric theory accounted for retrograde motion, which the geocentric theory was unable to explain.

○ 4. the heliocentric theory was obviously correct from watching the Sun move.

Save answer

Question 17: (5 points)

The greatest inaccuracy in Copernicus' theory of the solar system was that

○ 1. he did not allow for retrograde motion.

○ 2. he placed the planets on epicycles, the centers of which followed orbits around the Sun.

○ 3. he assumed that the planets move in elliptical orbits with constant speeds rather than variable speeds.

○ 4. he placed the planets in circular orbits.

Save answer

Question 18: (5 points)

Kepler's first law states that a planet moves around the Sun

○ 1. in a circle, with the Sun at the center.

○ 2. in an elliptical orbit, with the Sun at one focus.

○ 3. in an elliptical orbit, with the Sun on the minor axis of the ellipse.

○ 4. in an elliptical orbit, with the Sun at the center of the ellipse.

Save answer

Question 19: (5 points)

Kepler's second law states:

○ 1. A line joining a planet to the Sun moves equal distances along the planet's orbit in equal times.

○ 2. A line joining a planet to the Sun sweeps through equal angles in equal times.

○ 3. A line joining a planet to the Sun points in the same direction at all times.

○ 4. A line joining a planet to the Sun sweeps out equal areas in equal times.

Save answer

Question 20: (5 points)

Kepler's third law tells us that

- 1. the period of a planet in yr equals its semimajor axis in AU.
- 2. the square of a planet's period in yr equals the cube of its semimajor axis in AU.
- 3. the square of a planet's period in yr equals the fourth power of its semimajor axis in AU.
- 4. the cube of a planet's period in yr equals the square of its semimajor axis in AU.

Save answer

Finish   Help