Review Test Submission: 2 CHAPTER QUIZ

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Course	1501_Stars Galaxies and the Universe [1501_ASTR_1960_00]
Test	2 CHAPTER QUIZ
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Attempt Score	19 out of 24 points
Time Elapsed	45 minutes.
Instructions	

Question 1

1 out of 1 points

A line running from due north to due south through a point directly overhead is called the

Selected Answer: ✓ a. meridian.

Answers:
a. zenith.
b. celestial equator.
✓ c. meridian.
d. nadir.

Response Feedback: FEEDBACK: A meridian is an imaginary line that is part of a great circle connecting the point over your head (your zenith) to the north and south celestial poles. The great circle also passes through the point under your feet (your nadir) (page 30). See also The View from the Poles.

Question 2

1 out of 1 points

Residents of the Southern Hemisphere cannot see the stars around the north celestial pole because

Selected Answer: ✓ a. Earth itself is in the way.

Answers:
a. the Moon blocks this line of sight.
✓ b. Earth itself is in the way.

c. the tilt of Earth prevents this view.

d. the light from the Sun interferes.

Response Feedback: FEEDBACK: In the Southern Hemisphere, the south celestial pole is visible but the North Pole is under the horizon, hidden by the earth under our feet (page 35). See also the Sun Motions Demonstrator and The View from the Poles.

Question 3

1 out of 1 points

Is there any location on Earth where the entire sky is potentially visible within a 24-hour period (ignoring the fact that some stars can't be seen if it is daytime)?

Selected Answer: d. at the equator

Answers: a. at the equator

b. There is no position on the Earth where it is possible to see the entire sky in one daily rotation of the Earth.

c. at either the north or south pole

d. at a latitude of either 45° north or south

Response Feedback: FEEDBACK: At the equator one can see all the way to the north and south celestial poles, as they will be on the horizon. Throughout a 24-hour period, the entire sky will pass over (page 33). See also the Sun Motions Demonstrator and The View from the Poles.

Question 4

1 out of 1 points

If you are located at a position of latitude 30° north, a star that you observe near the north celestial pole will

Selected Answer: d. stay up longer than a star located on the celestial equator.

Answers: a. never rise above the horizon.

b. stay up longer than a star located on the celestial equator.

c. stay up a shorter time than a star located on the celestial equator.

d. stay up for exactly 12 hours.

Response Feedback: FEEDBACK: Objects that are located on the celestial equator will be visible for only 12 hours per day. The further north a star is, the longer it stays up. Circumpolar stars that are near the north celestial pole never set (page 35). See also the Sun Motions Demonstrator and The View from the Poles.

Question 5

1 out of 1 points

In six months, you will be able to see a different set of stars in the night sky because

Selected Answer: b. Earth will move.

Answers:
a. the Moon will move.
b. Earth will move.
c. the stars will move.
d. the Sun will move.

Response Feedback: FEEDBACK: We are able to view objects that are visible only when the Sun is on the opposite side of Earth. After six months, Earth will have completed half its orbit about the Sun and the visible night sky will be in the opposite direction from a half-year earlier (page 38). See also the Ecliptic (Zodiac) Simulator and The Earth Spins and Revolves.

Question 6

0 out of 1 points

If Earth's spin axis were exactly perpendicular to the plane of Earth's orbit,

Selected Answer: b. All the possible answers are correct.

Answers:
a. All the possible answers are correct.
b. there would be exactly 12 hours of daylight and 12 hours of nighttime every
c. the Sun would follow the same path through the sky every day.
d. day.
e. the Sun would rise due east and set due west every day.

Response FEEDBACK: Not only would all of the possible choices

Feedback: occur every day, it would occur at all locations on Earth and there would be no change of seasons (page 39).

Question 7

1 out of 1 points

The tilt of Earth's axis affects seasons by changing the

Selected Answer: c. inclination of sunlight upon your location on Earth as the year progresses.

Answers:
a. rate of rotation of Earth as the year progresses.
b. distance between your location on Earth and the Sun as the year progresses.
c. inclination of sunlight upon your location on Earth as the year progresses.
d. speed of Earth as it orbits the Sun.

Response Feedback: FEEDBACK: During the season of summer in the Northern Hemisphere, sunlight strikes Earth at a large inclination angle relative to the surface of Earth; this causes the sunlight to be intense, which means it delivers a lot of energy per area. During the winter season in the Northern Hemisphere, sunlight strikes Earth at a small inclination angle relative to the surface of Earth, therefore less energy per area is received (pages 38–39).
See also the Sun's Rays Simulator and The Earth Spins and Revolves.

Question 8

1 out of 1 points

If Earth's axis were tilted twice as much as it currently is, we would experience

Selected Answer: a. larger changes in seasons.

Answers:
a. larger changes in seasons.
b. the same seasons that we experience currently.
c. no seasons at all.
d. smaller changes in seasons.

Response Feedback: FEEDBACK: The greater the tilt of Earth, the more directly the polar areas of the planet will be exposed to the Sun during summer seasons and the less directly they will be exposed in the winter seasons. This should increase the

intensity of heating and therefore trigger greater changes on our planet during each season (page 40–41). See also the Sun's Rays Simulator.

Question 9

0 out of 1 points

The Sun is directly overhead at noon

Selected Answer: b. at all locations on Earth on the summer solstice.

Answers:
a. at all locations in the Northern Hemisphere, but only on the summer solstice.
b. only twice a year within the Tropics.
c. at all locations on Earth on the summer solstice.
d. at locations in the Northern Hemisphere, but only on the vernal equinox.

Response Feedback: FEEDBACK: The Tropics are between latitudes 23.5o north and south. On the days of the solstices, the Sun's position will be directly overhead at these latitudes, and during the rest of the year, the Sun's position will travel continuously between these positions. On the equinoxes, the Sun will be directly overhead for observers on the equator (page 44). See also the Sun Motions Demonstrator.

Question 10

1 out of 1 points

Our modern calendar system accounts for the precession of the equinoxes so that

Selected Answer: b. seasons begin close to the same day each year.

Answers:
a. our calendar always starts when Earth is at the same place in its orbit each year.
b. the constellation against which we see the Sun is the same at each summer solstice.
c. seasons begin close to the same day each year.
d. the phases of the Moon are synchronized with each month.

Response FEEDBACK: Our calendar is based on a tropical year, which

Feedback: is 365.24 solar days long. This requires the addition of an extra day every leap year so that the seasons occur during the same months year after year (pages 49–50).

Question 11

0 out of 1 points

We only see one side of the Moon because

Selected Answer: c. the Moon does not spin on its axis.

Answers:
a. the Moon rotates on its axis once per orbit around Earth.
b. the Moon does not move in its orbit.
c. the Moon does not spin on its axis.
d. there is always only one half of the Moon lit by the Sun.

Response Feedback: FEEDBACK: When the Moon orbits Earth, the same side always faces Earth. This means that the Moon can complete a rotation on its axis only when it also completes a full orbit of Earth (pages 45–46). See also the Lunar Phase Simulator and The Moon's Orbit: Eclipses and Phases.

Question 12

1 out of 1 points

If it is 6:00 p.m. where you live, and you see a full Moon, it is

Selected Answer: b. "rising" from the eastern horizon.

Answers:
a. This situation is impossible; you cannot view this phase at this time.
b. "rising" from the eastern horizon.
c. "setting" into the western horizon.
d. high above the horizon.

Response Feedback: FEEDBACK: A full Moon is visible in the sky exactly opposite in position to the Sun. A full Moon at sunset must "rise" in the east as the Sun "sets" in the west (page 46). See also the Lunar Phase Simulator and The Moon's Orbit: Eclipses and Phases.

Question 13

1 out of 1 points

A crescent phase of the Moon can be seen at midnight if the Moon is

Selected Answer: a. This situation is impossible; you cannot view this phase at this time.

Answers:
a. "rising" from the eastern horizon.
b. This situation is impossible; you cannot view this phase at this time.
c. "setting" into the western horizon.
d. high above the horizon.

Response Feedback: FEEDBACK: Either a waning crescent or waxing crescent Moon cannot be seen at midnight because these phases are visible only when one views the Moon in the direction of the Sun. Crescent phases should rise after midnight or set before midnight (page 46). See also the Moon Phases and the Horizon Diagram

Question 14

0 out of 1 points

Your likelihood of seeing a particular phase of the Moon depends on

Selected Answer: c. the position of the Moon in its orbit around Earth.

Answers:
a. the time of day or night where you are located on Earth.
b. the angular separation between the Moon and the Sun.
c. All the possible answers are correct.
d. the position of the Moon in its orbit around Earth.

Response Feedback: FEEDBACK: Whether you can see a certain phase of the Moon depends on whether you are able to see the Moon at the time of day or night when you look. Gibbous and full phases of the Moon are visible mainly during nighttime hours, and crescent and new Moon phases are visible during the daytime, since one must look toward the direction of the Sun to see the Moon during this part of its cycle. Some phases of the Moon can be visible during both day and night (pages 47–48). See also See also the Moon Phases and the Horizon Diagram and The Moon's Orbit:

Eclipses and Phases.

Question 15

1 out of 1 points

When comparing a solar eclipse to a lunar eclipse, the solar eclipse

Selected Answer: a. is visible over less of Earth's surface than a lunar eclipse.

Answers:
a. is seen only as a total eclipse, whereas a lunar eclipse can be partial.
b. is visible over less of Earth's surface than a lunar eclipse.
c. lasts longer.
d. is visible over more of Earth's surface than a lunar eclipse.

Response Feedback: FEEDBACK: Because Earth is so much closer to the Moon than to the Sun, the umbra of the Moon's shadow during a solar eclipse is less than 300 km wide. Therefore, a solar eclipse will be visible on only a small part of the surface of Earth when the shadow sweeps by. For a lunar eclipse, Earth's umbra is about 2½ times the diameter of the Moon, so a lunar eclipse will last longer than a solar eclipse and is visible by anyone on Earth who can see the Moon during the event (pages 50–55).

Question 16

1 out of 1 points

A lunar eclipse is possible

Selected Answer: a. only when a full Moon intersects the line of nodes.

Answers:
a. during any new Moon phase throughout the year.
b. only when a new Moon intersects the line of nodes.
c. during any full Moon phase throughout the year.
d. only when a full Moon intersects the line of nodes.

Response Feedback: FEEDBACK: The Moon's orbit is not exactly in the same plane as Earth's orbit around the Sun. An eclipse is possible only when the line on which the two orbits

intersect also passes through the position of the Sun (page 55). See also the Eclipse Shadow Simulator.

Question 17

1 out of 1 points

While it takes the Moon 27.32 days to orbit Earth, from our perspective the Moon goes through its phases in 29.53 days because

Selected Answer: c. Earth moves through its orbit around the Sun.

Answers:
a. the Moon's orbit around Earth is not perfectly circular.
b. the Moon is not a perfect sphere.
c. Earth's orbit around the Sun is not perfectly circular.
d. Earth moves through its orbit around the Sun.

Response Feedback: FEEDBACK: The Moon's sidereal period is shorter than the cycle for its phases because the Moon must travel further to reach the same position with respect to the Sun. Earth has had time to move in its orbit about the Sun during the 27.3-day sidereal period of the Moon (page 48). See also Lunar Phase Simulator.

Question 18

1 out of 1 points

During the vernal equinox, a person on the equator will experience sunlight

Selected Answer: c. for the same amount of time as someone halfway between the equator and a pole.

Answers:
a. much longer than someone halfway between the equator and a pole.
b. two hours longer than a person located at the north pole.
c. for the same amount of time as someone halfway between the equator and a pole.
d. for a much shorter time than someone halfway between the equator and a pole.

Response Feedback: FEEDBACK: On the day of the vernal equinox, the Sun's position is on the celestial equator. Every location on Earth

sees the Sun for 12 hours and experiences the night sky for 12 hours (page 40). See also the Sun Motions Demonstrator.

Question 19 1 out of 1 points

The average distance between the Sun and the Earth

Selected Answer: b. is an astronomical unit (AU).

Answers:
a. cannot be measured using the aberration of starlight.
b. is an astronomical unit (AU).
c. varies with the precession of the equinoxes.
d. is the ecliptic.

Response Feedback: FEEDBACK: The Earth's orbit is nearly circular. The average distance between the center of the Sun and the center of the Earth is defined as an astronomical unit (AU) (page 37).

Question 20 1 out of 1 points

From the equator, stars at night will seem to

Selected Answer: b. rise in the east, move overhead, and then set in the west.

Answers:
a. remain stationary.
b. rise in the east, move overhead, and then set in the west.
c. rise in the east, travel along the horizon, and then set in the west.
d. rotate around the observer in a carousel fashion, never rising nor setting.

Response Feedback: FEEDBACK: At the equator, the entire sky will sweep by overhead in one day. The celestial poles will be on the horizon so there will be no stationary point around which the stars circle (page 36). See also the Sun Motions Demonstrator and The Celestial Sphere and the Ecliptic.

Question 21 1 out of 1 points

When the Sun crosses the meridian at your location on Earth, it is

Selected Answer: d. local noon.

Answers:
a. early morning.
b. early evening.
c. local midnight.
d. local noon.

Response Feedback: FEEDBACK: The local meridian is a line that connects the point directly overhead with the north and south celestial poles. When the sun crosses this line, it is defined as local noon, but it may not be precisely the same time as noon in the time zone in which you live (page 31). See also the Sun Motions Demonstrator.

Question 22 0 out of 1 points

The celestial sphere helps us to understand a star's

Selected Answer: d. All the possible answers are correct.

Answers:
a. motion in space.
b. constellation.
c. location in space.
d. All the possible answers are correct.

Response Feedback: FEEDBACK: The celestial sphere helps us visualize the apparent motions of the Sun and stars, as well as providing us a spherical map of stars that completely surrounds the Earth. It does not give us information on the relative distances from Earth to objects in the sky (page 30).

Question 23 1 out of 1 points

From the perspective of a viewer in the Northern Hemisphere, which of the following is most true?

Selected Answer: a. The north celestial pole is always somewhere overhead.

Answers:
a. The north celestial pole is always somewhere overhead.
b.

The north celestial pole is never somewhere overhead.

c. The north celestial pole is overhead only at night.

d.
The north celestial pole is overhead only during daylight.

Response Feedback: FEEDBACK: From the Northern Hemisphere, the north celestial pole is always above the horizon at an angular height equal to the observer's latitude (page 36). See also the Sun Motions Demonstrator.

Question 24

1 out of 1 points

A sky observer in the Southern Hemisphere would

Selected Answer: d.
see stars moving clockwise around the south celestial pole.

Answers:

a. not see the celestial equator.

b.
see stars moving counterclockwise around the south celestial pole.

c. see the north celestial pole.

d.
see stars moving clockwise around the south celestial pole.

Response Feedback: FEEDBACK: In the Southern Hemisphere, an observer would always see the south celestial pole and, furthermore, would see the sky moving around the pole in a clockwise direction, as opposed to the counterclockwise rotation viewed by observers in the Northern Hemisphere (page 34). See also the Sun Motions Demonstrator.

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