Astronomy 103: First Exam

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• Each question is worth 2 points.
• Write your name on this exam and on the scantron.

Short Answer

What is the closest Planet to the sun?

Multiple Choice

1. Suppose you tried to count the 100 billion stars in our galaxy, how long would it take (at the rate of 1 per second)?

   (a) a few days
   (b) a few weeks
   (c) a few months
   (d) a few years
   (e) a few thousand years

2. The further away we look the further back in time we look.

   (a) true
   (b) false
3. How many Constellations are there?
   (a) 8
   (b) 88
   (c) 8,80
   (d) 8,800
   (e) 0.88

4. About how many Stars are visible to the naked eye?
   (a) 70
   (b) 700
   (c) 7,000
   (d) 7,000,000
   (e) 7 billion

5. What is an Astronomical Unit?
   (a) The average distance from the Sun to Pluto.
   (b) The average distance from the Sun to Mercury.
   (c) The average distance from the Moon to Earth.
   (d) The average distance from the Sun to Earth.
   (e) The average diameter of the solar system.

6. Approximately how old is the Universe?
   (a) 1,000 years
   (b) 1 million years
   (c) 10 million years
   (d) 1 billion years
   (e) 10 billion years
7. Approximately how fast are you moving due to the rotation of the earth?
   (a) 13 km/hr
   (b) 130 km/hr
   (c) 1,300 km/hr
   (d) 13,000 km/hr
   (e) 0 km/hr

8. Which of the following is true of the ecliptic?
   (a) It is the plane of the earth's orbit around the sun.
   (b) During a solar eclipse the moon is on the ecliptic.
   (c) During a lunar eclipse the moon is on the ecliptic.
   (d) all of the above
   (e) none of the above

9. Bright stars in a constellation
   (a) are near each other in space.
   (b) are all about the same distance from us.
   (c) may be far away from each other.
   (d) may be in another galaxy.
   (e) may be quite far apart on the sky.

10. How many arc seconds in 1 degree?
    (a) 60
    (b) 360
    (c) 600
    (d) 3,600
    (e) 36,000
11. The meridian in your sky is
   (a) a very fast moving bird
   (b) a fast moving star
   (c) the line of north to south
   (d) the line of east to west
   (e) the line where the planets move

12. Polaris is
   (a) always straight overhead.
   (b) always near the celestial north pole.
   (c) always near the celestial equator.
   (d) a shift in velocity with brightness
   (e) on the ecliptic.

13. If you are on the equator the celestial north pole is
   (a) straight overhead
   (b) at your longitude in the sky
   (c) on your horizon.
   (d) a and b
   (e) a and c

14. If a full moon is setting it must be
   (a) near dawn
   (b) near noon.
   (c) near midnight.
   (d) near sunset.
   (e) any of these.
15. If a star on the celestial equator is directly overhead then
   (a) it must be spring equinox
   (b) it must be winter solstice
   (c) you must be on the equator
   (d) you must be on the north pole
   (e) it must be midnight local sidereal time

16. If you were standing on the moon during a lunar eclipse
   (a) The earth would be directly overhead.
   (b) The sun would be directly overhead
   (c) the earth would be blocking the sun
   (d) the moons shadow would be visible on the earth
   (e) none of the above

17. Hubble found that distant galaxies
   (a) were all smaller then ours
   (b) were all bigger then ours
   (c) were all moving toward us
   (d) were all moving away from us
   (e) were quasars

18. How many light years to the next nearest star
   (a) a few
   (b) a few hundred
   (c) a few thousand
   (d) a few million
   (e) a few billion
19. How many light years to Andromeda (nearby galaxy)
   (a) a few
   (b) a few hundred
   (c) a few thousand
   (d) a few million
   (e) a few billion

20. If you were living on the moon and saw the earth high over head
   (a) The earth would set only once a month
   (b) The earth would block the sun every day
   (c) the earth would set every 24 hours
   (d) the earth would block the sun once a month
   (e) none of the above

21. How did Eratosthenes estimate the size of the earth?
   (a) By observing time elapsed in a solar eclipse.
   (b) By observing time elapsed in a lunar eclipse.
   (c) By observing the maximum altitude of the Sun at two different locations.
   (d) By sending ships around the world.
   (e) none of the above

22. At which lunar phase are the tides most pronounced?
   (a) does not depend on phase.
   (b) New moon
   (c) First quarter.
   (d) both new and full moon
   (e) both first and third quarter
23. The time it takes a earth to go around the sun once relative to the stars is called

(a) a sidereal year.
(b) a synodic year.
(c) a calendar year.
(d) a star date.
(e) none of the above.

24. To have an eclipse the following must be true

(a) the sun is near the solstice.
(b) the sun is near the equinox.
(c) the moon is full
(d) the moon is new
(e) the moon is near the nodes of the moons orbit and the suns orbit.

25. Which of the following explains why mean solar time differs from apparent solar time?

(a) the path of the sun is on the ecliptic.
(b) the length of a solar day is not always exactly 24 hours.
(c) the earths axis precesses with a period of 26,000 years.
(d) the sun reaches the meridian at a time which depends on longitude.
(e) the earths rotation period relative to the stars is 23 hours and 56 min.

26. Our calendar uses a leap year because

(a) the is one more sidereal day then solar day.
(b) the tropical year is slightly more then 365 days
(c) the precession of the earths axis.
(d) the tilt of the earths axis.
(e) the moons orbit is slowing the earths rotation.
27. The season’s are caused primarily by

(a) the tilt of the Earths rotational axis to the normal of the Earths orbital plane
(b) the tilt of the Moons orbital plane to the Earths orbital plane
(c) the tilt of the Earths orbital plane to the ecliptic
(d) the changes in the Earth Sun distance
(e) the changes in the Earth Moon distance

28. Momentum is defined as

(a) mass times speed.
(b) mass times velocity.
(c) mass times acceleration.
(d) moons speed divided by earths speed.
(e) moons speed relative to suns speed.

29. The southernmost point in the travels of the Sun through the sky is called

(a) winter solstice
(b) summer solstice
(c) spring equinox
(d) fall equinox
(e) right ascension

30. The Sun is directly over the Tropic of Cancer at

(a) winter solstice
(b) summer solstice
(c) spring equinox
(d) fall equinox
(e) right ascension
31. The Sun is directly over the equator on its way south on the
   (a) winter solstice
   (b) summer solstice
   (c) spring equinox
   (d) fall equinox
   (e) right ascension

32. The white part of the moon points toward the
   (a) east
   (b) north
   (c) south
   (d) west
   (e) sun

33. A new moon occurs when the moon is
   (a) very far from the sun in the sky
   (b) very close to the sun in the sky
   (c) about 90° from the sun in the sky
   (d) about 45° from the sun in the sky
   (e) not in the same sky as the sun

34. A quarter moon appears when
   (a) very close to the sun in the sky
   (b) very far from the sun in the sky
   (c) about 90° from the sun in the sky
   (d) about 45° from the sun in the sky
   (e) not in the same sky as the sun
35. Earth is made of metal and rocks, where did this material come from.

(a) Mars.
(b) The Moon.
(c) The Big Bang.
(d) It was produced by nuclear fusion in other jstars.
(e) Chemical reactions in space.

36. The time between a new moon and the first quarter is

(a) about 1 day
(b) about 2 days
(c) about 1 week
(d) about 2 weeks
(e) about a month

37. The time between a new moon and the next new moon is

(a) about 1 day
(b) about 2 days
(c) about 1 week
(d) about 2 weeks
(e) about a month

38. A star which is always up for us is called a

(a) very strange star indeed
(b) high star
(c) north star
(d) circumpolar star
(e) circumnavigate star
39. Declination measures
   (a) the height of a star  
   (b) angle of star with equator  
   (c) angle of star with horizon  
   (d) mass of star  
   (e) none of these  

40. Right Ascension measures
   (a) the height of a star  
   (b) angle of star with equator  
   (c) angle of star with horizon  
   (d) mass of star  
   (e) none of these  

41. He discovered that the orbits of planets are ellipses
   (a) Kepler  
   (b) Brahe  
   (c) Newton  
   (d) Galileo  
   (e) Ptolemy  

42. If you drop a rock from a building and it accelerates at about 10 m/s², then after 2 seconds its speed will be
   (a) 1 m/s  
   (b) 10 m/s  
   (c) 20 m/s  
   (d) 40 m/s  
   (e) 80 m/s
43. The names of the seven days of the week are from the
   (a) seven planets closest to the sun.
   (b) seven most well known greek music sensations.
   (c) seven brightest stars.
   (d) seven most popular Norse Gods.
   (e) seven naked-eye objects that move among the constellations.

44. The circle the sun follows through the sky is called the ecliptic.
   (a) true
   (b) false

45. The center of mass for the earth sun orbit lies inside the sun.
   (a) true
   (b) false

46. The solar day is longer then the sidereal day because the earth has
    moved a bit in its orbit which changed the position of the sun.
    (a) true
    (b) false

47. Tidal friction is causing the earth’s rotation to slow.
    (a) true
    (b) false

48. When energy is converted from one form to another a tiny bit is always
    lost.
    (a) true
    (b) false

49. The moon is constantly falling toward the earth.
    (a) true
    (b) false