

BROCK UNIVERSITY

Test 1: Fall 2017

Course: ASTR 1P01, Section 2

Examination date: 30 September 2017

Time of Examination: 13:00 – 13:50

Number of pages: 10

Number of students: 1300

Time limit: 50 min

Instructor: S. D'Agostino

Answer all questions on the scantron sheet provided. No aids permitted except for a non-programmable calculator. Each question is worth 1 mark. Total number of marks: 50.

DO NOT WRITE YOUR ANSWERS ON YOUR QUESTION PAGE. DOING SO WILL RESULT IN AN ASSIGNED GRADE OF ZERO.

1. It takes light approximately _____ to travel from the Sun to the Earth.
 - (a) 8 seconds
 - (b) * 8 minutes
 - (c) 8 hours
 - (d) 8 months
2. The diameter of the Earth is about
 - (a) 1,300 km.
 - (b) * 13,000 km.
 - (c) 26,000 km.
 - (d) 150,000,000 km.
3. Our solar system
 - (a) contains the Milky Way galaxy.
 - (b) contains many galaxies, including the Milky Way galaxy.
 - (c) contains many galaxies, but not including the Milky Way galaxy.
 - (d) * does not contain any galaxies.
4. It takes the Earth about _____ to travel on its orbit once around the Sun.
 - (a) * 1 year
 - (b) 26,000 years
 - (c) 200 million years
 - (d) 220 million years
5. An average star in our galaxy is
 - (a) much hotter and brighter than the Sun.
 - (b) * about as hot and bright as our Sun.
 - (c) much dimmer and cooler than our Sun.

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6. An astronomical unit
- (a) is the average distance between the Earth and the Moon.
 - (b) is the time needed for light to vibrate for a year.
 - (c) is the approximate mass of an average star.
 - (d) is the approximate diameter of an average galaxy.
 - (e) * [None of the above.]
7. In one year, the Earth rotates on its axis about
- (a) once.
 - (b) 12 times.
 - (c) * 365 times.
 - (d) 26,000 times.
 - (e) [None of the above.]
8. The radius of the orbit of Jupiter around the Sun is about _____ times the radius of Earth's orbit around the Sun.
- (a) * 5
 - (b) 500
 - (c) 50,000
 - (d) 5,000,000
9. The space between stars
- (a) is empty.
 - (b) * contains gas and dust.
 - (c) is where new matter and energy are created.
 - (d) is where old matter and energy are destroyed.
10. Clusters of galaxies in the universe are organized into
- (a) globular clusters.
 - (b) hyperclusters.
 - (c) megaclusters.
 - (d) * superclusters.
11. The distance from the Earth to the Moon is about
- (a) 400 km.
 - (b) * 400,000 km.
 - (c) 400,000,000 km.
 - (d) 400,000,000,000 km.

12. The universe is believed to have an age of about
 - (a) 14 thousand years.
 - (b) 14 million years.
 - (c) * 14 billion years.
 - (d) 14 trillion years.

13. As seen by an observer on the Earth, the Sun apparently
 - (a) * rises roughly in the East and sets roughly in the West.
 - (b) rises roughly in the West and sets roughly in the East.
 - (c) rises roughly in the East and sets roughly in the East.
 - (d) rises roughly in the West and sets roughly in the West.

14. There are hundreds of billions of stars in
 - (a) a typical binary star system.
 - (b) a typical globular star cluster.
 - (c) a typical cosmic filament.
 - (d) * the Milky Way galaxy.

15. The time needed for light to travel from the Earth to the Moon is
 - (a) a very small fraction of a second.
 - (b) * about 1 second.
 - (c) about 1 minute.
 - (d) about 1 hour.

16. If the entire history of the universe were compressed into a year, with the Big Bang occurring on 1 January and the present moment being midnight on 31 December, then the dinosaur era on Earth ended
 - (a) in mid-June.
 - (b) in late September.
 - (c) in early December.
 - (d) * on 30 December.

17. The distance between the Sun and the star closest to the Sun is about
 - (a) 4 thousand light years.
 - (b) 4 million light years.
 - (c) 4 billion light years.
 - (d) * [None of the above.]

18. The diameter of the visible disk of the Milky Way is about
- (a) 100 AU.
 - (b) 100,000 AU.
 - (c) 100 light years.
 - (d) * 100,000 light years.
19. An asterism is
- (a) a collection of galaxies that are close together in space.
 - (b) a collection of galaxies that appear close together in the sky.
 - (c) a named grouping of stars that is special recognized constellation.
 - (d) * a named grouping of stars that is not one of the recognized constellations.
20. The Moon rises in the _____ and sets in the _____ .
- (a) * east, west
 - (b) west, east
 - (c) north, south
 - (d) south, north
21. In their daily motions, stars rise in the _____ and set in the _____ .
- (a) * east, west
 - (b) west, east
 - (c) north, south
 - (d) south, north
22. At a particular viewing location on Earth, stars that never rise or set are called
- (a) ecliptic stars.
 - (b) polarized stars.
 - (c) * circumpolar stars.
 - (d) equatorial stars.
23. A star will rise tonight at 11:00 pm. At the same viewing location, yesterday it rose at about
- (a) 11:50 pm.
 - (b) 10:10 pm.
 - (c) * 11:04 pm.
 - (d) 10:56 pm.

24. You observe the night sky tonight. The best way to see different stars tomorrow night is to move to a location on Earth that has a different
- (a) * latitude.
 - (b) longitude.
 - (c) ecliptic.
25. As seen from the Earth, the angular size of the Sun is _____ the angular size of the Moon.
- (a) greater than
 - (b) * about equal to
 - (c) less than
 - (d) [The Moon is too close to the Earth to have an angular size.]
26. Many individual star names derive from ancient
- (a) * Arabic.
 - (b) Farsi.
 - (c) Hindi.
 - (d) Urdu.
27. In St. Catharines, after the summer solstice and before the fall equinox, the number of hours between sunrise and sunset
- (a) increases every day.
 - (b) remains the same every day.
 - (c) * decreases every day.
 - (d) sometimes increases and sometimes decreases, depending on the month.
28. In St. Catharines, after the winter solstice and before the spring equinox, the number of hours between sunrise and sunset
- (a) * increases every day.
 - (b) remains the same every day.
 - (c) decreases every day.
 - (d) sometimes increases and sometimes decreases, depending on the month.
29. In St. Catharines, after the fall equinox and before the winter solstice, the Sun rises a little farther _____ each day.
- (a) north of east.
 - (b) * south of east.
 - (c) east of north.
 - (d) east of south.

30. In St. Catharines, after the winter solstice and before the spring equinox, the Sun sets a little farther _____ each day.
- (a) * north of west.
 - (b) south of west.
 - (c) west of north.
 - (d) west of south.
31. A full moon occurs when
- (a) the Moon lies approximately between the Earth and the Sun.
 - (b) * the Earth lies approximately between the Moon and the Sun.
 - (c) the Sun lies approximately between the Earth and the Moon.
 - (d) the Sun, Earth, and Moon form an approximate right angle.
32. The phase of the Moon is first quarter when
- (a) the Moon lies approximately between the Earth and the Sun.
 - (b) the Earth lies approximately between the Moon and the Sun.
 - (c) the Sun lies approximately between the Earth and the Moon.
 - (d) * the Sun, Earth, and Moon form an approximate right angle.
33. The full moon sets at about
- (a) noon.
 - (b) sunset.
 - (c) midnight.
 - (d) * sunrise.
34. The new moon sets at about
- (a) noon.
 - (b) * sunset.
 - (c) midnight.
 - (d) sunrise.
35. The plane of the Moon's orbit around the Earth is tipped relative to the plane of the Earth's orbit around the Sun by an angle of about
- (a) 1° .
 - (b) * 5° .
 - (c) 13° .
 - (d) 23° .

36. When the Moon's phase is waning crescent it rises
- (a) between sunrise and mid-day.
 - (b) between mid-day and sunset.
 - (c) between sunset and the middle of the night.
 - (d) * between the middle of the night and sunrise.
37. When the Moon's phase is waxing gibbous it rises
- (a) between sunrise and mid-day.
 - (b) * between mid-day and sunset.
 - (c) between sunset and the middle of the night.
 - (d) between the middle of the night and sunrise.
38. When the Moon's phase is waning gibbous it sets
- (a) * between sunrise and mid-day.
 - (b) between mid-day and sunset.
 - (c) between sunset and the middle of the night.
 - (d) between the middle of the night and sunrise.
39. When the Moon's phase is waxing crescent it sets
- (a) between sunrise and mid-day.
 - (b) between mid-day and sunset.
 - (c) * between sunset and the middle of the night.
 - (d) between the middle of the night and sunrise.
40. The first-quarter moon rises at about
- (a) sunrise.
 - (b) * mid-day.
 - (c) sunset.
 - (d) the middle of the night.
41. The third-quarter moon sets at about
- (a) sunrise.
 - (b) * mid-day.
 - (c) sunset.
 - (d) the middle of the night.

42. The seasons on Earth are caused by
- (a) the Earth being closer to the Sun in the summer and farther away from the Sun in the winter.
 - (b) variation in the distance between the Moon and the Earth as the Moon orbits the Earth.
 - (c) * the Earth's rotation axis being tilted relative to the plane of Earth's orbit around the Sun.
 - (d) the Earth's rotation axis being tilted relative to the plane of Moon's orbit around the Earth.
43. The Sun lies directly between the Earth and the Moon
- (a) during a solar eclipse.
 - (b) during a lunar eclipse.
 - (c) every day at high noon.
 - (d) * [None of the above.]
44. The Earth lies directly between the Sun and the Moon
- (a) during a solar eclipse.
 - (b) * during a lunar eclipse.
 - (c) every day at high noon.
 - (d) [None of the above.]
45. A solar day is about _____ than a sidereal day.
- (a) * 4 minutes longer
 - (b) 4 minutes shorter
 - (c) 50 minutes longer
 - (d) 50 minutes shorter
46. On the day of the vernal (spring) equinox,
- (a) the Sun changes from rising farther north of east every day to rising farther south of east every day.
 - (b) the Sun changes from rising farther south of east every day to rising farther north of east every day.
 - (c) * the Sun rises directly east.
 - (d) [None of the above.]

47. On the day of the winter solstice,
- (a) the Sun changes from rising farther north of east every day to rising farther south of east every day.
 - (b) * the Sun changes from rising farther south of east every day to rising farther north of east every day.
 - (c) the Sun rises directly east.
 - (d) [None of the above.]
48. Eclipses are possible when
- (a) the inclination of the Earth's rotation axis matches the inclination of the Moon's orbital plane.
 - (b) the inclination of the Earth's precession axis matches the inclination of the Moon's orbital plane.
 - (c) the inclination of the Earth's eccentricity axis matches the inclination of the Moon's orbital plane.
 - (d) * the line of nodes points directly towards the Sun.
 - (e) [None of the above.]
49. Dates of eclipses shift every year by about
- (a) 10 days.
 - (b) * 20 days.
 - (c) 30 days.
 - (d) 40 days.
50. The maximum number of solar eclipses in a year is
- (a) 2.
 - (b) 3.
 - (c) 4.
 - (d) * 5.