1. It takes light approximately ________ to travel from the Sun to the centre of our galaxy.
   (a) 4 seconds
   (b) 4 minutes
   (c) 4 hours
   (d) 4 months
   (e) * [None of the above.]

2. The distance between the Sun and the star nearest the Sun is about
   (a) a few AU.
   (b) * a few light-years.
   (c) a few thousand kilometres.
   (d) a few million kilometres.

3. It takes light emitted by the Sun about 500 s to reach Earth. The speed of light is about 300,000 km/s. The distance from the Sun to Earth is about
   (a) 150 thousand km
   (b) * 150 million km
   (c) 150 billion km
   (d) 150 trillion km

4. Stars in the Milky Way galaxy are separated from one another by an average of about
   (a) a few AU.
   (b) a few thousand AU
   (c) * a few light-years.
   (d) a few thousand light-years.
5. 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.]

6. The Sun is
   (a) much hotter and brighter than an average star.
   (b) * a fairly average, typical star.
   (c) much dimmer and cooler than an average star.
   (d) not a star.

7. The radius of the orbit of Venus around the Sun is ________ the radius of Mercury’s orbit around the Sun.
   (a) less than
   (b) nearly equal to
   (c) * greater than

8. Planets in our solar system are visible to us because
   (a) we use night-vision goggles to view them.
   (b) they produce their own light.
   (c) * they reflect the Sun’s light.
   (d) they reflect the Sun’s light and produce their own light.

9. The Milky Way
   (a) contains billions of galaxies.
   (b) contains millions of galaxies.
   (c) contains thousands of galaxies.
   (d) * contains the Sun, the solar system, and many other stars, but no other galaxies.

10. The diameter of the Earth is about
    (a) 1,300 km.
    (b) * 13,000 km.
    (c) 26,000 km.
    (d) 150,000,000 km.
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. The Milky Way contains
   (a) hundreds of thousands of stars.
   (b) hundreds of millions of stars.
   (c) * hundreds of billions of stars.
   (d) hundreds of trillions of stars.

15. The Kuiper belt, which contains nuclei of short-period comets, lies past the orbit of
    Neptune, at a distance from the Sun of about
    (a) * 30 AU to 60 AU.
    (b) 30 thousand AU to 60 thousand AU.
    (c) 30 million AU to 60 million AU.
    (d) 30 billion AU to 60 billion AU.

16. The Oort cloud, which contains nuclei of long-period comets, lies in the outer reaches
    of the solar system, at a distance from the Sun of about
    (a) 50 AU to 100 AU.
    (b) * 50 thousand AU to 100 thousand AU.
    (c) 50 million AU to 100 million AU.
    (d) 50 billion AU to 100 billion AU.
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. Stars that rise every evening rise about _______ each night.
   (a) * 4 minutes earlier
   (b) 4 minutes later
   (c) 50 minutes earlier
   (d) 50 minutes later

24. The stars that you will see tonight (if the skies are clear) depend most strongly on your
   (a) * latitude.
   (b) longitude.
   (c) ecliptic.

25. As seen from the Earth, the angular size of the Moon is _______ the angular size of the Sun.
   (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. The apparent visual brightness of a star, as observed on Earth, is measured on a scale that is called by astronomers
   (a) apparent visual light level.
   (b) * apparent visual magnitude.
   (c) apparent visual optical albedo.
   (d) apparent visual spectral helio-endoscopy.

27. At the equinoxes, the Sun sets in St. Catharines
   (a) directly in the east.
   (b) a little north of east.
   (c) a little south of east.
   (d) * directly in the west.

28. At the winter solstice, the number of hours after sunrise and before sunset in St. Catharines is
   (a) * less than 12.
   (b) exactly 12.
   (c) more than 12.
29. In St. Catharines, after the winter solstice and before the spring equinox, 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 fall equinox and before the winter solstice, 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 third 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 rises 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. If the Moon sets a few hours before sunset, then its phase is
   (a) waxing crescent.
   (b) * waning crescent.
   (c) waxing gibbous.
   (d) waning gibbous.

37. If the Moon rises a few hours before sunset, then its phase is
   (a) waxing crescent.
   (b) waning crescent.
   (c) * waxing gibbous.
   (d) waning gibbous.

38. If the Moon rises a few hours before the middle of the night, then its phase is
   (a) waxing crescent.
   (b) waning crescent.
   (c) waxing gibbous.
   (d) * waning gibbous.

39. If the Moon sets a few hours before sunrise, then its phase is
   (a) waxing crescent.
   (b) waning crescent.
   (c) * waxing gibbous.
   (d) waning gibbous.

40. The third-quarter moon sets at about
   (a) sunrise.
   (b) * mid-day.
   (c) sunset.
   (d) the middle of the night.
41. The first-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. A sidereal day is about ________ than a solar day.
   (a) 4 minutes longer
   (b) * 4 minutes shorter
   (c) 50 minutes longer
   (d) 50 minutes shorter

44. On the day of the autumnal (fall) 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.]

45. On the day of the summer 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.]
46. The amount of time between a solar eclipse and a lunar eclipse can be as short as about
   (a) one week.
   (b) * two weeks.
   (c) three weeks.
   (d) four weeks.

47. The cycle of the Moon’s phases repeats approximately once every
   (a) day.
   (b) * 29.5 days.
   (c) six months.
   (d) year.

48. The constellations of the Zodiac lie along the
   (a) * ecliptic.
   (b) celestial equator.
   (c) celestial seasonings.
   (d) celestial tuning fork.

49. During a lunar eclipse,
   (a) the Sun lies directly between the Earth and the Moon.
   (b) * the Earth lies directly between the Sun and the Moon.
   (c) the Moon lies directly between the Earth and the Sun.
   (d) the Earth, Moon, and Sun form a right angle.

50. During a solar eclipse,
   (a) the Sun lies directly between the Earth and the Moon.
   (b) the Earth lies directly between the Sun and the Moon.
   (c) * the Moon lies directly between the Earth and the Sun.
   (d) the Earth, Moon, and Sun form a right angle.