Stars and the Solar System

Very Short Answer Type Questions

Q.1. Name any two celestial objects which we can see easily in the night sky.

Answer: Moon and the stars are the celestial objects which we can see easily in the night sky.

Q.2. Name the star (after the Sun) which is closest to the Earth.

Answer: Alpha Centauri is the star which is closest to the Earth after the Sun. It is at a distance of about 40,000,000,000,000 km from the Earth.

Q.3. Name the star which remains fixed at the same place in the sky in the North.

Answer: The pole star is the star which remains fixed at the same place in the sky in the North.

Q.4. Name the unit which is used to express distances between the various celestial bodies (like stars and planets).

Answer: Light year is the unit used to express distance between the various celestial bodies. Light year is the distance travelled by light in one year. The speed of light is 300,000 km per second. For example, the Sun is nearly 150,000,000 Km i.e. 150 million Km away from the Earth. The distance of the Sun from the Earth may be said to be about 8 light minutes.

Q.5. Why is the distance between stars and planets expressed in light years?

Answer: The distance between the Earth and stars and the distance between the stars is very large. The stars are millions of times farther away than the Sun. the Sun is nearly 150,000,000 Km i.e. 150 million Km away from the Earth. It is inconvenient to express these distances in kilometres. Therefore, these large distances are expressed in light years. For example, the distance of the Sun from the Earth may be said to be about 8 light minutes.

Q.6. What do you understand by the statement that a star is 8 light years away from the Earth?

Answer: The distance between the Earth and stars and the distance between the stars is very large. It is inconvenient to express these distances in kilometres. Therefore, these large distances are expressed in light years.

1 light year= 9.46 × 1012 Km. Now, a star is 8 light years away from the Earth. It means the distance between the star and the Earth is equal to the distance travelled by light in eight years.

Therefore, the star is located 8 × 9.46 × 1012 Km = 75.68 × 1012 Km away from the Earth.

Q.7. Name the constellation which reminds us of a large ladle or a question mark in the night sky.

Answer: Ursa Major is the constellation which reminds us of a large ladle or a question mark in the night sky. It is also known as the Big Dipper, the Great Bear or the Saptarshi. There are seven prominent stars in this constellation. It appears like a big ladle or a question mark. There are three stars in the handle of the ladle and four in its bowl.

Q.8. In which season of the year is the constellation Orion visible in the sky?

Answer: The constellation Orion is visible during winter in the late evenings. It also has seven or eight bright stars. It is also called the Hunter. The three middle stars represent the belt of the hunter. The four bright stars appear to be arranged in the form of a quadrilateral.

Q.9. In which season of the year is the constellation Ursa Major visible in the sky?

Answer: Ursa Major can be seen during summer time in the early part of the night. It has seven prominent stars.

Q.10. Give two other names of Ursa Major constellation.

Answer: Ursa Major constellation is also known as the Big Dipper, the Great Bear or the Saptarshi. There are seven prominent stars in this constellation. It appears like a big ladle or a question mark.

Q.11. In which season of the year are the following constellations visible in the night sky?

(a) Cassiopeia

(b) Leo Major

Answer: (a) Cassiopeia is another prominent constellation in the northern sky. It is visible during winter in the early part of the night. It looks like a distorted letter W or M.

(b) Leo Major is visible in the northern hemisphere around the spring. It is easily identifiable through may. Its brightest star is Regulus. Its most prominent pattern of stars is a backwards question mark called the Sickle. You can use the Pointer stars of the Big Dipper to find Leo Major.

Q.12. Name the biggest planet of the Solar System.

Answer: Jupiter is the biggest planet of the Solar system. It is so large that about 1300 earths can be placed inside this giant planet.

Q.13. Name the smallest planet of the Solar System.

Answer: Mercury is the smallest planet of the Solar system. It is nearest to the Sun.

Q.14. Which force keeps the members of the Solar System bound to the Sun?

Answer: The Sun and the celestial bodies which revolve around it form the solar system. It consists of large number of bodies such as planets, comets, asteroids and meteors. The Gravitational force keeps the members of the Solar System bound to the Sun.

Q.15. Why does the Sun appear to be bigger and brighter than all other stars?

Answer: The Sun is the nearest star which is continuously emitting huge amount of heat and light. Hence, the Sun appears to be bigger and brighter than all the planets. The Sun is the source of almost all the energy on the Earth.

Q.16. Which is the main source of heat and light energy for all the members of the Solar System (like planet and satellites, etc.)?

Answer: The Sun is the nearest star which is continuously emitting huge amount of heat and light. The Sun is the source of almost all the energy on the Earth.

Q.17. Name a star having a system of planets with life on one of its planets.

Answer: The Sun is the star having a system of planets with one planet called Earth with life on it. The Earth is the only planet on the solar system on which the life is known to exist.

Q.18. Name the planet having a well-developed system of rings around it.

Answer: Saturn is the planet having a well-developed system of rings around it. These rings are not visible with the naked eye. They can be observed with a small telescope.

Q.19. Name the planets which lie between the Sun and the Earth.

Answer: Mercury and Venus are the planets which lie between the Sun and the Earth. Mercury is the smallest planet and is very close to the Sun. Venus is the nearest planet to the Earth and is the brightest planet of the Solar System.

Q.20. How will our Earth look when seen from a space-ship or Moon?

Answer: When seen from a space-ship or Moon, the Earth appears blue-green in colour. It is due to the reflection of light from the water and landmass on its surface.

Q.21. Name the planet

(a) nearest to the Sun, and

(b) farthest from the Sun.

Answer: (a) Mercury is the planet nearest to the Sun. It is the smallest planet of our Solar System.

(b) Neptune is the farthest planet from the Sun. It is the fourth largest planet in the Solar System.

Q.22. Name two planets which have been discovered with the help of telescope.

Answer: Uranus and Neptune have been discovered with the help of telescope. These are the outermost planets of the solar system. They can be seen only with the help of large telescopes

Q.23. Name the hottest planet.

Answer: Venus is the hottest planet of the solar system. It is the second planet from the Sun and has a temperature that is maintained at 462 degrees Celsius.

Q.24. Name two planets which show phases like the Moon.

Answer: Mercury and Venus shows phases like the Moon. They have the orbits which are smaller than the Earth and exhibit the full range of phases like the moon.

Q.25. Name one planet of the Solar System having life on it.

Answer: Earth is the only planet of the Solar System having life on it. The special environment conditions are responsible for the existence and the continuation of life on the Earth. These conditions include the right distance from the Sun, so it has the right temperature, the presence of water, suitable atmosphere and a blanket of ozone.

Q.26. Which characteristics of Mars distinguishes it from other planets?

Answer: Mars appears slightly reddish in colour and is also called the red planet. It has two small natural satellites.

Q.27. Which planet is known as the red planet?

Answer: Mars is known as the red planet. It appears slightly reddish in colour due to the presence of iron oxide on its surface.

Q.28. In which part of the sky can you find Venus if it is visible as an Evening Star?

Answer: Venus appears in the eastern sky before sunrise. It is known as morning star. Sometimes, it appears in the western sky just after sunset. It is known as Evening star.

Q.29. Which characteristic of the planet Saturn makes it unique in the Solar System?

Answer: Saturn has rings around it which makes it unique in the Solar System. These rings can be observed with a small telescope and cannot be seen with the naked eye. Saturn also has a large number of satellites.

Q.30. Name two planets which can be seen as 'Morning Star' and 'Evening Star'.

Answer: Mercury and Venus can be seen as ‘Morning Star’ and ‘Evening Star’.

Q.31. What name is given to the celestial body which revolves around a planet?

Answer: The celestial body which revolves around a planet is known as a Satellite. Moon is a natural satellite of the Earth.

Q.32. Which two planets have asteroids between them?

Answer: Mars and Jupiter have asteroids between them. These planets have a large gap between the orbits. This gap is occupied by a large number of small objects that revolve around the Sun called the asteroids.

Q.33. Name two objects other than planets which are members of the Solar System?

Answer: Asteroids and Comets are the two objects other than planets which are members of the Solar System.

Q.34. Name the member of the Solar System which appears in the sky like a bright ball of light with a long glowing tail.

Answer: Comets are the member of the Solar System which appears in the sky like a bright ball of light with a long glowing tail. The length of the tail grows in size as it approaches the sun.

Q.35. Which celestial body is seen as a bright streak of light coming down the night sky?

Answer: Meteor is seen as a bright streak of light coming down the night sky. A meteor is usually a small object that occasionally enters the Earth’s atmosphere.

Q.36. Which celestial objects are also called minor planets?

Answer: Asteroids are the celestial objects which are also called minor planets. Asteroids can only be seen through large telescopes.

Q.37. Name one natural and one artificial satellite of the Earth.

Answer: Moon is the natural satellite of the Earth. Aryabhatta was the first Indian artificial satellite of the Earth.

Q.38. Name the agency responsible for the development of space science programs in India.

Answer: ISRO also known as Indian Space Research Organisation is the agency responsible for the development of space science programs in India.

Q.39. Name the first artificial satellite launched by India.

Answer: Aryabhatta was the first artificial satellite launched by India.

Q.40. Name the technique of collecting information about the Earth from an orbiting satellite.

Answer: Artificial satellites are used for forecasting weather, transmitting television and radio signals. They are also used for telecommunication and remote sensing.

Q.41. Write the full name of INSAT.

Answer: INSAT stands for the Indian National Satellite System. It is a series of multipurpose geo-stationary satellites launched by ISRO to satisfy the telecommunications, broadcasting, meteorology, and search and rescue operations.

Q.42. Write the full name of IRS.

Answer: IRS stands for Indian Remote Sensing satellite program.

Q.43. Name two constellations which are visible in the sky:

(a) in the summer season.

(b) in the winter season.

Answer: (a) Ursa Major can be seen during summer time in the early part of the night. It has seven prominent stars.

(b) Cassiopeia is another prominent constellation in the northern sky. It is visible during winter in the early part of the night. It looks like a distorted letter W or M.

Q.44. State whether the following statements are true or false:

(a) Constellation Orion can be seen only with a telescope.

(b) Pole Star is a member of the Solar System.

(c) Mercury is the smallest planet of the Solar System.

(d) Uranus is the farthest planet in the Solar System.

(e) There are nine planets in the Solar System.

(f) Comets are members of the Solar System.

(g) INSAT is an artificial satellite.

Answer: (a) This statement is False.

Orion is clearly visible in the night sky from November to February.

(b) This statement is False.

Pole star is a name of Polaris in the constellation Ursa Minor, after its property of being the naked-eye star closest to the Earth's celestial north pole.

(c) This statement is True.

Mercury is the planet nearest to the Sun. It is the smallest planet of our Solar System.

(d) This statement is False.

Neptune is the farthest planet in the Solar System.

(e) This statement is False.

There are eight planets in the Solar System. In 2006, the International Astronomical Union (IAU) adopted a new definition of a planet. Pluto does not fit this definition. It is no longer a planet of the solar system.

(f) This statement is True.

Comets are the members of the Solar System. They revolve around the Sun in highly elliptical orbits.

(g) This statement is True.

Artificial satellites are man-made. They are launched from the Earth.

Q.45. Fill in the following blanks with suitable words:

(a) The stars appear to.....in the sky.

(b) The Sun is a.....whereas Orion is a .....

(c) The group of stars that appears to form a recognizable pattern in the sky is known as.....

(d) The brightest star in the night sky is.....

(e) Ursa Major constellation appears to revolve around the .....star in the night sky.

(f) Orion constellation can be used to locate the position of .....star whereas Ursa Major constellation can be used to locate the .....star in the night sky.

(g) The planet which is farthest from the Sun is.....

(h) The planet which appears reddish in colour is.....

(i) The small heavenly bodies revolving around the Sun between the orbits of Mars and Jupiter are called ….

(j) Asteroids are found between the orbits of .....and.....

(k) Shooting stars are actually not.....

(l) A celestial body that revolves around a planet is known as.....

(m) A meteoroid becomes a.....on entering Earth's atmosphere.

(n) The long-distance transmission of television programmes has been made possible with the help of ..... satellites.

Answer: (a) The correct answer is …….. twinkle.

Stars twinkle because we are able to see them through the thick layers of turbulent atmosphere.

(b) The correct answer is ……. star and …...constellation.

The constellation Orion is visible during winter in the late evenings. It also has seven or eight bright stars.

(c) The correct answer is …… constellation.

The stars forming a group that has a recognisable shape is called a constellation. We can easily identify them in the night sky.

(d) The correct answer is ……. Sirius.

Sirius is a star system and the brightest star in the Earth's night sky.

(e) The correct answer is …… Pole.

Ursa Major can be seen during summer time in the early part of the night. It has seven prominent stars.

(f) The correct answer is ……. Sirius and ……Pole.

Orion is clearly visible in the night sky from November to February. The pole star is the star which remains fixed at the same place in the sky in the North.

(g) The correct answer is ……. Neptune.

Neptune is the farthest planet from the Sun. It is the fourth largest planet in the Solar System.

(h) The correct answer is …… Mars.

Mars appears slightly reddish in colour and is also called the red planet. It has two small natural satellites.

(i) The correct answer is …... asteroids.

Asteroids are the celestial objects which are also called minor planets. Asteroids can only be seen through large telescopes.

(j) The correct answer is …... Mars and …... Jupiter.

Asteroids are the celestial objects which are also called minor planets. Asteroids can only be seen through large telescopes.

(k) The correct answer is ……. Stars.

Meteors are commonly known as shooting stars, although they are not stars. A meteor is usually a small object that occasionally enters the earth's atmosphere.

(l) The correct answer is …… satellite.

A body revolving around another body is called a satellite. Moon is the natural satellite of the Earth. Some planets also have natural satellites.

(m) The correct answer is …. meteor.

Meteors are commonly known as shooting stars, although they are not stars. A meteor is usually a small object that occasionally enters the earth's atmosphere.

(n) The correct answer is …... artificial.

Artificial satellites are man-made. They are launched from the Earth.

Short Answer Type Questions

Q.46. What is meant by 'celestial objects'? Name any three celestial objects.

Answer: The stars, the planets, the moon and many other objects in the sky are called celestial objects. The moon is the brightest object in the night sky. Stars are celestial bodies that emit light of their own. Our sun is also a star. Moon is the natural satellite of the Earth. The Sun and the celestial bodies which revolve around it form the solar system. These celestial bodies include the planets, comets, asteroids and meteors.

Q.47. What is a star? Name the star nearest to the Earth.

Answer: Stars are celestial bodies that emit light of their own. Our sun is also a star. It is convenient to express distances of stars in light years. Stars appear to move from east to west. The pole star appears to be stationary from the Earth, because it is situated close to the direction of the axis of rotation of the Earth. Some groups of stars appear to form recognizable groups known as constellation. The Sun is the star nearest to the Earth. It is the source of almost all energy on the Earth. The Sun is the main source of heat and light for all the planets.

Q.48. Why does Pole Star appear to be stationary in the sky?

Answer: The pole star appears to be stationary from the Earth, because it is situated close to the direction of the axis of rotation of the Earth. The Pole Star is not visible from the southern hemisphere. Some of the northern constellations like Ursa Major may also not be visible from some points in the southern hemisphere.

Q.49. Do all the stars in the sky move? Explain.

Answer: The stars appear to move in the sky. It appears because of the motion of the Earth. Earth is spinning around its own axis and also moves around the Sun. As a result, the stars also appear to move from east to west. A star which rises in the east in the evening, sets in the west in the early morning. All the stars do not appear to move. For example, pole star does not appear to move because it is situated in the direction of earth's axis.

Q.50. What is a constellation? Name any two constellations.

Answer: The stars forming a group that has a recognisable shape is called a constellation. We can easily identify them in the night sky. Ursa Major and Orion are the examples of the constellations. Ursa Major is the constellation which reminds us of a large ladle or a question mark in the night sky. It is also known as the Big Dipper, the Great Bear or the Saptarshi. There are seven prominent stars in this constellation. It appears like a big ladle or a question mark. The constellation Orion is visible during winter in the late evenings. It also has seven or eight bright stars. It is also called the Hunter. The three middle stars represent the belt of the hunter. The four bright stars appear to be arranged in the form of a quadrilateral.

Q.51.A. How much time does light take to reach us from the Sun?

Answer: Sunlight travels at the speed of light. Light emitted from the surface of the Sun has to travel across the vacuum of space to reach our eyes. It takes an average of 8 minutes and 20 seconds for the sunlight to travel from the Sun to the Earth.

Q.51.B. How much time does light take to reach us from the next nearest star 'Proxima Centauri'?

Answer: The next nearest star to Earth is 'Proxima Centauri'. It is 4.24 light years from the Sun. Its light will take 4.24 years to reach us.

Q.52. What is Solar System? Name the different types of celestial objects which are members of the Solar System.

Answer: The Sun and the celestial bodies which revolve around it form the Solar System. It consists of large number of bodies such as planets, comets, asteroids and meteors. The Gravitational force keeps the members of the Solar System bound to the Sun. The Sun is the star having a system of planets with one planet called Earth with life on it. Comets are the member of the Solar System which appears in the sky like a

bright ball of light with a long glowing tail. Asteroids are the celestial objects which are also called minor planets. Asteroids can only be seen through large telescopes. Meteors are commonly known as shooting stars, although they are not stars. A meteor is usually a small object that occasionally enters the earth's atmosphere.

Q.53. What are planets? How many planets are there in the Solar System?

Answer: Planets are the members of the Solar System. They look like stars but they do not have light of their own. They reflect the sunlight that fall on them. They keep changing their positions with respect to the stars. A planet revolves around the Sun in a definite path. This path is called an orbit. The time taken by a planet to complete one revolution is called its period of revolution. As the distance of the planet increases from the Sun, the period of revolution increases. A planet also rotates on its axis besides revolving around the Sun. The time taken by the planet to complete one rotation is called its period of rotation. Some planets have moons or satellites revolving around them.

Q.54. Name all the planets of the Solar System in the order of their increasing distances from the Sun.

Answer: The Sun and the celestial bodies which revolve around it form the Solar System. The Gravitational force keeps the members of the Solar System bound to the Sun. The Earth is a planet. It is the member of the Solar system. The eight planets in their order of their increasing distance from the Sun are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

Q.55. What are inner planets and outer planets? Name them.

Answer: There are eight planets in the Solar System. The first four planets, Mercury, Venus, Earth and Mars are much nearer the Sun than the other four planets. They are called the inner planets. The inner planets have very few moons. The planets outside the orbit of Mars, namely Jupiter, Saturn, Uranus and Neptune are much farther off than the inner planets. They are called the outer planets. They have a ring system around them. The outer planets have large number of moons. The outer planets can be seen only with the help of large telescopes.

Q.56. Why is it difficult to observe the planet Mercury?

Answer: Mercury is the nearest planet to the Sun. It is the smallest planet of our Solar System. It is very close to the Sun which makes it very difficult to observe. This is because most of the time it hidden in the glare of the Sun. However, it can be observed just before sunrise or just after sunset, near the horizon. Mercury has no satellite of its own.

Q.57. State one way in which the planets can be distinguished from the stars in the night sky.

Answer: Planets are the members of the Solar System. They look like stars but they do not have light of their own. They reflect the sunlight that fall on them. Whereas the stars emit light of their own. The Sun is also a star.

Q.58. What are the various environmental conditions available on Earth which are responsible for the existence and continuation of life on Earth?

Answer: Earth is the only planet of the Solar System having life on it. The special environment conditions are responsible for the existence and the continuation of life on the Earth. These conditions include the right distance from the Sun, so it has the right temperature, the presence of water, suitable atmosphere and a blanket of ozone.

Q.59. State one important consequence of each of the following:

(a) Rotation of Earth on its axis.

(b) Motion of tilted Earth around the Sun.

Answer: (a) The Earth rotates on its axis taking approximately 24 hours to complete one rotation. Rotation of Earth causes the day night cycle which also creates a corresponding cycle of temperature and humidity.

(b) The plane in which the Earth revolves round the Sun is called the orbital plane of the Earth. The axis of rotation of the Earth is not perpendicular to the plane of its orbit. These two planes are inclined to each other at an angle of 23.5°. This tilt is responsible for the change of seasons on the Earth.

Q.60. What is a satellite? Name the natural satellite of the Earth.

Answer: Any celestial body revolving around another celestial body is called its satellite. The Earth is the satellite of the Sun because it revolves around the Sun. The bodies revolving around the planets are considered as satellites of the planet. Moon is the natural satellite of Earth.

Q.61. Moon does not have light of its own. How are we able to see the Moon?

Answer: Moon is the natural satellite of Earth. It revolves around the Earth. The moon completes one rotation on its axis as it completes one revolution around the Earth. The moon does not produce its own light. We are able to see the moon because the sunlight falling on it gets reflected towards us. Therefore, we are able to see only that part of moon, from which the light of the Sun is reflected towards us.

Q.62. Name the constellation which appears to have the shape of:

(a) a big bear

(b) a distorted W or M

(c) a hunter

(d) a big lion

Answer: (a) Ursa Major constellation is also known as the Big Dipper, the Great Bear or the Saptarshi. There are seven prominent stars in this constellation. It appears like a big ladle or a question mark.

(b) Cassiopeia is another prominent constellation in the northern sky. It is visible during winter in the early part of the night. It looks like a distorted letter W or M.

(c) The constellation Orion is has seven or eight bright stars. It is also called the Hunter. The three middle stars represent the belt of the hunter. The four bright stars appear to be arranged in the form of a quadrilateral.

(d) Leo Major appears to have the shape of a big lion. It is visible in the northern hemisphere around the spring. It is easily identifiable through may. Its brightest star is Regulus. Its most prominent pattern of stars is a backwards question mark called the Sickle.

Q.63. What are asteroids? Where are they located?

Answer: There is a large gap in between the orbits of Mars and Jupiter. This gap is occupied by a large number of small objects that revolve around the Sun. These are called asteroids. Asteroids are the celestial objects which are also called minor planets. Asteroids can only be seen through large telescopes.

Q.64. State two differences between the artificial satellites of the Earth and its natural satellite Moon.

Answer: Natural satellites are formed by nature. Moon is the natural satellite of the Earth. Following are the differences between the Moon and the artificial satellites of the Earth:

Moon	Artificial satellites
1. Moon is the natural satellite of the Earth and is formed by nature. It is permanent.	1. Artificial satellites are manmade and are launched from the Earth. For example, INSAT, IRS, Kalpana-1, EDUSAT are artificial satellites.
2. The distance between the moon and the Earth is very large and hence, it does not have any practical application.	2. They revolve around the Earth much closer than earth's natural satellite, the moon. They have many practical applications. They are used for forecasting weather, transmitting television and radio signals. They are also used for telecommunication and remote sensing.

Q.65. What is an artificial satellite? Name any two artificial satellites launched by our country.

Answer: Artificial satellites are manmade and are launched from the Earth. They revolve around the Earth much closer than earth's natural satellite, the moon. They have many practical applications. They are used for forecasting weather, transmitting television and radio signals. They are also used for telecommunication and remote sensing. INSAT, IRS, Kalpana-1, EDUSAT are artificial satellites.

Q.66. State five uses of artificial satellites.

Answer: Artificial satellites are manmade and are launched from the Earth. They revolve around the Earth much closer than earth's natural satellite, the moon. They have many practical applications. Following are the uses of artificial satellites:

● They are used for forecasting weather.

● They are used for transmitting television and radio signals.

● They are also used for telecommunication and remote sensing.

● They help in scientific research.

● They are used in Global positioning system (GPS).

Q.67. Define light year. How many kilometres make 1 light year?

Answer: Light year is the unit used to express distance between the various celestial bodies. Light year is the distance travelled by light in one year. The speed of light is 300,000 km per second. For example, the Sun is nearly 150,000,000 Km i.e. 150 million Km away from the Earth. The distance of the Sun from the Earth may be said to be about 8 light minutes. 1 light year= 9.46 × 1012 Km.

Q.68. What is a comet? Name the comet which was last seen in 1986 after a period of 76 years.

Answer: Comets are the member of the Solar System which appears in the sky like a bright ball of light with a long glowing tail. The length of the tail grows in size as it approaches the sun. The tail of a comet is always directed away from the sun. They revolve around the Sun in highly elliptical orbits. The period of revolution of comets around the Sun is usually very long. Many comets are known to appear periodically. Halley's comet appears after nearly every 76 years. It was last seen in 1986.

Q.69. When does a comet become visible to us?

Answer: Comets are the member of the Solar System. They revolve around the Sun in highly elliptical orbits. The period of revolution of comets around the Sun is usually very long. Comets appear periodically. Comets are visible to us in the sky like a bright ball of

light with a long glowing tail. The length of the tail grows in size as it approaches the sun. The tail of a comet is always directed away from the sun.

Q.70. What happens to the tail of a comet when it moves far away from the Sun?

Answer: Comets are the member of the Solar System. They revolve around the Sun in highly elliptical orbits. Comets appear periodically. Comets are visible to us in the sky like a bright ball of light with a long glowing tail. The length of the tail grows in size as it approaches the sun. The tail of a comet is always directed away from the sun.

Q.71. What is a meteor? What is the other name of a meteor?

Answer: Meteor is seen as a bright streak of light coming down the night sky. A meteor is usually a small object that occasionally enters the Earth's atmosphere with very high speed. The friction due to the atmosphere heats it up and it glows and evaporates quickly. As a result, the bright streak lasts for a very short time. These are commonly known as shooting stars.

Q.72. What is the difference between a star and a shooting star?

Answer: Stars are celestial bodies that emit light of their own. Our sun is also a star. The stars appear to move from east to west. A star which rises in the east in the evening, sets in the west in the early morning. Meteors are commonly known as shooting stars. Meteor is seen as a bright streak of light coming down the night sky. It is usually a small object that occasionally enters the Earth's atmosphere with very high speed.

Q.73. What are meteorites?

Answer: Meteorites are the large meteors which can reach the Earth before they evaporate completely. Meteorites help scientists in investigating the nature of the material from which the solar system was formed.

Q.74. What is the difference between a meteor and a meteorite?

Answer: Meteor is seen as a bright streak of light coming down the night sky. A meteor is usually a small object that occasionally enters the Earth's atmosphere with very high speed. The friction due to the atmosphere heats it up and it glows and evaporates quickly. As a result, the bright streak lasts for a very short time. These are commonly known as shooting stars. Meteorites are the large meteors which can reach the Earth before they evaporate completely. Meteorites help scientists in investigating the nature of the material from which the solar system was formed.

Q.75. What are meteoroids? Which of two is really a member of the Solar System: Meteoroid or Meteor?

Answer: A meteoroid is a small chunk of rock or iron that travels through space. When it enters the Earth's atmosphere, it makes a bright trail and is called a meteor. Meteor is seen as a bright streak of light coming down the night sky. A meteor is usually a small

object that occasionally enters the Earth's atmosphere with very high speed. The friction due to the atmosphere heats it up and it glows and evaporates quickly. As a result, the bright streak lasts for a very short time. These are commonly known as shooting stars. Meteors are the part of the Solar System.

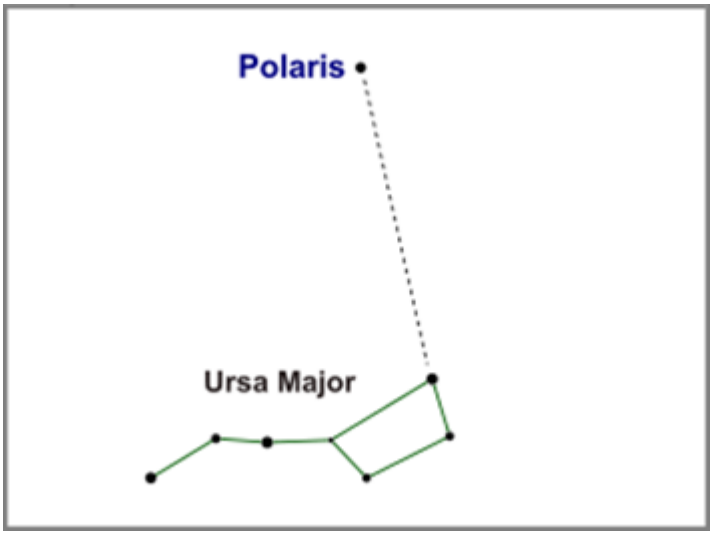
Long Answer Type Questions

Q.76.A. What is the number of prominent stars in the Ursa Major?

Answer: Ursa Major is the constellation which reminds us of a large ladle or a question mark in the night sky. It is also known as the Big Dipper, the Great Bear or the Saptarshi. There are seven prominent stars in this constellation. It appears like a big ladle or a question mark.

Q.76.B. Draw a diagram of Ursa Major constellation to show the position of main stars in it.

Answer: Following is the diagram of Ursa Major constellation:

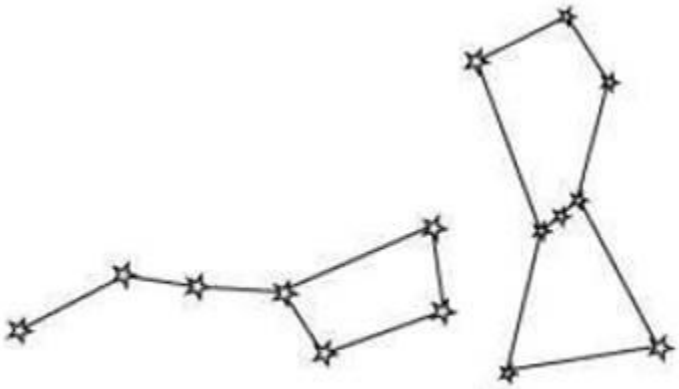


Q.77.A. What is the number of prominent stars in the Orion?

Answer: The constellation Orion is visible during winter in the late evenings. It also has seven or eight bright stars. It is also called the Hunter. The three middle stars represent the belt of the hunter. The four bright stars appear to be arranged in the form of a quadrilateral.

Q.77.B. Draw a diagram of the Orion constellation to show the position of prominent stars in it.

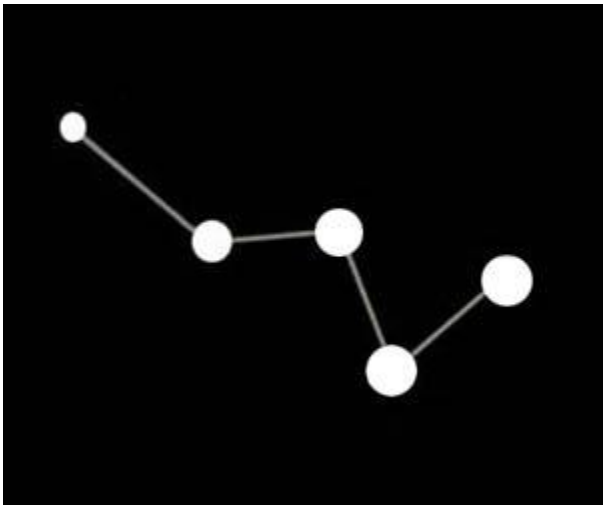
Answer: Following is the diagram of Orion and Ursa Major:



Ursa Major Orion

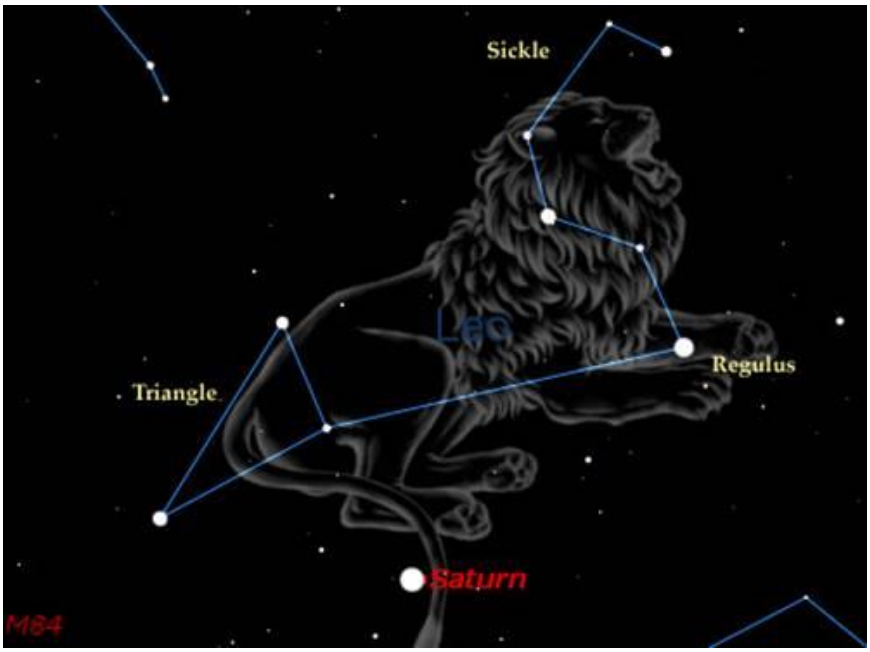
Q.78.A. What is the number of main stars in the Cassiopeia constellation? Draw a diagram of Cassiopeia constellation to show the position of main stars in it.

Answer: Cassiopeia is another prominent constellation in the northern sky. It is visible during winter in the early part of the night. It looks like a distorted letter W or M.



Q.78.B. What is the number of main stars in Leo Major constellation? Draw a diagram to show the position of main stars in Leo Major constellation.

Answer: Leo Major appears to have the shape of a big lion. It is visible in the northern hemisphere around the spring. It is easily identifiable through may. Its brightest star is Regulus. Its most prominent pattern of stars is a backwards question mark called the Sickle



Q.79.A. Explain how you can locate the Pole Star with the help of Ursa Major constellation.

Answer: Ursa Major has seven prominent stars. Pole star can be located with the help of Ursa Major. It is located by drawing an imaginary line passing through the two stars at the end of Ursa Major. This imaginary line is extended towards the North direction, which is about five times the distance between the two lines. This line will lead to a star which is not too bright. This star is Pole star.

Q.79.B. Explain how the position of Sirius Star can be located in the night sky with the help of Orion constellation.

Answer: Sirius is the brightest star in the sky. It is located close to the Orion constellation. An imaginary line is drawn passing through the three middle stars of Orion. By looking along this line towards the east, will lead to a very bright star. This bright star is Sirius.

Q.80.A. What is the difference between a full Moon and a new Moon? After how many days a full Moon changes into a new Moon?

Answer: There is a change in the shape of moon every day. There are days when the shape of moon appears perfectly round. Also, there are days when the moon cannot be seen at all even if the sky is clear. The day on which the whole disc of the moon is visible is called the full Moon day. Every night, the size of the bright part of the moon appears to become thinner and thinner. On the fifteenth day, the moon is not visible. This day is called the new Moon day. The next day, only a small portion of the moon appears in the sky. This is known as the crescent moon. Then again, the moon grows larger every day. On the fifteenth day once again we get a full view of the moon. After fifteen days, the full moon changes into a new Moon.

Q.80.B. What is meant by the phases of the Moon? What causes the phases of the Moon?

Answer: The different shapes of the bright part of the moon as seen during a month are called the phases of the moon. Moon is the natural satellite of the Earth. It revolves around the Earth. It completes one rotation on its axis as it completes one revolution around the Earth. The moon does not have light of its own. We are able to see the moon because the sunlight falling on its surface gets reflected towards us. We, therefore, see only that part of the moon, from which the light of the Sun is reflected towards us. The size of the illuminated part of the moon visible from the Earth increases each day after the new moon day. After the full moon day, the sunlit part of the moon visible from the Earth decreases in size every day. This process leads to the phases of the Moon.

Multiple Choice Questions (MCQs)

Q.81. Which of the following is not a planet of the Sun?

Answer: Sirius is the brightest star in the sky. It is located close to the Orion constellation.

Q.82. Ursa Major is a:

Answer: Ursa Major is the constellation which reminds us of a large ladle or a question mark in the night sky. It is also known as the Big Dipper, the Great Bear or the Saptarshi.

Q.83. Which of the following is not a member of the Solar System?

Answer: The stars forming a group that has a recognisable shape is called a constellation. For example, Ursa Major is a constellation.

Q.84. Which of the following is not a planet?

Answer: Moon is the natural satellite of the Earth. It revolves around the Earth.

Q.85. Phases of the Moon occur because:

Answer: The size of the illuminated part of the moon visible from the Earth increases each day after the new moon day. After the full moon day, the sunlit part of the moon visible from the Earth decreases in size every day. This process leads to the phases of the Moon.

Q.86. Which of the following is not a member of the Solar System?

Answer: The stars forming a group that has a recognisable shape is called a constellation. For example, Ursa Major is a constellation.

Q.87. After the Sun, the next nearest star to the Earth is:

Answer: The next nearest star to Earth is 'Proxima Centauri'. It is 4.24 light years from the Sun. Its light will take 4.24 years to reach us.

Q.88. The distances between the various celestial objects are usually expressed in the unit of:

Answer: Light year is the unit used to express distance between the various celestial bodies. Light year is the distance travelled by light in one year.

Q.89. Which of the following constellations can be seen in the night sky during the winter season?

A) Orion

B) Ursa Major

C) Leo Major

D) Cassiopeia

Answer: The constellation Orion is visible during winter in the late evenings. It also has seven or eight bright stars. It is also called the Hunter. Cassiopeia is another prominent constellation in the northern sky. It is visible during winter in the early part of the night.

Q.90. The brightest star in the night sky called Sirius is located close to one of the following constellations. This constellation is:

Answer: Sirius is the brightest star in the sky. It is located close to the Orion constellation.

Q.91. Asteroids revolve around the Sun between the orbits of the planets:

Answer: There is a large gap in between the orbits of Mars and Jupiter. This gap is occupied by a large number of small objects that revolve around the Sun. These are called asteroids.

Q.92. The biggest planet of the solar system is:

Answer: Jupiter is the biggest planet of the Solar system. It is so large that about 1300 earths can be placed inside this giant planet.

Q.93. The planet with a system of well-developed rings encircling it is:

Answer: Saturn is the planet having a well-developed system of rings around it. These rings are not visible with the naked eye. They can be observed with a small telescope.

Q.94. The two pointer stars the line passing through which points to the direction of pole star are a part of the constellation called:

Answer: Ursa Major is the constellation which reminds us of a large ladle or a question mark in the night sky.

Q.95. The smallest planet of the solar system is:

Answer: Mercury is the smallest planet of the Solar system. It is nearest to the Sun.

Q.96. Which of the following are non-luminous objects?

A) Orion

B) Morning Star

C) Moon

D) Pole star

Answer: The moon does not have light of its own. We are able to see the moon because the sunlight falling on its surface gets reflected towards us.

Q.97. Which of the following planets show phases like the moon?

A) Venus

B) Mercury

C) Jupiter

D) Mars

Answer: Mercury and Venus shows phases like the Moon. They have the orbits which are smaller than the Earth and exhibit the full range of phases like the moon.

Q.98. Which of the following is the hottest planet in the Solar System?

Answer: Venus is the hottest planet of the solar system. It is the second planet from the Sun and has a temperature that is maintained at 462 degrees Celsius.

Q.99. Which of the following constellations are visible in the summer season?

A) Cassiopeia

B) Orion

C) Leo Major

D) Big Bear

Answer: Ursa Major can be seen during summer time in the early part of the night. It has seven prominent stars. Leo Major is visible in the northern hemisphere around the spring. It is easily identifiable through may.

Q.100. The agency responsible for the development of space science programmes in India is:

Answer: ISRO is also known as Indian Space Research Organisation is the agency responsible for the development of space science programs in India.

The Indian Space Research Organisation is the space agency of the Government of India headquartered in the city of Bengaluru.

Questions Based on High Order Thinking Skills (HOTS)

Q.101. X is a group of stars which is visible during the summer season in the early part of the night. It can be seen clearly in .the month of April in the northern part of the sky. It resembles a bowl with a handle. It also resembles a big kite with a tail.

(a) What is the general name of groups of stars like X?

(b) Write any two names of X.

(c) Is it a part of our Solar System?

(d) How many bright stars are usually observed in X?

(e) Which famous star can be located in the sky with the help of X?

Answer: (a) The general name for the group of stars like X is a constellation. The stars forming a group that has a recognisable shape is called a constellation. We can easily identify them in the night sky. Ursa Major and Orion are the examples of the constellations.

(b) X is the Ursa Major constellation. It is also known as the Big Dipper, the Great Bear or the Saptarshi. There are seven prominent stars in this constellation. It appears like a big ladle or a question mark. There are three stars in the handle of the ladle and four in its bowl.

(c) Constellations is a group of stars forming a group that has a recognizable shape. Yes, Ursa Major is a part of our Solar System.

(d) There are seven prominent stars in the Ursa Major constellation. It appears like a big ladle or a question mark. There are three stars in the handle of the ladle and four in its bowl.

(e) Pole star can be located with the help of Ursa Major. It is located by drawing an imaginary line passing through the two stars at the end of Ursa Major. This imaginary line is extended towards the North direction, which is about five times the distance between the two lines. This line will lead to a star which is not too bright. This star is Pole star.

Q. 102.A. In which direction do stars appear to move in the sky?

Answer: The stars appears to move from east to the west direction in the sky.

Q.102.B. Why do they appear to move in this direction?

Answer: The stars appear to move in the sky. It appears because of the motion of the Earth. Earth is spinning around its own axis and also moves around the Sun. As a result, the stars also appear to move from east to west. A star which rises in the east in the evening, sets in the west in the early morning. All the stars do not appear to move. For example, pole star does not appear to move because it is situated in the direction of earth's axis.

Q.103. The number of main stars in constellation A is 5, in constellation B is 7 in constellation C can be 7 or 8, whereas in constellation D is usually 9. Name the constellations A, B, C and D.

Answer: The constellation A is Cassiopeia. It is the prominent constellation in the northern sky. It is visible during winter in the early part of the night. It looks like a distorted letter W or M.

The constellation B is Ursa Major. It is also known as the Big Dipper, the Great Bear or the Saptarshi. There are seven prominent stars in this constellation. It appears like a big ladle or a question mark. There are three stars in the handle of the ladle and four in its bowl.

The constellation C is Orion. The constellation Orion is visible during winter in the late evenings. It also has seven or eight bright stars. It is also called the Hunter. The three middle stars represent the belt of the hunter. The four bright stars appear to be arranged in the form of a quadrilateral.

The constellation D is Leo Major. Leo Major appears to have the shape of a big lion. It is visible in the northern hemisphere around the spring. It is easily identifiable through may. Its brightest star is Regulus.

Q.104. Which star in the night sky can be located with the help of:

(a) Orion constellation?

(b) Ursa Major Constellation

Answer: (a) The constellation Orion is visible during winter in the late evenings. It also has seven or eight bright stars. It is also called the Hunter. Sirius is the brightest star in the sky. It is located close to the Orion constellation. An imaginary line is drawn passing through the three middle stars of Orion. By looking along this line towards the east, will lead to a very bright star. This bright star is Sirius.

(b) The constellation Ursa Major is also known as the Big Dipper, the Great Bear or the Saptarshi. There are seven prominent stars in this constellation. It appears like a big ladle or a question mark. Pole star can be located with the help of Ursa Major. It is located by drawing an imaginary line passing through the two stars at the end of Ursa Major. This imaginary line is extended towards the North direction, which is about five times the distance between the two lines. This line will lead to a star which is not too bright. This star is Pole star.

Q.105. Match items in column A with one or more items in column B:

Column A

(i) Inner planets

(ii) Outer planets

(iii) Constellation

(iv) Satellite of the Earth

Column B

(a) Saturn

(b) Pole Star

(c) Great Bear

(d) Moon

(e) Earth

(f) Orion

(g) Mars

Answer: (i) Inner planets - (e) Earth and (g) Mars

There are eight planets in the Solar System. The first four planets, Mercury, Venus, Earth and Mars are much nearer the Sun than the other four planets. They are called the inner planets. The inner planets have very few moons.

(ii) Outer planets - (a) Saturn

The planets outside the orbit of Mars, namely Jupiter, Saturn, Uranus and Neptune are much farther off than the inner planets. They are called the outer planets. They have a ring system around them. The outer planets have large number of moons. The outer planets can be seen only with the help of large telescopes.

(iii) Constellation - (c) Great Bear and (f) Orion

The stars forming a group that has a recognisable shape is called a constellation. We can easily identify them in the night sky. Ursa Major and Orion are the examples of the constellations.

(iv) Satellite of the Earth - (d) Moon

Moon is the natural satellite of the Earth. It revolves around the Earth.