## SSC Board: Std 6 Ch 16: The Universe – Q bank - answers

## Answers

1. Which celestial bodies form the solar system?
All natural objects in our solar system, such as the sun, moon, stars, planets, comets, asteroids, satellites, meteoroids, etc. are the celestial bodies that form the solar system.

2. What is the difference between stars and planets?
The heavenly bodies that twinkle are called stars. Stars have their own light.
The heavenly bodies that do not twinkle are called planets. Planets do not have light of their own. They get light from the stars. Planets revolve around a star, even as they rotate around themselves.

3. How many planets are there in our solar system?
There are eight planets in our solar system, they are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

4. What is to be found between Mars and Jupiter?
A bad or belt of innumerable asteroids are found between Mars and Jupiter.

5. Why do we see only one side of the moon?
The Moon is the satellite of the earth. Its periods of rotation and revolution are both of 27.3 days. That is why we see only one side of the moon.

6. Which planet has a day longer than its year?
The planet Venus has a day longer than its year. Venus completes one rotation in 243 Earth days and completes one revolution around the sun in 225 Earth days.

1. Name these –
(a) Birth place of stars: Nebula
(b) Biggest planet in the solar system: Jupiter
(c) The galaxy which is our neighbor: Andromedia
(d) Brightest planet in the solar system: Venus
(e) Planet with largest number of satellites: Jupiter
(f) Planets without a single satellite: Mercury and Venus
(g) Planet with a rotation different from other planets Venus and Uranus
(h) A celestial body that carries a tail along: Comet

2. Fill in the blanks.
(a) The group of galaxies of which our Milky Way is a part is called Local Group .
(b) Comets are made of frozen matter and dust particles .
(c) The planet Uranus appears as if it is rolling along its orbit.
(d) Jupiter is a stormy planet.
(e) The Pole Star is the best example of a variable type of star.

3. Say if the statements given below are right or wrong. Rewrite the statements after correcting them.
(a) Venus is the planet closest to the sun.
Wrong, Mercury is the planet closest to the sun.

(b) Mercury is called a stormy planet.
Wrong, Jupiter is called a stormy planet.

(c) Jupiter is the biggest planet.
Right, Jupiter is the biggest planet.

4. Answer the following.
(a) What is a special characteristic of the planet Mars?
The special characteristics of planet Mars is that it is red in colour. This is because the soil on it has iron in it.

(b) What are the types of galaxies?
There are four types of glaxies, they are spiral, elliptical, barred, spiral and irregular.

(c) Which celestial bodies does a galaxy include?
A galaxy includes clusters of stars, nebulae, clouds of gases, clouds of dust, dead stars, newly born stars, etc.

(d) Name the different types of stars.
The different types of stars are:
Sun-like stars : These stars can be slightly smaller or bigger than the sun. But there is a lot of difference in their temperatures. Examples : stars like Sirius, Alpha Centauri.
Red Giants stars: The temperature of these stars ranges between 3000° C and 4000° C. But their luminance can be 100 times that of the sun. Their diameter is 10 to 100 times that of the sun and they are red in colour.
Super Nova stars : These are even brighter and larger than the red giant stars. Their temperature is between 3000° C to 4000° C but their diameter can be more than a hundred times greater than that of the Sun.
Binary or Twin Stars : More than half of the stars in sky are binary stars. They consist of two stars that revolve around each other. At times, three or four stars that revolve around each other have also been located.
Variable Stars : The luminance and shape of these stars is not stable. They are constantly contracting or expanding. When a star expands, it emits less energy and at such times its brightness decreases. As against this, when a star contracts, its surface temperature increases and the star emits greater energy and appears brighter. For example, Polaris (Pole Star).

(e) What are the types of comets and on what basis are they classified?
Comets are of two types, Long period comets and short period comets. They are classified on the basis of the number of years they take to complete one revolution around the sun. For example, long period comets take more than 200 years to complete one revolution around the sun and short period comets take less than 200 years to complete one revolution around the sun.

(f) What is the difference between meteors and meteorites?
Meteors are rocky pieces originating from the asteroid belt. Sometimes the meteors do not burn completely and fall to the surface of the earth. These are called meteorites.

(g) What are the characteristics of the planet Neptune?
Neptune is the eighth planet in the solar system. A season on Neptune lasts for about 41 years. On this planet winds blow with extremely high speed.

**5. Match the following.**

| Group A | Group B |
|---|---|
| (1) Galaxy | (a) From east to west |
| (2) Comet | (b) 33 satellites |
| (3) Sun-like star | (c) Spiral |
| (4) Saturn | (d) Sirius |
| (5) Venus | (e) Halley |

Galaxy – Spiral, Comet – Halley, Sun-like star – Sirius, Saturn – 33 satellites,
Venus – from east to west.

## Fill in the blanks:

1. A smoky white band full of stars spreading north-south in the sky, is called the Milky Way.
2. The Milky Way is also known as Mandakini.
3. A group of innumerable stars and their planetary systems are together known as a galaxy.
4. The Milky Way is the galaxy in which our solar system is located.
5. The Milky Way is a part of the Local Group of galaxies.
6. The galaxy that is closest to our Milky Way is called Andromeda.
7. The universe includes innumerable galaxies, the space between them and also energy.

8. The scientist Edwin Hubble showed that there exist many galaxies beyond our Milky Way.
9. In 1990, NASA, the American space agency launched the Hubble Telescope in the orbit of the earth.
10. The Hubble telescope has made it easier to look for stars, to take photographs and to obtain spectrums.
11. The thousands of twinkling stars that we observe in the clear night sky are part of our Milky Way.
12. The birth place of stars are the huge nebulae.
13. Nebulae are made of dust particles and gases.
14. Generally, the surface temperature of stars ranges from 3500° C to 50000° C.
15. The colour of stars changes according to their temperature.
16. Sun-like stars can be slightly smaller or bigger than the sun.
17. The temperature of red giant stars ranges between 3000° C and 4000° C.
18. Super Nova stars are even brighter and larger than the red giant stars.
19. The temperature of super nova stars is between 3000° C to 4000° C.
20. More than half of the stars in sky are binary stars.
21. Binary stars consist of two stars that revolve around each other.
22. The luminance and shape of variable stars is not stable.
23. When a star expands, it emits less energy and at such times its brightness decreases.
24. When a star contracts, its surface temperature increases and the star emits greater energy and appears brighter.
25. The solar system consists of the sun, the planets, asteroids, comets and meteors.
26. The planets Mercury, Venus, Mars, Jupiter and Saturn can be easily seen.
27. The Mercury, Venus, Earth and Mars are the inner planets.
28. The Jupiter, Saturn, Uranus and Neptune are outer planets.
29. Outer planets have rings around them.
30. The crust of all the inner planets is hard.
31. The outer planets have gaseous outer cover.
32. The sun which is at the centre of the solar system
33. The Sun is a yellow coloured star.
34. The surface temperature of the sun is around 6000° C.
35. The size of the sun is so huge that around 13 lakh planets of the size of the earth can be easily placed within it.
36. Due to the gravitational force of the sun, the celestial bodies in the solar system revolve around it.
37. The diameter of the sun is approximately 13,92,000 km.
38. The sun rotates around its axis and while doing so, it revolves around the centre of the Milky Way taking the solar system along with it.
39. Planet Mercury is closest to the sun.
40. The planet Mercury is visible in the morning and the evening if it is away from the sun.
41. Mercury is the fastest moving planet.
42. Venus is the brightest planet in the solar system.
43. Planet Venus is seen in the sky in the east before the sunrise and in the west after the sunset.
44. Venus rotates around itself from east to west.
45. Venus is the hottest planet.
46. Earth is the third planet of the solar system.
47. Only the planet Earth has life on it.
48. There is a magnetic field around the earth.
49. The magnetic field around the earth diverts the harmful rays from the sun towards the polar regions of the earth.
50. As the soil on Mars contains iron, its colour is reddish.
51. The highest and longest mountain in the solar system Olympus Mons is located on Mars.
52. Jupiter is the largest planet of the solar system.
53. Jupiter is so huge that as many as 1397 planets of the size of the earth can get accommodated in it.
54. Jupiter is also called the Stormy Planet.
55. Though the mass of Saturn is 95 times that of the earth, its density is very low.
56. Uranus appears as if it is rolling along on its orbit.
57. A season on Neptune lasts for about 41 years.
58. The celestial bodies that revolve around a planet without independently revolving around the sun are called satellites.
59. The Moon is the satellite of the earth.

60. The Moons periods of rotation and revolution are both of 27.3 days.
61. Except for Mercury and Venus all other planets have satellites but in varying numbers.
62. Asteroids are small sized bodies could not turn into planets when the solar system was formed, but continued to revolve around the sun.
63. A belt of asteroids has formed between the planets Mars and Jupiter.
64. A small sized celestial body that revolves independently around the sun is called a dwarf planet.
65. Pluto takes around 248 years to complete its revolution around the sun whereas it takes around 6.38 days for one rotation.
66. Comets are formed out of ice and dust particles.
67. Since olden times, the appearance of a comet has been considered to be an inauspicious event.
68. Comets are made up of frozen matter and dust particles.
69. When they are close to the sun, this frozen matter gets converted into gas due to the solar heat.
70. Certain comets appear to have a long feathery tail.
71. Due to their long elliptical orbits, the appearance of comets in the sky is very rare.
72. Comets are classified in two main groups - long period comets and short period comets.
73. Long period comets take more than 200 years to complete one revolution around the sun.
74. Short period comets take less than 200 years to complete one revolution around the sun.
75. Halley's comet appeared in the year 1910 and reappeared in 1986.
76. The central part or nucleus of Halley's comet was found to be 16 km long and 7.5 km wide.
77. Halley's comet takes 76 years to complete its revolution around the sun.
78. Fred Whipple, an American astronomer, proposed that comets consist of an icy cluster of various constituents.
79. Comets came to be called dirty snowballs.
80. By 1950, Whipple had discovered six comets.
81. Meteors are rocky pieces originating from the asteroid belt.
82. It is believed that the Lonar lake in Maharashtra has been formed by the impact of such a meteorite.

## Answer the following:

1. What is a Milky Way?
A smoky white band full of stars spreading north-south in the sky. This is the Milky Way.

2. What is Milky way also known as?
Milky Way is also known as Mandakini.

3. What is a galaxy?
A group of innumerable stars and their planetary systems are together known as a galaxy.

4. In which galaxy is our Milky Way located?
The Milky Way is the galaxy in which our solar system is located.

5. Our Milky Way a part of which galaxy?
The Milky Way is a part of the 'Local Group' of galaxies.

6. what does the Milky Way include?
The Milky Way includes many stars smaller than our Sun as well as many others that are thousands of times bigger than the Sun. It also includes many other celestial bodies such as clusters of stars, nebulae, clouds of gases, clouds of dust, dead stars, newly born stars, etc.

7. Name the galaxy closest to our Milky Way.
The galaxy that is closest to our Milky Way is called Andromeda.

8. What does the universe include?
The universe includes innumerable galaxies, the space between them and also energy.

9. Name the various types of galaxies.
Various types of galaxies identified according to their shapes are spiral, elliptical, barred spiral and irregular.

10. Name the scientist who showed that there exist many galaxies in our Milky Way.
The scientist Edwin Hubble showed that there exist many galaxies beyond our Milky Way.

11. Who launched the Hubble Telescope and in which year.
In 1990, NASA, the American space agency launched the 'Hubble Telescope' in the orbit of the earth.

12. What does the Hubble Telescope do?
The Hubble telescope has made it easier to look for stars, to take photographs and to obtain spectrums.

13. Name the different colours that the stars radiate.
Stars radiating different colours such as blue, white, yellow and reddish can be seen in the sky.

14. What are nebulae?
The birth place of stars are the huge nebulae, made of dust particles and gases.

15. What is the surface temperature of the stars?
Generally, the surface temperature of stars ranges from 3500° C to 50000° C.

16. Name the different type of stars.
The different type of stars are Sun-like stars, Red Giants, Super Nova  Binary stars and Variable stars.

17. Describe Sun-like stars.
Sun-like stars can be slightly smaller or bigger than the sun. But there is a lot of difference in their temperatures.

18. Name some Sun-like stars
Sirius and Alpha Centauri

19. Describe Red giant stars.
The temperature of red giant stars ranges between 3000° C and 4000° C. But their luminance can be 100 times that of the sun. Their diameter is 10 to 100 times that of the sun and they are red in colour.

20. Describe super nova stars.
Super Nova stars are even brighter and larger than the red giant stars. Their temperature is between 3000° C to 4000° C but their diameter can be more than a hundred times greater than that of the Sun.

21. Describe binary stars.
More than half of the stars in sky are binary stars. They consist of two stars that revolve around each other. At times, three or four stars that revolve around each other have also been located.

22. Describe variable stars.
The luminance and shape of variable stars is not stable. They are constantly contracting or expanding. When a star expands, it emits less energy and at such times its brightness decreases. As against this, when a star contracts, its surface temperature increases and the star emits greater energy and appears brighter. For example, Polaris (Pole Star).

23. What does the solar system consists of?
The solar system consists of the sun, the planets, asteroids, comets and meteors.

24. Name the planets that can be easily seen.
The planets Mercury, Venus, Mars, Jupiter and Saturn can be easily seen.

25. Name the inner and the outer planets.
The Mercury, Venus, Earth and Mars are the inner planets whereas the Jupiter, Saturn, Uranus and Neptune are outer planets.

26. Describe the sun.
The sun which is at the centre of the solar system is a yellow coloured star. Its surface temperature is around 6000° C. The size of the sun is so huge that around 13 lakh planets of the size of the earth can be easily placed within it. Due to the gravitational force of the sun, the celestial bodies in the solar system revolve around it. The diameter of the sun is approximately 13,92,000 km. The sun rotates around its axis and while doing so, it revolves around the centre of the Milky Way taking the solar system along with it.

27. Describe Mercury.
Mercury is closest to the sun. It is visible in the morning and the evening if it is away from the sun. A number of depressions, which look like volcanic craters, but are actually caused by meteoric falls can be seen on the surface of Mercury. Mercury is the fastest moving planet.

28. Describe Venus.
Venus is the brightest planet in the solar system. It is seen in the sky in the east before the sunrise and in the west after the sunset. It rotates around itself from east to west. It is the hottest planet.

29. Describe Earth.
Earth is the third planet of the solar system. No other planet other than the earth has life on it. As the earth is a magnet, there is a magnetic field around the earth. It diverts the harmful rays from the sun towards the polar regions of the earth.

30. Describe Mars.
Mars is the fourth planet in the solar system. As the soil on Mars contains iron, its colour is reddish. Hence Mars is also called the Red Planet. The highest and longest mountain in the solar system 'Olympus Mons' is located on Mars.

31. Describe Jupiter
Jupiter is the largest planet of the solar system. It is so huge that as many as 1397 planets of the size of the earth can get accommodated in it. Even though the planet is so huge, it revolves around itself with a great speed. As huge storms occur frequently on it, it is also called the 'Stormy Planet'.

32. Describe Saturn
Saturn is the sixth planet of the solar system and next only to Jupiter in size. It is considered to be a peculiar planet because of the rings around it. Though its mass is 95 times that of the earth, its density is very low. If it were dropped into a sea large enough to hold it; it would actually float in it!

33. Describe Uranus
Uranus is the seventh planet in the solar system. It cannot be seen without a telescope. Its axis is so greatly inclined that it appears as if it is rolling along on its orbit.

34. Describe Neptune.
Neptune is the eighth planet in the solar system. A season on Neptune lasts for about 41 years. On this planet winds blow with extremely high speed.

35. What is a satellite?
The celestial bodies that revolve around a planet without independently revolving around the sun are called satellites. Like planets, satellites rotate around their respective axes.

36. Describe the moon
The Moon is the satellite of the earth. It does not have an atmosphere. Its periods of rotation and revolution are both of 27.3 days.

37. Name the planets that have satellites.
Mars, Earth, Venus, Jupiter, Saturn, Uranus and Neptune have satellites.

38. Name the planets that do not have satellites.
Mercury and Venus do not have satellites.

39. What are asteroids?
A great number of small sized bodies could not turn into planets when the solar system was formed, but continued to revolve around the sun are known as asteroids.

40. Where do you find the asteroids in our solar system
A belt of asteroids is found between the planets Mars and Jupiter.

41. What is a dwarf planet?
A small sized celestial body that revolves independently around the sun is called a dwarf planet.

42. Name a dwarf planet.
Pluto is a dwarf planet.

43. Describe Pluto.
Pluto takes around 248 years to complete its revolution around the sun whereas it takes around 6.38 days for one rotation.

44. What is a comet?
A comet is a celestial body that revolves around the sun. Comets are formed of frozen matter and dust particles. They are part of the solar system.

45. Why to certain comets appear to have a long feathery tail?
When the comets are close to the sun, the frozen matter gets converted into gas due to the solar heat. These gases get thrown in a direction away from the sun. As a result, certain comets appear to have a long feathery tail.

46. Why is the appearance of comets very rare?
Due to their long elliptical orbits, their appearance in the sky is very rare. They reappear in the sky after very long periods of time.

47. What are long period comets?
Comets that take more than 200 years to complete one revolution around the sun are called long period comets.

48. What are short period comets?
Comets that take less than 200 years to complete one revolution around the sun are called short period comets.

49. In which years did Haley's comet appear?
Halley's comet appeared in the year 1910 and reappeared in 1986.

50. How long does Halley's comet takes to complete its revolution around the sun?
Halley's comet takes 76 years to complete its revolution around the sun.

51. What is a meteor fall?
At times, we see a falling star. This event is called a meteor fall.

52. What are meteors?
Meteors are rocky pieces originating from the asteroid belt.

53. What are meteorites?
Sometimes the meteors do not burn completely and fall to the surface of the earth. These are called meteorites.