Stars and the Solar System

Q.1 Which of the following is NOT a member of the solar system?

(a) An asteroid
(b) A satellite
(c) A constellation
(d) A comet

Sol: (c) A constellation

Q.2 Which of the following is NOT a planet of the sun?

(a) Sirius
(b) Mercury
(c) Saturn
(d) Earth

Sol: (a) Sirius

Q.3 Phases of the moon occur because

(a) We can see only that part of the moon which reflects light towards us.
(b) Our distance from the moon keeps changing.
(c) The shadow of the Earth covers only a part of the moon's surface.
(d) The thickness of the moon's atmosphere is not constant.

Sol: (a) We can see only that part of the moon which reflects light towards us.

Q.4 Fill in the blanks:

(a) The planet which is farthest from the sun is _____.
(b) The planet which appears reddish in colour is _____.
(c) A group of stars that appear to form a pattern in the sky is known as a _____.
(d) A celestial body that revolves around a planet is known as a _____.
(e) Shooting stars are actually not _____.
(f) Asteroids are found between the orbits of _____ and _____.

Sol:

(a) The planet which is farthest from the sun is **Neptune**.
(b) The planet which appears reddish in colour is **Mars**.
(c) A group of stars that appear to form a pattern in the sky is known as a **constellation**.
(d) A celestial body that revolves around a planet is known as a **satellite**.
(e) Shooting stars are actually not **stars**.
(f) Asteroids are found between the orbits of **Mars** and **Jupiter**.

Q.5 Mark the following statement as true (T) or false (F).

(a) Pole star is a member of the solar system. ( )
(b) Mercury is the smallest planet of the solar system. ( )
(c) Uranus is the farthest planet in the solar system. ( )
(d) INSAT is an artificial satellite. ( )
(e) There are nine planets in the solar system. ( )
(f) Constellation Orion can be seen only with a telescope. ( )

Sol:

(a) Pole star is a member of the solar system. (F)
(b) Mercury is the smallest planet of the solar system. (T)
(c) Uranus is the farthest planet in the solar system. (F)
(d) INSAT is an artificial satellite. (T)
(e) There are nine planets in the solar system. (F)
(f) Constellation Orion can be seen only with a telescope. (F)

Q.6 Match items in column A with one or more items in column B.

A	B
(i) Inner planets	(a) Saturn
(ii) Outer planets	(b) Pole star
(iii) Constellation	(c) Great Bear
(iv) Satellite of the Earth	(d) Moon
	(e) Earth
	(f) Orion
	(g) Mars

Sol:

A	B
(i) Inner planets	(e) Earth, (g) Mars
(ii) Outer planets	(a) Saturn
(iii)Constellation	(c) Great Bear
(iv) Satellite of the Earth	(c) Moon

Q.7 In which part of the sky can you find Venus if it is visible as an evening star?
Sol: West side of sky we can find the Venus. It is also known as evening star.

Q.8 Name the largest planet of the solar system.
Sol: Jupiter is the largest planet of the solar system.

Q.9 What is a constellation? Name any two constellations.
Sol: A group of stars that are in a recognizable shape is called a constellation. Examples:

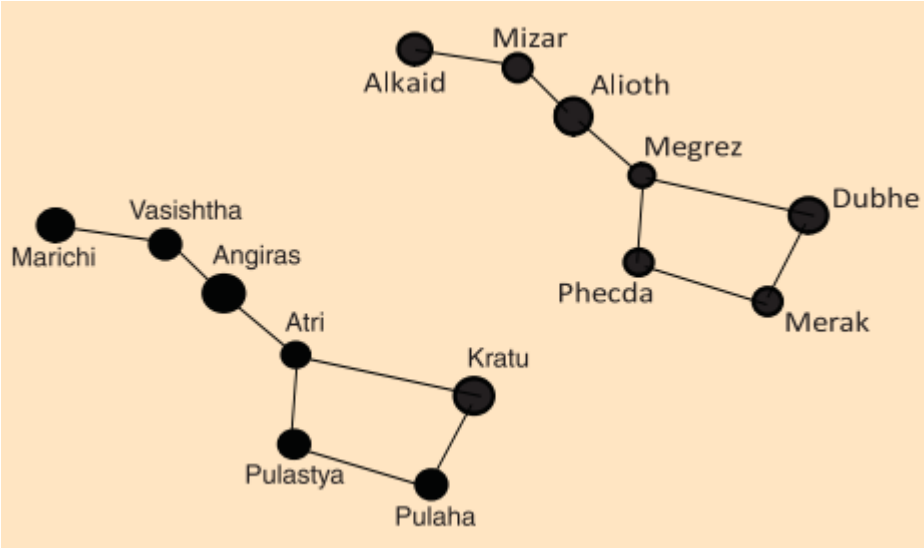
(a) Great Bear *(b) Orion* *(c) Cassiopeia* *(d) Leo Major*

Q.10 Draw sketches to show the relative position of prominent stars in

(a) Ursa Major

(b) Orion

Sol:



(a) Ursa Major

Orion

Q.11 Name two objects other than planets which are members of the solar system.

Sol: Comets and Asteroids are the two objects which are members of the solar system.

Q.12 Explain how you can locate the Pole Star with the help of Ursa Major.

Sol: Pole star can be located with the help of the two stars at the end of Ursa Major. Imagine a straight line which is passing through these stars and extend this imaginary line in north direction. This line distance is five times of distance between two stars. A star is seen in this direction. This star is pole star.

Q.13 Do all the stars in the sky move? Explain.

Sol: No, all the stars do not move in the sky. They seems to move in the sky from east to west due to the rotation of earth in its own axis.

Q.14 Why is the distance between stars expressed in light years? What do you understand by the statement that a star is eight light years away from the Earth?

Sol: The distances between the stars are very high. So, It is not convenient to write in terms of km. for example: The distance between sun and earth is 150,000,000 km, whereas the distance of alpha century is 40,000,000,000,000 km. So, it is expressed in terms of light year.
One light year = 9.46×10^{12} km.

A light year means that the distance covered by light in one year. For example: distance between two stars is 10 light year, it means that the distance covered by light in 10 years.

Q.15 The radius of Jupiter is 11 times the radius of the Earth. Calculate the ratio of the volumes of Jupiter and the Earth. How many Earths can Jupiter accommodate?

Sol: Given: Radius of Jupiter =11 x radius of Earth

$R = 11 \times r$

Earth's Volume = $(4/3)\ \pi\ r^3$

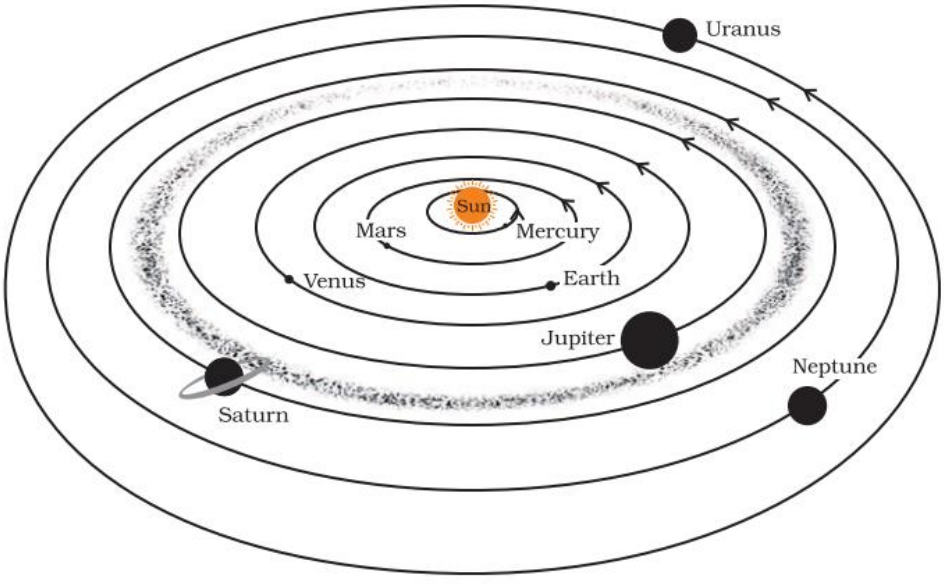
Jupiter's Volume = $(4/3)\ \pi\ R^3$ or $(4/3)\ \pi\ (11r)^3$

$= 1331\ [(4/3)\ \pi\ r^3]$

Jupiter's Volume / Earths' Volume = $1331\ [(4/3)\ \pi\ r^3] / (4/3)\ \pi\ r^3$

Jupiter's Volume / Earths' Volume = 1331

Q.16 Boojho made the following sketch (Fig.) of the solar system. Is the sketch correct? If not, correct it.



Sol: No, this sketch is not correct.