12. Stars and The Solar System

Objective Type Questions

1. Name the following:-

(a) Proxima Centauri

(b) Light year

(c) Ursa Major (d) (i) Jupiter (ii) Mercury

(e) Gravitational force

(f) Saturn

(g) Uranus and Neptune

(h) Mercury and Venus

(i) Mercury and Venus

(j) Comet

(k) Moon: natural and EDUSAT: artificial

(l) Indian Space Research Organisation

(m) Aryabhatta

(n) (i) Indian National Satellite

(ii) Indian-Remote-Sensing Satellite

2. Fill in the following blanks with suitable words:-

(a) star; constellation

(b) constellation

(c) Sirius

(d) Pole

(e) Sirius; Pole

(f) Neptune

(g) Mars

(h) asteroids

(i) Mars; Jupiter

(j) stars

(k) satellite

(l) meteor

(m) artificial

3. State whether the following statements are true or false :-

(a) False

(b) False

(c) True

(d) False

(e) False

(f) True

(g) True

4. Match items in column A with one or more items in column B :-

(a) (v ; vii)

(b) (i)

(c) (iii ; vi)

(d) (iv)

Subjective Type Questions

Short Answer Type Questions

1. The objects which exist in the sky are called celestial objects. The stars, the planets, satellites, asteroids, comets and meteoroids are all celestial objects.

2. The Pole Star appears to be stationary and does not change its position with time because it lies on the axis of rotation of Earth.

3. The group of stars which appears to form some recognizable shape or pattern is known as a constellation. Leo Major and Ursa Major are two constellations.

4. (a) The Sun is about 8 light minutes away from the Earth.

(b) Proxima Centauri star is about 4.3 light years away from the Earth.

5. Planets are the large celestial objects which revolve around the Sun in closed elliptical paths called orbits. There are 8 major planets in the Solar system. Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

6. The easiest way to distinguish planets from the stars in the night sky is that the stars appear to twinkle at night but the planets do not twinkle at all.

7. A satellite is a celestial body that revolves around a planet. Moon is a satellite of the Earth.

8. The Moon does not produce its own light even then we are able to see it shining in the night sky. We are able to see the Moon because the sunlight falling on the Moon gets reflected towards the Earth.

9. (a) Ursa Major (b) Cassiopeia (c) Orion (d) Leo Major

10. Asteroids are small celestial objects which revolve around the Sun between the orbits of Mars and Jupiter. They are located between Mars and Jupiter.

11. A man-made space-craft placed in orbit around the Earth is called an artificial satellite. Bhaskara and INSAT are two artificial satellites launched by our country.

12. The distances between the various celestial objects are expressed in the unit of 'light year'. 1 light year = 9.46 × 1012 kilometres

13. Comets are very small celestial objects made of gas and dust which revolve around the Sun in highly elliptical orbits and become visible only when they come close to the Sun. As a comet approaches the Sun, it develops a long, glowing tail and becomes visible to us.

14. The main difference between a star and a shooting star is that a star has its own light but a shooting star has no light of its own. The light of a shooting star is produced when its particles burn on entering the Earth's atmosphere.

15. Meteoroids are celestial objects which range in size from tiny sand grains to big boulders of several hundred tonnes and revolve around the Sun in their orbits. Meteoroids are members of the Solar System because they revolve around the Sun.

Long Answer Type Questions

1. (a) The Ursa Major constellation consists of seven bright stars which are arranged in a pattern resembling somewhat a big bear.

(b) Refer to figure 3 for the diagram.

2. (a) The Orion constellation consists of seven or eight bright stars.

(b) Refer to figure 7 for the diagram.

3. (a) Cassiopeia constellation consists of 5 main stars. Refer to figure 9 for the diagram.

(b) Leo Major constellation usually consists of 9 main stars. Refer to figure 10 in the diagram.

4. (a) We can locate the position of Pole Star in the night sky with the help of Ursa Major constellation. This can be done as follows: Look towards the northern part of the sky on a clear, moonless night during summer and identify the Ursa Major constellation in the sky. Now look at the two pointer stars at the end of the Ursa Major constellation. Imagine a straight line drawn through

the two pointer stars of the Ursa Major constellation and extend it in the North direction. This line will lead to the Pole Star which is not very bright.

(b)We can locate the position of Sirius Star in the night sky with the help of Orion constellation. This can be done as follows: In order to locate Sirius, imagine a straight line passing through the three middle stars of Orion constellation in the night sky. Look along this line towards the east direction in the sky. This imaginary line will lead us to a very bright star which is Sirius Star.

5. (a) When the Moon is on the side of Earth nearest to the Sun, then the side of Moon which is lit by Sun is away from Earth. And the side of Moon which is towards the Earth is in darkness. In this position, Moon appears to be in darkness from Earth and hence cannot be seen. This is called new Moon. After fifteen days, the Moon reaches in a position which is on the side of Earth farthest from the Sun. In this position, the whole sun-lit side of the Moon is towards the Earth and we see a bright moon. This is called full Moon.

(b) The different shapes of the bright, visible part of the Moon as seen from the Earth are called phases of the Moon. As Moon revolves around the Earth once every month and moves around the Sun along with Earth, different amounts of its sun-lit surface are turned towards the Earth leading to a change in the appearance of Moon and formation of phases of the Moon.