CLASS VI – PHYSICS
CHAPTER 4: BEYOND EARTH

A. VERY SHORT ANSWER TYPE (2 MARKS)

1. What do you mean by a star?

A star is a huge ball of hot gases that produces its own light and heat.

2. Explain about Sirius.

Sirius is the brightest star in the night sky as seen from Earth. It is also called the Dog Star and is part of Canis Major.

3. What is Aldebaran?

Aldebaran is a bright, orange-red star in the constellation Taurus. It is often called the Eye of the Bull.

4. Explain about Polaris.

Polaris is known as the North Star or Pole Star. It appears nearly fixed in the northern sky and helps people find north.

5. What is the colour of the Rigel star?

Rigel appears blue-white. It is a very bright star in the constellation Orion.

6. Which star is about 550–650 light-years away?

Betelgeuse is commonly estimated to be roughly 550–650 light-years from Earth, though its distance estimate is uncertain.

7. What is a constellation?

A constellation is a recognised pattern of stars in the sky, given a name.

8. Explain the different types of constellations.

Constellations are commonly grouped by the part of the sky where they are seen, such as northern, southern and zodiac constellations.

9. What do you mean by night-sky watching?

Night-sky watching is observing stars, planets, the Moon and other objects in the sky, usually at night.

10. Explain the solar system.

The solar system consists of the Sun and all the objects held by its gravity, including planets, moons, dwarf planets, asteroids and comets.

11. What are the planets in the solar system?

The eight planets are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

12. What do you mean by natural satellites and comets?

A natural satellite is an object that orbits a planet or another larger body. A comet is an icy object that orbits the Sun and may develop a glowing coma and tail near it.

13. Explain the universe.

The universe includes all space, time, matter and energy, including stars, galaxies, planets and other celestial objects.

14. What did you learn about the Milky Way?

The Milky Way is the galaxy that contains our Solar System. From a dark place, it can appear as a faint, milky band across the night sky.

B. SHORT ANSWER TYPE (3 MARKS)

1. What is the difference between a star and a constellation?

A star is a hot ball of gas that gives out its own light and heat. A constellation is a recognised pattern or group of stars seen in the sky. The stars in a constellation may be at very different distances from Earth.

2. Explain briefly the types of constellations.

Constellations can be described as northern, southern or zodiac constellations according to their location in the sky. Northern constellations are best seen from the Northern Hemisphere, southern constellations from the Southern Hemisphere, and zodiac constellations lie along the apparent path of the Sun.

3. What did you learn about the night sky?

The night sky contains stars, planets, the Moon and other celestial objects. Stars appear to move across the sky because Earth rotates. With careful observation, we can recognise constellations and notice changes in the positions of the Moon and planets.

4. Explain the planets in the solar system.

There are eight planets in the Solar System. Mercury, Venus, Earth and Mars are rocky inner planets. Jupiter and Saturn are gas giants, while Uranus and Neptune are ice giants. All the planets revolve around the Sun in their own orbits.

5. What are comets?

Comets are small bodies made mainly of ice, dust and rock that revolve around the Sun. When a comet approaches the Sun, its ice heats up and releases gas and dust, forming a glowing cloud and often a tail. The tail points generally away from the Sun.

6. What is the role of the Moon for Earth?

The Moon causes most of the tides in Earth's oceans through its gravitational pull. It helps stabilise Earth's axial tilt and provides natural light at night by reflecting sunlight. It is also Earth's only natural satellite.

7. Is the Moon a natural satellite?

Yes. The Moon is Earth's natural satellite because it revolves around Earth and is held in orbit by Earth's gravity. It does not produce its own light; it reflects sunlight.

8. Explain the Milky Way.

The Milky Way is a large spiral galaxy containing billions of stars, gas and dust. Our Sun and Solar System are located in one of its spiral arms. On a clear, dark night, it can be seen as a pale, milky band across the sky.

9. What things are present in the universe?

The universe contains galaxies, stars, planets, natural satellites, dwarf planets, asteroids, comets, gas, dust and black holes. It also includes space, time, matter and energy.

C. LONG ANSWER TYPE (5 MARKS)

1. Why is Earth considered a unique planet in the Solar System? Give reasons.

Earth is considered unique because it has conditions suitable for life. It has liquid water on its surface, an atmosphere containing gases needed by living things, and temperatures that are generally suitable for life. The atmosphere and magnetic field help protect life from some harmful radiation. Earth also has soil and nutrients that support plants and many different forms of life. So far, Earth is the only planet known to support life.

2. What is the Big Bang Theory? Explain how it describes the origin of the universe.

The Big Bang Theory is the leading scientific explanation for the origin and early development of the universe. It states that the universe began about 13.8 billion years ago in an extremely hot, dense state. Space itself expanded, and as the universe cooled, particles and atoms formed. Gravity later brought gas together to form stars and galaxies. The universe is still expanding today.

3. Why is the Milky Way also called “Akash Ganga”? Write a short note on its cultural importance in India.

The Milky Way is called “Akash Ganga,” meaning “Ganga of the sky,” because it appears as a pale, flowing band of light across a dark sky. The name connects its appearance with the sacred River Ganga. In Indian traditions, it has been associated with stories and beliefs about the heavens. It has inspired poetry, stories and cultural imagination. Scientifically, it is the galaxy that contains our Solar System.

4. What are constellations? Describe any two constellations in detail with their shapes.

Constellations are recognised patterns of stars in the sky that have been given names. The stars may look close together from Earth but can be very far apart in space.

1. Ursa Major (Great Bear): It includes a group of seven bright stars that form a shape often compared to a large ladle or a plough. The two stars at the outer edge of the bowl can help locate Polaris.

2. Orion (The Hunter): Orion is a prominent constellation. Three bright stars in a short straight line form Orion’s Belt. Four bright stars around the belt outline the hunter’s body, making the constellation easy to recognise.

5. Explain the different components of the universe—stars, galaxies, planets and other celestial objects.

The universe contains many kinds of objects:

• Stars: Huge, hot balls of gas that produce light and heat, such as the Sun.
• Galaxies: Vast systems containing billions of stars, gas and dust held together by gravity. The Milky Way is our galaxy.
• Planets: Large, nearly spherical objects that orbit stars and do not produce their own light.
• Natural satellites: Objects that orbit planets, such as Earth's Moon.
• Asteroids and comets: Small bodies that orbit the Sun; asteroids are mainly rocky or metallic, while comets contain much ice and dust.
• Other objects: Dwarf planets, nebulae, black holes, gas and cosmic dust are also found in the universe.