CHAPTER-1

THE EARTH IN THE SOLAR SYSTEM

2Marks Questions:

1. How does a planet differ from a star?

Answer: Differences between a planet and a star:

planet	star
A planet does not have its own light and heat. It derives its light from a star	A star prossesses its own heat and light
A planet is usually smaller than stars	Starts are very hugs objects compared to a planet in general

2. What is meant by the 'Solar System'?

Answer: The term Solar System refers to the "family" of the Sun. The Sun is a star around which eight planets, among other celestial objects, revolve in orbits. This whole system of bodies is called the Solar System. The Sun is the "head" of this system.

3. Name all the planets according to their distance from the sun.

Answer: The list of planets in the order of their distance from the Sun is as follows:

- Mercury
- Venus
- Earth
- Mars
- Jupiter
- Saturn
- Uranus
- Neptune

4.Why is the Earth called a unique planet?

Answer:

- It is the only planet known to support life. It has oxygen and water present in proportions that allow life to thrive.
- It also has a temperature range that supports life.
- The proportion of water present is about two-thirds of the surface of the earth when compared to land.

5.Why do we see only one side of the moon always?

Answer:

One revolution of the moon around the earth takes about 27 days. Incidentally, the moon's rotation about its own axis also takes nearly the same time. One day of the moon is equal to 27 Earth days. So only one side of the moon can be seen from the earth.

6.What is the Universe?

Answer:

The Universe is the largest unit in which we live. It is a collection of galaxies. There is only one Universe and everything that exists in this Universe itself.

7. Write a short note on the two planets nearest to the sun.

Answer:

Mercury. It is the nearest planet to the sun. It takes just about 88 earth days to revolve once around the sun. It is extremely hot since it is close to the sun. It is also the smallest planet. Venus. It is the second closest planet to the sun. It is similar to earth in shape and size. It is called “Earth’s twin”.

8. How does earth support life?

Answer:

The earth has conditions that support life. It is neither too hot nor too cold. It has both water and air, which are both indispensable for life. Presence of oxygen in the air in an appropriate proportion supports life. These factors make the earth a unique planet.

4Marks Questions:

1. Explain why we cannot see celestial bodies such as the moon and stars during the day.

Answer: During the day, the very bright light of the sun prevents us from seeing celestial bodies such as the moon and stars. The intense sunlight overwhelms the faint light emitted by these celestial bodies, making them invisible against the backdrop of the sun's brightness. As a result, they become visible only when the sky darkens after sunset.

2. Describe the characteristics of the Saptarishi constellation and its significance in determining directions.

Answer: The Saptarishi constellation consists of seven stars and is part of the Ursa Major Constellation. One can notice that an imaginary line drawn through the pointer stars of Saptarishi points to the North Star or the Pole Star. The North Star remains stationary in the sky, indicating the north direction. In ancient times, people used the North Star and constellations like Saptarishi to navigate and determine directions during the night.

3. Differentiate between inner planets and outer planets in the solar system. Provide examples of each.

Answer: Inner planets are those that are closer to the sun and primarily composed of rocks. Examples of inner planets include Mercury, Venus, Earth, and Mars. Outer planets are situated far from the sun and are predominantly made up of gases and liquids. Examples of outer planets are Jupiter, Saturn, Uranus, and Neptune.

4. Explain the concept of the Milky Way galaxy and its connection to our solar system.

Answer: The Milky Way is a massive system containing billions of stars, along with clouds of dust and gases. Our solar system is a part of the Milky Way galaxy. In ancient India, it was referred to as Akash Ganga, meaning a river of light flowing in the sky. The Milky Way is visible as a whitish broad band on clear starry nights and represents the vastness of the cosmic system that includes our solar system.

5. What is the Pole Star? How can the Saptarishi be used to locate it?
Answer:

The Pole Star is the star that is known to retain its position in the sky always. We can locate the position of the Pole Star with the help of the constellation Saptarishi. If an imaginary line is drawn joining the "pointer stars" of the Saptarishi and extended further, it will point to the Pole Star.

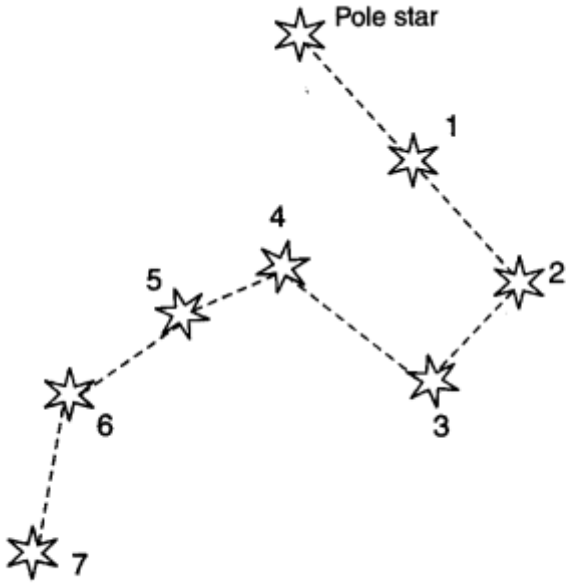


Fig. 1.3

6. Name the two extreme shapes of the moon. When and at what intervals do they occur?
Answer:

The moon is seen in its two extreme shapes on the Full Moon night arid the New Moon night. The Full Moon. The Full Moon means the moon in its full circular shape. The New Moon. The New Moon means the moon that can not be a seer. The New Moon occurs on the fifteenth day and the Full Moon occurs on the last day of the Hindi calendar month.

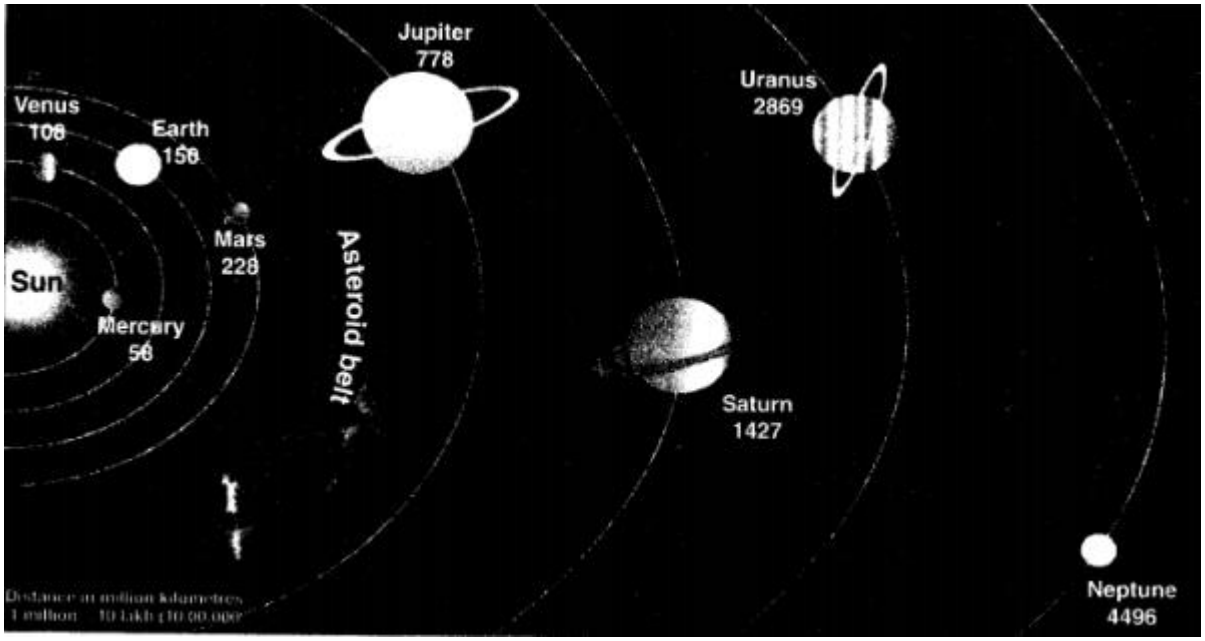
7Marks Questions:

1.Write short notes on the following:
(a) The sun
(b) The moon
(c) Galaxy.
Answer:(a) The sun is considered the "head" of the solar system. It is a star, although it is smaller and less bright than most other stars. It is a huge celestial body made up of extremely hot gases. It provides heat and light for the whole of the solar system. Life on earth depends on many factors, and the sunlight is one of them. The sun is about 150 million kilometers away from the earth.

(b) The moon is the only natural satellite of our planet earth. Its diameter is just about a quarter of the earth's diameter. It is comparatively closer (3,84,400 kilometers away) to earth than all other celestial bodies. It does not support life. It revolves around the earth and rotates about its own axis in about the same time, due to which only one side of the moon is visible to us.

(c) Galaxy is a term that refers to billions of stars, clouds of dust and gases, and other celestial bodies considered as a single unit. The only bigger unit in the universe, galaxies make up the universe. The galaxy we live in is called the Milky Way.

2. Draw a diagram showing the eight planets of the solar system in their orbits around the' sun. Also prepare a table mentioning the length of their days and years. Answer:



3.Explain the formation of shadows on the moon's surface during a full moon night. Discuss how these shadows are created and why they are visible to observers on Earth. Support your explanation with relevant details.

Answer: During a full moon night, the shadows on the moon's surface are created by the varying heights and angles of the mountains, plains, and depressions present on the moon. These lunar features cast shadows when illuminated by the sun.The moon does not have an atmosphere like Earth, which means there is no air to scatter sunlight. As a result, shadows on the moon are more distinct and well-defined compared to those on Earth.

When the sun's light falls on the lunar surface, it creates shadows based on the topography of the moon.For instance, the mountains on the moon may cast long shadows depending on the angle of the sun, while the plains and depressions may have shorter or no shadows. The interaction between the sunlight and the lunar landscape results in the visible shadows during a full moon night.

Observers on Earth can see these shadows because the moon is relatively close to our planet, about 384,400 km away. The absence of a substantial atmosphere on the moon, combined with the

Multiple Choice Questions

1) Full moon night occurs once every…….
(a) day
(b) 15 days
(c) 20 days
(d) month.

2) The Hindi word for the New Moon night is …….
(a) Amavasya
(b) Krishna Paksha
(c) Poornima
(d) none of these.

3) The sun is ……
(a) a star
(b) a celestial body
(c) the head of the solar system
(d) all of these.

4) Ursa Major is a/an
(a) star
(b) constellation
(c) galaxy
(d) asteroid.

5) Which of these was a planet till 2006 but is now a "dwarf planet"?
(a) Neptune
(b) The Sun
(c) Pluto
(d) Solaris.

Answers:
1)(d),
2)(a),
3)(d),
4)(b),
5)(c)

Fill in the Blanks.

1. The Amavasya night occurs about …….. days after the Poomima night.
2. Stars are celestial bodies that are …….. and …….
3. The planets do not possess their own …….. and …….
4. The Small Bear constellation is better known as the …….
5. The Greek word which is the origin of the word “planets” means …….
6. The Earth is the.....planet from the Sun in our solar system.
7. The Earth's orbit around the Sun is..... meaning it is not a perfect circle
8. The Earth takes approximately.....days to complete one orbit Around the sun
9. The imaginary line that runs through the North and South Poles and the Earth’s center is called.....
10. The Earth's rotation on its axis takes about..... hours to complete One full rotation.

Answers:

1. fifteen
2. big, hot
3. heat, light
4. Saptarishi
5. wanderers,
6. Third
7. Elliptical
8. 365.25 (or 365 days and about 6 hours)
9. Axis
10. 24 hours

summary:

"The Earth in the Solar System" is a concept that explores the Earth's position and significance within our solar system. Our solar system consists of the Sun and the celestial bodies that orbit it, including planets, moons, asteroids, and comets. Earth, the third planet from the Sun, is unique in its ability to support life due to a combination of factors such as its distance from the Sun, composition, and atmosphere.

Orbital Characteristics: Earth orbits the Sun at an average distance of about 93 million miles (150 million kilometers). Its elliptical orbit takes approximately 365.25 days to complete, marking one Earth year.

Atmosphere: Earth's atmosphere plays a crucial role in sustaining life. Composed mainly of nitrogen and oxygen, it provides the necessary elements for life forms to thrive. The atmosphere also protects the planet from harmful solar radiation.

Climate and Seasons: The Earth's axial tilt is responsible for the changing seasons. As the Earth orbits the Sun, different parts of the planet receive varying amounts of sunlight, leading to the cycle of seasons—spring, summer, fall, and winter.

Hydrosphere: Earth is often referred to as the "Blue Planet" due to its abundant water. Oceans, rivers, lakes, and other water bodies cover about 71% of the Earth's surface. Water is essential for supporting life and influencing climate patterns.

Moon: Earth has a natural satellite, the Moon, which orbits the planet. The gravitational interaction between the Earth and the Moon causes tides and has played a role in shaping the Earth's rotation.

Life: Earth is the only known celestial body to harbor life. The combination of a suitable atmosphere, liquid water, and a stable climate has allowed diverse forms of life to evolve and Goldilocks Zone: Earth is located in the habitable zone or "Goldilocks zone" around the Sun. This region is neither too hot nor too cold, making it conducive to the existence of liquid water—a key ingredient for life as we know it.