



INDIAN SCHOOL AL WADI AL KABIR



Class: VIII	DEPARTMENT: SCIENCE-2022-2023	DATE: 19/01/2023
WORKSHEET NO:16 WITH ANSWERS	TOPIC: STARS AND THE SOLAR SYSTEM	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS & SEC:	ROLL NO.

I. VERY SHORT ANSWER TYPE QUESTIONS (1M):

1. Name the natural satellite of the earth. [**Moon**]
2. Do stars emit light only during the night? [**No, they emit light all the time**]
3. What is meant by the term 'Constellation'? [**The stars forming a group that has a recognisable shape of animals, human beings or other objects is called a constellation.**]
4. What is a light year? [**One light year is the distance travelled by light in one year.**]
5. Define orbit. [**A planet has a definite path in which it revolves around the sun. This path is called the orbit.**]
6. Name any two artificial satellites. [**ARYABHATTA, INSAT, IRS, Kalpana 1, EDUSAT**]
7. Why do the phases of the moon occur? [**The phases of the moon occur due to its continuously changing position with respect to the earth and the Sun.**]
8. Why do we consider the sun a star? [**The sun is a star because it has its source of energy and continuously emits heat and light**]
9. What are celestial objects? [**Objects such as the stars, the planets, the moon and many other objects in the sky are called celestial objects.**]
10. What are planets? [**Planets are large celestial objects which revolve around the sun in closed elliptical paths called orbits.**]

For the question numbers 8,9 and 10, two statements are given- one labelled Assertion (A) and the other labelled Reason (R).

Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below
i) Both A and R are true and R is the correct explanation of the assertion.

ii) Both A and R are true but R is not the correct explanation of the assertion.

iii) A is true but R is false.

iv) A is false but R is true

11. **Assertion (A):** The distances between the various celestial bodies are expressed in the unit of a light year.

Reason (R): The distances between the celestial objects are so large that 'Kilometre'

becomes an extremely small and inconvenient unit to express such large distances.

i) Both A and R are true and R is the correct explanation of the assertion.

12. **Assertion (A):** A meteor is called a shooting star.

Reason (R): It is the largest star in the night sky.

iii) A is true but R is false.

13. **Assertion (A):** The stars appear to move in the sky from east to west direction.

Reason (R): The apparent motion of the stars in the sky from east to west direction is due to the rotation of the earth from east to west on its axis.

iii) A is true but R is false.

II. PASSAGE-BASED QUESTIONS:

Read the following passage and answer the questions.

The **solar system** is the Sun and the objects that travel around it. The Earth is part of the solar system because it also travels around the sun. The **Sun** is a star similar to the other stars in the sky but it is much closer to the Earth. The Sun is mostly a big ball of gases composed mainly of hydrogen and helium. Seven other planets travel around the sun, too. These planets, in order, include Mercury, Venus, Mars, Jupiter, Saturn, Uranus, and Neptune. Earth is located between Venus and Mars. The path the planets use when travelling around the sun is oval-shaped and is called its orbit. Each of the planets in the solar system takes a different amount of time to orbit or travel around the Sun.

The planet Earth takes 365 days or one year to orbit the Sun. The other planets take more or less time to orbit the Sun. It takes Mercury less than two months or 88 days to travel around the Sun. It is the shortest time compared to the other planets. The planet taking the longest time to go around the Sun is Neptune. It takes Neptune almost 165 years to travel around the Sun.

The four inner planets, Mercury, Venus, Earth, and Mars are made of rock containing many different minerals. The four outer planets, Jupiter, Saturn, Uranus, and Neptune are mostly made up of different gases. Jupiter is mainly helium, hydrogen, and water. The four outer planets also have rings that encircle them with Saturn having the most rings.

The asteroid belt is another object in the solar system. The **asteroid belt** is approximately located between the orbits of the planets Mars and Jupiter. The asteroid belt contains irregularly shaped bodies called **asteroids** which are believed to be left over from the beginning of the solar system 4.6 billion years ago. The objects are rocky and irregular in shape, and some may be hundreds of miles across, but most of the asteroids are very small.

i. Which of the following shows the correct order of the inner planets:

a) Mercury, Earth, Venus, Mars

b) Mercury, Mars, Venus, Earth

c) Mars, Mercury, Venus, Earth

d) Mercury, Venus, Earth, Mars

ii. Which of the following shows the smallest and the largest planets of the solar system:

a) Mercury, Neptune

b) Venus and Saturn

c) Mercury and Jupiter

d) Mars and Uranus

iii. Identify the ringed planet from the following:

a) Mercury

b) Saturn

c) Venus

d) Mars

iv. The **asteroid belt** is approximately located between the orbits of:

a) Mercury and Venus

b) Earth and Mars

c) Mars and Jupiter

d) Jupiter and Saturn

v. The planet which takes the longest time to revolve around the sun is:

a) Jupiter

b) Neptune

c) Uranus

d) Mars

III. CASE STUDY-BASED QUESTIONS:

1. i. A student studies that Aryabhata was the first man-made satellite launched by India. It was used for tracking and transmitting signals while orbiting around the Earth. What type of celestial body is Aryabhata?

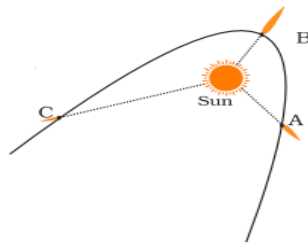
- (a) artificial- because it was the first satellite
- (b) natural- because it was sent into space
- (c) natural- because it revolves around the Earth
- (d) artificial- because it was a manmade satellite**

ii. What is an artificial satellite? [**A man-made satellite that revolves around the earth at a regular time period is known as an artificial satellite. e.g. ARYABHATTA, INSAT, IRS, Kalpana 1, EDUSAT etc.**]

iii. State the functions of artificial satellites. [These satellites are sent for various purposes to **study the universe, help forecast the weather, transfer telephone calls over the oceans, monitor crops and support military activity.**]

IV.a) SHORT ANSWER TYPE QUESTIONS (2 M):

1. Why is Venus known as the morning star or evening star? [**This planet is called *Morning Star* when it is seen in the sky before sunrise and *Evening Star* when seen in the sky after sunset.**]
2. Why does life exist on earth? State the conditions. [Special environmental conditions like **the right temperature range, the presence of water, a suitable atmosphere, and a blanket of ozone are responsible for the existence and continuation of life on earth.**]
3. The given figure show the tails of the comets at positions A, B, and C. In which position will the tail be the longest and Why?



[The tail will be longest at position B because as the comet moves closer to the sun, the tail grows longer due to the increased pressure of the solar wind.]

4. Why does the earth appear blue-green when observed from space? [It appears to be blue-green in colour when observed from space due to the reflection of light from water and landmass on its surface.]

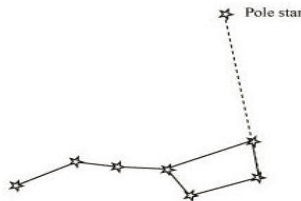
5. What are stars? Why do they appear to twinkle? [Stars are celestial objects that are extremely hot and have the light of their own. They appear to twinkle in the night. The twinkling of stars is an illusion (false show) caused by the disturbance of the star's light by the earth's atmosphere.]

IV. b) SHORT ANSWER TYPE QUESTIONS (3 M):

1. Write the differences between stars and planets.

STARS	PLANETS
1. Made up of light gases	Made up of rocks and minerals
2. Temperature is very high	The temperature depends on their distance from the sun
3. Stars have their light	Do not have the light of their own. They only reflect sunlight
4. Stars appear to twinkle in the sky	Planets do not twinkle.

2. What is a pole star? How do you locate the position of a pole star? [**The star which appears stationary from the Earth is known as Pole Star. It is used as a reference point to identify the direction. The pole star is situated in the direction which is directly above the geographic north pole of the earth's axis. Therefore, its position does not change and it appears stationary.**



To locate the pole star, look at the two stars at the end of Ursa Major. Imagine a straight line passing through these stars. Extend this line towards the north direction. This line will lead to a pole star.]

3. Define the terms: Meteoroid, meteor and meteorite. [**METEOROID: It is a chunk of rock moving in space of a size considerably smaller than an asteroid. They are usually destroyed completely by friction and heat when they pass through the Earth's atmosphere.**

METEOR: A small piece of rock from outer space that enters the Earth's atmosphere and glows as a streak of light as a result of friction with the air. It is called a shooting star though it is not a star.

METEORITE: A meteoroid that does not burn completely and falls to the Earth's surface.]

V. LONG ANSWER TYPE QUESTIONS (5 M):

1. Draw the diagrams and explain the constellations- Ursa Major, Orion and Cassiopeia.

[URSA MAJOR-Third largest constellation and known as the Great Bear, the Big Dipper or the Plough. It is visible in the northern hemisphere, in summer months consists of seven stars and is known as *Saptarshi Mandal* in India. We can locate the position of the Pole star with the help of the Ursa Major constellation.

[ORION-This constellation consists of seven or eight bright stars that depict the shape of a hunter holding a shield in his right hand. With the help of this constellation, it is easy to spot the brightest star in the night sky Sirius located close to Orion.

[CASSIOPEIA-This constellation is visible during winter in the northern sky, and consists of five stars which look like a distorted M or W]



URSA MAJOR



ORION



CASSIOPEIA

2. i. Why Mars is considered a red planet? [**It appears to be red due to the presence of iron oxide present in its soil and is called the *Red planet.***]
- ii. Can we hear any sound on the moon? Why? [**No, because there is no medium on the moon and sound need a medium to travel**]
- iii. Why meteors are not visible during day time? [**The brightness of the streak of light formed by meteors is extremely less when compared to that of the sun.**]
- iv. Why is it difficult to observe the planet, Mercury? [**Mercury is the Smallest planet, closest to the sun, which is not visible due to the glare of the sun.**]

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