

The Universe and Solar System

A. Fill in the blanks

1. The Universe was formed after explosion.
2. is the unit used to measure the distance between two celestial bodies.
3. is the centre of the solar system.
4. The word planet means
5.planet has many natural satellites.
6. India's first ever mission to the moon is
7. Earth is inclined by degrees.
8. The Equator faces the Sun directly on
9. At the time of Perihelion, the Earth is
10. The line which divides day and night on the Earth's surface is

Answer:

1. Big Bang
2. Light year
3. The Sun
4. wanderer
5. Jupiter
6. Chandrayaan
7. $23\frac{1}{2}$
8. 21st March, 23rd Sep to the Sim.
9. Closest
10. Terminator line

B. Choose the best answer

Question 1.

The movement of the Earth on its axis is called _____

- (a) Revolution
- (b) Seasons
- (c) Rotation
- (d) Circulation

Answer:

- (c) Rotation

Question 2.

The Tropic of Capricorn faces the Sun directly on

- (a) March 21
- (b) June 21
- (c) September 23
- (d) December 22

Answer:

- (c) September 23

Question 3.

The galaxy in which our solar system is found is _____

- (a) Andromeda
- (b) Magellanic clouds
- (c) Milky way
- (d) Starburst

Answer:

- (c) Milky way

Question 4.

The only celestial body where man has successfully landed

- (a) Mars
- (b) Moon
- (c) Mercury
- (d) Venus

Answer:

- (b) Moon

Question 5.

Which of the following planets can float On water?

- (a) Jupiter
- (b) Saturn
- (c) Uranus
- (d) Neptune

Answer:

- (b) Saturn

C. Circle the odd one out

1. Venus, Jupiter, Neptune, Saturn
2. Sirus, Andromeda, Milky way, Magellanic clouds.
3. Pluto, Eris, Ceres, Io
4. Comet, Asteroids, Meteorites, Dwarf planets
5. Rover, Orbiter, Aeroplane, Space shuttle

D. Match the following

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1.	Hottest Planet	a)	Mars
2.	Ringed Planet	b)	Neptune
3.	Red Planet	c)	Venus
4.	Somersaulting Planet	d)	Saturn
5.	Coldest Planet	e)	Uranus

Answer:

1. – c
2. – d
3. – a
4. – e
5. – b

E. (i) Consider the following statements

1. Venus rotates from east to west.
2. The Tropic of Cancer faces the Sun on June 21.
3. Mars has rings around it.

Choose the correct answer using the codes given below.

- (a) 1 and 2
- (b) 2 and 3
- (c) 1, 2 and 3
- (d) 2 only

Answer:

- (a) 1 and 2

(ii) Consider the following statements

Statement I: Earth is called a watery planet.

Statement II: The rotation of the Earth causes seasons.

Which of the statement(s) is/are true?

- (a) I is true; II is wrong
- (b) I is wrong; II is true
- (c) Both the statements are true
- (d) Statements I and II are wrong.

Answer:

- (a) I is true; II is wrong

F. Name the following

Question 1.

Cluster of stars.

Answer:

Galaxy

Question 2.

The nearest galaxy to the solar system.

Answer:

Andromeda

Question 3.

The brightest planet.

Answer:

Venus

Question 4.

The living sphere.

Answer:

Biosphere

Question 5.

The year which has 366 days.

Answer:

Leap year

G. Answer in brief

Question 1.

Name the inner planets.

Answer:

The inner planets are Mercury, Venus, Earth, and Mars.

Question 2.

Pluto is no longer a planet, Reason out,

1. In August 2006, the International Astronomical Union (IAU) down-graded the status of Pluto to that of dwarf planet.
2. The three criteria of the IAU for a full sized planet are
 - It is in orbit around the Sun.
 - It has sufficient Mass to assume nearly a round shape.
 - It has cleared the neighbourhood around its orbit.
3. Since Pluto is able to meet only the first two of the criteria, it is no more a planet.

Question 3.

What is perihelion?

Answer:

Perihelion is the Earth's closest position to the Sun.

Question 4.

How many times in a year would you find the Sun overhead if you lived on 20° N Latitude?

Answer:

Two times. It would be on the 21st March and 23rd September.

Question 5.

Which celestial body shares its orbit with others? Give an example.

Answer:

4. The dwarf planets share their orbits with others.
5. The five dwarf planets of the solar system are Pluto, Ceres, Eris, Makemake, and Haumea.

H. Give reasons

Question 1.

Why is Uranus called the somersaulting planet?

Answer:

It's axis is tilted so much, that it appears to orbit the Sun on its sides like a rolling ball. So it is called the somersaulting planet.

Question 2.

The surface of the moon has many craters.

Answer:

The craters are formed due to the meteorites which fall on the moon's surface.

Question 3.

The velocity of Earth's rotation is zero at poles.

Answer:

It is due to the shape and inclination of the earth.

I. Answer in detail**Question 1.**

Distinguish between inner and outer planets.

Answer:

Inner or Terrestrial Planets

1. Mercury, Venus, Earth, Mars.
2. They are comparatively smaller in size.
3. They are composed of rocks. The surface of the inner planets has mountains, volcanoes and craters.
4. None of the inner planets have rings orbiting them

Outer Planets or Jovian Planets, or Gaseous Giants

1. Jupiter, Saturn, Uranus, Neptune.
2. They are huge in size.
3. Most of them are made of gas.
4. All of the outer planets have rings orbiting them.

Question 2.

What are the effects of rotation and revolution?

Answer:

Effects of Rotation:

1. It is the spinning movement of the Earth on its axis
2. The time taken by the Earth to complete one rotation is called a day.
3. The rotation of the Earth causes day and night, As the Earth is spherical in shape, only one half of it is illuminated by the Sun at a time.
4. The other half remains dark.
5. The illuminated portion of the Earth experiences day, whereas the darkened part of the Earth experiences night.

Effects of Revolution:

1. It is the movement of the Earth around the Sun on its elliptical path.
2. The Earth takes 365 1/4 days to complete one revolution.
3. It revolves around the Sun at a speed of 30 km per second.
4. The remaining quarter day is added once in every four years in the month of February.
5. The inclination of the Earth on its axis and its revolution around the Sun cause different seasons.

Question 3.

Explain the characteristics of the various spheres of the Earth.

Answer:

Earth is the most suitable planet to support life. It has three major components that we call the realms of the Earth lithosphere, hydrosphere, and atmosphere.

(i) Lithosphere: The word lithosphere is derived from the Greek word Lithos, which means rocky. The Lithosphere is the land on which we live.

(ii) Hydrosphere: The word Hydro means water in Greek. The hydrosphere consists of water bodies such as oceans, seas, rivers, lakes, ice caps on mountains, and water vapour in the atmosphere.

(iii) Atmosphere: The word Atmo means the air in Greek. The atmosphere is the envelope of air that surrounds the Earth. Different types of gases make up the atmosphere. The major gases are Nitrogen (78%) and Oxygen (21%).

(iv) Biosphere: The narrow belt of interaction among the lithosphere, the hydrosphere, and the atmosphere, where life exists is known as Biosphere. Bio means life in Greek. It consists of distinct zones.

J. Picture Study

Question 1.

Study the picture and answer the given questions.

Question a.

Which is the closest planet to the Sun?

Answer:

Mercury

Question b.

Which is the largest planet?

Answer:

Jupiter

Question c.

Which is the farthest planet from the Sun?

Answer:

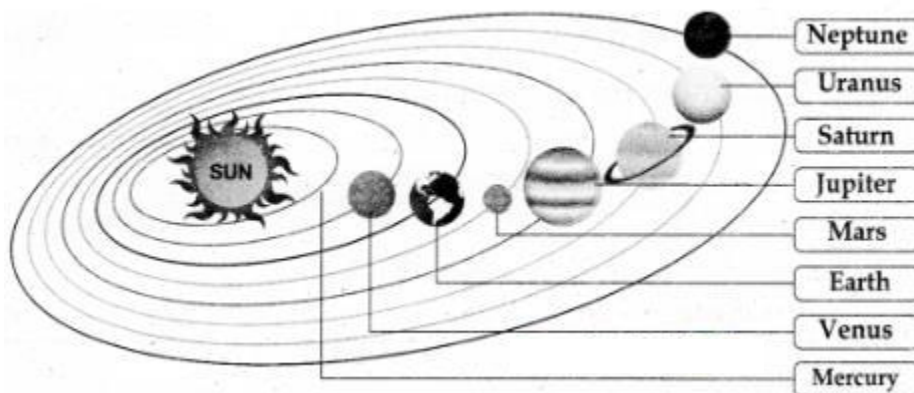
Neptune

Question d.

Which is the second smallest planet?

Answer:

Mars



Question 2.

Look at the picture and answer the questions given below.

Question a.

Identify the planet

Answer:

Uranus

Question b.

What is the colour of the planet?

Answer:

Green

Question c.

Why is it of this colour?

Answer:

Due to the presence of Methane



STUDENT ACTIVITY

K. Solve the puzzle

			¹ V		² C	E	R	E	S		
			E		H						
			N		A						
	³ E	Q	U	I	N	O	X				
			S		D						
					R		⁴ M				
					A		A		⁵ N		
		⁶ A		⁷ H	Y	D	R	O	G	E	N
		X			A		S			P	
		I			A					T	
		S			N					U	
										N	
						⁸ H	A	L	L	E	Y

Across:

2. A dwarf planet.
3. Equal days and nights.
7. I am a gas found in the Sun.
8. I appear once in 76 years.

Down:

1. I am the morning star.
2. India's first moon mission.
4. I have two natural satellites.
5. I am the farthest planet.
6. An imaginary line passing through the centre of the Earth.

I. Fill in the blanks

1. The study of the universe is called
2. A cluster of stars is known as
3. The Roman word 'Sol' means
4. The is at the centre of the solar system.
5. The elliptical path in which the planets move around the Sun is

Answer:

1. Cosmology
2. Galaxy
3. Sun God
4. Sun
5. Orbit

II. Choose the correct answer

Question 1.

The closest planet to the Sun is _____

- (a) Mercury
- (b) Venus
- (c) Uranus
- (d) Saturn

Answer:

- (a) Mercury

Question 2.

The solar system is believed to have formed about _____billion years ago.

- (a) 3

- (b) 4.5
- (c) 3.5
- (d) 5

Answer:

- (b) 4.5

Question 3.

The ringed planet is _____

- (a) Mars
- (b) Venus
- (c) Saturn
- (d) Mercury

Answer:

- (c) Saturn

Question 4.

The Outer Planets are _____

- (a) Jupiter and Mercury
- (b) Venus and Earth
- (c) Saturn and Mars
- (d) Uranus and Neptune

Answer:

- (d) Uranus and Neptune

Question 5.

The Tropic of Cancer faces the Sun directly on _____

- (a) March 21
- (b) June 21
- (c) September 23
- (d) December 22

Answer:

- (b) June 21

III. (i) Consider the following statements

1. The earth is the third planet in the solar system
2. The Sun is made up of hot gases like Hydrogen and Nitrogen
3. Mercury has no natural satellites

Choose the correct answer using the codes given below

- (a) 1 and 2

- (b) 2 and 3
- (c) 1 and 3
- (d) 2 only

Answer:

- (c) 1 and 3

(ii) Consider the following statements

1. The sun revolves around the earth.
2. Mars is named after the Roman God of war.
3. Uranus appears green

Choose the correct answer using the codes given below

- (a) 1 and 2
- (b) 2 and 3
- (c) 1 and 3
- (d) 3 only

(iii) Consider the following statements

Question 1.

Statement I: Jupiter is the fastest spinning planet in the solar system.

Statement II: Neptune is the coldest planet Which of the statement (s) is/are true?

- (a) I is true, II is wrong
- (b) I is wrong, II is true
- (c) Both the statements are true
- (d) Both statements are wrong.

Answer:

- (c) Both the statements are true

(iv) Consider the following statements

Question 1.

Statement I: The earth is inclined at $32\frac{1}{2}^\circ$ angle.

Statement II: The specific gravity of Saturn is more than that of water.

Which of the statement (s) is/are true

- (a) I is true, II is wrong
- (b) I is wrong, II is true
- (c) Both the statements are true
- (d) Both the statement are wrong

Answer:

(d) Both the Statement are wrong

IV. Answer the following questions

Question 1.

What is meant by light year?

Answer:

A light-year is a distance traversed by light in a year at a velocity of 30,000 km per second.

Question 2.

Mention the hierarchy of the universe.

Answer:

1. Universe
2. Galaxy
3. Solar system
4. Planets
5. Satellites

Question 3.

How many planets are there in the solar family? Name them.

Answer:

There are eight planets in the solar family. They are

1. Mercury
2. Venus
3. Earth
4. Mars
5. Jupiter
6. Saturn
7. Uranus and
8. Neptune.

V. Mind map

