

## Chapter 3

### Universe and Space Science

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#### I. Choose the best Answer:

**Question 1.**

Which of the following is a celestial body?

- (a) Sun
- (b) Moon
- (c) Stars
- (d) All the above

**Answer:**

- (d) All the above

**Question 2.**

Mangalyaan was sent to .....

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

**Answer:**

- (b) Mars

**Question 3.**

Chandrayaan -1 was launched on .....

- (a) 22nd October 2008
- (b) 8th November 2008
- (c) 22nd July 2019
- (d) 22nd October 2019

**Answer:**

- (a) 22nd October 2008

**Question 4.**

..... is called as Red planet.

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

**Answer:**

- (d) Mars

**Question 5.**

Which of the following is the working principle of Rockets?

- (a) Newton's first law
- (b) Newton's second law
- (c) Newton's third law
- (d) All the above

**Answer:**

- (c) Newton's third law

**Question 6.**

Cryogenic fuels are stored at .....

- (a) room temperature
- (b) low temperature
- (c) very low temperature
- (d) very high temperature

**Answer:**

- (c) very low temperature

**Question 7.**

..... was the first manned mission of NASA to go to the moon.

- (a) Apollo-5
- (b) Apollo-8
- (c) Apollo-10
- (d) Apollo-11

**Answer:**

- (b) Apollo-8

## II. Fill in the blanks:

1. The study about stars and planets are known as .....
2. Our Sun belongs to ..... Galaxy.
3. Mars revolves around the Sun once in ..... days.
4. .... is India's first interplanetary mission.
5. .... was the first man to walk on the surface of the Moon.

**Answer:**

1. Astronomy
2. Milky way
3. 687
4. Mars Orbiter Mission
5. Neil Armstrong

## III. Say True or False. If false, correct the statement:

**Question 1.**

The Sun and the celestial bodies form Solar system.

**Answer:**

true

**Question 2.**

Chandrayaan-1 was launched from Sriharikota.

**Answer:**

True.

**Question 3**

Mars is the smallest planet in the Solar system.

**Answer:**

False

Correct statement:

Mercury is the smallest planet in the Solar system.

**Question 4.**

PSLV and GSLV are India's popular satellites.

**Answer:**

True.

**Question 5.**

The propellant of a rocket is only in the form of solids.

**Answer:**

False Correct statement:

The propellant of a rocket is may be in the form of solids or liquids.

#### **IV. Match the following:**

1. Chandrayaan – Fuel
2. Mangalyaan – Moon
3. Cryogenic – First manned mission to the moon
4. Apple – 8 – First man landing mission to the moon
5. Apollo-11 – Mars

**Answer:**

1. Chandrayaan – Moon
2. Mangalyaan – Mars
3. Cryogenic – Fuel
4. Apple – 8 – First manned mission to the moon
5. Apollo-11 – First man landing mission to the moon

#### **V. Answer briefly:**

**Question 1.**

What are celestial objects?

**Answer:**

The stars, the planets, the Moon and any other objects like asteroids and comets in the sky are called celestial objects.

**Question 2.**

Define galaxy.

**Answer:**

A collection of billions of stars held together by mutual attraction is called galaxy.

**Question 3.**

What are the objectives of Chandrayaan-1?

**Answer:**

1. To find the possibility of water on the Moon.
2. To find the elements of matter on the Moon.
3. To search for the existence of Helium-3.
4. To make a 3-dimensional atlas of the Moon.
5. To study about the evolution of the solar system.

**Question 4.**

List out the objectives of Mangalyaan.

**Answer:**

1. To develop the technology required for interplanetary mission. .
2. To explore the surface of Mars.
3. To study the constituents of the Martian atmosphere.
4. To provide information about the future possibility of life and past existence of life

**Question 5.**

What are Cryogenic Fuels?

**Answer:**

Cryogenic fuels are the fuels used in rocket engine. They are maintained or stored at very low temperature in order to keep them in liquid state.

**Question 6.**

Name the Indians worked at NASA.

**Answer:**

Kalpana Chawla and Sunitha Williams.

## **VI. Answer in detail:**

**Question 1.**

What are the achievements of Chandrayaan -1?

**Answer:**

1. The discovery of presence of water molecules in the lunar soil.
2. Chandrayaan-1 confirmed that the Moon was completely molten once.
3. Chandrayaan-1 has recorded images of the landing site of the US space-craft Apollo-15 and Apollo-11.
4. It has provided high-resolution spectral data on the mineralogy of the Moon.
5. The existence of aluminium, magnesium and silicon were picked up by the X-ray camera.
6. More than 40,000 images have been transmitted by the Chandrayaan-1 camera in 75 days.
7. The acquired images of peaks and craters show that the Moon mostly consists of craters.
8. Chandrayaan-1 beamed back its first images of the Earth in its entirety.
9. Chandrayaan-1 has discovered large caves on the lunar surface that can act as human shelter on the Moon.

**Question 2.**

Explain the parts of a rocket.

**Answer:**

There are four major parts or systems in a rocket. They are:

1. Structural system
2. Payload system.
3. Guidance system.
4. Propulsion system.

**1. Structural system (Frame):**

It is the frame that covers the rocket. It is made up of very strong but light weight materials like titanium or aluminum. Fins are attached to some rockets at the bottom of the frame to provide stability during the flight.

**2. Payload system:**

It is the object that the satellite is carrying into the orbit. Payload depends on the rocket's mission. The rockets are modified to launch satellites with a wide range of missions like communications, weather monitoring, spying, planetary exploration, and as observatories. Special rockets are also developed to launch people into the Earth's orbit and onto the surface of the Moon.

**3. Guidance system:**

Guidance system guides the rocket in its path. It may include sensors, on-board computers, radars, and communication equipments.

#### 4. Propulsion system:

It takes up most of the space in a rocket. It consists of fuel (propellant) tanks, pumps and a combustion chamber. There are two main types of propulsion systems. They are: liquid propulsion system and solid propulsion system.

#### **Question 3.**

Write a note on Apollo missions.

**Answer:**

1. Apollo Missions are the most popular missions of NASA.
2. These missions made American Astronauts to land on the Moon.
3. It consists of totally 17 missions.
4. Among them Apollo -8 and Apollo-11 are more remarkable.
5. Apollo-8 was the first manned mission to go to the Moon. It orbited around the Moon and came back to the Earth.
6. Apollo-11 was the first 'Man Landing Mission' to the moon. It landed on the Moon on 20th July 1969. –
7. Neil Armstrong was the first man to walk on the surface of the Moon.

### **VII. Higher Order Thinking Questions:**

#### **Question 1.**

Why we are always seeing one side of the Moon?

**Answer:**

Moon doesn't have its own light, but it reflects the sunlight. The time period of rotation of the Moon about its own axis is equal to the time period of revolution around the Earth. That's why we are always seeing its one side.