

SAMPLE CONTENT

Perfect Notes

ENVIRONMENTAL STUDIES

PART ONE



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STD.V
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(Part One)

Std. V (English Medium)

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PREFACE

While designing the book, our main intention was to create a book that would act as a single point of reference for students. We wanted this book to provide students, the much needed answers for their textual questions as well as build up their knowledge quotient in the process.

Target's Perfect Environmental Studies (Part One): Std. V has been prepared as per the new 'Continuous Comprehensive Evaluation' (CCE) pattern which is more child-centric and focuses on active learning and making the process of education more enjoyable and interesting.

Environmental Studies is divided into two parts; part I (Science, Geography and Civics) and part II (History). We have infused the book with a liberal sprinkling of real life examples, pictorial explanations and additional questions. Questions titled under 'Use your brain power', 'Can you tell' and a series of 'In-text Questions', pave the way for a robust concept building.

Every chapter begins with Point wise Theory and Pictorial Illustrations. It follows through by covering all the textual content in the format of **Summative** and **Formative assessment**. Summative assessment includes Question-Answers, Give Reasons and other type of Questions. The **Important words** in long answers are underlined so that students can remember these words and write in the exams. Formative assessment is divided into Apply your knowledge, Oral Test and Activities/Project which helps students to understand concepts quickly. The chapter also includes **Activity Based Questions** that explain certain concepts to students through the medium of an activity. The chapter eventually ends with a **Chapter wise Assessment** that stands a testimony to the fact that the child has understood the chapter thoroughly. To provide general and understandable explanations of the difficult terms, **Glossary** is included at the end of the book. **Good to Know** and **Fun Facts** are added to trigger the students' thought process.

With absolute trust in our work, we hope our holistic efforts towards making this book as a knowledge hub for students to understand scientific concepts pays off.

- Publisher
Edition: Third

The journey to create a complete book is strewn with triumphs, failures and near misses. If you think we've nearly missed something or want to applaud us for our triumphs, we'd love to hear from you.

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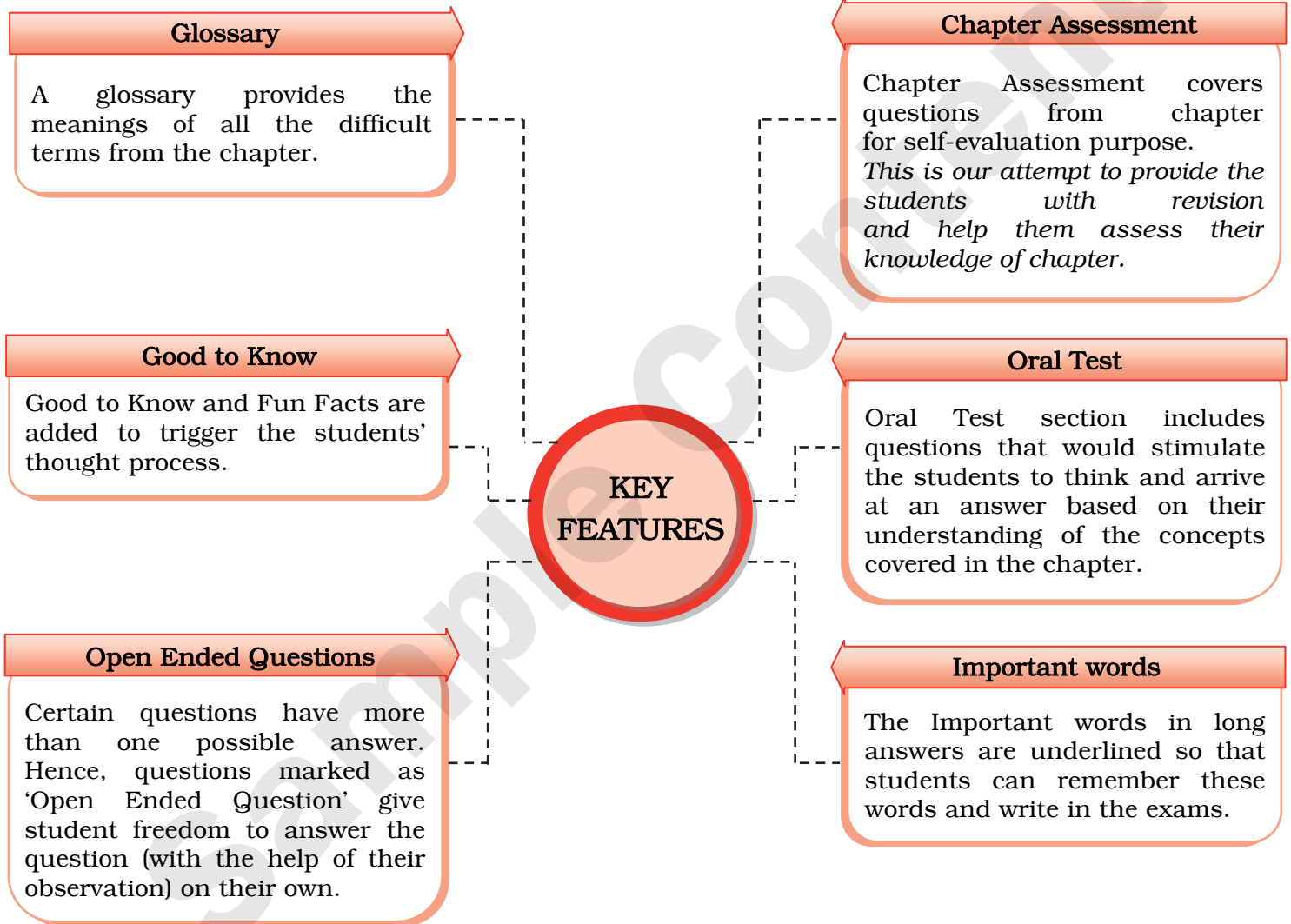
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Note: Textual Questions are represented by * mark.

© symbol after a word in theory indicates that the meaning of the word is provided in the glossary section.

1 Our Earth and Our Solar System

Let's Study

1. **Heavenly bodies:** Objects that make up the universe such as the sun, stars, planets, moon etc. are heavenly bodies.
2. **Stars:** The heavenly bodies that twinkle are stars. They have their own light. The sun is the closest star to the earth.
3. **Planets:** The heavenly bodies that do not twinkle are planets. They do not have their own light. They get their light from the stars. Planets revolve around a star and also rotate around themselves simultaneously.
4. **The Solar System:** The sun and the planets, their satellites, dwarf planets and asteroids that revolve around the sun together are called the solar system.
5. **Orbit:** The path along which a planet revolves around the sun is known as the orbit of that planet.
6. **Satellites:** The heavenly bodies that revolve around a planet are called satellites. They get their light from the sun. Example: Moon revolving around earth
7. **Dwarf planets:** The smaller heavenly bodies that revolve around the sun are called dwarf planets. They have their own orbit along which they revolve independently around the sun. Example: Pluto
8. **Asteroids:** The small heavenly bodies present in between the planets Mars and Jupiter are called asteroids. They also revolve around the sun.
9. **Gravity:** The force of attraction or a pull exerted by all the heavenly bodies on one another is called gravity.
10. **Space or outer space:** The emptiness between and beyond the stars and planets is called space or outer space.
11. In order to send an object from earth into space, it must be given power to overcome the force of gravity. Rocket technology or space launch technology is used for this purpose.
12. Man-made satellites are artificial satellites that are put into orbit around the earth or other planets. They can remain in space for many years.

SUMMATIVE ASSESSMENT

Answer in one word

*1. Who am I?

- (i) You can see me from the earth but the lighted part of me that you see changes every day.
- (ii) I have my own light. It is only from me that the planets get light and heat.
- (iii) I turn around myself, around a planet and also around a star.
- (iv) I turn around myself and revolve around the sun.
- (v) No other planet has a living world like mine.
- (vi) I am the nearest star to the earth.

Moon

Star

Satellite

Planet

Earth

Sun

Fill in the blanks

(orbit, asteroids, revolution, satellites, space, gravity)

1. Movement of the earth around the sun is called of the earth.
2. The specific path along which a planet revolves around the sun is known as of the planet.

revolution

Orbit



- are the heavenly bodies that revolve around planets.
- are the small heavenly bodies present between the planet Mars and Jupiter.
- The emptiness between and beyond the stars and planets is called

Satellites

Asteroids

Space

Choose the correct alternative

- Though a star, the sun does not twinkle because
(A) temperature of sun is very high (B) sun is very close to the earth
(C) sun is the biggest star in the universe (D) sun generates its own light.
- The moon appears to be bigger than the sun because
(A) it is a natural satellite (B) it is brighter than the sun
(C) it is closer to earth than the sun (D) it appears in the sky at night
- Our earth is an invaluable planet because
(A) it possesses gravity (B) it revolves in a circular orbit
(C) it is the only planet with life on it (D) it is at the centre of the space

Answers:

1. (B) 2. (C) 3. (C)

Underline the correct word and rewrite the statement.

- Moon is a natural satellite of the Jupiter / Earth.

Ans: Moon is a natural satellite of the Earth.

- Mangalyaan got established in orbit around Mars / Pluto on 24 September 2014.

Ans: Mangalyaan got established in orbit around Mars on 24 September 2014.

- Asteroids are found between Mars and Jupiter / Saturn in our solar system.

Ans: Asteroids are found between Mars and Jupiter in our solar system.

Right or Wrong? If Wrong, write the correct sentence.

- The heavenly bodies that do not twinkle are called stars.

Ans: **Wrong:** The heavenly bodies that do not twinkle are called planets.

- The moon has its own light.

Ans: **Wrong:** The moon gets its light from the sun.

- Dwarf planets have an orbit of their own.

Ans: **Right**

- Satellites get their light from the planet.

Ans: **Wrong:** Satellites get their light from the sun.



Fun Fact

11 Earths could fit across Jupiter's equator. If Earth were of a size of a grape then, Jupiter would be the size of a basketball.

Odd One out

[Note: Reasons are given only for understanding.]

- Mars, Pluto, Saturn, Neptune.

Ans: Pluto. **Reason:** It is a dwarf planet. Others are planets of solar system.

- Moon, Asteroids, Sun, Earth.

Ans: Sun. **Reason:** It has its own light. Others get light from the sun.



How are we different?

1. Planets and Stars

Ans:	Planets	Stars
(i)	The heavenly bodies that do not twinkle are called planets.	The heavenly bodies that twinkle are called stars.
(ii)	Planets do not have light of their own.	Stars have their own light.
(iii)	Planets are comparatively smaller in size.	Stars are huge in size.
	Example: Earth	Example: Sun

Answer the following

*1. What's the solution? (Open Ended Question)

One of the asteroids has fallen out of its place in the asteroid belt and is hurtling[®] towards the sun. Our earth is in its way and there is all likelihood of a collision. What can be done to prevent this collision?

- Ans: (i) The collision of asteroid with earth can be prevented by changing the path of asteroid. This can be achieved by breaking the asteroid into smaller pieces by a missile.
- (ii) Another method would be; planning a collision of an unmanned spacecraft with the asteroid.
- (iii) A gravity tractor[®] can be used to deflect the asteroid's path.
- (iv) Also, high power laser beams can be used to change the path of asteroid.
- (v) Hitting asteroids with man-made objects can alter their path.

*2. Use your brain power! (Open Ended Question)

(i) What will happen to our solar system if the sun were to suddenly disappear?

Ans: If the sun suddenly disappeared then:

- (a) There would be total darkness in the solar system.
- (b) Positions of planets would change and they would stop revolving or would not be held in their orbits.
- (c) There would be no seasonal changes on earth. No day and night cycle.
- (d) Without sunlight there will be no photosynthesis. Hence, all the plants would die.
- (e) Water vapours would not be formed and the water cycle would be affected.
- (f) The earth would freeze up. In other words, it would be like the ice age.

(ii) Suppose you want to give your address to a friend you have on the planet Mars. How will you write your address if you want them to understand exactly where you live?

Ans: Kumar/ Kumari _____
St. Pius Road,
Mulund (West),
Mumbai - 400 080,
Maharashtra,
Republic of India,
Continent of Asia,
Planet Earth,
Solar system,
Milky way galaxy.



- *3. In the picture given on textbook page no. 5, correct the sequence of the planets from the sun.

Ans: The sequence of planets given in textbook is: Mercury, Venus, Mars, Earth, Saturn, Jupiter, Uranus, Neptune.

The correct sequence of planets should be: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.

- *4. For what purpose are rockets used in space travel? How is it achieved?

Ans: Rockets are used for the purpose of sending a spacecraft into space. For this, a rocket must be given power to overcome the force of gravity. This power is provided by the rocket by burning large quantity of fuel present inside it.

- *5. What information do man-made satellites provide?

Ans: Man-made satellites provide useful information for agriculture, environment, map making, weather forecasting[®]. These satellites are used for searching water and mineral wealth on earth. They are also used for the purpose of telecommunication[®].

6. What happens to a spacecraft launched in space over the period of time?

Ans: Some spacecrafts sent in space remain in space. Some return to earth while some spacecrafts land on other planets or satellites.

Give reasons

1. We cannot see stars during daytime.

Ans: The sun is closer to us than any of the other stars. Due to its bright light, we cannot see other stars during daytime.

2. An object thrown upwards falls back to the ground.

Ans: Earth exerts gravitational pull/force on all objects present on it. Due to this force of attraction, the object thrown upwards falls back to the ground.

3. Diwali fire cracker rockets fly high in the air.

Ans: The explosives packed in the diwali rocket burn rapidly to produce a lot of energy. The design of rocket allows the rocket to go in a certain direction at a great speed using this energy. As a result, diwali rockets fly high in the air.

FORMATIVE ASSESSMENT

Apply Your Knowledge

1. Try this (Textbook page no. 1)

- (i) Observe the sky on two clear nights, keeping a gap of about a week between them. Base your observation on the following points:

- The brightness of the heavenly bodies
- Whether they twinkle
- Their colour and size
- Changes in their positions

Ans: Observations:

- (a) The brightness of heavenly bodies on two nights was almost same.
- (b) These bodies twinkled.
- (c) Their colour and size showed no significant changes.
- (d) Positions of these bodies had changed.

(Students are expected to pen down their observations.)



- (ii) On both nights, draw a picture of the illuminated portion of the moon and note how it changes from day to day.

Ans: The following diagram shows the illuminated portion of the moon for a period of four weeks. For first two weeks size of moon increases in order and moon becomes full. After that, for next two weeks, size of moon decreases in same order. We observe that, appearance of moon changes from day to day. This happens due to the change in the illuminated portion of moon.



Phase changes of Moon

(Students are expected to observe the moon for one week and draw its illuminated portion. The diagram given above can be used as a reference.)

2. Can you tell? (Textbook page no. 3) (Oral Work)

Observe the figure on page 2 of your textbook and answer the following questions.

- (i) Which planet is nearest to the sun?

Ans: Planet mercury is nearest to the sun.

- (ii) At what position is the earth from the sun?

Ans: Earth is at third position from the sun.

- (iii) Which planet is placed between the earth and Mercury?

Ans: Planet Venus is placed between the earth and Mercury.

- (iv) Name the planets beyond the orbit of Mars in serial order.

Ans: Jupiter, Saturn, Uranus, Neptune.

- (v) Which planet is furthest from the sun?

Ans: Neptune is the farthest planet from the sun.

3. Intext question (Textbook page no. 3) (Oral Work)

In which direction do these things fall?

- (i) Leaves, flowers, fruits from a tree. (ii) Rocks that come loose from a hillside.
(iii) Rain falling from the sky.

Ans: All the above things fall towards the earth's surface due to the gravitational pull exerted by the earth.

4. Find out more about the work of Kalpana Chawla and Sunita Williams, astronauts of Indian origin. (Textbook page no. 4)

Ans: Kalpana Chawla:

- (i) Kalpana Chawla was an Indo-American astronaut. She was the first woman of Indian origin to travel in space.
(ii) She first flew on the spacecraft named Columbia in 1997 as a mission specialist and primary robotic arm operator.
(iii) Kalpana Chawla spent a total of 30 days, 14 hours and 54 minutes in space over the course of her two missions.

Sunita Williams:

- (i) Sunita Williams is an American astronaut of Indian origin.
(ii) She was appointed at the International Space Station (ISS) as a member of space missions Expedition 14 and Expedition 15.
(iii) She served as a flight engineer on Expedition 32 and also as the commander of Expedition 33.
(iv) Sunita Williams holds the record for most spacewalks by a woman. Also, the record for most spacewalk time for a woman is in her name.



Oral Test

1. List the heavenly bodies which make our solar system.

Ans: The sun and the planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune), their satellites, dwarf planet Pluto and asteroids that revolve around the sun make our solar system.

2. What is the force of attraction exerted by heavenly bodies on one another called?

Ans: The force of attraction exerted by heavenly bodies on one another is called gravity.

3. What would the space mission be called if there are no people on board the spacecrafts?

Ans: The space mission would be called unmanned mission if there are no people on board the spacecrafts.

4. Name the technology used for the purpose of sending spacecraft into space.

Ans: Technology used for the purpose of sending spacecraft into space is rocket technology.

5. What are the scientists who travel in the spacecraft called?

Ans: The scientists who travel in spacecraft are called astronauts.

Activities / Project

*1. Make charts about space research and display them in an exhibition.

Ans: The following points can be used while making a chart on space research:

- (i) Space missions like Chandrayaan I, Mangalyaan and Apollo.
- (ii) Type of heavenly body studied.
- (iii) Objective of the mission.
- (iv) Outcome of the space research.

(Students are expected to make charts on space research with the help of points mentioned above.)

*2. Find out which planets in the solar system have satellites.

Ans:

	Planet	Number of Satellites found till date
(i)	Jupiter	79
(ii)	Saturn	53 known + 9 awaiting confirmation
(iii)	Uranus	27
(iv)	Neptune	14
(v)	Pluto (Dwarf planet)	5
(vi)	Mars	2
(vii)	Earth	1
(viii)	Venus	0
(ix)	Mercury	0

Information source: <https://www.nasa.gov/content/planets-moons-and-dwarf-planets>

[Note: The data given in the above table could vary in the future, as and when new satellites will be discovered.]



3. Complete the following table capturing some achievements of India's Space Missions.

	Mission and its details	Achievements
i.	Joint mission of ISRO and the Soviet Intercosmos in 1984.	_____
ii.	_____ : An unmanned spacecraft launched by ISRO on 22 nd October 2008.	Detailed study of the moon.
iii.	Mangalyaan or M.O.M. (Mars Orbit Mission): An unmanned spacecraft launched on 5 th November 2013 by ISRO and got established in orbit around Mars on 24 th September 2014.	_____

Ans:

	Mission and its details	Achievements
i.	Joint mission of ISRO and the Soviet Intercosmos in 1984.	<u>First Indian astronaut (Rakesh Sharma) spent 8 days on a space station.</u>
ii.	<u>Chandrayaan - 1</u> : An unmanned spacecraft launched by ISRO on 22 nd October 2008.	Detailed study of the moon.
iii.	Mangalyaan or M.O.M. (Mars Orbit Mission): An unmanned spacecraft launched on 5 th November 2013 by ISRO and got established in orbit around Mars on 24 th September 2014.	<u>Detailed study of Mars.</u>

CHAPTER ASSESSMENT

1. Match the heavenly bodies from Group 'A' with their types given in Group 'B'.

	Group 'A'		Group 'B'
(i)	Sun	(a)	Natural satellite
(ii)	Neptune	(b)	Planet
(iii)	Pluto	(c)	Star
(iv)	Moon	(d)	Dwarf planet

2. Answer in one sentence.

- What is space?
- Why is the moon called the satellite of the earth?

3. Name the following.

- Largest heavenly body in solar system.
- Closest heavenly body to earth.
- Small heavenly bodies between Mars and Jupiter.

4. Why does a planet revolve around the sun at a fixed distance in a fixed orbit?

Answers:

- (i) - (c), (ii) - (b), (iii) - (d), (iv) - (a)
- (i) The emptiness between and beyond the stars and planets is called space.
(ii) Moon revolves around the earth. Hence, it is called as the satellite of the earth.
- (i) Sun (ii) Moon (iii) Asteroids
- The sun exerts a gravitational pull on all the planets. On the other hand, the planets tend to move away from the sun. Under the combined effect of these two forces, planets keep revolving around the sun at a fixed distance in a fixed orbit.



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