

SAMPLE CONTENT



Perfect Notes

GENERAL SCIENCE

Build
Powerful
Concepts



STD. VI

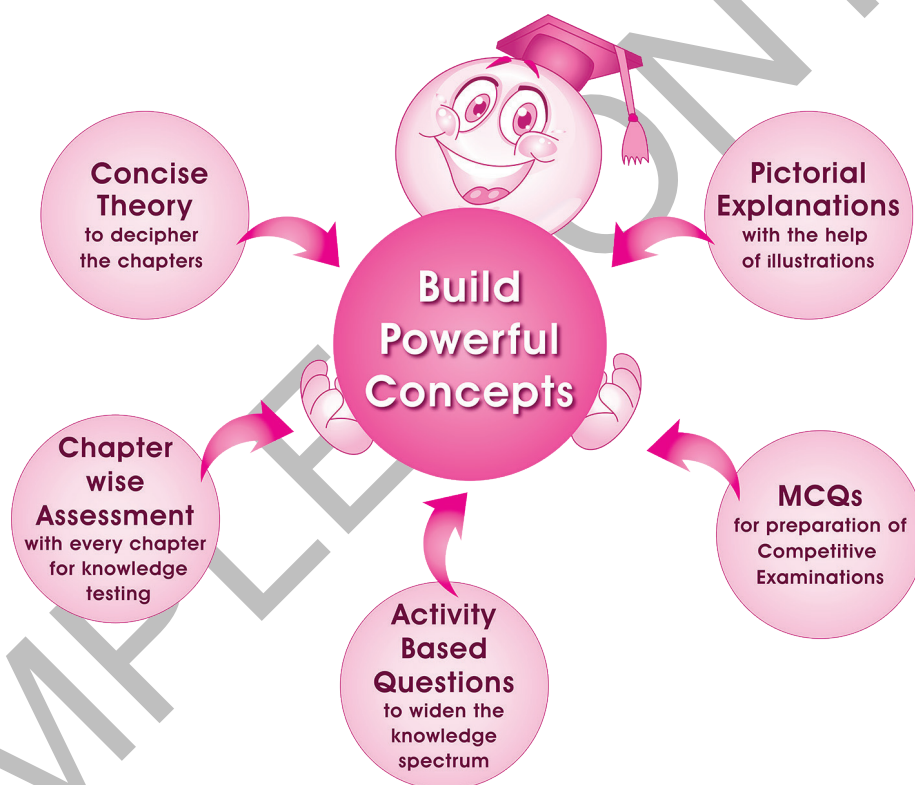
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STD. VI

General Science



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PREFACE

General Science: Std. VI has been prepared as per the new 'Continuous Comprehensive Evaluation' (CCE) system which is more child-centric and focuses on active learning and making the process of education more enjoyable and interesting.

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. Formative assessment is divided into Section A – Apply your knowledge, Section B – Oral work, Section C – Activities and Section D – Project which helps students to understand concepts quickly. The chapter also includes **Activity Based Questions** that explain certain concepts to students in a point wise manner 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. **Additional information** 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.

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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A book affects eternity; one can never tell where its influence stops.

Best of luck to all the aspirants!

From,
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Edition: Second

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Note: Textual Questions are represented by * mark.

6. Substances in Daily Use



Let's Study

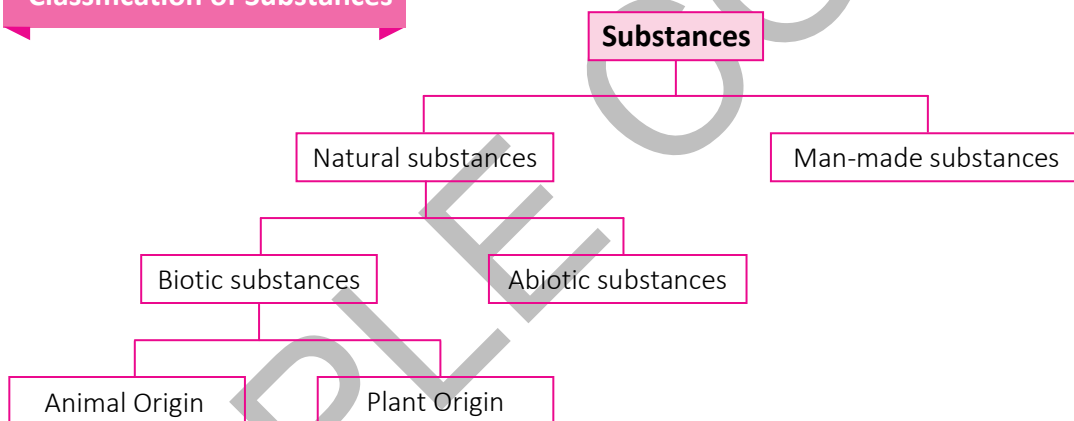
Substances and Objects

1. All the substances are made up of very tiny particles.
2. Substances are used to make various objects.
3. Depending on the properties of the substances, objects with desired shapes can be made. For example; wood, plastic or steel is used to make table, chair or cupboard.
4. Many objects can be made from the same substance.

Examples:

Substance	Objects
Cotton	Shirt, bed sheet, towel, etc.
Iron	Railway track, nails, safety pin, electric pole, etc.
Aluminium	Aluminium foil, aluminium roofs, kitchen utensils, etc.
Glass	Windows, glass bottles, magnifying glass, etc.

Classification of Substances



Substances are classified into two main types: Natural and man-made substances.

1. Natural Substances:

- i. Substances available in nature are called natural substances.
 - ii. They are further classified as biotic and abiotic substances.
- a. **Biotic substances:** Substances obtained from living things are called biotic substances.

Examples:

Biotic substances can be of animal origin or plant origin.

Leather and wool are obtained from animals. Hence, they are of **animal origin**.

Wood and cotton are obtained from plants. Hence, they are of **plant origin**.

- b. **Abiotic substances:** Substances obtained from non-living things are called abiotic substances.

Examples: Water, soil, metals, etc.

2. Man-made substances:

New substances produced by processing naturally available substances are called man-made substances.

Examples: Rocket, gloves

**Examples of Natural and Man-made Substances:**

Area of Use	Natural Substances	Man-made Substances
Foods	Fruits, vegetables, milk	Bread, jam, soft drinks, biscuits
Beauty products	Henna, Turmeric, Sandalwood, Aloe vera	Cold cream, talcum powder, sunscreen lotion, nail polish
Medicines	<i>Neem, Tulsi, Nilgiri oil</i>	Antacids, ointments, cough syrup

Production of substances**1. Rubber:****Natural Rubber:**

Natural rubber is obtained by collecting the latex (gum or sap) of a tree called *Hevea brasiliensis*. It has a peculiar odour and it is white in colour.



Process of collecting latex from *Hevea brasiliensis*

Vulcanization of Rubber:

- In this process, rubber is heated with sulphur for three to four hours. Sulphur gives hardness to rubber.
- Quantity of sulphur to be added is decided by the purpose for which the rubber will be used.
- Erasers, rubber balls, rubber toys, rubber bands all have varying proportions of sulphur in them.

2. Paper:

- Paper is formed by the intertwining of cellulose fibres in grass, wood, rags or waste paper.
- It is a type of network of cellulose fibres.
- Coniferous trees (Example - Pine) are generally used for the production of paper.
- Bark of the logs cut from trees is removed first and the wood obtained from the log is broken into pieces and is mixed with some chemicals and kept soaking for long time in order to form a pulp.
- After completion of the chemical process, the fibrous substances from wood pulp are removed and some dyes are added.
- The pulp is then passed through rollers, dried to form paper and wound on reels in the final stage.
- The first factory to produce newsprint (paper used for newspapers) in India was established at Napanagar in Madhya Pradesh in 1955.

3. Synthetic Fibres or Threads:

- Much research and development has taken place in the field of production of artificial yarn to meet the clothing needs of an increasing population.
- Almost all the materials made from natural fibres are now replaced by materials made from synthetic fibres.

Examples: Nylon, dacron, rayon, terylene, terene, polyester, acrylic, etc.

Nylon:

- The name nylon is derived from its places of invention, New York (NY) and London (LON).
- Nylon threads have a shine and are strong, transparent and water resistant.
- They are used to manufacture clothes, fishing nets, ropes, etc.

Rayon:

- A solution of cotton and wood pulp is prepared by dissolving them in sodium hydroxide.
- With the help of machines, threads are obtained from this solution.
- As these threads have shine and strength, they are said to be 'synthetic silk'.
- Due to the shining bright appearance like sun's rays, they are named as 'Rayon'.



Dacron, Terylene, Terene:

- i. Polymer chains are made from hydrocarbons, which are obtained from mineral oils.
- ii. A solution of such a polymer is passed through a strainer having fine holes.
- iii. After cooling, the fibres obtained are in the form of long, unbroken threads which are twisted to get yarn.
- iv. Threads with various properties are obtained by using different types of chemicals. These threads are named as dacron, terylene, terene, etc.

Some advantages of synthetic fibres:

- i. They can be manufactured on a mass scale.
- ii. They are cheap.
- iii. They are strong and durable.
- iv. They can be used for a long time.
- v. They are water repellent.
- vi. They are lightweight and comfortable to wear.
- vii. Since they have a shine, they enhance the appearance of the wearer.
- viii. They are wrinkle-free and scratch-free.

Some disadvantages of synthetic fibres:

- i. They do not absorb sweat from the skin as they are water repellent.
- ii. Their regular usage keeps the skin moist, which may cause skin diseases.
- iii. They are uncomfortable to wear in summer season.
- iv. They catch fire easily and can cause serious injuries by fire accidents.
- v. They do not get decomposed by micro-organisms.

Summative Assessment



Fill in the blanks

- *1. Man-made materials are made by natural materials.
2. Natural rubber is obtained by collecting the of a tree called *Hevea brasiliensis*.
- *3. Rubber made by vulcanization is a material.
- *4. thread was developed simultaneously in New York and London.
- *5. Rayon is also known as

Answers:

1. processing 2. latex 3. man-made 4. Nylon
5. synthetic silk



Choose the correct alternative

1. Which one of the following is a natural substance used for construction of houses?
(A) Plastic sheets (B) Cement (C) Asbestos sheets (D) Wood
2. Terylene is a _____ fibre.
(A) synthetic (B) natural (C) hydrocarbon (D) Wood

Answers:

1. (D) 2. (A)



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

1. Coal is a natural substance.
2. The package materials used for transportation of delicate articles and perishable fruits are not water resistant.
3. In rubber band, the proportion of sulphur is very high.
4. Nylon is used to manufacture clothes and fishing nets.

**Answers:**

1. Right.
2. Wrong.
The package materials used for transportation of delicate articles and perishable fruits are water resistant.
3. Wrong.
In rubber band, the proportion of sulphur is very small.
4. Right.

**Odd One out**

1. Bamboo, coconut fronds, brick, wood.
2. Leather, jute, metals, wool.
3. Nylon, rayon, dacron, silk.

Answers:

1. Brick
Reason: Except brick, all are natural substances.
2. Metals
Reason: Leather, jute and wool are biotic substances, while metals are abiotic substances.
3. Silk
Reason: Silk is a natural fibre, while others are synthetic fibres.

**Additional information**

Nowadays, almost 23 million tons of natural rubber are produced and processed worldwide.

**Match the Following**

1. Match the substances given in Group 'A' with their concerned or respective area of use given in Group 'B'.

Group 'A'		Group 'B'	
i.	Stone slates	a.	Construction
ii.	Cement	b.	Food
iii.	Spices	c.	Beauty products
iv.	Talcum powder	d.	Writing material

2. Match the substances given in Group 'A' with their required raw materials given in Group 'B'.

Group 'A'		Group 'B'	
i.	Artificial rubber	a.	Hydrocarbons
ii.	Dacron	b.	Sand and Calcium carbonate
iii.	Paper	c.	Latex and Sulphur
iv.	Glass	d.	Cellulose fibres

Answers:

1. (i – d), (ii – a), (iii – b), (iv – c)
2. (i – c), (ii – a), (iii – d), (iv – b)

**How are we different?**

1. Synthetic fibre and Natural fibre.

Ans:

	Synthetic fibre	Natural fibre
i.	It is a man-made substance.	It is a naturally occurring substance.
ii.	It is water repellent.	It is water absorbent.
iii.	It is lesser in cost as compared to a natural fibre.	It is more expensive as compared to a synthetic fibre.
iv.	It catches fire easily.	It does not catch fire easily.
v.	It does not get decomposed by micro-organisms.	It gets decomposed by micro-organisms.
	Examples: Nylon, rayon, dacron	Examples: Silk, cotton



Answer the following

***1. Which are the natural materials obtained from plants and animals?**

Ans: Natural materials obtained from plants: Jute, cotton, bamboo, fruits, grains, etc.
Natural materials obtained from animals: Leather, milk, wool, silk, etc.

***2. Why did the need for man-made materials arise?**

Ans: i. The need for man-made materials arise because man continuously strives for newer things. He tries to make life more comfortable.
ii. As natural materials have limited use, he started making new materials and substances by processing the natural materials.
iii. These new man-made materials are easier to use, are more durable and can be produced on a large-scale at a low cost.

3. Which man-made substances are used for packing? Why?

Ans: i. Man-made substances like metal or cardboard cartons, plastics and thermocol are used for packing.
ii. These substances are commonly used for packing because these are water resistant, lightweight and easy for transportation.

***4. What is vulcanization?**

Ans: i. Vulcanization is the process of heating rubber with sulphur for 3 – 4 hours in order to make it harder and less elastic.
ii. Quantity of sulphur to be added is decided by the purpose for which the rubber will be used.

***5. How is paper manufactured? Write in your own words.**

Ans: i. Paper is manufactured from coniferous trees such as pine tree.
ii. Bark of the logs of these trees is removed and cut into small pieces.
iii. Wood pieces are then mixed with some chemicals and allowed to soak for a long time in order to form pulp.
iv. After the chemical process is completed, fibrous substances from the wood pulp are separated and some dyes are added.
v. The resulting pulp is then passed through rollers, dried to form paper and finally wound on reels.

6. How can we reduce the consumption of paper in daily life?

Ans: We can reduce the consumption of paper in our daily life in the following ways:
i. We can use old notebooks, which have blank pages to write.
ii. For rough work and crafts, we can use blank sides of advertising pamphlets, calendar pages, inner side of postal envelopes, etc.
iii. We can use a slate and a chalk for practicing problems.
iv. We can use old newspapers and colourful magazine pages to cover books, to wrap gifts, etc.

***7. Which natural materials are used to obtain fibres?**

Ans: Natural materials such as cotton, wood pulp and mineral oils are used to obtain fibres.

***8. What are we used for?**

i. **Soil** ii. **Wood** iii. **Nylon** iv. **Paper** v. **Rubber**

Ans: i. **Soil:** It is used in construction, making pots, bricks and is also used in farming.
ii. **Wood:** It is used in making furniture and also in construction of houses.
iii. **Nylon:** It is used in manufacturing of clothes, fishing nets and ropes.
iv. **Paper:** It is used in making books, in newspaper industry and also in making currency.
v. **Rubber:** It is used in tyre industry to manufacture tyres. It is also used in making erasers, rubber balls, rubber toys, etc.

***9. Find out.** **i. How is lac obtained from nature?**

- Ans:**
- Lac is a natural resin of animal origin.
 - It is obtained from lac insects, scientifically named as *Tachardia lacca*.
 - Lac insects attach themselves in great numbers to particular plants upon which they feed and thrive.
 - As they grow, they secrete resinous lac from the body, which can be collected and processed to make various articles.

ii. How are pearls obtained?

- Ans:**
- Pearls are obtained from marine molluscs such as pearl oyster.
 - When the molluscs feel an irritation caused by sand or other materials, it forms a coating around it as a natural response.
 - Multiple such coatings are applied and a pearl is formed.
 - This material is similar to calcium carbonate and is very tough.
 - Cultured pearls are grown by placing tiny piece of glass or plastic bead inside the molluscs.

**Give reasons*****1. Humus is a natural material.**

- Ans:**
- Substances available in nature are called natural substances.
 - Humus is the topmost layer of soil formed by decomposition of dead plants and animals by micro-organisms in nature.
 - It is an abiotic component of nature and formed by natural process.
- Hence, humus is a natural material.

***2. Man-made materials have more demand.**

- Ans:**
- New substances produced by processing naturally available substances are called man-made substances.
 - Natural substances have limited applications, in their original form.
 - But when natural substances are scientifically processed, they become more useful as these substances are comparatively stronger and more durable. For example, clay is processed to make tiles and earthen wares, which are more useful.
 - Moreover, man-made substances can be made available in large quantities at low cost.
- Hence, man-made materials have more demand.

3. Producing glass from sand and calcium carbonate is an irreversible change.

- Ans:**
- Irreversible change occurs when the properties of constituents permanently change due to the chemical reactions taking place in them and a new substance is formed.
 - When sand and calcium carbonate are processed chemically, their properties change permanently and glass is formed.
- Hence, producing glass from sand and calcium carbonate is an irreversible change.

***4. Saving paper is the need of the hour.**

- Ans:**
- Paper is formed by intertwining of cellulose fibres in wood.
 - Production of paper requires pulp obtained from coniferous trees such as pine.
 - Nowadays, paper consumption is very high and to maintain supply of paper, it requires significant cutting down of coniferous trees.
 - This means, to save these trees, paper must be used economically.
- Hence, saving paper is the need of the hour.



***5. We must use cotton clothes in summer.**

Ans: i. During summer, our body tends to perspire more in order to maintain body temperature.
 ii. Cotton allows better air circulation and also helps in absorbing sweat and maintaining body moisture. This helps in keeping the skin dry during the summer season.
 Hence, we must use cotton clothes in summer.

***6. We must observe economy in the use of materials.**

Ans: i. Materials we use are either natural substances or man-made substances.
 ii. Natural substances on the earth are limited and once exhausted, may take thousands of years to replenish.
 iii. Even man-made substances need natural substances as raw materials.
 iv. Observing economy in the use of materials demands careful usage of resources, reduction in the waste materials and recycling of materials, wherever possible. This ensures sustainability of materials.
 Hence, we must observe economy in the use of materials.

Formative Assessment



Section- A
Apply Your Knowledge

1. Can you recall? (Textbook page no. 42)



Observe the picture 6.1 of your textbook and answer the following questions.

i. Which three objects do you see in the picture?

Ans: Chair, table and cupboard.

ii. How did you identify them?

Ans: I identified them by seeing their shapes and specific arrangements in them.

iii. What material are they made of?

Ans: Chair is made up of wood, table is made up of plastic and cupboard is made up of steel.

iv. Can any one of these materials be used to make all the three objects?

Ans: Yes, all the three objects i.e., chair, table and cupboard can be made by using either wood, steel or plastic.

2. Try this (Textbook page no. 42)



Make a list of various objects in your house and note down the substances they are made of.

Ans:

Objects	Substances
Door	Wood
Bottles	Glass/Plastic
Toothbrush	Plastic
Chairs	Wood/Plastic
Mirror	Glass
Books	Paper pulp

Objects	Substances
Curtains	Cotton
Utensils	Steel/Aluminum
Socks	Wool
Handbag	Jute
Cups	Glass
Pillows	Cotton


(Students can add to the above list by writing down more such objects and substances found in their houses.)

**3. Classify** (Textbook page no. 42)**Classify the following substances according to their uses:**

Substances – Sand, soap, wool, window, glass, bamboo, cotton, bricks, silk, leafy vegetables, cement, fruits, water, sugar.

Ans:

Substances	Area of use
Sand, window, glass, bamboo, bricks, cement	Construction
Wool, cotton, silk	Clothes
Leafy vegetables, fruits, water, sugar	Food
Soap	Cleaning purpose

*[Note: Water can also be used for construction and cleaning purposes.]***4. Use your brain power!** (Textbook page no. 42) **Make a list of objects, each of which can be made from several substances.**

Ans:

Objects	Substances
Water bottle	Plastic, metals, glass
Table	Plastic, wood, steel
Cup	Plastic, glass, steel
Bag	Leather, plastic, jute
Footwear	Rubber, plastic, leather

Objects	Substances
Earrings	Metals, plastic, paper, jute
Kitchen utensils	Metals, wood, glass, plastic
Furniture	Glass, wood, plastic, metal
Clothes	Cotton, nylon, rayon, polyester, wool
Toys	Plastic, metals

*(Students can add to the above list by finding more such objects.)***5. Can you tell?** (Textbook page no. 43) **i. What is the difference between these two groups of natural substances – leather, jute, wool, cotton and water, soil, metals.****Ans:** Leather, jute, wool and cotton are natural substances that are obtained from living things. They are called biotic substances.

Water, soil and metals are natural substances that are obtained from non-living things. They are called abiotic substances.


ii. How are leather and wool different from jute and cotton?**Ans:** Leather and wool are of animal origin, whereas jute and cotton are of plant origin.**iii. Do we find plastic, nylon, brass or cement in nature?****Ans:** No, we do not find plastic, nylon, brass or cement in nature as they are man-made substances.**6. Classify** (Textbook page no. 44)**Classify the various substances available in your house as natural and man-made substances.**

Ans:

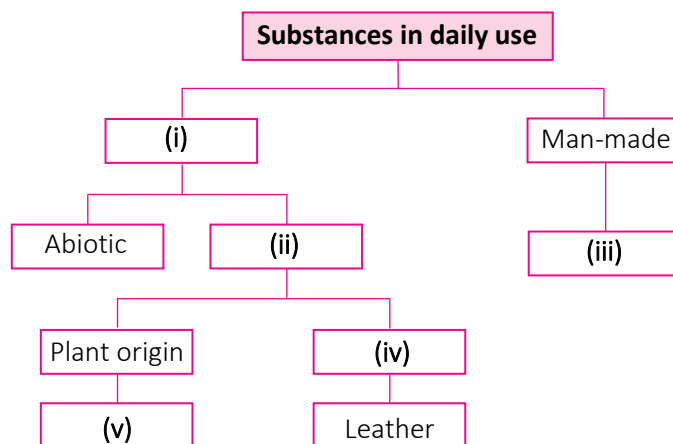
Natural substances	Man-made substances
Turmeric	Sunscreen lotion
Tulsi	Cough syrup
Grains	Bread
Milk	Ice-cream
Water	Soft drinks
Flowers	Perfume
Fruits	Jam
Coconut	Sweets

(Students can add more examples to the above list by including various natural and man-made substances present in their house.)



7. Use your brain power! (Textbook page no. 44) 

Complete the table below, showing how substances of daily use are classified.



Ans: (i) Natural (ii) Biotic (iii) Plastic
 (iv) Animal origin (v) Cotton

8. You must have observed green chillies or tomatoes turning red after sometime. Have you ever seen or heard of red tomatoes becoming green again?

Ans: No, red tomatoes do not turn green again. This is because when green tomatoes turn red, an irreversible change occurs due to certain chemical reactions. As a result, the changes in properties are permanent. Therefore, the reverse process cannot occur to get back the green tomatoes from red ones.

9. Can you tell? (Textbook page no. 46) 

i. From which substances in nature can we get threads or fibre?

Ans: Silk is a natural thread or fibre. It is obtained from the cocoons of silk worms.
 Cotton is a natural thread obtained from cotton plant.

ii. What are clothes made from?

Ans: Clothes can be made from the biotic substances such as cotton, wool, silk, etc., as well as from synthetic fibres such as nylon, rayon, polyester, etc.

10. Find out. (Textbook page no. 46) 

i. Where was the process of making paper invented?

Ans: The process of making paper was invented in China.

ii. What kind of paper is used for our textbooks? What size is it?

Ans: The various types of papers generally used to make textbooks are : Machine-finished coated papers, wood free uncoated papers, coated fine papers and special fine papers. The size of our textbook is $11 \times 8\frac{1}{4}$ inches.

iii. How is paper for currency notes manufactured?

Ans: The paper used for currency is a special blend of 75% cotton and 25% linen. It even contains small segments of red and blue fibres scattered throughout for visual identification.

11. Science watch.... (Textbook page no. 48) 

While studying science, we do verify whatever we learn, but what about others? It is necessary to explain to everybody that there is science behind every phenomenon. Let us explain to them what we have learnt and let us act on the basis of our knowledge.

[Note: Schools can conduct science exhibitions, poster presentations and various competitions to create awareness as well as to educate public about the role of science behind different phenomenon occurring around us.]



Section- B Oral work

1. Name any natural product that is used in the field of construction.

Ans: Bamboo

2. Name any two natural fibres.

Ans: Silk, cellulose

3. Name the process in which sulphur is added to rubber to increase its hardness.

Ans: Vulcanization

4. Which fibres are intertwined with grass, wood, rags or waste paper to form paper?

Ans: Cellulose fibres are intertwined with grass, wood, rags or waste paper to form paper.



Section- C Activities

*1. Visit a rubber, paper or textile industry in your area and collect information about it.

*2. Collect various samples of paper and note their uses.

*3. Use blank pages from old notebooks and make a new one.

(Students are expected to perform these activities on their own.)

Chapter Assessment

1. Fill in the blanks:

- Glass is made from sand and
- Various obtained from mineral oils are used to make polymer chains.
- Terene, terylene and polyester are examples of threads.

2. Answer in one word:

- In which state of India, was the first factory to manufacture paper for newspaper established?
- An object made from rubber.

3. Answer in your own words:

- What are biotic substances? Give two examples.
- How can you recognize if an apparel is made up of cotton or nylon?

Answers:

1. i. calcium carbonate ii. hydrocarbons iii. synthetic

2. i. Madhya Pradesh ii. Eraser

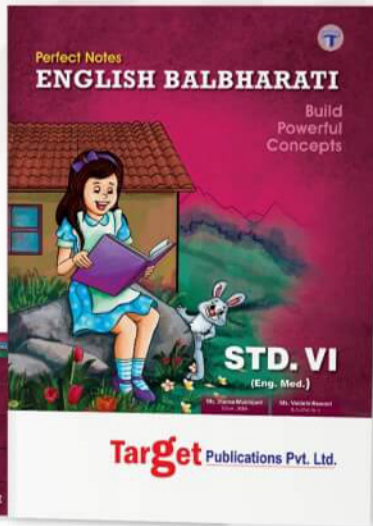
3. i. Substances obtained from living things are called biotic substances.
Examples: Wool and Cotton

- a. Cotton clothes are made up of natural fibres. Hence, they lack luster. They absorb water freely and get wrinkled easily.
b. On the other hand, nylon clothes are made up of synthetic fibres. Hence, these clothes do not absorb water. They are shiny and wrinkle free.

Thus, due to the difference in their properties, one can easily recognize if an apparel is made up of cotton or nylon.



Std. VI



AVAILABLE SUBJECTS:

- English Balbharati
- हिंदी सुलभभारती
- मराठी सुलभभारती
- Mathematics
- General Science
- History - Civics & Geography

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