UNIQUE STUDY POINT

By Sumeet Sahu

www.uniquestudyonline.com

Unique Study Point, Amitesh Nagar, Indore, MP | Contact: 8103405051

Class: VI	**Subject:** Science	**Session:** 2025-26
Chapter: 06 - Materials Around Us	**Time:** 1½ Hours	**Max. Marks:** 40

General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five sections A, B, C, D and E.
3. Section A contains 10 MCQs of 1 mark each.
4. Section B contains 4 questions of 2 marks each.
5. Section C contains 3 questions of 3 marks each.
6. Section D contains 1 question of 5 marks.
7. Section E contains 2 Case Study Based questions of 4 marks each.

SECTION A - Multiple Choice Questions (1 mark each)

1. Which of the following is NOT a property of materials?

(a) Hardness
(b) Temperature
(c) Lustre
(d) Transparency

2. Which metal may lose its lustre due to the effect of air and moisture?

(a) Gold
(b) Silver
(c) Iron
(d) All of these

3. Which of the following materials is opaque?

(a) Water
(b) Glass
(c) Wood
(d) Butter paper

4. Oxygen gas dissolves in water. Why is this important?

(a) For making water taste better
(b) For survival of aquatic animals and plants
(c) For making water heavier
(d) For changing water colour

5. 1 cubic metre (m^3) is equal to:

(a) 10 L
(b) 100 L
(c) 1000 L
(d) 10000 L

6. Which of the following is insoluble in water?

(a) Salt
(b) Sugar
(c) Sand
(d) Glucose

7. The unit used to measure volume is:

(a) Kilogram
(b) Litre
(c) Meter
(d) Second

8. Which property is relative in nature?

(a) Mass
(b) Volume
(c) Hardness
(d) Solubility

9. An example of a lustrous material is:

(a) Chalk
(b) Rubber
(c) Aluminium
(d) Cloth

10. Materials are selected for making objects based on:

(a) Their cost only
(b) Their colour only
(c) Their properties and purpose
(d) Their availability only

SECTION B - Short Answer Questions (2 marks each)

11. Why are containers used to store materials in shops and at home usually transparent? Give two reasons.

12. What is the difference between soluble and insoluble materials? Give one example of each.

13. Explain why mass and volume are considered properties of all matter.

14. Why is it not advisable to use paper-like materials for making cooking utensils?

SECTION C - Short Answer Questions (3 marks each)

15. Describe an activity to demonstrate the difference between transparent, translucent, and opaque

materials.

16. Explain with examples how classification helps us in daily life. Give at least three examples from different situations.

17. A shopkeeper keeps iron nails, cotton cloth, plastic bottles, and wooden planks in his shop. How would you classify these materials based on their properties? Classify them under at least two different properties.

SECTION D - Long Answer Question (5 marks)

18. What decides which material should be used for making an object? Explain with suitable examples how the properties of materials determine their use in making different objects. Also, explain why sometimes different materials are used for making different parts of the same object.

SECTION E - Case Study Based Questions (4 marks each)

19. Case Study 1:

In a science laboratory, students were given various materials to test their properties. They had a metal key and were asked to scratch the surface of different materials including wood, aluminium, stone, iron, candle, and chalk. Some materials were scratched more easily than others.

Based on the above case study, answer the following questions:

(a) What property of materials were students testing in this activity? (1 mark)
(b) Which materials would be scratched more easily - candle and chalk or iron and stone? (1 mark)
(c) Define the terms used to describe materials based on the ease with which they can be scratched. (1 mark)
(d) Why is it said that hardness is a relative property? Explain with an example. (1 mark)

20. Case Study 2:

Madam Vidya entered the class and deliberately asked students to keep their bags on their seats and sit down. Students were not able to sit because bags had occupied that space. Then she provided two identical glass tumblers to two students and encouraged them to pour the remaining water from their drinking water bottles into the respective glass tumblers. One glass tumbler got half-filled with water while the other was almost completely filled with water.

Based on the above case study, answer the following questions:

(a) Why couldn't students sit on their seats when bags were placed there? (1 mark)
(b) Why was the level of water different in the two tumblers? (1 mark)
(c) What does the space occupied by water represent? (1 mark)
(d) What would you observe if written information on water bottles is 500 mL? Explain its significance. (1 mark)

DETAILED ANSWER KEY - PAPER 02

SECTION A - Answers to MCQs

1. (b) Temperature

Temperature is not a property of materials. Properties of materials include hardness, lustre, transparency, solubility, mass, and volume. Temperature is a condition or state that can be measured.

2. (d) All of these

All metals including gold, silver, and iron may lose their lustre and start to look dull or non-lustrous due to the effect of air and moisture on them. This is why we often notice the lustre only on their freshly cut surfaces.

3. (c) Wood

Wood is an opaque material. Materials through which you are not able to see at all are called opaque. Other examples include cardboard and metals.

4. (b) For survival of aquatic animals and plants

Oxygen gas dissolving in water is very important for the survival of animals and plants that live in water. Aquatic organisms breathe the dissolved oxygen in water.

5. (c) 1000 L

1 cubic metre (m^3) is equal to 1000 litres. The SI unit for volume is cubic metre, abbreviated as m^3.

6. (c) Sand

Sand is insoluble in water. Materials that do not mix with water and do not disappear even after stirring for a long time are insoluble in water.

7. (b) Litre

The units to measure volume are litre (L) and millilitre (mL). The SI unit for volume is cubic metre (m^3).

8. (c) Hardness

Hardness is a relative property. For example, rubber is harder than sponge but softer than iron. The hardness of a material can be compared only in relation to other materials.

9. (c) Aluminium

Aluminium is a lustrous material. Materials that typically have shiny surfaces are said to have a lustrous appearance. Such materials with lustre are usually metals.

10. (c) Their properties and purpose

We choose a material to make an object depending on its properties and the purpose for which the object is to be used. While cost and availability are factors, the primary consideration is whether the material's properties suit the intended purpose.

SECTION B - Answers to Short Answer Questions

11.

Containers used to store materials in shops and at home are usually transparent for the following reasons:

1. Easy Identification: We can easily see and identify the contents stored inside without opening the container. This saves time and effort.

2. Quantity Check: We can check how much material is left in the container without opening it. This helps in knowing when to refill or reorder the material.

Transparent containers help in better organization and management of stored materials in both domestic and commercial settings.

12.

Soluble Materials: Materials that completely disappear when mixed in water are said to be soluble in water. They dissolve or mix completely with water.

Example: Sugar, salt

Insoluble Materials: Materials that do not mix with water and do not disappear even after we stir them for a long time are insoluble in water.

Example: Sand, sawdust, chalk powder

13.

Mass and volume are considered properties of all matter because:

Mass: Everything that exists as matter has a certain amount of material in it, which is measured as mass. Whether solid, liquid, or gas, all matter has mass that can be measured in grams or kilograms.

Volume: All matter occupies some space. The space occupied by matter is its volume. Even air, which we cannot see, occupies space and has volume.

Since anything that occupies space and has mass is called matter, these two properties are universal to all matter.

14.

It is not advisable to use paper-like materials for making cooking utensils because:

1. Paper is highly flammable and will catch fire when exposed to heat, making it dangerous for cooking.

2. Paper is not waterproof and will absorb liquids, making it unsuitable for holding food items.

3. Paper loses its strength when wet and will disintegrate, making it impractical for cooking purposes.

Cooking utensils need to be made from materials that can withstand heat, are non-flammable, and can hold food and liquids safely, such as metals or ceramics.

SECTION C - Answers to Short Answer Questions

15.

Activity to demonstrate transparent, translucent, and opaque materials:

Materials Required: A torch or lamp, clear glass sheet, frosted glass sheet, wooden board, and a screen or wall

Procedure:

1. Take a clear glass sheet and place it between the light source and the wall
2. Observe how light passes through and objects behind can be seen clearly
3. Replace the clear glass with frosted glass
4. Observe that light passes through but objects cannot be seen clearly
5. Now place a wooden board between the light source and the wall
6. Observe that no light passes through and a shadow is formed on the wall

Observation and Conclusion:

- Clear glass is **transparent** as objects can be seen clearly through it
- Frosted glass is **translucent** as light passes but objects cannot be seen clearly
- Wooden board is **opaque** as no light passes through it

16.

Classification helps us in daily life in numerous ways:

1. In the Kitchen: We store things in an organized manner where similar utensils are placed together. For example, all plates in one cabinet, all glasses together, spices in one section, and pulses in another. This makes it easy to find what we need quickly.

2. In a Grocery Shop: A grocer keeps all types of spices in one corner, pulses and grains in another corner, oil and ghee separately, and so on. This systematic arrangement helps both the shopkeeper and customers to locate items easily.

3. In a Chemist Shop: Medicines are arranged systematically based on their types, uses, or alphabetically. This ensures that the right medicine can be found quickly, which is crucial in medical situations.

Benefits of Classification:

- Saves time in finding things
- Maintains order and cleanliness
- Helps in inventory management
- Makes it easier to identify patterns and relationships
- Improves efficiency in daily tasks

17.

Classification 1: Based on Lustre

Lustrous Materials:

- Iron nails (shiny surface when new)

Non-lustrous Materials:

- Cotton cloth
- Plastic bottles
- Wooden planks

Classification 2: Based on Hardness

Hard Materials:

- Iron nails (difficult to compress or scratch)
- Plastic bottles (relatively hard)
- Wooden planks (difficult to compress)

Soft Materials:

- Cotton cloth (can be easily compressed and folded)

Classification 3: Based on Transparency

Transparent Materials:

- Plastic bottles (if made of clear plastic)

Opaque Materials:

- Iron nails
- Cotton cloth
- Wooden planks

SECTION D - Answer to Long Answer Question

18.

The selection of material for making an object is decided by two main factors:

1. Properties of the Material: The physical and chemical characteristics of the material

2. Purpose of the Object: What function the object needs to perform

How Properties Determine Use - Examples:

Example 1: Making a Tumbler

Required Properties: Should be able to hold water, non-porous, easy to clean
Suitable Materials: Glass (transparent, waterproof), Plastic (lightweight, waterproof), Metal (durable, waterproof)
Unsuitable Materials: Cloth (porous, water leaks), Paper (absorbs water, becomes weak)

Example 2: Making Windows

Required Properties: Transparent (to allow light and view)
Suitable Material: Glass
Why: Glass is transparent, durable, and protects from weather while allowing visibility

Example 3: Making Cooking Utensils

Required Properties: Heat resistant, non-flammable, durable
Suitable Materials: Metals like iron, steel, aluminium
Why: Metals can withstand high temperatures and are durable

Why Different Materials for Different Parts of Same Object:

Sometimes different parts of an object need to perform different functions, so they require different properties. For example:

Example: A Pen

Body: Made of plastic or metal - needs to be hard, durable, and easy to hold

Tip: Made of metal - needs to be hard and precise for writing

Ink: Liquid chemical - needs to flow smoothly and be visible on paper

Cap: Made of plastic - needs to protect the tip and be easy to remove

Example: A Bicycle

Frame: Made of metal - needs strength and durability

Seat: Made of leather or foam - needs to be soft and comfortable

Tyres: Made of rubber - needs to be flexible and provide grip

Chain: Made of metal - needs strength and flexibility

Conclusion: The properties of materials determine their suitability for specific uses. By understanding these properties, we can select appropriate materials that will make objects functional, durable, and suitable for their intended purpose.

SECTION E - Answers to Case Study Based Questions

19.

(a) The students were testing the **hardness** property of materials. This property determines how easily a material can be scratched or compressed.

(b) Candle and chalk would be scratched more easily than iron and stone. Candle and chalk are relatively soft materials, while iron and stone are hard materials that resist scratching.

(c) The terms used are:

Hard Materials: Materials which are difficult to compress or scratch

Soft Materials: Materials which can be compressed or scratched easily

(d) Hardness is said to be a relative property because the hardness of a material can only be determined by comparing it with other materials. For example, rubber is harder than sponge but softer than iron. We cannot say whether rubber is hard or soft without comparing it to something else. The same material can be considered hard or soft depending on what it is being compared with.

20.

(a) Students couldn't sit on their seats because the bags had occupied that space. All matter occupies space, and since the bags were already occupying the seats, there was no space left for the students to sit.

(b) The level of water was different in the two tumblers because the amount of water in each tumbler was different. One bottle had more water remaining than the other. The water in the first tumbler occupied less space (lower volume), while water in the second tumbler occupied more space (higher volume).

(c) The space occupied by water represents its **volume**. Volume is the amount of space that matter occupies.

(d) If 500 mL is written on water bottles, it indicates the **volume** of water that the bottle contains or can hold. This is the net quantity mentioned on bottles.

Significance:

- It tells us the capacity of the bottle
- It helps consumers know exactly how much water they are buying
- It allows comparison between different bottles
- 'mL' stands for millilitre, which is a unit of measuring volume
- The notation should be written as 500 mL (with space between number and unit, 'm' in lowercase and 'L' in uppercase)

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