

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 statement about materials is INCORRECT?
 - (a) Objects can be made from different materials
 - (b) Some materials can be used to make more than one object
 - (c) All materials have the same properties
 - (d) Materials are selected based on their properties
2. Freshly cut iron looks different from unpolished wood because iron is:
 - (a) Transparent
 - (b) Lustrous
 - (c) Translucent
 - (d) Opaque
3. Rubber is harder than sponge but softer than iron. This shows that hardness is:
 - (a) An absolute property
 - (b) A relative property
 - (c) Not a property of materials
 - (d) Same for all materials
4. The correct way to write 500 millilitres is:
 - (a) 500ml
 - (b) 500 mL
 - (c) 500 ML
 - (d) 500 Ml
5. Which pair of materials would you group together based on transparency?

- (a) Wood and glass
- (b) Water and clear glass
- (c) Iron and butter paper
- (d) Frosted glass and metal

6. What property makes oil unsuitable for dissolving salt?

- (a) Oil is transparent
- (b) Oil is lustrous
- (c) Salt is insoluble in oil
- (d) Oil is hard

7. A tennis ball bounces higher than a cricket ball of the same size because:

- (a) They are made of different materials with different properties
- (b) They have the same mass
- (c) They are both transparent
- (d) They are both soluble

8. Which is the best example showing that an object can be made from different materials?

- (a) All windows are made of glass
- (b) Tumblers can be made of glass, plastic, or metal
- (c) All books are made of paper
- (d) All chairs are made of wood

9. The main reason for classifying materials is to:

- (a) Make them more expensive
- (b) Study patterns and select appropriate materials
- (c) Make them look attractive
- (d) Increase their weight

10. 1 m³ is equal to:

- (a) 1 L
- (b) 10 L
- (c) 100 L
- (d) 1000 L

SECTION B - Short Answer Questions (2 marks each)

11. Differentiate between material and matter with one example each.

12. Why do we see lustre only on freshly cut surfaces of metals? Explain.

13. Can a cricket ball be used to play tennis? Give reasons for your answer.

14. You need to have containers for collection of food waste and broken glass. Which materials will you choose for these containers and why?

SECTION C - Short Answer Questions (3 marks each)

15. Design an activity to show that some materials are soluble in water while others are insoluble.

Write the procedure, observations, and conclusion.

16. Explain why objects are grouped or classified in daily life. Give three practical examples from different situations (kitchen, shop, and any other place of your choice).

17. You are given two mysterious materials X and Y. Material X is rigid and does not change shape easily when pressed. Material Y easily changes shape when pressed. When mixed in water, only material X dissolves completely. Identify possible materials for X and Y. Justify your answer with proper reasoning.

SECTION D - Long Answer Question (5 marks)

18. Explain in detail how the properties of materials determine their uses in everyday life. Support your answer with at least five different examples showing the relationship between specific properties and their applications. Also, explain why it is important to select the right material for the right purpose.

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

19. Case Study 1:

In a science exhibition, students from Class VI prepared different types of containers to demonstrate properties of materials. Ravi made a container from clear plastic, Sneha made one from frosted plastic, Arjun made one from cardboard, and Priya made one from metal. They were asked to store water and observe which container would be most suitable for checking the water level without opening it.

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

- Which container would be most suitable for checking water level without opening it? Why? (1 mark)
- Classify the materials used (clear plastic, frosted plastic, cardboard, metal) as transparent, translucent, or opaque. (1 mark)
- Why would cardboard be unsuitable for storing water for a long time? (1 mark)
- If you had to choose a material for making a bathroom window, which type would you prefer and why? (1 mark)

20. Case Study 2:

A group of students visited a kitchen and observed how various utensils and containers were made from different materials. They noticed cooking pots made of metal, storage containers made of plastic, cutting boards made of wood, and drinking glasses made of glass. Their teacher asked them to explain why different materials were chosen for different purposes in the kitchen.

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

- Why are cooking pots made of metal rather than plastic or wood? Give two reasons. (1 mark)
- What properties make glass suitable for drinking glasses? (1 mark)
- Why is wood preferred for cutting boards over metal? (1 mark)
- Explain the principle behind choosing materials for different kitchen items. (1 mark)

SECTION A - Answers to MCQs**1. (c) All materials have the same properties**

This statement is incorrect. Different materials have different properties. For example, iron is hard and lustrous while cotton is soft and non-lustrous. The variety in properties is what makes different materials suitable for different purposes.

2. (b) Lustrous

Freshly cut iron looks different from unpolished wood because iron is lustrous (has a shiny surface), while wood is non-lustrous (does not have a shiny surface). Metals typically show lustre on their freshly cut surfaces.

3. (b) A relative property

This example shows that hardness is a relative property. The hardness of a material can only be determined by comparing it with other materials. The same material (rubber) can be considered hard or soft depending on what it is being compared with.

4. (b) 500 mL

The correct way to write 500 millilitres is '500 mL' with a space between the number and unit, 'm' in lowercase and 'L' in uppercase.

5. (b) Water and clear glass

Water and clear glass would be grouped together based on transparency as both are transparent materials through which objects can be seen clearly.

6. (c) Salt is insoluble in oil

Salt is insoluble in oil, which makes oil unsuitable for dissolving salt. Salt dissolves only in water and water-based liquids, not in oils and fats.

7. (a) They are made of different materials with different properties

A tennis ball bounces higher than a cricket ball because they are made of different materials with different properties. Tennis balls are made of rubber which is more elastic and bouncy, while cricket balls are made of cork and leather which are harder and less bouncy.

8. (b) Tumblers can be made of glass, plastic, or metal

This is the best example showing that an object can be made from different materials. Different materials can be used to make objects with similar functions, depending on specific requirements like transparency, weight, or durability.

9. (b) Study patterns and select appropriate materials

The main reason for classifying materials is to study and observe patterns in their properties, which helps in selecting appropriate materials for specific purposes. Classification makes it easier to understand and use materials effectively.

10. (d) 1000 L

1 cubic metre (m³) is equal to 1000 litres. The SI unit for volume is cubic metre.

SECTION B - Answers to Short Answer Questions

11.

Material: Any substance that is used to create an object is referred to as material. Materials are types of matter used in the creation or making of objects.

Example: Wood is a material used to make furniture, doors, and various other objects.

Matter: Anything that occupies space and has mass is called matter. Matter is a more general term that includes everything that exists physically.

Example: Water is matter because it occupies space and has mass.

Key Difference: All materials are matter, but not all matter is used as materials. For instance, air is matter but is not typically called a material unless being used to create something (like in inflatable objects).

12.

We see lustre only on freshly cut surfaces of metals because:

1. **Effect of Air and Moisture:** When metals are exposed to air and moisture for a long time, chemical reactions occur on their surfaces. This forms a layer of oxides or other compounds that makes the surface dull or non-lustrous.

2. **Fresh Surfaces:** When we cut or polish a metal, we expose a fresh surface that has not yet reacted with air and moisture. This fresh surface shows the natural lustrous appearance of the metal.

Example: Iron nails become rusty (brown and dull) when exposed to air and moisture, but if we file or cut them, the fresh surface underneath appears shiny and lustrous.

13.

No, a cricket ball cannot be used to play tennis effectively because:

1. **Different Materials and Properties:** Cricket balls are made of cork core covered with leather, making them hard and heavy. Tennis balls are made of rubber covered with felt, making them lighter and more bouncy.

2. **Bounce Characteristics:** Tennis requires a ball that bounces high and quickly, which cricket balls do not provide. Cricket balls have low bounce compared to tennis balls.

3. **Safety Concerns:** Cricket balls are very hard and heavy. Using them for tennis could cause serious injuries as players stand much closer to each other in tennis and use lighter rackets.

4. **Damage to Equipment:** The hard cricket ball would likely damage the tennis racket which is designed for lighter, softer balls.

Conclusion: Different materials are used for making balls for various sports because each sport has specific requirements for bounce, weight, hardness, and safety.

14.

For Food Waste Container:

Material Choice: Plastic with a tight-fitting lid

Reasons:

1. Plastic is waterproof and can contain liquids from food waste
2. It is easy to clean and does not absorb odors permanently
3. It is lightweight and easy to carry to disposal areas
4. It is durable and can withstand daily use

For Broken Glass Container:

Material Choice: Thick cardboard or hard plastic

Reasons:

1. The material should be strong enough to hold sharp glass pieces safely
2. It should be opaque so broken glass is not visible (avoiding risk of cuts)
3. Thick cardboard or hard plastic won't be easily punctured by glass shards
4. It should be disposable or easy to clean after use

Important Properties to Consider: Durability, water resistance (for food waste), strength (for broken glass), ease of cleaning, and safety.

SECTION C - Answers to Short Answer Questions

15.

Activity: Testing Solubility of Materials in Water

Aim: To demonstrate that some materials are soluble in water while others are insoluble.

Materials Required: Five glass tumblers, water, sugar, salt, chalk powder, sand, sawdust, spoon

Procedure:

1. Take five glass tumblers and label them as A, B, C, D, and E
2. Fill each tumbler about two-thirds with water
3. Add one teaspoonful of sugar to tumbler A
4. Add one teaspoonful of salt to tumbler B
5. Add one teaspoonful of chalk powder to tumbler C
6. Add one teaspoonful of sand to tumbler D
7. Add one teaspoonful of sawdust to tumbler E
8. Stir the contents of each tumbler well with a spoon
9. Wait for 5 minutes and observe what happens in each tumbler
10. Record your observations

Observations:

Tumbler A (Sugar): Sugar completely disappears in water after stirring - SOLUBLE

Tumbler B (Salt): Salt completely disappears in water after stirring - SOLUBLE

Tumbler C (Chalk powder): Chalk powder does not disappear, settles at bottom - INSOLUBLE

Tumbler D (Sand): Sand does not disappear, settles at bottom - INSOLUBLE

Tumbler E (Sawdust): Sawdust floats on water, does not disappear - INSOLUBLE

Conclusion:

1. Materials like sugar and salt are **soluble** in water - they dissolve completely and disappear
2. Materials like chalk powder, sand, and sawdust are **insoluble** in water - they do not dissolve

and remain visible

3. Solubility is an important property that helps us classify materials

4. This property is useful in various applications like cooking, medicine, and industrial processes

16.

Objects are grouped or classified in daily life to make organization easier, save time, and improve efficiency. Here are three practical examples:

1. In the Kitchen:

Method: Similar utensils and ingredients are placed together

Examples:

- All plates are kept in one cabinet
- All spices are kept in one container or shelf
- Pulses and grains are kept in separate containers in one section
- All glasses and cups are kept together

Benefits:

- Easy to find items quickly while cooking
- Prevents confusion and saves time
- Maintains cleanliness and hygiene
- Makes kitchen organization efficient

2. In a Grocery Shop:

Method: Items are arranged based on their type and use

Examples:

- All spices in one corner
- Pulses and grains in another section
- Oil and ghee kept separately
- Biscuits and snacks in one area
- Soaps and detergents in a different section

Benefits:

- Customers can easily locate what they need
- Shopkeeper can manage inventory efficiently
- Prevents mixing of food and non-food items
- Facilitates quick billing and restocking

3. In a Wardrobe/Closet:

Method: Clothes are organized based on type and season

Examples:

- Formal clothes kept separate from casual wear
- Winter clothes stored together
- Undergarments and socks in separate drawers
- Accessories like belts and ties in specific compartments

Benefits:

- Easy to choose appropriate clothing for occasions
- Saves time in morning preparations
- Prevents clothes from getting wrinkled or damaged
- Makes it easy to identify what needs cleaning or replacement

General Importance of Classification in Daily Life:

1. **Time Management:** Reduces time spent searching for items
2. **Space Optimization:** Makes better use of available space
3. **Hygiene and Safety:** Prevents contamination and accidents
4. **Economic Efficiency:** Reduces waste and helps in inventory management
5. **Psychological Benefit:** Organized spaces reduce stress and improve productivity

17.

Given Information:

- Material X: Rigid, does not change shape easily, soluble in water
- Material Y: Changes shape easily when pressed, insoluble in water

Identification:

Material X could be: Sugar or Salt (any crystalline soluble substance)

Material Y could be: Clay, Sponge, or Rubber (any soft, water-insoluble substance)

Detailed Analysis and Justification:

For Material X:

Property 1 - Rigid (Hard):

- Sugar crystals are hard and maintain their shape under normal pressure
- Salt crystals are also rigid and difficult to compress
- When in crystalline form, these substances don't easily change shape

Property 2 - Soluble in Water:

- Sugar dissolves completely in water
- Salt also dissolves completely in water
- Both disappear when mixed and stirred in water

Conclusion: Material X is likely **sugar or salt** because both are hard/rigid in solid form and completely soluble in water

For Material Y:

Property 1 - Easily Changes Shape:

- Sponge can be easily compressed and changes shape
- Clay can be molded and shaped easily
- Rubber (like an eraser) can be compressed

Property 2 - Insoluble in Water:

- Sponge does not dissolve in water (though it absorbs water)
- Clay remains as particles and settles, doesn't dissolve
- Rubber does not dissolve in water

Conclusion: Material Y is likely **sponge, clay, or rubber** because these materials are soft (can be compressed) and do not dissolve in water

Best Possible Combination:

Material X = **Sugar** and Material Y = **Sponge**

This combination best fits the description because:

1. Sugar crystals are rigid (hard) and salt is rigid
2. Sugar is completely soluble in water
3. Sponge is soft and easily compressed
4. Sponge is insoluble in water
5. Both materials are common and easy to test

SECTION D - Answer to Long Answer Question

18.

The properties of materials play a crucial role in determining their uses in everyday life. Each material has specific characteristics that make it suitable for particular applications. Here are five detailed examples:

Example 1: Glass for Windows

Property: Transparency

Application: Making windows in homes and buildings

Reasoning:

- Glass allows light to pass through completely, enabling natural lighting
- People can see outside through glass windows
- It provides protection from weather while maintaining visibility
- If glass were opaque, rooms would be dark and require artificial lighting

Additional Properties: Hard (durable), easy to clean, weather-resistant

Example 2: Metal for Cooking Utensils

Properties: Heat resistance, hardness, non-flammable

Application: Making cooking pots, pans, and other cookware

Reasoning:

- Metals like iron, steel, and aluminium can withstand high temperatures without melting or catching fire
- They are hard and durable, lasting for years
- Metals conduct heat efficiently, cooking food evenly
- Paper or plastic would burn or melt if used for cooking

Why Not Other Materials: Wood would burn, plastic would melt, glass might break with thermal shock

Example 3: Rubber for Tyres

Properties: Flexibility, elasticity, grip, durability

Application: Making tyres for vehicles and bicycles

Reasoning:

- Rubber is flexible and can absorb shocks from uneven roads
- Its elastic property allows tyres to return to original shape after compression
- Rubber provides excellent grip on roads, ensuring safety
- It is durable and can withstand various weather conditions

Why Not Other Materials: Hard materials like metal or wood would not absorb shocks and would provide a very uncomfortable ride

Example 4: Cotton for Clothes

Properties: Soft, breathable, absorbs moisture, comfortable

Application: Making clothes, especially for summer wear

Reasoning:

- Cotton is soft against skin, providing comfort
- It absorbs sweat, keeping the body dry
- It allows air to pass through, keeping the body cool
- It can be easily washed and maintained

Why Not Other Materials: Plastic would not be breathable and would cause discomfort, metal would be too heavy and rigid

Example 5: Plastic for Water Bottles

Properties: Lightweight, transparent/translucent, waterproof, durable, non-toxic

Application: Making water bottles and storage containers

Reasoning:

- Plastic is lightweight, making bottles easy to carry
- Transparent plastic allows checking water level without opening
- It is waterproof and does not leak
- Modern food-grade plastics are safe and non-toxic
- It is more durable than paper and lighter than glass

Why Not Other Materials: Paper would absorb water and become weak, metal would be heavier and often opaque

Importance of Selecting the Right Material:

1. Safety:

- Using the wrong material can cause accidents and injuries
- Example: Using flammable materials near heat sources

2. Functionality:

- Objects work properly only when made from appropriate materials
- Example: A water container made of cloth would leak

3. Durability and Longevity:

- Right materials ensure objects last longer
- Example: Metal tools are more durable than wooden ones

4. Efficiency:

- Appropriate materials make tasks easier and more efficient
- Example: Using lightweight materials for aircraft reduces fuel consumption

5. Cost-Effectiveness:

- Selecting suitable materials saves money in the long run
- Example: Using durable materials reduces replacement costs

6. Environmental Impact:

- Choosing right materials can reduce environmental damage
- Example: Using recyclable materials instead of non-recyclable ones

7. Comfort and Convenience:

- Appropriate materials enhance user experience
- Example: Using soft materials for furniture provides comfort

Conclusion:

The relationship between properties of materials and their applications is fundamental to our daily life. Understanding these properties helps us:

- Make informed decisions about material selection
- Use resources efficiently and sustainably
- Ensure safety and functionality of objects
- Innovate and create new solutions to problems
- Appreciate the science behind everyday objects

This knowledge is not just academic but has practical applications in every aspect of our lives, from the clothes we wear to the buildings we live in, and from the vehicles we travel in to the utensils we cook with.

SECTION E - Answers to Case Study Based Questions

19.

(a) Ravi's container made from **clear plastic** would be most suitable for checking water level without opening it.

Reason: Clear plastic is transparent, which means objects can be seen clearly through it. This allows us to see the water level inside the container without opening it. We can visually check how much water is remaining just by looking at the container from outside.

(b) Classification of materials:

Transparent: Clear plastic (objects can be seen clearly)

Translucent: Frosted plastic (objects can be seen but not clearly)

Opaque: Cardboard, Metal (objects cannot be seen at all)

(c) Cardboard would be unsuitable for storing water for a long time because:

1. Cardboard is porous and has tiny gaps in its structure
2. It absorbs water, becoming weak and soggy
3. Prolonged contact with water causes cardboard to disintegrate and lose its shape
4. Water would eventually leak through the cardboard
5. Wet cardboard becomes a breeding ground for bacteria and mold

For long-term water storage, we need materials that are waterproof and do not absorb water, such as plastic, glass, or metal.

(d) For a bathroom window, I would prefer **frosted plastic or frosted glass**.

Reasons:

1. **Privacy:** Frosted materials are translucent - they allow light to pass through but people cannot be seen clearly from outside, providing privacy
2. **Natural Lighting:** Unlike opaque materials, translucent materials still allow natural light to enter the bathroom, reducing the need for artificial lighting during daytime

3. **Water Resistance:** Both frosted plastic and glass are waterproof and can withstand the humid bathroom environment
4. **Easy Maintenance:** These materials are easy to clean and maintain
5. **Aesthetics:** Provides a balance between functionality and appearance

I would NOT choose transparent materials (clear glass) because they don't provide privacy, nor would I choose opaque materials (wood, metal) because they completely block light.

20.

(a) Cooking pots are made of metal rather than plastic or wood because:

Two Important Reasons:

Reason 1 - Heat Resistance: Metals can withstand very high temperatures without melting, burning, or releasing harmful chemicals. Plastic would melt at cooking temperatures, and wood would catch fire or burn.

Reason 2 - Heat Conduction: Metals conduct heat efficiently and evenly, which is essential for proper cooking. They transfer heat from the stove to the food effectively. Plastic and wood are poor heat conductors and would not cook food properly.

Additional Benefits: Metals are durable, easy to clean, and do not absorb food odors or flavors.

(b) Properties that make glass suitable for drinking glasses:

1. **Transparency:** Being transparent, we can see the liquid inside and check its color and cleanliness
2. **Non-toxic:** Glass does not react with beverages and does not release harmful chemicals
3. **Easy to Clean:** Glass has a smooth surface that is easy to wash and sterilize
4. **Odorless and Tasteless:** Glass does not absorb odors or flavors from previous drinks
5. **Hardness:** Glass is hard and maintains its shape, making it durable for daily use

(c) Wood is preferred for cutting boards over metal because:

1. **Knife-Friendly:** Wood is softer than metal, so it doesn't dull or damage knife blades as quickly as metal would
2. **Natural Antibacterial Properties:** Wood has natural properties that help reduce bacterial growth
3. **Surface Protection:** Wood is gentler on food items being cut compared to hard metal surfaces
4. **Stability:** Wooden cutting boards don't slip easily during use due to their weight and texture
5. **Noise Reduction:** Cutting on wood is quieter than cutting on metal

Note: Metal cutting boards would quickly make knives blunt and create loud noise while cutting.

(d) The principle behind choosing materials for different kitchen items is: **"The material should be selected based on its properties and the function the item needs to perform."**

Detailed Explanation:

Principle Components:

1. Match Properties to Purpose:

- Each kitchen item has a specific function
- The material chosen must have properties that enable that function

- Example: Cooking requires heat resistance, so metals are used

2. Safety Considerations:

- Materials must be safe for food contact
- Should not release harmful chemicals
- Must withstand kitchen conditions (heat, water, cleaning agents)

3. Practical Requirements:

- Durability for long-term use
- Ease of cleaning and maintenance
- Cost-effectiveness
- Availability

4. User Convenience:

- Lightweight items for easy handling
- Comfortable to use
- Aesthetically pleasing

Application of Principle:

- **Cooking Pots:** Need heat resistance → Use metal
- **Drinking Glasses:** Need transparency and safety → Use glass
- **Cutting Boards:** Need to protect knives → Use wood
- **Storage Containers:** Need to see contents → Use transparent plastic
- **Spoons and Spatulas:** Need heat resistance and flexibility → Use metal or heat-resistant plastic

This principle of matching material properties with functional requirements is applied not just in kitchens but in all areas of life, from construction to clothing, from transportation to technology.

Made with ♥ by Sumeet Sahu

Unique Study Point, Amitesh Nagar, Indore, MP

Website: uniquestudyonline.com