

Chapter - 4

Sorting Materials and Groups

Multiple Choice Questions:

1. An iron nail is kept in each of the following liquids. In which case would it lose its shine and appear dull?

- (a) Mustard oil**
- (b) Soft drink**
- (c) Coconut oil**
- (d) Kerosene**

Solution:

(b): Soft drink

Soft drinks contain water, carbon dioxide and acid due to which iron nail is corroded and appears dull.

2. Pick one material from the following which is completely soluble in water.

- (a) Chalk powder**
- (b) Tea leaves**
- (c) Glucose**
- (d) Sawdust**

Solution:

(c): Glucose

Glucose is one substance which is completely soluble in water.

3. You are provided with the following materials

- (i) magnifying glass**
- (ii) mirror**
- (iii) stainless steel plate**
- (iv) glass tumbler.**

Which of the above materials will you identify as transparent?

- (a) (i) and (ii)**
- (b) (i) and (iii)**
- (c) (i) and (iv)**
- (d) (iii) and (iv)**

Solution:

(c): Magnifying glass and glass tumbler

Magnifying glass and glass tumbler are transparent materials.

4. Boojho found a bag containing the following materials.

- (i) Mirror**
- (ii) Paper stained with oil**

(iii) Magnet

(iv) Glass spectacles

Help Boojho in finding out the material(s) which is/are opaque.

Solution:

(a) (i) only

(b) (iv) only

(c) (i) and (iii)

(d) (ii) and (iv)

Solution:

(c): Mirror and Magnet

Mirror is opaque since it is painted on one side.

Magnet is opaque since it is made up of iron metal.

5. While doing an activity in class, the teacher asked Paheli to handover a translucent material. Which among the following materials will Paheli pick and give her teacher?

(a) Glass tumbler

(b) Mirror

(c) Muslin cloth

(d) Aluminium foil

Solution:

(c): Muslin cloth

Muslin cloth is translucent since we can see through it but not clearly.

Glass tumbler is transparent.

Mirror and aluminum foil are opaque.

6. Which pair of substances among the following would float in a tumbler half filled with water?

(a) Cotton thread, thermocol

(b) Feather, plastic ball

(c) Pin, oil drops

(d) Rubber band, coin

Solution:

(b): Feather, plastic ball

Feather and plastic ball will float on water since they are lighter than water.

7. Which among the following are commonly used for making a safety pin?

(a) Wood and glass

(b) Plastic and glass

(c) Leather and plastic

(d) Steel and plastic

Solution:

(d): Steel and plastic

Steel can be moulded to get sharp points and plastic is used to seal the edges. Hence steel and plastic are used for making safety pins.

8. Which of the following materials is not lustrous?

(a) Gold

(b) Silver

(c) Wood

(d) Diamond

Solution:

(c): Wood

Wood is not lustrous since it is not a crystalline substance.

9. Which of the following statements is not true?

(a) Materials are grouped for convenience.

(b) Materials are grouped to study their properties.

(c) Materials are grouped for fun.

(d) Materials are grouped according to their uses.

Solution:

(c): Materials are grouped for fun.

Materials are usually grouped to study their properties and according to their uses in systematic manner. Hence materials are not grouped for fun.

10. Find the odd one out from the following.

(a) Tawa

(b) Spade

(c) Pressure cooker

(d) Eraser

Solution:

(d): Eraser

Eraser is made up of rubber while tawa, pressure cooker and spade are made up of metal.

11. Which type of the following materials is used for making the front glass (wind screen) of a car?

(a) Transparent

(b) Translucent

(c) Opaque

(d) All the above

Solution:

(a): Transparent

Transparent glass is used for making the front glass of a car so that everything can be seen clearly.

Very Short Answer Questions:

12. It was Paheli's birthday. Her grandmother gave her two gifts made of metals, one old dull silver spoon and a pair of lustrous gold earrings. She was surprised to see the difference in the appearance of the two metals. Can you explain the reason for this difference?

Solution:

Paheli could see the difference in the appearance of two metals since, silver reacts with some gases like hydrogen sulphide and loses its shine in moist air. Gold is a noble metal which does not react with the gases present in the atmosphere.

13. Mixtures of red chilli powder in water, butter in water, petrol in water, and honey in water were given to Radha, Sudha, Sofia and Raveena, respectively. Whose mixture is in solution form?

Solution:

Raveena will get the mixture in solution form. Since, honey and water are soluble with each other hence a solution will be formed when honey is mixed with water.

14. On a bright sunny day, Shikha was playing hide and seek with her brother. She hid herself behind a glass door. Do you think her brother will be able to locate her? If yes, why? If no, why not?

Solution:

Yes, Shikha's brother could locate her since the glass door which she hid is transparent in nature.

15. Take a small cotton ball and place it in a tumbler/ bowl filled with water. Observe it for atleast 10 minutes. Will it float or sink in water and why?

Solution:

Initially the cotton ball floats on water since it is lighter. Slowly it absorbs water and becomes heavy and later sinks in water.

16. Which among the following materials would you identify as soft materials and why? Ice, rubber band, leaf, eraser, pencil, pearl, a piece of wooden board, cooked

rice, pulses and fresh chapati.

Solution:

Leaf, rubber band, cooked rice, eraser and fresh chapati are soft materials because they can be scratched or compressed easily.

17. You are provided with the following materials – turmeric, honey, mustard oil, water, glucose, rice flour, groundnut oil.

Make any three pairs of substances where one substance is soluble in the other and any three pairs of substances where one substance remains insoluble in the other substances.

Solution:

Soluble pairs

(i) Honey – water

(ii) Mustard oil – groundnut oil

(iii) Glucose – water

Insoluble pairs

(i) Mustard oil – water

(ii) Turmeric – water

(iii) Rice flour – water

18. During summer holidays, a group of children collected a lump of salt, green grass, broken glass piece, a small thermocol box, pen, iron nail, glass marbles, hair, naphthalene ball, a piece of sugar candy (mishri) and tried to group them on the basis of properties given in table 4.1 below. Help them in filling the table.

Name of the material	Appearance (Hard/Soft)	Transparency (Transparent/Translucent/Opaque)	Floats/Sinks in water	Soluble/Insoluble in water

Solution:

Name of the material	Appearance (Hard/Soft)	Transparency (Transparent/Translucent/Opaque)	Floats/Sinks in water	Soluble/Insoluble in water
Lump of salt	Hard	Opaque	Sinks	Soluble

Green grass	Soft	Opaque	Floats	Insoluble
Broken glass piece	Hard	Transparent	Sinks	Insoluble
Thermocol box	Soft	Opaque	Floats	Insoluble
Pen	Hard	Opaque	Floats	Insoluble
Iron nail	Hard	Opaque	Sinks	Insoluble
Glass marbles	Hard	Transparent	Sinks	Insoluble
Hair	Hard	Opaque	Floats	Insoluble
Naphthalene ball	Hard	Opaque	Floats	Insoluble
A piece of sugar candy	Hard	Opaque	Sinks	Soluble

19. Arrange the jumbled words to arrive at the appropriate names of materials and also write two uses of each.

(a) milaunuim

(b) tcaslpi

(c) soekrnee

(d) gavnier

Solution:

The arranged word are:

(a) Aluminium – It can be used to wrap food in the foil, in making aircraft, etc.

(b) Plastic – It can be used as buckets/pencil box, etc.

(c) Kerosene – It can be used as fuel, solvent, etc.

(d) Vinegar – It can be used as preservative, food ingredients, etc.

20. Match the objects given in column I with the materials given in column II.

<u>Column I</u>	<u>Column II</u>
(a) Surgical instruments	(i) Plastic
(b) Newspaper	(ii) Animal product

(c) Electrical switches	(iii) Steel
(d) Wool	(iv) Plant product

Solution:

The correct match is:

<u>Column I</u>	<u>Column II</u>
(a) Surgical instruments	(iii) Steel
(b) Newspaper	(iv) Plant product
(c) Electrical switches	(i) Plastic
(d) Wool	(ii) Animal product

21. Pick five objects from the word box given as Fig. 4.1 which are opaque and would sink in water.

O	S	T	P	L	E
A	T	L	E	E	R
C	O	I	N	A	A
O	N	K	C	F	S
A	E	E	I	W	E
L	L	Y	L	R	R

Solution:

Objects that are opaque and would sink in water are:

- (i) Coin
- (ii) Stone
- (iii) Key
- (iv) Pencil
- (v) Eraser

Long Answer Questions:

22. Chalk, iron nail, wood, aluminium, candle, cotton usually look different from each other. Give some properties by which we can prove that these materials are different.

Solution:

Few properties by which we can prove that these materials are different:

Chalk – Hard, rough, non-lustrous

Iron nail – Hard, smooth, lustrous

Wood – Hard, rough, non-lustrous

Aluminium – Hard, smooth, lustrous

Candle – Hard, smooth, non-lustrous

Cotton – Soft, smooth, non-lustrous

23. Why do you think oxygen dissolved in water is important for the survival of aquatic animals and plants?

Solution:

Aquatic animals and plants use oxygen which is dissolved in water for breathing and photosynthesis.

24. Differentiate among opaque, translucent and transparent materials, giving one example of each.

Solution:

Those substances through which objects cannot be seen are termed as opaque substances.

Example: wood, stone.

Those substances through which objects can be seen but not clearly are termed as translucent substances. Example: frosted glass, oiled paper.

Those substances through which objects can be seen clearly are termed as transparent substances. Example: crystal clear water, glass.

25. Sugar, salt, mustard oil, sand, sawdust, honey, chalk powder, petals of flower, soil, copper sulphate crystals, glucose, wheat flour are some substances given to Paheli. She wants to know whether these substances are soluble in water or not. Help her in identifying soluble and insoluble substances in water.

Solution:

Soluble in water:

Sugar

Salt

Honey

Copper sulphate crystals

Glucose

Insoluble in water:

Mustard oil

Sand

Sawdust

Chalk powder

Petals of flower

Soil

Wheat flour