### Chapter 4 - Sorting Materials into Groups –By MUKUT BOSE. (NPSSBS RAJARHAT)

### Sorting Materials Into Groups

##### **Q1. State True/False**

i.             Opaque are a materials through which you are not able to see. True

ii.            Insoluble substances mix in water. False

iii.          Soft materials can be compressed or scratched. True

iv.          Brick is opaque, while butter paper is translucent. True

v.           Salt does not dissolve in water. False

vi.          All gases are non–lustrous. True

vii.        Oil mixes with water. False

viii.       Stone settles down in water. True

ix.          Vinegar does not mix with water. False

x.           Iron is harder than sponge. True

xi.          Air is transparent. True

xii.        Glycerin is not soluble in water. False

xiii.       Diamonds, gems and pearls are lustrous. True

xiv.      Honey floats on the surface of water. False

xv.        Alcohol is immiscible with water. False

xvi.      Diamond is the hardest natural occurring substance. True.

##### **Q2. Fill in the blanks.**

i.             Oxygen gas is soluble in water.

ii.            Grouping things together with similar properties is called Sorting/Classification.

iii.          Mercury is the metal that exists in liquid state.

iv.          Potassium/ Sodium is a soft metal that can be cut with a knife.

v.           Iodine is a non-metal that has lustre.

vi.          A piece of stone is a hard material.

vii.        All gases are not soluble/miscible in water.

viii.       Dried leaf floats on the surface of water.

ix.          Oily patch on a piece of paper is translucent.

x.           Water is a transparent liquid.

xi.          Materials that have lustre are usually called as metal.

xii.        Materials are grouped on the basis of similarities or dissimilarities in their properties.

xiii.       Based upon transparency, materials can be grouped as opaque, transparent and translucent.

xiv.      A substance which is used in making different objects is called material.

##### **Q3. Name a substance through which light can pass through partially but one cannot see through it clearly.**

Ans. Translucent

##### **Q4. Name a liquid which is lustrous.**

Ans. Amongst the liquids, mercury is the lustrous.

##### **Q5. Name two non-metals which are lustrous.**

Ans. Graphite and Iodine crystals

##### **Q6. What happens when we add mustard oil to a glass full of water?**

Ans. The mustard oil floats on water and forms a separate layer.

##### **Q7. Name some materials that float on water.**

Ans. wax, plastic ball, wood, leaf, ice, thermocol, oil

##### **Q8. Name some materials that sink in water.**

Ans. stone, key, screw, iron nail, coin

##### **Q9. Name any two things which can be made out of wood.**

Ans. Table and Chair

##### **Q10. Write the object from the following which shine: brick, earthen pitcher, glass bowl, plastic table, steel spoon, cotton bed sheet, newspaper.**

Ans. glass bowl and steel spoon

##### **Q11. Make a list of items that floats on kerosene.**

Ans. paper, thermocol, thin plastic sheet

##### **Q12. Name one lustrous material.**

Ans. Aluminium

##### **Q13. Which material is generally used for making pens?**

Ans. Plastic or Metal

##### **Q14. Write any two objects made up of opaque materials.**

Ans. wooden doors and steel plate

##### **Q15. What is common between oil and water?**

Ans. Both are in liquid state.

##### **Q16. Write two things made from leather.**

Ans. belt and hand-bag

##### **Q17. Write name of any three metals.**

Ans. Iron, Aluminium and Copper

##### **Q18. Name few things made up of plastic.**

Ans. cups, plates, toys, buckets, baskets

##### **Q19. Why water is considered as a universal solvent?**

Ans. Water is capable of dissolving most of the substances in it. That is why it is known as an universal solvent.

##### **Q20. Why does a coin sink in water?**

Ans. Object with higher density than water will sink. A coin is made up of metal. Density of metal is higher than water. That’s why coin sinks in water.

##### **Q21. Why are cooking utensils made of metal but their handles of plastic or wood?**

Ans. Cooking utensils have wood or plastic handles to prevent us from burning our hands when utensils are hot.

##### **Q22. Why oil does not dissolve in water?**

Ans. Oil does not dissolve in water because the space between the molecules of water is not occupied by the oil.

##### **Q23. Why some material loses their shine and appears dull?**

Ans. Due to the action of air and moisture on them, a dull layer of some other compound appears on them. Thus material loses their shine and appears dull.

##### **Q24. We can group things in more than one way. Explain.**

Ans.  We can group things in more than one way because one object can have more than one property.

##### **Q25. Oxygen and carbon dioxide are slightly soluble in water. What is the importance of each of these gases in nature?**

Ans. Oxygen and carbon dioxide gas dissolved in water are needed for the survival of animals and plants that live in water.

##### **Q26. Define density. How is it related to floating and sinking in water?**

Ans. The degree of compactness of a substance is called density. The object which is denser than water will sink whereas object which is less dense than water will float.

##### **Q27. Why does sugar dissolve in water?**

Ans. Water molecules surround the tiny sugar cubes and hit them. This weakens the attractive forces of the surrounding molecules and pulls them into the solution.

##### **Q28. Why in departmental stores all brands of shampoos and soaps are kept together while all pulses and kitchen items are kept at one place?**

Ans.  This is done, so that customer can easily pick the things needed and compare values of different brands available.

##### **Q29. What is classification?**

Ans. The process of grouping things together on the bases of some similar characteristics is called classification.

##### **Q30. What are miscible liquids?**

Ans. The liquids which dissolve in water are called miscible liquids. Example: vinegar, alcohol, milk, etc.

##### **Q31. What are immiscible liquids?**

Ans. The liquids which do not dissolve in water are called immiscible liquids. Example: kerosene oil, coconut oil, petrol, diesel, ether etc.

##### **Q32. What is diffusion?**

Ans. Diffusion is the tendency of molecules to spread out in order to occupy an available space.

##### **Q33. Why do we need to group materials?**

Ans. We group materials to study their properties and also to observe any patterns in them. Grouping of material saves our time, energy and makes our work easier.

##### **Q34. How does a chemist give us the required medicine quickly?**

Ans. All related medicines are kept together on a proper place after sorting. This sorting of medicines in a chemist shop makes it easy for the chemist to give us the required medicine quickly.

##### **Q35. What are lustrous materials?**

Ans. The materials which have natural shine on their surface or the shine appears when they are freshly cut or sand papered are called lustrous materials. Generally most of the metals are lustrous.

**Q36. Classify the following things as transparent, opaque and translucent things. marble, computer, plastic sheet, wood, water, frosted glass, butter paper, air, glass door**

|  |  |  |
| --- | --- | --- |
| Transparent | Opaque | Translucent |
| water | marble | frosted glass |
| air | computer | butter paper |
| glass door | plastic sheet |  |
|  | wood |  |
|  | iron sheet |  |
|  | brick |  |

##### **Q37. Differentiate between naturally occurring materials and man-made materials?**

Ans.

|  |  |
| --- | --- |
| **Naturally occurring materials** | **Man-made materials** |
| 1. The materials which occur in nature are called naturally occurring materials. | 1. The materials which do not occur in nature but are made by man by combining two or more materials are called man-made materials. |
| 2. Examples – wood, cotton, stone soil etc. | 2. Examples – plastic, glass, detergent, steel etc. |

##### **Q38. Define soluble substance, insoluble substance and solubility.**

Ans. The substance which dissolves in water is called soluble substance. Example – milk, ink, sugar, common salt etc.

The substance which do not dissolves in water is called insoluble substance. Example – sand, stone, mud, glass etc.

The property of substance due to which it dissolves in water is called solubility.

##### **Q39. Find odd one out from the following:**

      a.   stone, bed, cup , boy, wooden box

      b.   mango, cherry, rose, grapes, apple

      c.   gold, soil, aluminum, silver, platinum, iron

      d.   sugar, salt, ink, lemon juice, milk, wood

Ans.

      a.   boy (all others are non-living)

      b.   rose (all others are fruit)

      c.   soil (all others are metals)

      d.   wood (all others are soluble in water)

##### **Q40. Think and write few bases on which we can group objects.**

Ans. We can group object on the following bases:

                        i.        Material used such as wood, metal, plastic etc.

 ii.        Material is soft or hard.

                      iii.        Material is soluble or insoluble in water.

##### **Q41. Why do we need to classify things around us?**

Ans. We need to classify things around us for the following reasons:

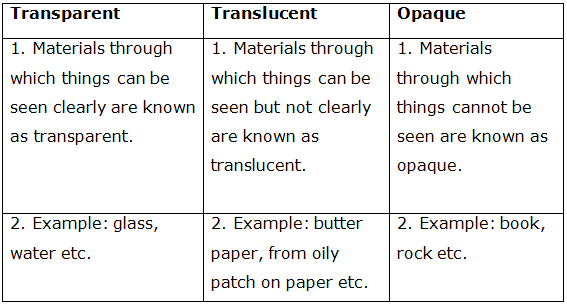
      i.     Organize them better help us to locate them easily.

      ii.    To study their properties.

      iii.  To decide which material to choose for a specific purpose.

##### **Q42. Differentiate between transparent, translucent and opaque.**

Ans.



##### **Q43. Write properties of materials.**

Ans. Properties of materials are:

a. Appearance

b. Hardness

c. Solubility

d. Density

e. Transparency

**Q44. Why don’t we use paper or cloth for making tumbler?**

Ans. We cannot use paper or cloth for making tumbler because

                          i.        Paper or cloth is not hard enough to hold water.

                        ii.        Cloth has tiny pores through which liquid will oozes out.

**Q45. Write the similarities between gold, silver and copper.**

Ans. Similarities between gold, silver and copper are:

                       i.        They all are metals.         ii.        They all have lustre.

                      iii.        They are hard.

**Q46. Name some materials made up of paper.**

Ans. books, notebooks, newspapers, calendars etc.

##### **Q47. Write the materials the following objects made of.**

Ans.



 Q49. How grouping of items help the shopkeeper?

Ans. Proper grouping of items helps the shopkeeper in the following ways:

                         i.        He can locate the items easily and in lesser time.

                        ii.        He can easily find out which item is about to finish and he can order them on time for his customers.

Q50. With help of an experiment prove that water is transparent.

Ans. Take a glass tumbler half filled with water. Drop a coin in the glass. Place the glass undisturbed for some time in a place where there is enough light. Now see the coin from the top of the glass. You can see the coin immersed in water clearly. This shows that water is a transparent liquid.

**Q51. Write an experiment to show that sugar and salt is soluble in water whereas solid like sand and chalk are insoluble in water.**

Ans. Take 4 beakers half filled with water. Add 1 teaspoonful of sugar to the first beaker, salt to second, sand to the third beaker and chalk powder to the fourth beaker. Stir content of each beaker. We will see that sugar and salt dissolve completely whereas sand and chalk powder do not dissolve.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*