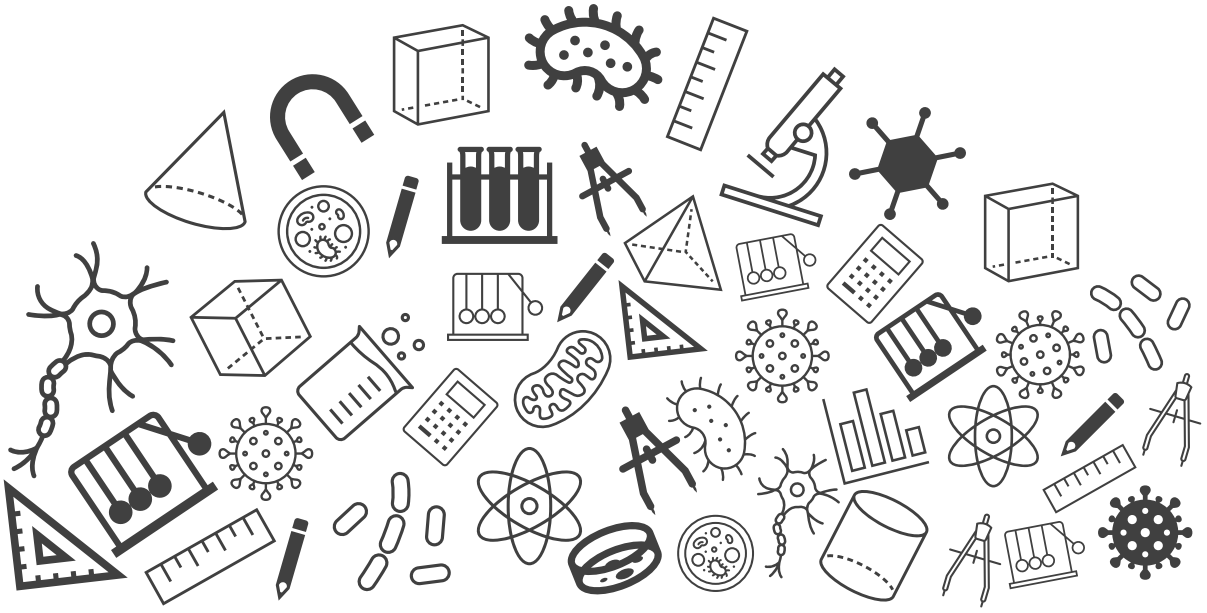
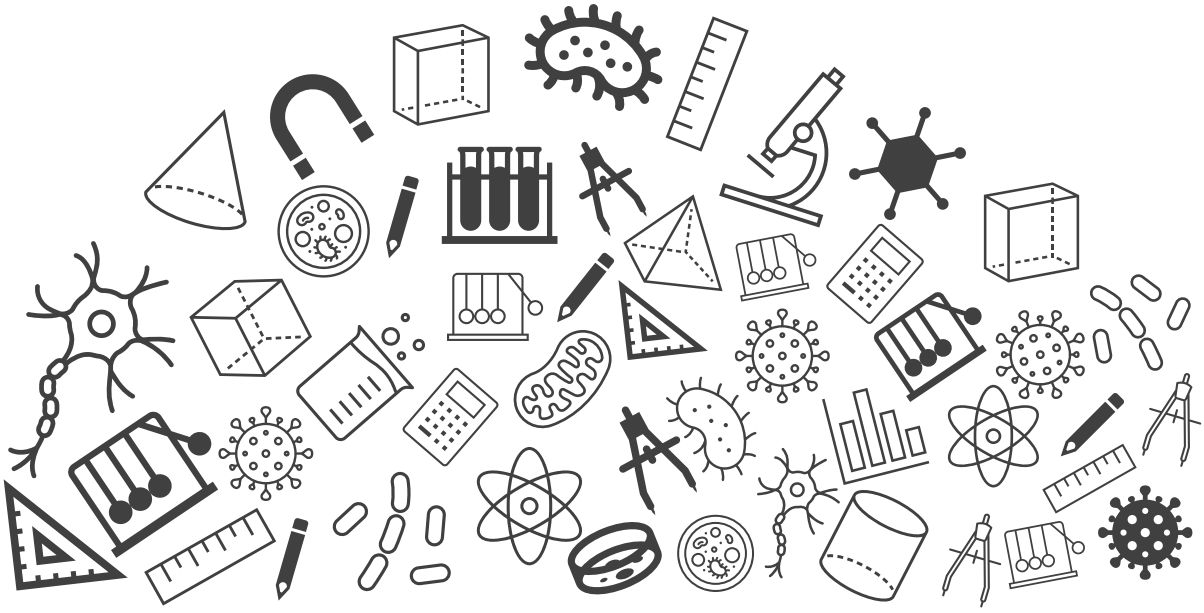
Grade 09
Science Chapter Notes



Is Matter Around Us Pure?



Is Matter around Us Pure?

Topic : Exam Important Questions

1. Which of the following has the smallest particle size?

   - **A.** Salt water
   - **B.** Milk
   - **C.** Charcoal in water
   - **D.** Smoke

   [1 Mark]
   Solution:
   The order of particle size of mixtures is as follows:
   Suspension > Colloid > Solution

   Among all the given options, salt water is a solution, milk and smoke are colloids and charcoal in water is a suspension.

   Therefore, arranging the options according to their particle size:
   Charcoal in water > Milk and smoke > Salt water

   Hence, the correct answer is option A. [1 Mark]

2. Smoke and fog both are aerosols. In what way are they different?

   [1 Mark]

   Solution:

   In smoke and fog, the dispersion medium is same, i.e., air but they differ in dispersed phase. In smoke, solid carbon particles are dispersed in the air while in fog, liquid water particles are dispersed in air.
   [1 Mark]

3. State three differences between suspensions and colloids.

[3 Marks]

Solution:

Suspensions	Colloids
• Particles are visible to our naked eye. [0.5 Marks]	• Particles are not visible to our naked eye. But they can be seen under a microscope. [0.5 Marks]
• Constituent particles settle down when left undisturbed for some time. [0.5 Marks]	• Constituent particles do not settle down even when left undisturbed for a long time. [0.5 Marks]
• Size of particles is greater than 1000 nm. [0.5 Marks]	• Size of particles ranges from 1-1000 nm. [0.5 Marks]

4. Define the terms dispersed phase and dispersion medium with examples.

[2 Marks]

Solution:

Dispersed phase:

- The component of a colloid that is dispersed in the dispersion medium.

[0.5 Marks]

Dispersion medium:

- The component in which the dispersed phase is suspended is known as the dispersion medium.

[0.5 Marks]

Example:

1. Smoke: An aerosol contains solid(smoke particles) as dispersed phase and gas(air) as dispersion medium.
2. Cheese: A gel contains liquid(water) as dispersed phase and solid(jelly particles) as dispersion medium.

[1 Mark]

5. Steel is an example of a/an _____.

A. compound

B. heterogeneous mixture

C. element

D. homogeneous mixture

[1 Mark]

Solution:

Steel is an alloy of iron (metal) and carbon (non-metal).

Alloys are the homogeneous mixtures composed of two or more elements, in which at least one of the elements is a metal.

Correct answer is option D.

[1 Mark]

6. To make a saturated solution, 15 g of sodium chloride is dissolved in 85 g of water at 293 K. Calculate the concentration in terms of mass by mass percentage at this temperature.

A. 15%

B. 24%

C. 20%

D. 21%

[1 Mark]

Solution:

Mass of the solute (sodium chloride) = 15 g

Mass of the solvent (water) = 85 g

Mass of the solution = Mass of the solute + Mass of the solvent

= 15 + 85 = 100 g

Concentration (mass by mass percentage) = $\frac{\text{mass of solute}}{\text{mass of solution}} \times 100$

= $\frac{15}{100} \times 100$ = 15%

Correct answer is option A.

[1 Mark]

7. Peeyush has prepared a solution which contains 30 g of sugar dissolved in 300 g of water. What will be the concentration of the solution in terms of mass by mass percentage prepared by him?

[2 Marks]

Solution:

Given,
Mass of solute = 30 g
Mass of solvent = 300 g
So, Mass of solution = Mass of solute + Mass of solvent
= 30 + 300 = 330 g

Mass by mass percentage of a solution $= \frac{\text{mass of solute}}{\text{mass of solution}} \times 100$

[1 Mark]

On putting values in formula, we get
= (30/330)*100
= 9.09 %

Hence, Peeyush has prepared a solution of concentration 9.09% by mass.

[1 Mark]

8. Why is it not possible to distinguish particles of a solute from the solvent in the solution?

[1 Mark]

Solution:

A solution is homogeneous. The solute and solvent particles are very small. They cannot be distinguished even under a microscope.

[1 Mark]