

## CASE STUDY QUESTIONS

### CLASS IX

### SCIENCE

#### CHAPTER 2 – IS MATTER AROUND US PURE

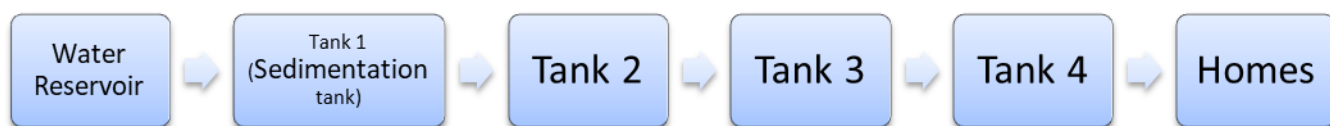
1. *A solution which can dissolve more of the solute at a given temperature is called unsaturated solution. However, a solution which cannot dissolve any more of the solute is called saturated solution. The amount of solute that can dissolve in 100 g of the solvent at a given temperature is called solubility of the substance.*

Use this information to answer the following questions:

- i) A 30 % solution of X at 298 K is marked as saturated solution of X. What is the solubility of X at 298 K?
- ii) What name is given to the solution which contains more solute than that required to prepare saturated solution at that temperature?
- iii) Which of the following method is not suitable for making an unsaturated solution a saturated one?
  - a) The solution is made to reach saturation point.
  - b) By lowering the temperature of the solution
  - c) By adding more solvent
  - c) By adding more solute

2. *In urban communities, the water supplies are drawn generally, from surface sources like rivers, lakes etc. Before supplying water to homes, the water works make this surface water free from suspended impurities as well*

as bacteria. Partial flow sheet for water treatment plant is given below.  
Study carefully and answer the question given:



Select the correct options:

i) What is the name of Tank 2?

- a) Loading tank    b) Chlorination tank    c) Dissolution tank    d) Filtration tank

ii) In which tank chlorine is added?

- a) Tank 2                  b) Tank 4                  c) Tank 3                  d) Tank 1

iii) What is the purpose of adding chlorine?

- a) To modify the taste of water                                  b) To decolourise it  
c) To kill bacteria and pathogens                                  d) To make filtration fast

iv) Which tank brings out the filtration process?

- a) Tank 1                  b) Tank 2                  c) Tank 3                  d) Tank 4

3. Sudha tested the solubility of four salts, X, Y, Z and T at different temperatures and collected the following data.

Salt dissolved	Temperature				
	290 K	313 K	323 K	343 K	353 K
	<b>Solubility ( g/ 100 g water)</b>				
X	22	34	40	93	109
Y	43	43	46	50	50
Z	27	30	34	37	40
T	25	38	42	54	64

Answer the following questions from the table:

- a) Which salt has the highest and lowest solubility at 323 K?
- b) A student prepared a saturated solution of X at 323 K and then added 25 g water to it. What mass of X must be added to again make the solution saturated?
- c) The solubility of which salt is least affected by increase in temperature?