

SOLUTIONS

CLASSIC

Molarity

Date:

Molarity

1. The volume of a solution, which is prepared by dissolving "a" g of salt Z in water, is "V" ml. What is the molarity of the solution in terms of "a" and "V"? ($Z=100\text{g/mol}$)
2. What will be molarity of 250 ml solution, which is prepared by using 4 g NaOH? ($\text{NaOH}=40\text{ g/mol}$)
3. What is the molarity of 500 ml, 800 ml and 1250 ml solutions of $\text{Mg}(\text{NO}_3)_2$ if each solution contains 41 g of $\text{Mg}(\text{NO}_3)_2$? ($\text{Mg}(\text{NO}_3)_2 = 164\text{ g/mol}$)
4. How many grams of KOH should be used to prepare 500 ml of 0.4 M solution? ($\text{KOH} = 56\text{g/mol}$)
5. What is the volume of 0.1 M solution which is prepared by dissolving 80 g of $\text{Fe}_2(\text{SO}_4)_3$ in water? ($\text{Fe}_2(\text{SO}_4)_3=400\text{ g/mol}$)

Dilution

6. How many milliliters of 2 M stock solution of the salt should be used to prepare 4 L of 0.5M solution of X?
7. What will be the new molarity of 200 ml of 6 M NaCl solution, if 600 ml of water is added into the solution at constant temperature?
8. The volume of Na_2SO_4 solution, which is "V" ml and 0.01 M, is decreased to 1/10 of its initial value by evaporating some amount of water from the solution. What is the molarity of new solution?

Mixing Solution

9. There are three solutions of NaCl, which are 0.2 M 300 ml, 0.5 M 200 ml and 0.8 M 500 ml. If these three solutions are mixed what will be new molarity of NaCl?
10. I. 0.4 M 400 ml II. 0.5 M 700 ml
III. 0.8 M 500 ml
The solutions given above are mixed and some amount of water is added into the new solution. If the molarity of the new solution is 0.3 M, what is the volume of water that is added into new solution?

Ion Concentration

11. Write the dissolution reactions of $\text{K}_2\text{CO}_3(\text{s})$, $\text{Mg}(\text{ClO}_3)_2(\text{s})$, $\text{Fe}_3(\text{PO}_4)_2(\text{s})$, $\text{NH}_4\text{Cl}(\text{s})$, $\text{Al}_2(\text{SO}_4)_3(\text{s})$, $\text{NaCl}(\text{s})$, $\text{C}_6\text{H}_{12}\text{O}_6(\text{s})$, $\text{CH}_4(\text{g})$ and $\text{I}_2(\text{s})$ in water?
12. By using equal moles of KOH, H_2SO_4 , FeCl_3 and $\text{C}_6\text{H}_{12}\text{O}_6$ equal volumes of solutions are prepared. What is the decreasing order of these solutions according to total concentrations of ions?
13. What are the molarities of Fe^{+3} and SO_4^{-2} ions in 100 ml solution which is prepared by dissolving 0.1 mol $\text{Fe}_2(\text{SO}_4)_3$ in water?
14. If the molarity of NO_3^- ion is 0.4 M in 500 ml $\text{Ca}(\text{NO}_3)_2$ solution; how many grams of $\text{Ca}(\text{NO}_3)_2$ dissolved in the solution? ($\text{Ca}(\text{NO}_3)_2=164\text{ g/mol}$)
15. What is the mass of the salt in 1L $\text{Mg}(\text{NO}_3)_2$ solution which contains 0.04 M NO_3^- ion?
16. How many milliliters of 0.1 M $\text{Mg}(\text{NO}_3)_2$ solutions should be added into 100 ml 0.4 M $\text{Al}(\text{NO}_3)_3$ solution in order to make molarity of NO_3^- ion 0.4 in the new solution?
17. When "x" ml water is added into 100 ml 0.4 M H_2SO_4 solution, the molarity of H^+ ions is 0.2 M, what is the value of "x"?
18. 2 liters of the solution which is prepared by dissolving 0.1 mol of $\text{Ca}(\text{NO}_3)_2$ and 0.2 mol of NaNO_3 . What are the molarities of ions of Ca^{+2} , Na^+ and NO_3^- in the solution?
19. If equal volumes of 0.3 M MgCl_2 and solution and 0.4 M NaCl solution are mixed what will be the molarity of the Cl^- ions in the new solution?
20. If the sum of the concentration of ions is 10^{-3} M in the solution, which includes 6.5 g of FeCl_3 , what is the volume of the solution? ($\text{FeCl}_3=162.5\text{ g/mol}$)