



# GUIDANCE TUTORIALS



Stepping towards Success

First believe that we can.

## Science Atoms and Molecules SA II

### Answer the following questions:

1. State the law of Definite Proportion. 1
2. State the law of conservation of mass. 1
3. Which postulate of Dalton's atomic theory is the result of the law of conservation of mass? 1
4. Which postulate of Dalton's atomic theory can explain the law of Definite Proportion? 1
5. What is a mole? 1
6. What is Avogadro constant? 1
7. Give example of any tetra atomic element. 1
8. How many atoms are present in  $\text{PO}_4^{3-}$  1.
9. Write the chemical formula for Ammonium sulphate and Magnesium Hydroxide 1
10. Write the chemical formula for Sodium Carbonate and Aluminium Nitrate. 1
11. Calculate the formula unit mass of a compound,  $\text{Na}_2\text{S}_2\text{O}_3$ . (Atomic mass Na=23u, S=32u, O=16u) 2
12. Calculate the formula unit mass of a compound,  $\text{MgSO}_4$ . (Atomic mass Mg=24u, S=32u, O=16u) 2
13. Calculate number of moles in 3.6 g of  $\text{H}_2\text{O}$  (Atomic mass H=1u, O=16u) 2
14. Calculate number of moles in 8.8 g of  $\text{CO}_2$  (Atomic mass C=12u, O=16u) 2
15. What is the mass of 4 moles of aluminium atoms (Atomic mass of aluminium = 27u)? 3
16. Calculate the number of molecules of sulphur ( $\text{S}_8$ ) present in 512 g of solid sulphur. Given, atomic mass of S=32 u; Avogadro number ( $N_0$ ) =  $6.022 \times 10^{23}$  per mole. 3
17. What is the mass of 10 moles of Sodium Sulphite  $\text{Na}_2\text{SO}_3$  (Atomic mass of Na=23u, S=32u, O= 16u)? 3
18. Calculate the number of aluminium ions present in 5.1g of aluminium oxide. Given, atomic mass of Al=27 u, O=16u; 3
19. List six postulates of Dalton's atomic theory. 3
20. A 0.24 g sample of compound of oxygen and boron was found by analysis to contain 0.096 g of boron and 0.144 g of oxygen. Calculate the percentage composition of the compound by weight. 3