

## CHEMICAL CALCULATIONS

STD: XI  
CODE: AX

MARKS: 75  
TIME : 1.30 Hr

### PART- I

**CHOOSE THE CORRECT ANSWER:**

**(15X1=15)**

1. 64 g of SO<sub>2</sub> contains  
(A) 6.023x10<sup>23</sup> molecules (b) 3.013x10<sup>23</sup> molecules  
(c) 100 molecules (d) 6.023x10<sup>23</sup> atoms.
2. Mass in gram of chlorine atoms is  
(a)  $\frac{36.5}{6.02 \times 10^{23}}$  (b)  $\frac{6.02 \times 10^{23}}{36.5}$  (c)  $\frac{35.5}{6.02 \times 10^{23}}$  (d)  $\frac{35.5}{6.02 \times 10^{23}}$
3. The empirical formula of a compound is CH; its molar mass is 26 amu.  
The molecular formula of the compound is  
(a) C<sub>2</sub>H<sub>2</sub> (b) C<sub>3</sub>H<sub>3</sub> (c) C<sub>6</sub>H<sub>6</sub> (d) C<sub>3</sub>H<sub>8</sub>
4. The percentage of 'S' in a compound is 19.97 . The relative no of moles of Sulphur will be  
(a) 20% (b) 33% (c) 0.31 (d) 0.55
5. Which of the following reactions represents reduction?  
(a) Zn → 2e<sup>-</sup> + Zn<sup>2+</sup> (b) Fe<sup>3+</sup> + e<sup>-</sup> → Fe<sup>2+</sup>  
(c) Cl → e<sup>-</sup> + Cl<sup>+</sup> (d) Ca → 2e<sup>-</sup> + Ca<sup>2+</sup>
6. The oxidation state of oxygen in BaO<sub>2</sub> is  
(a) -2 (b) +1 (c) -1 (d) 0
7. MnO<sub>2</sub> + HCl → MnCl<sub>2</sub> + Cl<sub>2</sub> + 2H<sub>2</sub>O the reducing agent in the above reaction is  
(a) MnO<sub>2</sub> (b) MnCl<sub>2</sub> (c) Cl<sub>2</sub> (d) HCl
8. The units of molarity will be  
(a) mol cm<sup>-3</sup> (b) mol dm<sup>-3</sup> (c) mol kg<sup>-1</sup> (d) no units
9. The mole fraction of solute in a solution is 0.75 the mole fraction of solvent will be  
(a) 0.50 (b) 0.65 (c) 0.35 (d) 0.25
10. When 4.9 g of H<sub>2</sub>SO<sub>4</sub> is dissolved in 1000 cm<sup>3</sup> of the solution its normality is  
(a) 0.1N (b) 0.2N (c) 0.01N (d) 0.05N
11. Equivalent mass of anhydrous oxalic acid is  
(a) 63 (b) 278 (c) 45 (d) 120
12. The volume of one mole of any gas at STP will be  
(a) 2.24x10<sup>-2</sup>m<sup>3</sup> (b) 22.4x10<sup>-2</sup>m<sup>3</sup> (c) 2.24x10<sup>-2</sup>cm<sup>3</sup> (d) 6.02x10<sup>23</sup>m<sup>3</sup>
13. The mass of Decimolar solution of NaOH is  
(a) 40g (b) 4g (c) 0.4 g (d) 0.04 g
14. The oxidation no of 'Cr' in K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> is  
(a) +7 (b) +3 (c) +6 (d) -6
15. Standard temperature corresponds to  
(a) 303k (b) 273k (c) 300k (d) 400k

### PARTS II

**ANSWER ALL THE QUESTIONS:**

**(10X3=30)**

16. Define formula weight of a substance.
17. Calculate the formula weight of C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>
18. Calculate the no of moles of 76g C<sub>4</sub>H<sub>10</sub>
19. How many molecules are in 43g of NH<sub>3</sub>?
20. Define empirical formula of a substance.
21. Write relation between empirical formula and molecular formula.
22. What is stoichiometry?
23. Define oxidation as per electronic concept.
24. Calculate the oxidation no of underlined elements in the following  
(a) CO<sub>2</sub> (b) Pb<sub>3</sub>O<sub>4</sub> PO<sub>4</sub><sup>3-</sup>
25. Define normality of a solution.

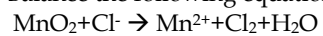
### PART-III

**ANSWER ALL THE QUESTIONS:**

**(4X5=20)**

26. What is the simplest formula of the compound which has the following percentage?  
Composition. Carbon 80%, hydrogen 20%
27. Write rules for the calculation of hydrogen and oxygen in compounds.

28. Balance the following equation by oxidation number method.



29. How is equivalent mass of a substance determined by oxidation number method?

**PART-IV**

**ANSWER ALL THE QUESTIONS:**

**(1X10=10)**

30. Describe the determination of molar mass of volatile substance by **VICTOR-MEYER'S** method.