SHIKSHA CLASSES

Subject : Chemistry | **Question Paper** | **Total Marks :25**

Class : XI | **2 : Introduction to Analytical Chemistry** | **Time : 1 Hour**

SECTION A

Q.1 : Choose the correct option : 4

i) In Avogadro's constant 6.022 × 1023 mol-1, the number of significant figures is …….

a) 3 b) 4

c) 5 d) 6

ii) By decomposition of 25 g of CaCO3, the amount of CaO produced will be …….

a) 2.8 g b) 8.4 g

c) 14.0 g d) 28.0 g

iii) The percentage of oxygen in NaOH is .....

a) 40% b) 60%

c) 8% d) 10%

iv) 0.9 glucose ($C_6H_{12}O_6$) is present in 1 L of solution. Find molarity.

a) 5 M b) 50 M

c) 0.005 M d) 0.5 M

Q.2 : Answer the following : 2

i) How is absolute error calculated?

ii) Define Analytical Chemistry.

SECTION B

: Answer the following : (ANY 3) 6

Q.3 : Express the following quantities in exponential terms :

i) 0.0003498 ii) 235.4678

iii) 70000.0 iv) 1569.00

Q.4 : Why there is a need of rounding off figures during calculation?

Q.5 : Subtract 5.8×10^{-3} from 3.5×10^{-2} and express result in scientific notation.

Q.6 : Explain the terms Empirical formula and Molecular formula.

Q.7 : The red colour of blood is due to a compound called "haemoglobin". H contains 0.335 % of iron. Four atoms of iron are present in one molecule of haemoglobin. What is its molecular weight?

SECTION C

: Answer the following : (ANY 3) 9

Q.8 : Explain the following terms :

i) Mole fraction ii) Molarity

iii) Molality

Q.9 : Find out the molar masses of the following compounds :

i) copper sulphate crystal ($CuSO_4.5H_2O$)

ii) Sodium carbonate, decahydrate ($Na_2CO_3.10H_2O$)

iii) Mohr's salt [$FeSO_4 (NH_4)_2SO_4.6H_2O$]

(At. mass : Cu = 63.5, S = 32, O = 16, H = 1, Na = 23, C = 12, Fe = 56, N = 14)

Q.10 : Explain the following terms with respect to precise measurement :

i) Absolute deviation

ii) Mean absolute deviation

iii) Relative deviation

Q.11 : A compound with molar mass 159 was found to contain 39.62% copper and 20.13% sulphur. Suggest molecular formula for the compound. (Atomic masses : Cu = 63, S = 32, O = 16)

Q.12 : **Perform the following operations :**

i) $3.971 \times 10^7 + 1.98 \times 10^4$

ii) $4.11 \times 10^{-3} + 8.1 \times 10^{-4}$

iii) $2.12 \times 10^6 - 3.5 \times 10^5$

SECTION D

: **Answer the following : (ANY 1)** 4

Q.13 : A 1.000 mL sample of acetone, a common solvent used as a point remover, was placed in a small bottle whose mass was known to be 38.0015g. The following values were obtained when the acetone-filled bottle was weighed : 38.7798g, 38.7795g and accuracy of these measurement if the actual mass of the acetone was 0.7791g?

Q.14 : A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine by mass. Its molar mass is 98.96 g mol-1. What is its empirical formula and molecular formula? Atomic mass of hydrogen, carbon and chlorine are 1.008, 12.000 and 35.4530, respectively.

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