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XI-SCI : Chemistry  
Introduction to Analytical Chemistry,

DATE:

TIME: 1 hour 30  
minutes

MARKS: 25

SEAT NO:

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**Note:-**

1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

**Section A**

**Q.1 Select and write the correct answer.**

**(4)**

1. Which one of the following property of matter is NOT quantitative in nature?  
A) Mass            B) Length  
C) Color            D) Volume
2. The molecular mass of an organic compound is  $78 \text{ g mol}^{-1}$ . Its empirical formula is CH. The molecular formula is  
A)  $\text{C}_6\text{H}_6$             B)  $\text{C}_4\text{H}_4$   
C)  $\text{C}_2\text{H}_2$             D)  $\text{C}_2\text{H}_4$
3. The number of significant figures in  $1.50 \times 10^4$  is  
A) 2            B) 3  
C) 4            D) 6
4. The % of  $\text{H}_2\text{O}$  in  $\text{Fe}(\text{CNS})_3 \cdot 3\text{H}_2\text{O}$  is  
A) 10            B) 56  
C) 34            D) 19

**Q.2 Answer the following.**

**(3)**

1. What is the application of chemical analysis in agriculture?
2. Find out the molar masses of Mohr's salt  $[\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}]$   
(Atomic mass : Cu = 63.5; S = 32; O = 16; H = 1; Na = 23 ; C = 12; Fe = 56 ; N = 14)
3. Round off 0.00254 m to two significant figures.

**Section B**

**Attempt any Four**

- Q.3 Write a note on qualitative chemical analysis. **(2)**
- Q.4 What is semi - microanalysis? What are the apparatus used in the semi - micro qualitative analysis? **(2)**
- Q.5 Comment on the accuracy of value obtained from instrument having smaller least count and larger least count. **(2)**
- Q.6 Distinguish between accuracy and precision. **(2)**
- Q.7 What is the rules to be followed while performing calculations with measured quantities? **(2)**

Q.8 Perform each of the following calculations. Round off your answer to two digits. (2)

(a)  $\frac{1}{3.40 \times 10^{24}}$

(b)  $\frac{33}{9.00 \times 10^{-4}}$

**Section C**  
**Attempt any Two**

Q.9 Write a note on scientific notation. (3)

Q.10 Explain in brief about the qualitative analysis of organic and inorganic compound. (3)

Q.11 The red color of blood is due to a compound called "hemoglobin". It contains 0.335 % of iron. (3)  
Four atoms of iron are present in one molecule of hemoglobin. What is its molecular weight?

**Section D**  
**Attempt any One**

Q.12 What do you mean by significant figures? State the rules for deciding significant figures. (4)

Q.13 Find the percentage composition of constituent green vitriol crystals ( $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ ). Also find (4)  
out the mass of iron and water of crystallization in 4.54 kg of the crystals.