

Continuous Assessment Test (CAT- I) November- 2022

Programme : **MIS**  
 Course Title : **Engineering Chemistry**  
 Faculty : **Dr. P. Sangeetha**  
 Time : **90 mins**

Semester : **Fall Sem (2022-23)**  
 Code : **CHY1701**  
 Slot : **B1**  
 Class Nbr : **CH2022231700933**  
 Max. Marks : **50**

Answer ALL the Questions ( 5 X 10 = 50 Marks)

Q.No.	Question Description	Marks
1.	Explain in brief the principle and the procedure for the determination of dissolved oxygen by Winkler's method.	10
2. a.	In an EDTA titration, 50 ml of standard hard (1mg $\text{CaCO}_3$ in 1ml) water sample consumed 28 ml of EDTA, 50 ml of hard water sample consumed 38 ml of EDTA and 50ml of sample hard water (after boiling, cooling and filtering) required 8 ml EDTA. Calculate the temporary and permanent hardness of the given water sample.	5
b.	Calculate the quantity of lime (84% pure) and soda (92% pure) required for softening of 20,000 L of water containing the following salts per L: $\text{Ca}(\text{HCO}_3)_2 = 41.5$ ppm; $\text{Mg}(\text{HCO}_3)_2 = 36.5$ ppm; $\text{CaSO}_4 = 34$ ppm; $\text{MgSO}_4 = 31$ ppm; $\text{CaCl}_2 = 27$ ppm; and $\text{NaCl} = 10$ ppm. Given molecular weight: $\text{Ca}(\text{HCO}_3)_2 = 162$ ; $\text{Mg}(\text{HCO}_3)_2 = 146$ ; $\text{CaSO}_4 = 136$ ; $\text{MgSO}_4 = 120$ ; $\text{CaCl}_2 = 111$ ; $\text{NaCl} = 58.5$ .	5
3.	Explain the modern techniques (i) LOC and (ii) Ion selective electrodes for analysis of water.	10
4.	Describe ion exchange method for softening of hard water. Mention its advantages and disadvantages.	10
5.	Describe the various steps involved in the treatment of water for municipal supply.	10