

**VIT**Vellore Institute of Technology
(Deemed to be University under section 3 of U.G.C. Act, 1956)School of Advanced Science
Continuous Assessment Test – I
Winter Semester 2019-20**Course Name & Code:** Engineering Chemistry & CHY1701**Duration:** 90 min**Slot:** E1+TE1**Max. Marks:** 50**Class Number:** 3337, 2800, 2736, 3624, 2751, 2775, 2786, 3347, 3619, 4024, 3621**Faculty Name:** Dr. Akhila Maheswari M., Dr. Asharani I.V, Dr. Ethiraj K R, Dr. Ganesh Babu S., Dr. Mohana Roopan S., Dr. Padala Kishor, Dr. P. Rajasekar, Dr. Sovan Roy, Dr. Sumathi S., Dr. Susanta Kumar Bhunia, Dr. Vijayaraghavan R.

S. No.	Answer All the Questions (10 x 5 = 50 Marks)	CO
1.	Briefly discuss the Winkler's method for the determination of dissolved oxygen (DO) in water with relevant equations.	1
2.	A standard hard water sample is prepared by dissolving 1.2 g of CaCO_3 in HCl and the solution is made up to 1000 mL with deionized water. 50 mL of the prepared solution requires 25 mL of EDTA solution for titration using EBT indicator. 50 mL of sample hard water requires 15 mL of EDTA solution and after boiling and filtering 50 mL of the water requires 10 mL of EDTA. Calculate the total, carbonate and non-carbonate hardness of the water sample.	1
3.	Discuss the troubles caused due to the use of hard water in a steam boiler.	1
4.	Write a short note on caustic embrittlement and its prevention method.	1
5.	Explain the disadvantages of scale and sludge formation in a boiler. How can they be removed?	1
6.	Write a short note on the hot lime-soda process, and its advantages over the cold lime-soda process.	1
7.	Discuss any two internal conditioning methods used to treat the hard water.	1
8.	Why does chlorine act as an active disinfectant at a particular pH? Explain the significance of breakpoint chlorination.	1
9.	Explain the ion-exchange process for softening the hard water with a neat diagram.	1
10.	Write a short note on Reverse Osmosis (RO). List out its advantages and disadvantages.	1



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