VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF ADVANCED SCIENCES

B.Tech.– Winter Semester 2018-19

Continuous Assessment Test–I, January 2019

Course Code : CHY1701
Course name : Engineering Chemistry
Semester : Winter 2018-2019

Duration : 90 min.
Max. Marks : 50
Slot : G2+TG2

Engineering Chemistry **Course Outcomes (CO)** for Module-1 & Module-2	
Upon the completion of the course, students shall have ability to:	**Code**
Understand the principle and working of lime-soda process, zeolites, ion-exchange resins, reverse osmosis, electrodialysis etc	[U]
Apply the knowledge of water treatment processes and solving the problems in engineering field	[A]

Answer ALL the Questions

		CO	Marks
1.	Outline the principle for the estimation of water hardness using EDTA and elaborate its procedure in detail. A standard hard water (SHW) sample contains 0.50 mg of $CaCO_3$ per mL. 50 mL of SHW consumed 45 mL of EDTA using EBT indicator at end point. 25 mL of sample water consumed 15 mL of EDTA, and after boiling and filtering, 25 mL of this boiled water sample consumed 4 mL of EDTA. Calculate the total, permanent and temporary hardness of water.	[A]	10
2.	Dissolved gases like oxygen and CO_2 in water are not good for boiler. Give explanations for the statement and discuss the methods by which dissolve gases like oxygen and CO_2 can be removed from water. Discuss Winkler's method for the determination of DO in water.	[A]	10
3.	Discuss in detail the demineralization of water by ion exchange process with their advantages and disadvantages.	[U]	10
4 (a)	Discuss the significance of breakpoint chlorination with a neat-diagram.	[A]	5
(b)	Distinguish hot lime soda and cold lime soda process.	[U]	5
5 (a)	Distinguish candle based filtration and membrane filtration for water treatment.	[A]	5
(b)	Discuss the desalinization of water by reverse osmosis method with appropriate diagram.	[U]	5