National Institute Of Technology Srinagar (J&K)

ASSIGNMENT-II (SPRING-2020)

Water Chemistry

Course: B. Tech.
Subject: **Engineering Chemistry**
Semester: 2nd
Max. Marks: 20
Submission Date: up to 21th May, 2020

Branches: CHE, MEC, MME, CIV.
Subject Code: (CYL-100)
Session: Spring-2020
Issue Date: 15th May, 2020

CO.2 : To learn the basic concepts of water chemistry and softening methods.

Note: Attempt all the questions. Each question carries equal marks.

Q. No.	Questions	Marks	CO
Q. 1.	What is *hardness* and *alkalinity* of water due to ? How is hardness of water determined by *EDTA-method.*	5	2
Q. 2.	What do you mean by *sterlization of water* ? Describe the *muncipal treatment*, coagulation and chlorination, of water for drinking purposes. What is *Break Point* Chlorination ?	5	2
Q. 3.	List down various methods of softening of water. Describe *lime-soda and ion exchange process* in detail.	5	2
Q. 4.	**a)** How many kg of *lime* (90% pure) and *soda* (85% pure) are required for softening of 10,000 liters of water, containing the following analysis data: $Ca(HCO_3)_2$ = 80 mg/l, $Mg(HCO_3)_2$ = 70 mg/l, $CaSO_4$ = 130 mg/l, $MgSO_4$ = 120 mg/l, $MgCl_2$ = 120 mg/l Mol. Wt.: $Ca(HCO_3)_2$ = 162, $Mg(HCO_3)_2$ = 146, $CaSO_4$ = 136, $MgSO_4$ = 120, $MgCl_2$ = 95 **b)** Calculate the *temporary* and *permanent hardness* and the *alkalinity* of the water sample having above given analysis data.	5	2