Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 2133505 Date: 23/12/2014

Subject Name: Chemistry for Environmental Science & Technology

Time:02:30pm – 05:00pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** A water supply project has to supply water to a town having population of 50000. Design a suitable sedimentation tank with the following data: **07**

i) Per capita demand = 150 lits/day
ii) Peak demand = 1.5 * Average demand
iii) Velocity of flow = 30 cm/min
iv) Detention period = 4 hours

(b) What is the Environmental Significance of pH? Explain the method for estimation of pH with neat sketch. **07**

Q.2 **(a)** List out the different types of common impurities found in water in detail. **07**

(b) Define discrete particles. Explain the theory and purpose of sedimentation. **07**

OR

(b) Define disinfection. Explain the different methods used for disinfection of water. **07**

Q.3 **(a)** Define environment? Describe the four major layers of the atmosphere with suitable diagram. **07**

(b) Explain the process of Bioaccumulation and Biomagnification with suitable example. **07**

OR

Q.3 **(a)** Define chlorination. Explain pre-chlorination and Break point Chlorination. **07**

(b) Explain different tests used for the estimation of residual chlorine in water. **07**

Q.4 **(a)** What do you mean by acid rain? Explain the gas phase conversion of SO_2 to sulfuric acid gas and NO_x to nitric acid gas. **07**

(b) Define Photochemical smog. Explain the phenomena of photochemical smog in detail. **07**

OR

Q.4 **(a)** Define temporary hardness and permanent hardness. Explain zeolite process for the removal permanent hardness from water. **07**

(b) Define turbidity. Explain procedure for the estimation of turbidity in detail. **07**

Q.5 **(a)** Define conductivity? Briefly explain the working principle of conductivity Meter. **07**

(b) Discuss the Winkler test for measurement of dissolved oxygen in a sample of water. **07**

OR

Q.5 **(a)** Explain the method of estimation of Heavy metals in water by AAS with Neat Sketch. **07**

(b) Write a short note on “Green house effect” & “global Warming” **07**

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