Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV EXAMINATION – WINTER 2015

Subject Code: 141302 **Date:30/12/2015**

Subject Name: Environmental Sciences II

Time: 02:30pm to 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)**	Explicate the following terms in detail (i) Tyndall effect (ii) Brownian movement.	**07**
	(b)	Explain classification of alcohols. Enlist the name of the alcohols that are having commercial importance.	**07**
Q.2	**(a)**	Explain modified Winkler Method with Chemical Reaction for DO determination.	**07**
	(b)	The solubility of $PbBr_2$ is 0.012 M at 25 °C. Calculate the Ksp	**07**
		OR	
	(b)	The solubility product Ksp for Calcium Sulphate in water is 1.96×10^{-4}. Determine the equilibrium Ca^{+2} concentration in mg/l for a saturated calcium sulphate solution.	**07**
Q.3	**(a)**	Illustrate the phenomena of common ion effect with example.	**07**
	(b)	Explain the principle of Solvent Extraction	**07**
		OR	
Q.3	**(a)**	Write a note on Osmosis.	**07**
	(b)	Enlist the chemicals required for estimating COD. Give role of the chemicals used for the same.	**07**
Q.4	**(a)**	Write the sources of Acidity in water and wastewater	**07**
	(b)	Give name of commonly used pesticides and explain biological properties of pesticides.	**07**
		OR	
Q.4	**(a)**	Enumerate the difference between BOD and COD.	**07**
	(b)	Describe in brief the methods used for the determination of volatile acids.	**07**
Q.5	**(a)**	10 mL of sample is pipetted directly into a 300-mL BOD bottle. The initial DO of the diluted sample is 9.0 mg/L and its final DO is 2.0 mg/L. The initial DO of the dilution water is also 9.0 mg/L, but the final DO is 8.0 mg/L. The temperature of incubation is 20 °C. If the sample is incubated for 5 days, what is the BOD_5 of the sample?	**07**
	(b)	Explain Aliphatic and Aromatic compounds with examples.	**07**
		OR	
Q.5	**(a)**	Explain the importance of following terms related to BOD determination: Seeding, Nutrients, Dilution Water and Aeration	**07**
	(b)	Explain biological degradation of (i) Detergents (ii) Proteins	**07**

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