Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III Remedial Examination May 2011

Subject code: 131301 Subject Name: Environmental Science - 1

Date: 30-05-2011 **Time: 10.30 am – 01.00 pm**

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)** Give the difference between **06**

(i) Primary Standards and Secondary Standards

(ii) Normal Solution and Molar Solution

(b) Write the uses of following glass wares: **08**

[1] BOD bottle [2]COD flask

[3] volumetric pipette [4] Burette

[5] Measuring flask [6] Desiccators

[7] Dropping [8] BottleReagent Bottle

Q.2 **(a)** Find the P^H of following solutions: **07**

(i) 0.02M H_2SO_4 (ii) 0.02N H_2SO_4

(b) Estimate the bicarbonate ion concentration (in mg/L as HCO_3^-) if the pH of the sample is 10 and carbonate concentration is 160 mg/L (as CO_3^{2-}). **07**

OR

(b) Write the sources of hardness in water. **07**

Q.3 **(a)** Describe the Henry's law with its importance in Environmental Engineering field. **07**

(b) Calculate volume of oxygen required at 25 ^oC and 0.5 atm. Pressure for combustion of 40 gm of methane. **07**

OR

Q.3 **(a)** Write a short note on Standard Methods for water and wastewater analysis. **07**

(b) Give the difference between Demineralized & Distilled water in detail. **07**

Q.4 **(a)** Calculate the amount of powder required in grams /solution required in ml for preparation of following solutions: **14**

I. 2000ml 0.25N $K_2Cr_2O_7$

II. 1500ml 0.01M EDTA

III. 1000ml 0.282N$AgNO_3$

IV. 1000ml 0.25N FAS

V. 1500ml 0.02NHCl

VI. 1500ml 0.02N H_2SO_4

VII. 2000ml 0.01N Na_2CO_3

VIII. 2500ml 0.282N NaCl

OR

Q.4 **(a)** Write the difference between gravimetric analysis and volumetric analysis. **07**

(b) Explain methods for washing of laboratory wares. **07**

Q.5 **(a)** Write the short note on P^H meter. **07**

(b) Write the short note on conductivity meter. **07**

OR

Q.5 **(a)** Explain Generalized Gas Law. **07**

(b) Write a short note on Turbidity meter. **07**

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