Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Semester -III (Environmental Engineering) Examination January- 2010

Subject code: 331302 **Subject Name: Environmental Science**

Date: 01 / 02 / 2010 **Time: 11.00 am – 1.30 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 Calculate the Formula weight and Equivalent weight of the following: **14**
i) $CaCO_3$, ii)NaOH, iii)$KMnO_4$, iv)$MgCO_3$, v)K_2PO_4, vi)$BaSO_4$, vii)$K_2Cr_2O_7$
(Atomic weight: Ca - 40, C - 12, O - 16, Na - 23, H - 1, K - 39, Mn - 55, Mg - 24.3, P - 31, Ba - 137.3, S - 32, Cr - 52)

Q.2

(a) Define Distilled water, Demineralized water and Write about any one method of preparing distilled water. **07**

(b) What is Calibration? Explain the Calibration of Laboratory wares with its Importance. **07**

OR

(b) What is Familiarization? Write the uses of following: i) Conical flask, ii) Volumetric flask, iii)Pipette, iv)pH Meter, v) BOD Incubator, vi) Separating funnel **07**

Q.3

(a) Explain in brief the Expression of results. **07**

(b) Differentiate between Gravimetric Analysis and Volumetric Analysis. **07**

OR

Q.3 (a) State the following Laws: i) Boyle's Law, ii)Charle's Law, iii)Generalized Gas Law, iv)Dalton's Law, v)Henry's Law, vi)Graham's Law, vii)Gay-Lussac's Law **07**

(b) Write the Importance of Quantitave measures in Environmental Engineering field. **07**

Q.4

(a) Explain in brief the pH concept and write about pH measurement with Glass Electrode. **07**

(b) Explain the various types of Hardness in detail. **07**

OR

Q. 4 (a) Define Total Solids, Total Suspended Solids, Total Dissolved Solids and write about applications of Solids data in Environmental Engineering practice. **07**

(b) Enlist the various methods of analysis of Sulfate and Explain Gravimetric Analysis in detail. **07**

Q.5

(a) What are the sources of Oil & Grease in municipal wastewater and what adverse environmental effects can result due to Oil & Grease? **07**

(b) List five requirements that must be complied with to obtain reliable BOD data and write about the use of BOD test in water pollution control. **07**

OR

Q.5 (a) What precautions must be followed in the collection of samples for Dissolved Oxygen analysis and why Fixation of Dissolved Oxygen should be performed? **07**

(b) Explain the Chemical Oxygen Demand analysis of waste water by potassium dichromate. **07**

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