Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering - SEMESTER–I & II • EXAMINATION – WINTER 2013

Subject Code: 310036 **Date: 17-12-2013**

Subject Name: Physical Analytical and Inorganic Chemistry

Time: 2:30 pm - 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make Suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Use of programmable & Communication aids are strictly prohibited.**
5. **Use of only simple calculator is permitted in Mathematics.**
6. **English version is authentic.**

Q.1 Answer any seven out of ten. **14**

1. Give advantages of synthetic detergents over alkali solution.
2. Give the types of electrodes.
3. Define the terms :solute,solvent.
4. Explain the terms: common ion effect, give the condition for precipition.
5. Define: Surface tension & viscosity.
6. Distinguish between catalyst & catalysis
7. Write the two or three important properties of colloidal solution.
8. Define :Normality and Molarity.
9. Define : system and surrounding.
10. Explain Enthalpy.

Q.2 (a) Explain open system and closed system. **03**

OR

(a) Explain Intensive property and Extensive property. **03**

(b) Write types of catalysis. **03**

OR

(b) Discuss Ostwald's Viscometer **03**

(c) Explain Isothermal process and Adiabatic process. **04**

OR

(c) State First Law of thermodynemics and give it's mathematical statement. **04**

(d) Explain:- (i) Dialysis (ii) Electrodialysis **04**

OR

(d) Write characteristics of catalyst. **04**

Q.3 (a) Write Applications of colloids. **03**

OR

(a) Give the name of properties of colloidal solution . **03**

(b) Exothermic reaction & Endothermic reaction. **03**

OR

(b) Findout PH of 0.001M HCl solution. **03**

(c) calculate the heat of formation of ethylene from the following data. **04**

(i) $C_{(s)}+O_{2(g)} \rightarrow CO_{2\,(g)}$ $\Delta H = -98.0$Kcal

(ii) $H_{2(g)} + 1/2O_{2\,(g)} \rightarrow H_2O_{\,(l)}$ $\Delta H = -68.4$K.cal

(iii) $C_2H_{4(g)} + 3O_{2(g)} \rightarrow 2CO_{2(g)} + 2H_2O_{(l)}$ $\Delta H = -337$Kcal

OR

(c) What is Emulsion ?give types of Emulsion. **04**

(d) Lyphobic & Lyophilic solution **04**

		OR	
	(d)	Discuss methods to determine PH of given solution.	**04**
Q.4	(a)	Write the name of methods of preparing colloidal solutions.	**03**
		OR	
	(a)	Write short note on Glass electrode.	**03**
	(b)	Write short note on theories of catalysis.	**04**
		OR	
	(b)	Write the short note on Hess's Law .	**04**
	(c)	Define Rate of reaction and Derive the kinetic eqation for first orde reaction.	**07**
Q.5	(a)	What are Adiabatic and isothermal Changes? Derive equation for adiabatic Expansion of an ideal gas. (pv^y = Constant)	**07**
	(b)	Give different methods of expressing concentration & explain w/w and w/v method.	**07**
	(c)	Short note on Scattering of light.	**03**
	(d)	Write short note on Glass electrode.	**03**

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