Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-I Regular Examination January / February 2011

Subject code: 711605N

Subject Name: Cleaner Production in Chemical Industries

Date: 04 /02 /2011 **Time: 02.30 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.**

Q.1	**(a)**	What is **"Climate Change"?** Mention **various remedial measures** to combat "Climate Change".	**07**
	(b)	"Utilizing combined route" for **production of Formaldehyde** is a good example of **Cleaner Production (C.P.).** This combined route also helps for **"Mitigating Climate Change".** Discuss these statements with relevant Data and Justifications.	**07**
Q.2	**(a)**	Explain the cleaner production concept and procedure.	**07**
	(b)	Give an example of cleaner production in any one industry.	**07**
		OR	
	(b)	Discuss the application of thermodynamics in cleaner production.	**07**
Q.3		Discuss cleaner production in an engineering college in details.	**14**
		OR	
Q.3		One of the Principles of Cleaner Production is – "Optimization of various process parameters in a manufacturing process". Elaborate this statement with **suitable relevant critical discussion** for production of **either "Styrene" or "Vinyl Chloride".**	**14**
Q.4	**(a)**	Discuss in detail applications of "Cleaner Production Principles" with special reference to **liquid effluent waste minimization** for the following industrial products: (i) H-acid & (ii) Paracetamol	**14**
		OR	
Q.4	**(a)**	Discuss in detail applications of "Cleaner Production Principles" with special reference to **liquid effluent waste minimization** for the following industrial products: (i) Diethyl Malonate & (ii) Acrylonitrile	**14**
Q.5	**(a)**	Discuss in detail use of **"Reaction Engineering Principles in Cleaner Production"** for the production of **"Vinyl Acetate".**	**07**
	(b)	How the manufacturing process for the production of **Dodecyl Benzene Sulphonate** (DBS) **can be made** environmentally friendly?	**07**
		OR	
Q.5		Attempt **Any two** of the following:	**14**
	(a)	Discuss good hose keeping in cleaner production.	
	(b)	Discuss energy conservation for cleaner production.	
	(C)	Concept of 3R – Reduce, Recycle and Reuse.	

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