Seat No.:	Enrolment No.

Subject code: 711605N

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

## M. E. - SEMESTER – I • EXAMINATION – WINTER 2012

Date: 10-01-2013

<b>Subject Name: Cleaner Production in Chemical Industries</b>			
Time	: 02.3	0 pm – 05.00 pm Total Marks: 7	<b>70</b>
Instr	uctio	ns:	
	2. M	ttempt all questions. Take suitable assumptions wherever necessary. Egures to the right indicate full marks.	
Q.1		What is Cleaner Production? Discuss benefits of Cleaner Production. Write in brief about major challenges for implementing Cleaner Production in a Chemical Industry.	07 07
Q.2	(a)	Give an overview of "Climate Change and relevant remedial measures to combat Climate Change".	07
	<b>(b)</b>	What is Green Process? Explain importance of Green Processes with relevant example	07
		OR	
	<b>(b)</b>	Illustrate the "Principles of Process Optimization" to achieve Waste Minimization in a plant producing "Vinyl Acetate (VA)" or any other example.	07
Q.3	(a)	How Cleaner Production can be achieved via Energy Conservation in a plant producing "Formaldehyde' or any other Organic Chemical.	07
	<b>(b)</b>	Discuss the implementation of Cleaner Production in a plant manufacturing Dye Intermediate or "H-Acid"  OR	07
Q.3	(a)	What is the importance of Chemical Engineering Unit Operations? Discuss one unit operation in detail which can help create a cleaner product.	07
	<b>(b)</b>	•	07
Q.4	(a)	How Cleaner Production can be achieved by use of "Thermodynamic and Reaction Engineering Principles" in a Plant Producing – "Petrochemicals" or "Styrene"? Illustrate it with the help of suitable data, diagrams and equations.	07
	<b>(b)</b>	What is Good House Keeping? Discuss its benefits  OR	07
Q.4	(a)	and Reaction Engineering Principles"? Illustrate it with the help of suitable example.	07
	<b>(b)</b>	Discuss Cleaner Production methodologies and its steps.	07
Q.5	(a)	*	07
	<b>(b)</b>	Discuss the implementation of Cleaner Production in Pharmaceutical Industry.	07
		OR	

- Q.5 (a) What is the difference between End of Pipe Treatment and Cleaner 07 Production? Compare these techniques with its advantages and disadvantages.
  - (b) Summarize different routes available for the production of **07** "Acrylonitrile". Discuss various merits and demerits of different routes with respect to Cleaner Production (C.P.).

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