

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – WINTER 2012****Subject code: 711605N****Date: 10-01-2013****Subject Name: Cleaner Production in Chemical Industries****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 Cleaner Production? Discuss benefits of Cleaner Production. **07**
(b) Write in brief about major challenges for implementing Cleaner Production in a Chemical Industry. **07**

- Q.2** (a) Give an overview of “Climate Change and relevant remedial measures to combat Climate Change”. **07**
(b) What is Green Process? Explain importance of Green Processes with relevant example **07**

OR

- (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) Discuss the implementation of Cleaner Production in a plant manufacturing Dye Intermediate or “H-Acid” **07**

OR

- 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) Discuss role of cleaner production in sustainable development of chemical industries. **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) What is Good House Keeping? Discuss its benefits.. **07**

OR

- Q.4** (a) How Cleaner Production can be achieved by use of “Thermodynamic and Reaction Engineering Principles”? Illustrate it with the help of suitable example. **07**
(b) Discuss Cleaner Production methodologies and its steps. **07**
Q.5 (a) Discuss the implementation of Cleaner Production in a Textile Industry. **07**
(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 Production? Compare these techniques with its advantages and disadvantages. **07**
- (b) Summarize different routes available for the production of “Acrylonitrile”. Discuss various merits and demerits of different routes with respect to Cleaner Production (C.P.). **07**
