Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**M.E Sem-I Examination January 2010**

## Subject code: 711605

## Subject Name: Cleaner Production in Chemical Industries

**Date: 29 / 01 / 2010** **Time: 12.00 – 2.30 pm**

**Total Marks: 60**

## Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|---|
| **Q.1** | | Discuss in detail the use of thermodynamics and reaction engineering. in cleaner production for styrene production. | **12** |
| **Q.2** | **(a)** | Explain cleaner production (CP) concept | **06** |
| | **(b)** | Write a brief note on energy audit. | **06** |
| | | **OR** | |
| | **(b)** | Write short note on CP for sustainable development. | **06** |
| **Q.3** | | Discuss the environmental friendly process for production of vinyl chloride using the concept of three "R" –recycle, reuse and reduce. | **12** |
| | | **OR** | |
| **Q.3** | **(a)** | Write briefly on "climate change – a burning issue of today." Mentioning various remedial measures to combat climate change. | **06** |
| | **(b)** | Discuss in detail the application of Cleaner Production Principles with special reference minimization of waste water for the production of Diethyl Malonate. | **06** |
| **Q.4** | | Discuss in detail the application of Cleaner Production Principles with special reference to liquid effluent waste minimization for (i) H-acid and (ii) paracetamol. | **12** |
| | | **OR** | |
| **Q.4** | | Discuss Good House keeping in details. | **12** |
| **Q.5** | | Utilizing "Combined Route" for production of Formaldehyde is good example of Cleaner production. This route also helps for mitigating climate change. Discuss the statement with relevant data and justification lighting energy conservation and carbon credit. | **12** |
| | | **OR** | |
| **Q.5** | | Discuss in detail the cleaner production methodology. | **12** |

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