Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2013**

**Subject code: 714006N** **Date: 06-06-2013**

**Subject Name: Cleaner Production in Rubber Industries**

**Time: 10.30 am – 01.00 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** | | Discuss the six steps of cleaner production methodology to implement cleaner production in an industry. | **14** |
| **Q.2** | **(a)** | What do you mean by cleaner production? Explain its benefits. | **07** |
| **Q.2** | **(b)** | What are the major air and water pollutants? Discuss remedies to reduce pollution load. | **07** |
| | | **OR** | |
| **Q.2** | **(b)** | Discuss the applications of material balance and energy balance in cleaner production. | **07** |
| **Q.3** | **(a)** | Describe the different areas where the loss of rubber content is observed. Also write down the formula to calculate the total loss as per CT criterion. | **08** |
| **Q.3** | **(b)** | Answer the following | |
| | **i** | What are the different ways of producing concentrated latex? Which one is more preferable? | **03** |
| | **ii** | Explain CT criterion: 2 with respect to latex industry. | **03** |
| | | **OR** | |
| **Q.3** | **(a)** | Discuss in detail about the stages of natural rubber processing where we can identify the potential of cleaner production. | **08** |
| **Q.3** | **(b)** | Explain the features of waste water monitoring and sampling. | **06** |
| **Q.4** | **(a)** | How the block rubber factories with low water consumption differ from those of higher water consumption? | **07** |
| **Q.4** | **(b)** | Answer the following | |
| | **i** | Write about the CT criterion: 2 with respect to block rubber industries. | **04** |
| | **ii** | Explain the term CT code of practice. What does the scope of CT code of practice cover for rubber? | **03** |
| | | **OR** | |
| **Q.4** | **(a)** | How the block rubber factories with low fuel consumption differ from those with higher fuel consumption? | **07** |
| **Q.4** | **(b)** | Answer the following | |
| | **i** | With suitable block diagram explain the processing of crumb rubber. | **05** |
| | **ii** | Define the following terms: (i)CT-criterion (ii) CT-options | **02** |

| | | | |
|---|---|---|---|
| **Q.5** | **(a)** | Discuss the advantages of up flow anaerobic sludge blanket reactor over aerobic treatment units. | **07** |
| **Q.5** | **(b)** | Answer the following | |
| | **i** | Explain the construction and working of anaerobic sludge blanket reactor. | **05** |
| | **ii** | Give the classification of ponds. | **02** |
| | | **OR** | |
| **Q.5** | **(a)** | Describe the key design features which influence the performance of ponds. | **06** |
| **Q.5** | **(b)** | Answer the following | |
| | **i** | What is aerobic waste water treatment? How aerobic treatment units works? | **04** |
| | **ii** | Write about the method used to separate rubber particles prior to discharge it to another biological waste water system. | **04** |

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