

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – WINTER 2012****Subject code: 714006N****Date: 10-01-2013****Subject Name: Cleaner Production in Rubber 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** Discuss in detail cleaner production methodology by keeping one industry as reference. **14**
- Q. 2 (a)** Explain implementation of energy conversation with an industrial example. **07**
- Q. 2 (b)** Explain difference between cleaner production and end of pipe treatment with suitable example. **07**
- OR**
- Q. 2 (b)** Discuss cleaner production in vinyl chloride plant. **07**
- 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)** Answer the following
- i Categorize the area of waste generation in rubber industries. **03**
 - ii Explain the term CT-code of practice. What does the scope of CT-code of practice cover for rubber? **03**
- OR**
- Q. 3 (a)** With the flow diagram, explain the primary and secondary waste water treatment which is obtained from rubber processing sector. **07**
- Q. 3 (b)** Answer the following
- i Explain the pre cleaning operation of rubber scraps to produce block rubber. **05**
 - ii Define the following terms: (i) CT-criterion (ii) CT-options **02**
- Q. 4 (a)** How the block rubber factories with lower rubber loss differ from those of higher rubber loss? **07**
- Q. 4 (b)** Answer the following
- i Explain the environmental problems arising from concentrated latex industries. **05**
 - ii Which factors are to be covered in establishing the CT-code? **02**
- OR**
- Q. 4 (a)** How the block rubber factories with low fuel consumption differ from those with higher fuel consumption? **07**

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- Q. 4 (b)** Discuss in detail about the rubber smoke sheet processing with its block diagram. **07**
- Q. 5 (a)** With advantages and disadvantages of pond system, discuss in detail classification of ponds used to treat the rubber waste water. **07**
- Q. 5 (b)** Answer the following
- i** Draw labeled diagram of electrolytic reactor used to treat latex waste water. **05**
 - ii** Explain the term sludge retention time. **02**
- OR**
- Q. 5 (a)** What do you mean by aerobic waste water treatment? How waste water is treated in sequencing batch reactor? **07**
- Q. 5 (b)** Answer the following
- i** Explain the construction and working of upflow anaerobic sludge blanket reactor. **05**
 - ii** Write a brief note on acid formers. **02**
