

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- VII EXAMINATION-SUMMER 2023****Subject Code: 3171304****Date: 30/06/2023****Subject Name: Cleaner Production and Waste Utilization****Time: 10:30 AM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Define Cleaner Production. **03**
(b) Enlist and explain objectives and benefits of CP. **04**
(c) Enlist and explain CP tools. **07**
- Q.2** (a) Define LMTD. **03**
(b) What are the barriers to the CP? **04**
(c) Discuss procedure for Energy audit. **07**
- OR**
- (c) Explain with neat sketch Waste heat recovery system. **07**
- Q.3** (a) What do you mean by sustaining CP? **03**
(b) Which factors impacts the selection of CP solution? **04**
(c) Explain effect of CP on industrial economy. **07**
- OR**
- Q.3** (a) What is Good housekeeping? **03**
(b) Differentiate between CP and End-of-pipe approach. **04**
(c) Discuss the concept of CP. **07**
- Q.4** (a) What do you mean by Waste heat? **03**
(b) What is the difference between walk-through Energy audit and detailed Energy audit. **04**
(c) Discuss financial analysis of CP with suitable example. **07**
- OR**
- Q.4** (a) What is Energy audit? **03**
(b) Enlist instruments used for Energy audit. **04**
(c) Discuss one case study of CP implementation. **07**
- Q.5** (a) What is recycling? **03**
(b) Explain Mass and Energy balance. **04**
(c) Discuss Shell & Tube heat exchanger with neat sketch. **07**
- OR**
- Q.5** (a) What do you mean by Heat Exchanger? **03**
(b) Enlist various Heat exchangers with their suitable application. **04**
(c) Explain with neat sketch Plate and Frame type heat exchanger. **07**
