

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:3171304

Date:23-05-2025

Subject Name:Cleaner Production and Waste Utilization

Time:02:30 PM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Define Cleaner Production. **03**
(b) Enlist and explain CP Tools. **04**
(c) Discuss six step CP methodology. **07**
- Q.2** (a) What do you mean by Waste utilization? **03**
(b) Differentiate between CP and END-OF-PIPE approach. **04**
(c) Explain key steps to Energy audit. **07**
- OR**
- (c) Enlist and explain parallel approaches to Cleaner production. **07**
- Q.3** (a) Define LMTD. **03**
(b) Write short note on benefits of heat recovery in Steam boiler. **04**
(c) Enlist and explain types of Heat exchanger with its application. **07**
- OR**
- Q.3** (a) What do you mean by Heat recovery? **03**
(b) Draw the temperature profiles for counter current flow and parallel flow. **04**
(c) Explain in detail various methods for waste heat recovery. **07**
- Q.4** (a) Define Good housekeeping. **03**
(b) Write a short note on recycling and reuse of Liquid industrial waste. **04**
(c) Describe Shell & Tube Heat Exchanger with neat sketch. **07**
- OR**
- Q.4** (a) Define Reuse and Recycle. **03**
(b) Discuss factors affecting selection of CP solution. **04**
(c) How to carry out Preliminary or Walk- through Energy audit? **07**
- Q.5** (a) How will you designate CP team for Dairy industry? **03**
(b) Discuss the importance of Mass and energy balance for CP. **04**
(c) Discuss one case study of CP implementation in Dairy industry. **07**
- OR**
- Q.5** (a) What is Environmental Management System? **03**
(b) Discuss the concept of 4R's. **04**
(c) Discuss one case study of CP implementation in Pulp & Paper industry. **07**
