

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII EXAMINATION – SUMMER 2016****Subject Code:171304****Date:05/05/2016****Subject Name:Cleaner Production and waste Utilization (Department Elective - I)****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.

- Q.1** (a) What is Cleaner Production (CP)? Explain CP concept in detail **07**
 (b) Draw a neat sketch of 1, 2 Shell and Tube heat exchanger **07**
- Q.2** (a) Explain the benefits of CP. **07**
 (b) Enlist the parallel approaches to cleaner production. Explain any two in detail **07**
- OR**
- (b) What are the hurdles to the implementation of CP in industry? **07**
- Q.3** (a) Write a short note: CP Tools **07**
 (b) Explain CP methodology **07**
- OR**
- Q.3** (a) Can we consider the following techniques, (i) off-site recycling and (ii) concentrating hazardous constituents to reduce volume, as CP option? – Justify your answer **07**
 (b) Enlist the objectives of energy audit. **07**
- Q.4** (a) What is Good housekeeping? How it is helpful in industries? **07**
 (b) Explain how to conduct financial analysis of proposed CP implementation **07**
- OR**
- Q.4** (a) With special reference to pulp and paper cluster, cite the areas where CP tools are useful. **07**
 (b) Write a short note: Recycling and reuse of liquid industrial waste **07**
- Q.5** (a) What do you mean by the term LMTD? Draw the temperature profiles for co-current and counter current flow. **07**
 (b) Write a short note: Bio management for waste utilization **07**
- OR**
- Q.5** (a) Explain in detail various methods for waste heat recovery. **07**
 (b) Explain in detail energy audit methodology **07**
