

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018****Subject Code: 2171304****Date: 26/11/2018****Subject Name: Cleaner Production & 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.

**MARKS**

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|------------|-----|--|-----------|
| <b>Q.1</b> | (a) | Discuss in detail about the role of cleaner production in survival and sustainable development of industrial clusters.       | <b>03</b> |
|            | (b) | Discuss how good housekeeping is useful in achieving cleaner production?   | <b>04</b> |
|            | (c) | Enlist the parallel approaches to cleaner production. Explain any three in detail.   | <b>07</b> |
| <b>Q.2</b> | (a) | State the benefits of waste heat recovery.   | <b>03</b> |
|            | (b) | Draw the sequential flow diagram for CP methodology  | <b>04</b> |
|            | (c) | Explain in detail about the barriers and motivations of cleaner production.  | <b>07</b> |
| <b>OR</b>  |     |  |           |
|            | (c) | Can we consider waste treatment and diluting constituents to reduce hazard or toxicity, as CP option? – Justify your answer. | <b>07</b> |
| <b>Q.3</b> | (a) | Suggest any two CP tools which can be used at Dairy Industry and explain how they can be used?                               | <b>03</b> |
|            | (b) | Write a brief note on “Hierarchy of CP.”   | <b>04</b> |
|            | (c) | Which CP tool do you suggest to reduce the pollution from your vehicle? How? Explain in brief.                               | <b>07</b> |
| <b>OR</b>  |     |  |           |
| <b>Q.3</b> | (a) | Why CP is more favorable than the End of pipe treatment.   | <b>03</b> |
|            | (b) | With proper example explain how industrial solid waste will be reuse to achieve CP.  | <b>04</b> |
|            | (c) | Write a short note on LMTD.  | <b>07</b> |
| <b>Q.4</b> | (a) | Discuss about the various CP tools.  | <b>03</b> |
|            | (b) | Discuss the concept of 3Rs in brief.   | <b>04</b> |
|            | (c) | Make a checklist for implementing Good housekeeping practices at textile industry.   | <b>07</b> |
| <b>OR</b>  |     |  |           |
| <b>Q.4</b> | (a) | List down the barriers of Energy Conservation.   | <b>03</b> |
|            | (b) | Write a brief note on “Energy Audit”.  | <b>04</b> |
|            | (c) | Write a short note on “Heat Recovery Boiler”   | <b>07</b> |
| <b>Q.5</b> | (a) | With the help of neat and clean sketch explain plate and frame type heat exchanger.  | <b>03</b> |
|            | (b) | How waste heat recovery is useful in achieving cleaner production.   | <b>04</b> |
|            | (c) | Write down the step by step methodology to implement CP in sugar industry with proper example.                               | <b>07</b> |
| <b>OR</b>  |     |  |           |
| <b>Q.5</b> | (a) | Give the classification of Heat Exchanger.   | <b>03</b> |
|            | (b) | Explain heat pipe with figure.   | <b>04</b> |
|            | (c) | Write down the step by step methodology to implement CP in Cement industry with proper example.                              | <b>07</b> |

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