

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:3160514****Date:10-07-2023****Subject Name:Green Technology and sustainable Development****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.

		<b>Marks</b>
<b>Q.1</b>	(a) Explain the concept of green chemistry.	<b>03</b>
	(b) Discuss the importance of green chemistry and its role in chemical industry.	<b>04</b>
	(c) Discuss the classification of Process intensification with suitable example.	<b>07</b>
<b>Q.2</b>	(a) List out the major challenges for implementing green technology in a chemical industry	<b>03</b>
	(b) Define the photochemical reactions with suitable example.	<b>04</b>
	(c) Write a brief note on, “Green solvents and their importance and applications”	<b>07</b>
	<b>OR</b>	
	(c) Explain the three principal dimensions of sustainable development with suitable examples..	<b>07</b>
<b>Q.3</b>	(a) Explain in brief. “Process intensification”	<b>03</b>
	(b) Discuss the role of government and institution in cleaner production technology.	<b>04</b>
	(c) Explain the greener approach towards reduction of pollution for dyes and pesticides industries.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Discuss in detail sustainable development in detail.	<b>03</b>
	(b) Discuss the role of cleaner production in sustainable development.	<b>04</b>
	(c) Explain the greener approach towards reduction of pollution for waste water industries and textile industries.	<b>07</b>
<b>Q.4</b>	(a) Enlist the four principles of Cleaner Production.	<b>03</b>
	(b) Discuss the benefits of Good House Keeping.	<b>04</b>
	(c) Explain the following cleaner production with case study. “Fluoride removal from wastewater”	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Enlist the cleaner Production Tools.	<b>03</b>

	(b) Discuss the merits and demerits of Cleaner Production.	04
	(c) Discuss process change as 'Source of Waste reduction'.	07
<b>Q.5</b>	(a) Discuss the type of energy Audit.	03
	(b) Discuss role of CP in survival and sustainable development of chemical industries.	04
	(c) Discuss in detail applications of "Cleaner Production Principles" with special reference to liquid effluent waste minimization for the following industrial products: (1) H-acid & (2) Paracetamol.	07
	<b>OR</b>	
<b>Q.5</b>	(a) Define:- (1) Source Reduction (2) Cleaner Technology (3) Good Housekeeping	03
	(b) Explain the Environmental Management Hierarchy.	04
	(c) Discuss the energy audit methodology and its steps.	07

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