

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII(NEW) EXAMINATION – SUMMER 2019****Subject Code: 2170409****Date:18/05/2019****Subject Name: Environmental Biotechnology****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.

		MARKS
<b>Q.1</b>	(a) What is compost? How is it different than vermicompost.	<b>03</b>
	(b) 'Methanogenesis is environment favoring process'. Explain.	<b>04</b>
	(c) Explain the non-conventional sources of energy, only with reference to its potential in India.	<b>07</b>
<b>Q.2</b>	(a) Explain the role of petro crops.	<b>03</b>
	(b) Draw the self explanatory sketch of Biogas plant.	<b>04</b>
	(c) Define biomass and enlist various biomasses as sources.	<b>07</b>
	<b>OR</b>	
	(c) Define activated sludge process. Explain the biological components that influence the efficiency of activated sludge process.	<b>07</b>
<b>Q.3</b>	(a) What is the role of Energy crops? Enlist few energy giving crops.	<b>03</b>
	(b) Discuss modeling parameters for activated sludge process.	<b>04</b>
	(c) Make a list to show the advantages and the limitations of a rotating biological contactor.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Which metals are considered as a heavy metal?	<b>03</b>
	(b) Briefly explain the role of Genetically engineered microorganisms.	<b>04</b>
	(c) Write a note on: primary wastewater treatment.	<b>07</b>
<b>Q.4</b>	(a) What are the steps to reduce pollution in distilleries?	<b>03</b>
	(b) Write a note on: waste gas purification	<b>04</b>
	(c) Make a technical comparison of all methods for the Biological waste gas purification including: Biotrickling filters, Bioscrubbers, and Membrane bioreactors.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) How do symbiotic non-pathogenic associations between plant roots and fungi are significant during reforestation?	<b>03</b>
	(b) Comment on the Eco-friendly strategy to check soil borne diseases	<b>04</b>
	(c) Discuss the reducing environment impact of industrial effluents with respect to biodegradation of pollutants.	<b>07</b>
<b>Q.5</b>	(a) Give a brief account on in situ bioremediation of both soil and ground water contamination.	<b>03</b>
	(b) Summarize how short rotation forestry and cellulose are strategic as a renewable energy source.	<b>04</b>
	(c) Narrate the role of <i>Casuarina</i> species plants during reforestation. Explain how development of stress tolerant plants can restore degraded lands.	<b>07</b>

- Q.5** (a) Give suitable reactions to explain the bacterial metabolism. **03**
- (b) How hydrocarbons produced by some microorganisms can serve as a liquid or gaseous fuel? **04**
- (c) What are the naturally occurring plants for phytoremediation and explain Transgenic plants for Phytoremediation. **07**

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