

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021****Subject Code:3162316****Date:30/11/2021****Subject Name:Bioplastics****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.

		MARKS
Q.1	(a) Define Biopolymers. List various advantages of biopolymers.	03
	(b) Give Classification of biodegradable polymers.	04
	(c) Define Biodegradability and give testing overview for biodegradable plastics.	07
Q.2	(a) List various commercial applications of Bioplastics.	03
	(b) Give advantages of bio-based plastics.	04
	(c) Discuss about aerobic and anaerobic biodegradation environments for polymers.	07
	OR	
	(c) Give classifications, advantages and applications of Starch based polymers.	07
Q.3	(a) List three main biodegradation mechanisms that are used to degrade biopolymers.	03
	(b) Discuss different ways to produce bio-based polymers.	04
	(c) Explain biodegradation in Soil Environment.	07
	OR	
Q.3	(a) Give various modes of degradation and their corresponding factors.	03
	(b) Give principle of Respiration Tests and Gas evolution test.	04
	(c) Explain about Chitin and Chitosan.	07
Q.4	(a) Give properties and applications of Polyhydroxybutyrate (PHB).	03
	(b) Give various factors affecting Biodegradability.	04
	(c) Discuss about Cellulose based polymers.	07
	OR	
Q.4	(a) Give properties and applications of Poly lactic acid (PLA).	03
	(b) List important characteristics of bacterial polyesters and give types of bacterial polyesters.	04
	(c) Discuss about environmental factors to which a plastic product is subjected at the surface and underground, when buried and possible interactions with living organisms.	07
Q.5	(a) Give example of Synthetic Biodegradable Polymers.	03
	(b) Give principle of Enzyme assays and Plate test.	04
	(c) Discuss about Polyhydroxyalkanoate (PHA), its general characteristics and applications.	07
	OR	
Q.5	(a) Discuss the need of Ecotoxicity analysis for Biodegradable Materials.	03
	(b) Explain about degradation in real Liquid environments.	04
	(c) Discuss indoor and outdoor soil burial test methods.	07
