

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:3162316****Date:15-12-2022****Subject Name:Bioplastics****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.
4. Simple and non-programmable scientific calculators are allowed.

		<b>MARKS</b>
<b>Q.1</b>	(a) Define : Bioplastics, Biodegradable Plastics, Compostibility	<b>03</b>
	(b) Give Classification of compostable polymers	<b>04</b>
	(c) Discuss differences between bioplastics and petroplastics. Classify Bioplastics and discuss.	<b>07</b>
<b>Q.2</b>	(a) Difference between chitin and chitosan	<b>03</b>
	(b) Give full forms of[any four] : PHB , BOD, ThOD, BPS, CA, PLA	<b>04</b>
	(c) Discuss in detail manufacture, advantages and disadvantages of PLA .	<b>07</b>
<b>OR</b>		
	(c) Discuss in detail, Biodegradability Measuring Devices.	<b>07</b>
<b>Q.3</b>	(a) Give details of three principal ways to produce polymers from renewable resources	<b>03</b>
	(b) Discuss difference between amylose and Amylopectin	<b>04</b>
	(c) Discuss in detail, biodegradation of polymers	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Discuss biodegradation of polymers using enzymes.	<b>03</b>
	(b) Write structure of PLA, PHA,PHB,TS	<b>04</b>
	(c) Discuss in detail manufacture, advantages and disadvantages of PHA	<b>07</b>
<b>Q.4</b>	(a) Discuss factor affecting biodegradability	<b>03</b>
	(b) Discuss about 3 Classes of PHAS	<b>04</b>
	(c) Discuss in detail, the laboratory test to evaluate the biodegradability in plastics.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Fill in the blanks: 1. Factors affecting thermal degradation are _____ 2. Factors affecting Chemical Degradation are _____ 3. Factors affecting photodegradation are _____	<b>03</b>
	(b) List various proteins which can be used to manufacture biodegradable plastics	<b>04</b>
	(c) Discuss in detail about Thermoplastic Starch.	<b>07</b>
<b>Q.5</b>	(a) Write advantages of Bio plastics	<b>03</b>
	(b) Write a brief note on Polycaprolactone	<b>04</b>
	(c) Discuss Biopolymers Found in Nature and Their Functions	<b>07</b>

**OR**

- Q.5** (a) Discuss types of soyproteins available for blending with biodegradable plastics **03**
- (b) What are the Requirements of the international standards for complete biodegradation under composting conditions . **04**
- (c) Discuss in detail Oxo-degradable plastics. **07**

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