

M.Sc. Sem-4 Examination

509

Polymer Science

April 2022

Time : 2-00 Hours]

[Max. Marks : 50

- Note: 1) All questions in section-I carry equal marks. 2) Attempt any **Three** questions in section-I.
3) Questions IX in section-II is compulsory.

Section-I (Total- 42 Marks)			
Q-I	A	What are the different classes of enzymes? Explain in details.	7
	B	How biodegradation of polymers depends upon its molecular structure?	7
Q-II	A	What is PHA? Explain synthesis process for PHA in details.	7
	B	What is TPS? Why normal starch is not thermally processed using conventional plastic equipment's?	7
Q-III	A	Explain in details nomenclature determine by "Enzyme commission".	7
	B	Explain degradation of biodegradable polymers by means of enzymatic activity and hydrolysis process with neat sketch.	7
Q-IV	A	Why production of biodegradable polymers takes place instead of non-biodegradable polymers? Explain in brief.	7
	B	What are different recycling techniques used for biodegradable polymers? Explain in brief.	7
Q-V	A	Classify and explain the biodegradable polymers on the basis of its naturally and synthetically prepared biodegradable polymers.	7
	B	Write short notes on various sources of biodegradable polymers.	7
Q-VI	A	Enlist various test methods used for biodegradation of polymers. Explain any one of them in details.	7
	B	Write short notes on Biopolyester.	7
Q-VII	A	Explain ready biodegradability test for biodegradable polymers?	7
	B	What is biodegradable polymer? And explain its necessity in current scenario.	7
Q-VIII	A	Compare the difference between chemical structure of amylose and amylopectin and its effects on the properties of starch.	7
	B	Short notes on surface and bulk erosion process.	7
Section –II			
Q-IX	1	Alcoholysis, glycolysis, and pyrolysis are the _____ routes for biodegradable polymers. (a) Biodegradation (b) Recovery (c) Recycling (d) All of the above	1
	2	_____ is a substance that acts as a biological catalyst in living organisms.	1

ES6-2

	(a) Bacteria (b) Fungi (c) Enzymes (d) Protozoa	
3	_____ polymer is a class of synthetically prepared biodegradable polymers. (a) Collagen (b) Starch (c) PLA (Polylactic acid) (d) Dextran	1
4	The enzymatic activity on biodegradable polymer will be affect by _____. (a) Temperature (b) pH (c) Concentration of enzyme on substrates (d) All of the above	1
5	In petri-dish test placing the test specimen on the surface of mineral salt is nothing but _____. (a) Blue algae (b) Red algae (agar) (c) Green algae (d) All of the above	1
6	The high capacity of biodegradation will take place in _____ test method. (a) Ready biodegradability test (b) Soil burial test (c) Inherent biodegradability test (d) None of the above	1
7	_____ biodegradable polymer is form by using raw materials such as microbial fermented lactic acid. (a) PHB (b) PGA (c) PLA (d) PHBV	1
8	The polymers which is dis-integrate by themselves over a certain period of time due to environmental degradation by bacteria are called _____ polymers. (a) Natural polymer (b) Inorganic polymer (c) Biodegradable polymer (d) All of the above	1
