Sl. No.	:	6231
Unique Paper Code	:	1141501
Name of the Paper	:	Polymer Degradation
Name of the Course	:	B. Tech. Polymer Science
Semester	:	V
Duration	:	3 Hours
Maximum Marks	:	75 Marks.

F

Instruction for candidates

(Write your Roll no. on the top immediately on receipt of the question paper.)

Attempt five questions in all.

Question No. 1 is compulsory. Draw neat and labeled diagram wherever necessary.

Q1. 3x9=27

1. What is the sequence of peaks in a DSC curve? Describe.
2. Name one application of Polymer degradation for protection. Explain the process.
3. Arrange polymethylene oxide, polyethylene oxide and polypropylene oxide in increasing order of stability and justification.
4. Draw the block diagram for DTA and explain it.
5. Why Polystyrene degrades easily although it is a very rigid polymer.
6. Describe chlorine degradation of polymers.
7. Hydrolytic degradation depends on which conditions?
8. What is DMA?
9. Define degradation?

Q2.

1. What are the different types of mechanical degradation? What are the characteristics of mechanical degradation? Compare mechanical degradation in solid state with mechanical degradation in liquid state. 2+3+2=7

2. What is photo degradation? What are the different types of photo degradation? What is quantum yield? 1.5+2+1.5=5

Q3.

1. What is bleaching effect in PVC degradation? Explain. 3
2. Write and explain the benzene formation reaction in PVC thermal degradation. 4
3. What is mastication? How natural rubber degrades in presence of oxygen? Explain. 5

Q4.

1. What are the differences in composting and biodegradation? 2
2. Write a note on cellulose biodegradation. 4
3. Write a note on PE and PP thermal degradation? 6

Q5.

1. Under what condition PET degrades thermally? discuss with reaction mechanism. 6
2. How PAN is transformed into Carbon Fiber? 4
3. Write a note on PU biodegradation? 2

Q6.

1. Why PAN fiber is not made by melt spinning process? 3
2. Note down the applications of DSC in polymer? 4
3. Draw a TGA curve with two step degradation, TO1=180 C, TO2=400 C; TMAX1=220 C, TMAX2=420 C. The 1st degradation involves 20% weight loss and second step involves 30% weight loss. 5