

**GUJARAT TECHNOLOGICAL UNIVERSITY**

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018

**Subject Code: 2172311****Date: 26/11/2018****Subject Name: Plastic Structure Property Relationship****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.

		MARKS
<b>Q.1</b>	(a) Define additives? List various additives used for plastics.	<b>03</b>
	(b) Draw the structures of i) PTFE ii) PVC iii) Nylon 6,6 iv) PS	<b>04</b>
	(c) List the differences in properties of crystalline and amorphous polymers.	<b>07</b>
<b>Q.2</b>	(a) What are the important fields of application of PVC.	<b>03</b>
	(b) Explain with examples what are Homochain and Heterochain polymers.	<b>04</b>
	(c) Explain the factors affecting the Tg of a polymer	<b>07</b>
<b>OR</b>		
	(c) Explain the effect of Hydrogen on the properties of polymers	<b>07</b>
<b>Q.3</b>	(a) List the properties and applications of PMMA.	<b>03</b>
	(b) Explain the effect of plasticizers on Tg of a polymer.	<b>04</b>
	(c) Compare the structure & properties of HDPE and LDPE.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) What do you mean by tensile strength and impact strength of a polymer.	<b>03</b>
	(b) Why is Teflon used in the applications of non stick coatings?	<b>04</b>
	(c) Explain the effect of Carbon on the properties of polymers.	<b>07</b>
<b>Q.4</b>	(a) What are blowing agents? Explain briefly.	<b>03</b>
	(b) Explain how structure of a polymer affects its mechanical properties.	<b>04</b>
	(c) Explain the factors affecting crystallinity in polymers.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) How does silicon affect the properties of a polymer.	<b>03</b>
	(b) List the points of difference between thermoplastics and thermosets.	<b>04</b>
	(c) Write a short note on effect of halogens on properties of a polymer.	<b>07</b>
<b>Q.5</b>	(a) Explain the relationship between structure of a polymer and its optical properties.	<b>03</b>
	(b) Why is Nylon used extensively for the manufacture of gears and bearings?	<b>04</b>
	(c) Discuss the structure and the properties of Bis-phenol A Polycarbonates. What are its important applications?	<b>07</b>

**OR**

- Q.5**
- (a) Explain giving examples what are Homo polymers and Copolymers. **03**
  - (b) Which are the different forms of PP? List the applications of PP. **04**
  - (c) Compare the structure of PVC with that of PE and explain how the structure is related to its properties. **07**

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