Seat No.:	Enrolment No.

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VII(NEW) • EXAMINATION - WINTER 2016** 

Subject Code:2172309 Date:23/11/2016

Subject Name:Plastic Structure property relationship

Time:10.30 AM to 1.00 PM Total Marks: 70

## **Instructions:**

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

Q.2 (a) Explain following. (i) Crazing in polymers (ii) Creep Formation (iii) Co-polymers (iv) Tacticity (b) Explain effect of intra and intermolecular hydrogen bonding on thermal and Processibility of polymers.  OR (b) How structure of Nylons and PE related with properties and their applications. Give examples.  Q.3 (a) What are the Optical properties? List any four. Explain transparency, haze with examples. (b) How structure of Poly Propylene related with properties and their applications. Give example.  OR Q.3 (a) Compare (i) Crystalline and amorphous polymers (ii) conformation and configuration (b) What are the factors which affect Tm? Give Relation between Tg and Tm.  Q.4 (a) Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties. (b) How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.  OR Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. of but PE appears to be solid at room temperature (b) Discuss effect of amorphous and crystalline structure on polymer properties. Give suitable examples.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. or What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm	Q		Explain Linear Branched and Cross-linked polymers with Structure and examples. Differentiate structure of LDPE and HDPE.  Compare (a) Homo chain & hetero chain plastics (b) Thermoset and thermoplastic	07 07
(b) Explain effect of intra and intermolecular hydrogen bonding on thermal and Processibility of polymers.  OR  (b) How structure of Nylons and PE related with properties and their applications. Give examples.  Q.3 (a) What are the Optical properties? List any four. Explain transparency, haze with examples.  (b) How structure of Poly Propylene related with properties and their applications. Give example.  OR  Q.3 (a) Compare (i) Crystalline and amorphous polymers (ii) conformation and configuration (b) What are the factors which affect Tm? Give Relation between Tg and Tm.  Q.4 (a) Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties.  (b) How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.  OR  Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties:  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature  (b) Discuss effect of amorphous and crystalline structure on polymer properties.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  OR  Q.6 (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm	(	Q.2 (a)	Explain following.  (i) Crazing in polymers (ii) Creep Formation (iii) Co-polymers (iv) Tacticity	07
(b) How structure of Nylons and PE related with properties and their applications. Give examples.  Q.3 (a) What are the Optical properties? List any four. Explain transparency, haze with examples.  (b) How structure of Poly Propylene related with properties and their applications. Give example.  OR  Q.3 (a) Compare (i) Crystalline and amorphous polymers (ii) conformation and configuration  (b) What are the factors which affect Tm? Give Relation between Tg and Tm.  Q.4 (a) Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties.  (b) How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.  OR  Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature  (b) Discuss effect of amorphous and crystalline structure on polymer properties. Give suitable examples.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm		(b)	Explain effect of intra and intermolecular hydrogen bonding on thermal and	07
examples.  (b) How structure of Poly Propylene related with properties and their applications. 07 Give example.  OR  Q.3 (a) Compare (i) Crystalline and amorphous polymers (ii) conformation and 07 configuration (b) What are the factors which affect Tm? Give Relation between Tg and Tm. 07  Q.4 (a) Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties. (b) How properties of polymers affect the presence of halides in its structure. 07 Explain with suitable examples.  OR  Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. 07 but PE appears to be solid at room temperature (b) Discuss effect of amorphous and crystalline structure on polymer properties. 07 Give suitable examples.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. 07 What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************		(b)	How structure of Nylons and PE related with properties and their applications.	07
(b) How structure of Poly Propylene related with properties and their applications. Give example.  OR  Q.3 (a) Compare (i) Crystalline and amorphous polymers (ii) conformation and configuration (b) What are the factors which affect Tm? Give Relation between Tg and Tm.  Q.4 (a) Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties. (b) How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.  OR  Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature (b) Discuss effect of amorphous and crystalline structure on polymer properties.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm	Q.3 (a)	What are the Optical properties? List any four. Explain transparency, haze with examples.	07	
Q.3 (a) Compare (i) Crystalline and amorphous polymers (ii) conformation and configuration (b) What are the factors which affect Tm? Give Relation between Tg and Tm.  Q.4 (a) Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties. (b) How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.  Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature (b) Discuss effect of amorphous and crystalline structure on polymer properties.  QR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm		(b)	How structure of Poly Propylene related with properties and their applications.	07
configuration (b) What are the factors which affect Tm? Give Relation between Tg and Tm.  Q.4 (a) Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties. (b) How properties of polymers affect the presence of halides in its structure.  Explain with suitable examples.  OR  Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature (b) Discuss effect of amorphous and crystalline structure on polymer properties.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  OR  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  OR  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  OR  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  OR  OR  OR  OR  OR			OR	
Q.4 (a) Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties.  (b) How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.  OR  Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature  (b) Discuss effect of amorphous and crystalline structure on polymer properties.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  OR  Q.5 (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm	(	- , ,	configuration	07
properties.  (b) How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.  OR  Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. or but PE appears to be solid at room temperature  (b) Discuss effect of amorphous and crystalline structure on polymer properties. Or Give suitable examples.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. or what is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************	(b)	What are the factors which affect Tm? Give Relation between Tg and Tm.	07	
(b) How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.  OR  Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature  (b) Discuss effect of amorphous and crystalline structure on polymer properties. Give suitable examples.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. 07  (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************	Q.4 (a)	Compare Nylon 6 and Nylon 6,6 on the basic of structure, formation and properties.	07	
<ul> <li>Q.4 (a) Explain (i) Effect of nitrogen on polymer properties (ii) Effect of Si on polymer properties</li> <li>(b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups</li> <li>Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature</li> <li>(b) Discuss effect of amorphous and crystalline structure on polymer properties. Give suitable examples.</li> <li>OR</li> <li>Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. 07</li> <li>(b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm</li> </ul>		(b)	How properties of polymers affect the presence of halides in its structure. Explain with suitable examples.	07
properties  (b) How following factors affect crystallinity of polymers (i) Linear and branched structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature  (b) Discuss effect of amorphous and crystalline structure on polymer properties. Give suitable examples.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. 07  (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************				
structure (ii) Geometrical isomers (iii) Bulky groups  Q.5 (a) Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature  (b) Discuss effect of amorphous and crystalline structure on polymer properties. Give suitable examples.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. 07  (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************	(	Q.4 (a)		07
but PE appears to be solid at room temperature  (b) Discuss effect of amorphous and crystalline structure on polymer properties.  Give suitable examples.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears.  (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************		(b)		07
(b) Discuss effect of amorphous and crystalline structure on polymer properties.  Give suitable examples.  OR  Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************	(	Q.5 (a)	Explain Why (i) PVC self-extinguishing properties (ii) PE has a Tg of -20 °C. but PE appears to be solid at room temperature	07
Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************	(b)	Discuss effect of amorphous and crystalline structure on polymer properties.	07	
Q.5 (a) Explain why PTFE and polyamides are suitable for manufacture of gears. (b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************			OR	
(b) What is Glass Transition Temperature (Tg)? How bulky groups and Polar groups affect Tg and Tm  ***********************************		0.5 (a)		07
********			What is Glass Transition Temperature (Tg)? How bulky groups and Polar	
			نات بات بات بات بات بات بات بات بات بات ب	
				1