Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – SUMMER • 2014

Subject Code: 172304 Date: 29-05-2014

Subject Name: Manufacturing of Thermoplastics Materials

Time: 02.30 pm - 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.**

Q.1 **(a)** Give classification of various processes for polymerisation of ethylene and compare the properties of LDPE and HDPE. **07**

(b) (i) Give classification of Thermoplastics and explain in brief. Give five examples of each. **04**

(ii) Classify engineering plastics based on their chemistry of origin and explain in brief. **03**

Q.2 **(a)** Fill in the blanks **07**

i) PE is hygroscopic material. _____ True/False

ii) Generally crystalline polymers are fiber-forming in nature.____True/False

iii) Chemical resistance of SAN is better than that of PS._____True/False

iv) PMMA is superior to glass in terms of _____strength.

v) Many properties of PP are differing than PE is due to presence of _____group.

vi) Continuous fibers of Nylon 6, 6 can be made by _____ polymerisation.

vii) _____undergoes ring-opening polymerisation to produce Nylon 6.

(b) What are the different forms of Polypropylene? Discuss manufacturing of polypropylene with flow diagram. **07**

OR

(b) How is vinyl chloride polymerized? Describe with a neat sketch of the flow diagram, the suspension process of manufacturing PVC. **07**

Q.3 **(a)** Give structure, properties and application of polyvinylfluoride (PVF) and polyvinylidenefluoride (PVDF). **07**

(b) How are the properties of polyacrylates related to their structures? Discuss. Also mention the important applications of PMMA. **07**

OR

Q.3 **(a)** Draw flow diagram for manufacturing of HDPE by Ziegler process and Explain. Also give its important properties. **07**

(b) Give Chemical structure of the following polymers- **07**
PS, PC, PP, PTFE, PMMA, PEEK, ABS

Q.4 **(a)** What are biopolymers? List various biopolymers and explain polysaccharides in detail. **07**

(b) Compare the structure of PVC with that of PE and explain how the structure is related to its properties. What are the important fields of application of PVC? **07**

OR

Q.4	**(a)**	What are ion-exchange polymers? Give classification of ion-exchange polymers and list its various applications.	**07**
	(b)	Which techniques are used to prepare Polystyrene (PS)? Explain Tower process with neat sketch.	**07**
Q.5	**(a)**	Write short note: (a) Spiro polymers (b) Ladder polymers	**07**
	(b)	Explain manufacturing of polycarbonate (PC) by interfacial polymerisation.	**07**

OR

Q.5	**(a)**	What are electro-conducting polymers? List various electro conducting polymers and give their applications.	**07**
	(b)	Give applications of the following polymers in various sectors- i) Liquid crystal polymer (LCP) ii) Polystyrene (PS) iii) Polyether ether ketone (PEEK) iv) Polytetrafluoroethylene (PTFE)	**07**

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