Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2152306 **Date:09/05/2016**

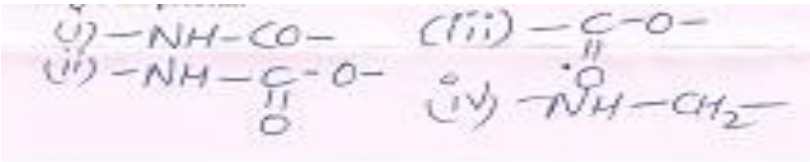
Subject Name:Chemistry of Plastic Materials

Time:02:30 PM to 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)**	Discuss Carothers' Equation in detail.	**07**
	(b)	Classify Polymers and discuss in detail.	**07**
Q.2	**(a)**	Define[any seven] : Critical Chain length; Oligomer; Micelle; Tacticity; Theta Temperature; Monomer; Pendant group; Cryatallinity; Addition polymerization; kinetic chain length	**07**
	(b)	Differentiate between polymers and low molecular weight compounds.	**07**
		OR	
	(b)	Discuss various types of bonding in polymers	**07**
Q.3	**(a)**	Discuss Chemistry of free radical polymerization	**07**
	(b)	Differentiate between Amorphous and Crystalline Polymers	**07**
		OR	
Q.3	**(a)**	Discuss Chemistry of Anionic Polymerization	**07**
	(b)	[a] Calculate the extent of reaction when phthalic anhydride and glycerol react in the stoichiometric amounts [b] Name the Polymer types in which the following linkages are present:	**07**



Q.4	**(a)**	Give the chemical structure of following polymers[any seven] : LDPE, PP; PS; PC; ABS; PVC; PET; PTFE; UREA FORMALDEHYDE	**07**
	(b)	What are Step Growth Polymers? Discuss Chemistry of Step	**07**

growth polymers.

OR

Q.4	**(a)**	[I] Complete the following reactions: [i] HO-CH2-CH2-OH+HOOC.CH=CH.COOH-----→ [ii] nHOOC-R-COOH + n HO-R'-OH--→ [iii] nC1OC-R-COC1 + nH2N-R'-NH2-→ [iv] nHOCH2CH2OH + n ONC-(CH2)6CNO-→ [II] Give the mechanism for the formation of o- and p-hydroxybenzyl alcohol from phenol and formaldehyde in the presence of alkali.	**07**
Q.4	**(b)**	Discuss how chemistry of LDPE affects its properties	**07**
Q.5	**(a)**	Discuss Chemistry v/s. properties and applications of PC	**07**
	(b)	Discuss how chemistry affects properties and applications of Nylon-6	**07**
Q.5	**(a)**	What are naturally occurring polymers? Discuss about linkages in cellulose and its applications in plastic industry.	**07**
	(b)	Discuss Chemistry , Properties and Applications of PMMA	**07**

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