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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-VII Examination-Nov/Dec.-2011

Subject code: 172806 **Date: 29/11/2011**

Subject Name: Instrumental Analysis in Textile Processing

Time: 10.30 am-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.**

Q.1	**(a)**	Which are the areas in which polymer characterization can be divided? Write in short on various methods of any one of them.	**07**
	(b)	Enlist various instruments and techniques used to analyze chemicals, dyes and auxiliaries. Which parameters are measured by those instruments and techniques?	**07**
Q.2	**(a)**	Write on differences amongst LM, TEM and SEM. Which parameters are to be considered for preparing sample for SEM?	**07**
	(b)	With a sketch explain principle of operation of AFM.	**07**
		OR	
	(b)	Write in short on application of chromatography for identification of colorant.	**07**
Q.3		How GC can be used to analyze DP finishes of the fabrics? Discuss in detail.	**14**
		OR	
Q.3		Which properties of polymer are measured using thermoanalytical techniques? Discuss use of DSC, with a typical trace, for characterization of thermal properties of fibre.	**14**
Q.4		Write in detail on use of Gas Permeation Chromatography for estimation of molecular weight.	**14**
		OR	
Q.4		Which polymer parameters are identified by XRD? How crystal size, orientation and crystallinity are determined using XRD? With the help of Bragg's equation and typical diffractometer, explain use of XRD in short.	**14**
Q.5	**(a)**	Write on various applications of NMR for instrumental characterization of textile compounds. Discuss the principle of NMR in short.	**08**
	(b)	Define birefringence. Explain the principle with a set up. How orientation can be determined with the help of birefringence?	**06**
		OR	
Q.5		Which technique is based on interferometry? Explain the application in short with typical interferogram.	**14**

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