Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII • EXAMINATION – SUMMER • 2015

Subject Code: 172303 **Date: 12/05/2015**
Subject Name: Medical Plastics
Time: 02.30pm-05.00pm **Total Marks: 70**

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

Q.1	**(a)**	Give a comparison of various types of PVC resins with its advantages and disadvantages –(for Rigid, Flexible and Chlorinated PVC)	**07**
	(b)	List the various medical devices and the components where PVC is used.	**07**
Q.2	**(a)**	Write the advantages of Antimicrobial additives used as medical plastics. With the help of graph discuss the effect of antimicrobial levels on inhibition and destruction of micro organisms.	**07**
	(b)	Give at least 10 reasons for the increase in the use of plastics in medical device applications.	**07**
		OR	
	(b)	Give a complete list of typical polymeric bio materials used in human body	**07**
Q.3	**(a)**	Give various factors of importance in material selection for biomedical application (in a tabular form). Give factors affecting its chemical, physical and mechanical properties.	**07**
	(b)	Give a detailed list of potential of bio-composites for medical application.	**07**
		OR	
Q.3	**(a)**	List various additives used in the modification and tailoring of plastics performance and processing.	**07**
	(b)	Write a short note on Radiopaque additives.	**07**
Q.4	**(a)**	With the help of diagram, give a list of various hard and soft tissues of human body that can be replaced/ treated by various polymers.	**07**
	(b)	List typical metallic and ceramic biomaterials used in human body.	**07**
		OR	
Q.4	**(a)**	Give classification of bio composites based on their reinforcement form.	**07**
	(b)	Give block diagram of classification of man-made polymer bio-composites based on biodegradability.	**07**
Q.5	**(a)**	Give a comparison of commodity and engineering thermoplastics used in medical devise applications.	**07**
	(b)	Give a comparison of amorphous and crystalline polymers used in medical devise applications.	**07**
		OR	
Q.5	**(a)**	Discuss the major factors for the use and popularity of PVC in medical device applications.	**07**
	(b)	Give the advantages and disadvantages of various Polyethylenes used as medical plastics. (Only for LDPE, HDPE, UHMWPE and Ethylene copolymers.)	**07**