

Seat No.: _____

Enrolment No. _____

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B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012

Subject code: 172303

Date: 01/01/2013

Subject Name: Medical Plastics

Time: 10.30 am - 01.00 pm

Total Marks: 70

Instructions:

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

- Q.1 (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**
- Q.2 (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**
- (b)** Give a complete list of typical polymeric bio materials used in human body **07**
- Q.3 (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**
- OR**
- Q.3 (a)** Give a comparison of commodity and engineering thermoplastics used in medical device applications. **07**
- (b)** Give a comparison of amorphous and crystalline polymers used in medical device applications. **07**
- Q.4 (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**
- OR**
- Q.4 (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**
- Q.4 (b)** Give at least 10 reasons for the increase in the use of plastics in medical device applications. **07**
- Q.5 (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**
- 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**
