Registration No: | | | | | | | | | | |

Total Number of Pages: 2 **B.TECH**

PEBT5303

6th Semester Regular / Back Examination 2015-16
BIOMATERIALS
BRANCH: BIOTECH
Time: 3 Hours
Max Marks: 70
Q.CODE: W515

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: **(2 x 10)**

a) What do you mean by tissue engineering?

b) List the three major mechanisms of adhesion.

c) Define fracture toughness and impact strength?

d) What are artificial heart valves?

e) What do you mean by artificial tissue?

f) What is Polylactic acid (PLA)?

g) How would you test mechanical properties of a scaffold for bone tissue?

h) Why are ceramic materials more advantageous metallic implant?

i) Define Xenograft and allografts.

j) What is Biodegradable polymer?

Q2 **a)** What is Biodegradable ceramics? Explain any two Biodegradable ceramics. **(5)**

b) Explain briefly different mechanical testing methods for biomaterials? **(5)**

Q3 **a)** Elucidate the various tissue responses to Implants? **(5)**

b) Differentiate between synthetic polymer and biopolymer? **(5)**

Q4 Define the term 'biomaterials'. Classify biomaterials with appropriate examples. What are the basic criteria's of biomaterials? **(10)**

Q5	**a)**	How would you design vascular prosthesis? What will be your choice of material and why?	**(5)**
	b)	Define the term 'biocompatibility'. Mention different methods for improving blood and tissue compatibility problems?	**(5)**
Q6	**a)**	Explain manufacturing process of Stainless steel based Implants?	**(5)**
	b)	What are the nanopolymers used in drug delivery?	**(5)**
Q7	**a)**	How structural modifications affect the physical properties of biomaterials?	**(5)**
	b)	Discuss briefly each aspect of the designing strategies of 2D and 3D matrices (scaffolds) of biomaterials for tissue engineering?	**(5)**
Q8		Answer any Two	**(5 x 2)**
	a)	Dental implants	
	b)	Hydrogel	
	c)	PMMA-bone cement	
	d)	Titanium alloys as biomaterial	