

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH
BRANCH: BEBT

SEMESTER : VI
SESSION : SP/2025

SUBJECT: BE312 BIOMATERIALS

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Explain the stress-strain behavior curve for the biomaterials.	[5] 1	2
Q.1(b)	Describe the functional requirements of the biomaterials and tissue replacement.	[5] 1	2
Q.2(a)	Compare the properties of stainless steel and Ti alloys biomaterials with clinical applications.	[5] 2	4
Q.2(b)	Compare Co-Cr and ceramics as biomaterials with clinical applications.	[5] 2	4
Q.3(a)	Illustrate the wound healing process.	[5] 3	3
Q.3(b)	Explain the cellular responses to the implants.	[5] 3	2
Q.4(a)	Explain the 'theoretical modeling' and 'role of free radical' in the study of biodegradable polymers.	[5] 4	3
Q.4(b)	Explain the instrumentation of scanning electron microscopy in examining the surface chemistry of the biomaterials.	[5] 5	4
Q.5	Write short notes on		
Q.5(a)	Soft tissue replacement	[5] 2,6	3
Q.5(b)	Hard tissue replacement	[5] 2,6	3

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