

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP2025)

CLASS: BTECH
BRANCH: BIOTECHNOLOGY

SEMESTER : VI
SESSION : SP2025

SUBJECT: BE312 BIOMATERIALS

TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

		CO	BL
Q.1(a)	Define biomaterials.	[2] CO1	1
Q.1(b)	Mention the merits and demerits of different types of biomaterials.	[3] CO1	1
Q.2(a)	Describe different types of stress on the implant materials.	[2] CO1	2
Q.2(b)	Explain the stress-strain curve to elucidate the behavior of biomaterials.	[3] CO1	3
Q.3(a)	Calculate the reliability of biomaterial if probabilities of infection, loosening, wear, and fracture failure are 2, 3, 1 and 5%, respectively.	[2] CO1	3
Q.3(b)	What are the important properties of Titanium-based biomaterials?	[3] CO2	2
Q.4(a)	Why are alloyed metal biomaterials preferred over unalloyed?	[2] CO2	3
Q.4(b)	Explain the corrosion process in metallic biomaterials.	[3] CO2	2
Q.5(a)	What are the salient properties of Ti-Ni as biomaterials?	[2] CO2	2
Q.5(b)	Compare the clinical applications of stainless steel and CoCr biomaterials based on the mechanical properties of the implant material.	[3] CO2	3

:::::27/02/2025:::::E