

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP2023)

CLASS: BTECH
BRANCH: BIOTECH

SEMESTER : VI
SESSION : SP2023

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
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		CO	BL
Q.1(a)	Define biomaterials.	[2] CO1	1
Q.1(b)	Name different types of biomaterials with clinical applications.	[3] CO1	1
Q.2(a)	Explain mechanical properties of the biomaterials using stress-strain curve.	[2] CO1	2
Q.2(b)	Calculate the reliability of biomaterial if probabilities of infection, loosening, wear and fracture failure are 2, 3, 1 and 5%. Respectively.	[3] CO1	3
Q.3(a)	Calculate the tensile strength of copper wire (diameter = 1.30mm) with applied force of 342N.	[2] CO1	3
Q.3(b)	What are important properties of CoCr alloy as biomaterial?	[3] CO2	2
Q.4(a)	Why are alloyed metal biomaterials preferred over unalloyed?	[2] CO2	3
Q.4(b)	What are salient properties of ceramic as biomaterials?	[3] CO2	2
Q.5(a)	Explain the corrosion process in metallic biomaterials.	[2] CO2	2
Q.5(b)	Compare the clinical applications of metallic and ceramic biomaterials based on mechanical properties.	[3] CO2	3

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