

CBCS SCHEME

USN

1BEBT105/205

First/Second Semester B.E./B.Tech. Degree Examination, June/July 2026

Elements of Biotechnology and Biomimetics

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1			M	L	C
Q.1	a.	Explain the Structure and functions of prokaryotic and eukaryotic cells with neat labelled diagram.	10	L2	CO1
	b.	With relevant examples explain the biological importance of polysaccharides in living organisms.	10	L2	CO1
OR					
Q.2	a.	Explain the relationship between DNA, RNA, and proteins in determining the characteristics of an organism.	10	L2	CO1
	b.	Discuss the role of protein hormones in maintaining body functions.	10	L2	CO1
Module – 2					
Q.3	a.	Discuss the significance of yellow biotechnology in food production and probiotics.	10	L3	CO2
	b.	Explain the role of industrial (white) biotechnology in sustainable industrial processes.	10	L2	CO2
OR					
Q.4	a.	Explain how environmental biotechnology can be used to remediate oil spills and industrial pollutants.	10	L2	CO2
	b.	Evaluate the importance of bioinformatics in modern drug discovery and personalized medicine.	10	L3	CO2
Module – 3					
Q.5	a.	Explain the significance of Geographical Indication (GI) tags with reference to Basmati rice or Turmeric.	10	L2	CO3
	b.	Analyze the role of biosafety and containment practices in preventing laboratory-associated risks.	10	L3	CO3
OR					
Q.6	a.	Differentiate between upstream processing and downstream processing in biotechnology industries.	10	L3	CO3
	b.	Explain how biotechnology contributes to achieving the UN Sustainable Development Goals (SDGs).	10	L2	CO3

1 of 2

Module – 4

Q.7	a.	Explain how AI contributes to agriculture and crop improvement.	10	L2	CO4
	b.	Evaluate the advantages of AI-based medical imaging systems over conventional diagnostic methods.	10	L3	CO4

OR

Q.8	a.	Discuss how AI technologies can enhance agricultural productivity and crop resistance.	10	L3	CO4
	b.	Explain the importance of AI in protein and enzyme engineering.	10	L2	CO4

Module – 5

Q.9	a.	Discuss the concept of artificial photosynthesis in bioinspired energy production.	10	L3	CO4
	b.	Explain the significance of seashell-based, spider web-inspired, and insect eye-inspired innovations in material science and optics.	10	L2	CO4

OR

Q.10	a.	Explain how termite mounds inspire passive cooling systems in buildings.	10	L2	CO4
	b.	Explain how self-cleaning surfaces inspired by lotus leaves can reduce maintenance costs and improve sustainability.	10	L3	CO4

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