

Reg. No. : E N G G T R E E . C O M

**Question Paper Code : 85015**

**B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2025.**

**First Semester**

**Biotechnology**

**BT25101 — INTRODUCTION TO BIOTECHNOLOGY**

**(Common to Industrial Biotechnology)**

**(Regulations 2025)**

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**Time : Three hours**

**Maximum : 100 marks**

**Answer ALL questions.**

**PART A — (10 × 2 = 20 marks)**

1. Identify two organisms used in cheese or alcoholic fermentation processes.
2. Differentiate between amylase and pectinase based on their application in food industries.
3. Identify the major symptoms of vitamin D deficiency.
4. State the role of vitamin A in vision with reference to rod and cone cells.
5. List two major clinical functions of albumin.
6. State the primary genetic cause of sickle cell anemia.
7. List two conventional techniques for detecting pathogenic microbes.
8. Define DNA based diagnosis and give one example of a disease diagnosed using it.
9. List two microorganism commonly involved in composting mentioning their role.
10. Mention two industrial products derived from waste biomass, listing the source of waste.

**PART B — (5 × 13 = 65 marks)**

11. (a) Elaborate on the applications of molds, bacteria and yeast in food industries with suitable examples.

**Or**

- (b) Compare different industrial enzyme sources and illustrate their roles in value added food production.

12. (a) Explain the nutritional importance of fiber and discuss both its beneficial and adverse effects.

Or

- (b) Discuss the biochemical functions of fat-soluble and water-soluble vitamins with suitable examples.
13. (a) Discuss the sequence of reactions in blood clotting and the role of thrombin and fibrin.

Or

- (b) Explain the structure and functions of major plasma proteins and their clinical significance.
14. (a) Elaborate on the biotechnological strategies for diagnosing Alzheimer's disease and cystic fibrosis.

Or

- (b) Explain the use of protein and enzyme as markers in disease detection and their reliability.
15. (a) Elaborate on the contribution of Biotechnology to develop biofuels from waste and its environmental benefits.

Or

- (b) Discuss the principle of biocomposting and evaluate the factors influencing compost quality.

**PART C — (1 × 15 = 15 marks)**

16. (a) Compile the effectiveness of a diagnostic workflow that uses plasma proteins, hemoglobin derivatives and DNA based tools to detect infectious and genetic diseases.

Or

- (b) Analyze how disorders like Vitamin A deficiency and hemoglobin abnormalities could be managed in low resource setting using integrated biotechnology approach.