

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF SCIENCE - HONOURS/ HONOURS WITH RESEARCH - SEMESTER - I
EXAMINATION - WINTER 2025

Subject Code: BS01001011

Date: 23-12-2025

Subject Name: Biochemistry

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Draw neat and clean diagrams as required.

Q.1 Write a note on the following

**(Marks-
10X2=20)**

1. Mutarotation
2. Difference between reducing and non-reducing disaccharides
3. Importance of oxidative phosphorylation in ATP synthesis
4. Salting out of proteins
5. Name two water-soluble vitamins and their deficiency diseases
6. Griffith's experiment
7. Role of buffers in maintaining pH
8. First and second laws of thermodynamics
9. Difference between A and B type DNA
10. Fibrous protein with example

Q.2 Answer the following (Any 2 out of 3)

**(Marks-
2X10=20)**

1. Discuss the primary, secondary, tertiary, and quaternary structures of proteins with examples.
2. Explain the biosynthesis and degradation of purines and pyrimidines.
3. Describe the process of glycolysis. What are the major regulatory steps involved in its control?

Q.3 Answer the following (Any 6 out of 8)

**(Marks-
6X5=30)**

1. Describe the structure, types, and functions of disaccharides.
2. Discuss the chemiosmotic theory of oxidative phosphorylation and the role of the proton pump in ATP synthesis.
3. Explain the concept of ionization of water
4. Describe different types of RNA
5. Describe the process of gluconeogenesis.
6. Classify amino acids based on their structure and properties. Provide examples for each class.
7. Describe the laws of thermodynamics and how they apply to bioenergetics.
8. Classify vitamins into water-soluble and fat-soluble. Explain types of fat soluble vitamin and their deficiency diseases.
