

2025

M.Sc. 1st Semester Examination

**BIOTECHNOLOGY AND
BIOINFORMATICS**

Paper : BTIE405A1

**[Biochemistry of Macromolecules
and Secondary Metabolites]**

Full Marks : 25

Time : One Hour

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

Answer any *two* questions : $2 \times 2 = 4$

1. State the significance of gluconeogenesis.
2. Why non-covalent bonds are called as 'dance of life'?
3. Write the weak forces that stabilizes the protein structure.
4. Write the structural difference between amylose and amylopectin.

P.T.O.

(2)

Group - B

Answer any *two* questions : $4 \times 2 = 8$

5. State the effect of competitive inhibitors on K_m and V_{max} .
6. Describe the metabolic significance of pentose phosphate pathway.
7. Describe β -oxidation of fatty acid.
8. State the role of vitamin in metabolism with an example.

Group - C

Answer any *one* question : $8 \times 1 = 8$

9. Write short notes on : 4×2
 - (i) Glycolysis
 - (ii) Deamination and transamination
10. What is coenzyme? Explain the roles of pH and temperature affecting the activity of enzymes. Write a short note on Michaelis-Menten Equation. $2+4+2$

Internal Assessment - 5 marks

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Paper : BTIE405A1

[Microbiology and Microbial Physiology]

Full Marks : 25

Time : One Hour

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Group - A

Answer any *two* questions : $2 \times 2 = 4$

1. State the hypothesis of theory of Panspermia for origin of life.
2. How can you maintain continuous culture of bacteria?
3. Write the functions of influenza virus neuraminidase and hemagglutinin.
4. How bacteria can tolerate high temperature?

P.T.O.

(2)

Group - B

Answer any *two* questions : 4×2=8

5. Write a short note on Miller-Urey Experiment.
6. Why is it difficult to develop antiviral compounds? Which targets in the viral replication process are used to develop an anti-viral compound? 1+3
7. How do you calculate percentage similarity as per the Numerical Taxonomy? What is myxospore? 2+2
8. Mention the growth influencing factor of bacteria.

Group - C

Answer any *one* question : 8×1=8

9. Write short note on Viroids. What is Diatomite? Explain the RNA World Hypothesis with two supporting evidences. 3+2+3
10. What are polyketides? Describe different classes of polyketide synthetase enzyme. Give example of two polyketides acting as mycotoxin. 2+4+2

Internal Assessment - 5 marks
