

**MASTER OF SCIENCE IN
CHEMISTRY/MASTER OF SCIENCE IN
ANALYTICAL CHEMISTRY
(MSCCHEM/MSCANCHEM)**

Term-End Examination

December, 2025

MCH-015 : BIOLOGY FOR CHEMISTS

Time : 1 Hour

Maximum Marks : 25

Note : Answer all questions. Illustrate your answers wherever required.

1. Answer any **two** of the following questions :

$$2 \times 2\frac{1}{2} = 5$$

- (a) How does the regulation of Phosphofructokinase (PFK) in glycolysis help the cell meet its energy needs ?

- (b) In the context of glycolysis, why is the interconversion of G-3-P and DHAP crucial for maintaining metabolic efficiency ?
- (c) Explain the role of pyruvate in energy production under aerobic and anaerobic conditions.

2. Answer any **two** of the following questions :

$$2 \times 2\frac{1}{2} = 5$$

- (a) What is galactosemia ? How does it affect metabolism in individuals ?
- (b) List the main steps of the TCA cycle.

Write the significance of TCA cycle.

- (c) What is the role of transamination in amino acid metabolism ? Which coenzyme is involved in the reaction ?

3. Answer any **two** of the following questions :

$$2 \times 2\frac{1}{2} = 5$$

- (a) What is the role of Acetyl CoA in metabolism ? Why can fatty acids not be converted directly into glucose ?
- (b) The body ensures the brain gets energy during starvation. Give reason and explain.
- (c) Immunoglobulin G (Ig G) is the most common antibody in the blood, helping fight infections and provide long-term immunity. Explain.

4. Differentiate between any **two** of the following pairs :

$$2 \times 2\frac{1}{2} = 5$$

- (a) Natural active immunity and Artificial active immunity
- (b) ATP hydrolysis and AMP hydrolysis
- (c) The role of ATP and the role of NADH in cellular metabolism

5. Write short notes on any **two** of the following :

$$2 \times 2\frac{1}{2} = 5$$

- (a) Fluid Mosaic Model of the plasma membrane
- (b) Tertiary structure of protein
- (c) Significance of genetic code

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