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Daffodil International University

**Department of Genetic Engineering and Biotechnology**
Faculty of Health and Life Sciences
B. Sc. (Hons.) in Genetic Engineering and Biotechnology
Midterm Examination Fall 2026

**Course Code:** 0512-2107 **Course Title:** Metabolism
**Level and Term:** L2, T1 **Section: 253 (A+B)** **Course Teacher Initials:** DMI & AR
**Time:** 1 Hour 30 Minutes **Total Marks:** 25

**Answer the Following Questions:** Marks

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|---|---|---|---|---|
| 1 | (a) | Define metabolism and identify the major mechanisms involved in regulating metabolic pathways. | [CLO1, PLO1, C1] | 2.5 |
| | (b) | Compare anabolism and catabolism in terms of their purposes, energy requirements, and roles in cellular metabolism. | [CLO1, PLO1, C4] | 2.5 |
| 2 | | Explain the pathway of glycolysis, identifying its intermediates, enzymes, and energy-producing steps. | [CLO3, PLO2, C2] | 5.0 |
| 3 | (a) | Evaluate the aerobic and anaerobic fates of pyruvate in terms of ATP production, and physiological significance. | [CLO1, PLO1, C5] | 3.0 |
| | (b) | Illustrate the TCA cycle, indicating its substrates, intermediates, enzymes, and products at each step. | [CLO3, PLO2, C3] | 2.0 |
| 4 | (a) | Explain transamination with a suitable biochemical reaction, marking the substrates, products, and enzyme involved. | [CLO3, PLO1, C2] | 2.0 |
| | (b) | Discuss the urea cycle, showing its major intermediates, enzymes, and the sequence of reactions. | [CLO3, PLO2, C6] | 3.0 |
| 5 | (a) | What is lipid metabolism? Analyze the major pathways of lipid metabolism. | [CLO1, PLO2, C4] | 2.5 |
| | (b) | Elaborate the process of β-oxidation, showing the sequence of reactions, enzymes, and products. | [CLO3, PLO2, C6] | 2.5 |