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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
Final Examination Summer 2026

Course Code: 0512-2107
Level and Term: L-2, T-1
Time: 02 Hours

Section: 252 (A+B)

Course Title: Metabolism
Course Teacher Initials: DMJ
Total Marks: 40

nswer the following questions:

			Marks
1	(a) Define nucleotides. Describe the pathway of *de novo* pyrimidine nucleotides synthesis with flowchart.	[CLO1, PLO1, C6]	4.0
	(b) Explain the major metabolic functions of nucleotides and briefly discuss the regulation of nucleotides biosynthesis.	[CLO2, PLO2, C2]	4.0
2	(a) Explain the term amino acid metabolism. Briefly discuss the major pathways involved in amino acid catabolism.	[CLO1, PLO1, C2]	4.0
	(b) Discuss the regulation of amino acid metabolism. Explain the significance of amino acid biosynthesis.	[CLO2, PLO2, C6]	4.0
3	(a) Define biosynthetic pathways. Explain the major steps involved in triglyceride biosynthesis'	[CLO1, PLO1, C2]	4.0
	(b) Construct a flowchart of the fatty acid biosynthesis pathway and describe its major applications in biotechnology and metabolic engineering.	[CLO2, PLO2, C4]	4.0
4	(a) Define the *de novo* and salvage pathways of nucleotide synthesis. Explain how purine nucleotides are synthesized via the *de novo* pathway.	[CLO1, PLO1, C1]	4.0
	(b) What is mineral metabolism? Briefly describe the major functions of minerals in the body.	[CLO3, PLO7, C6]	4.0
5	(a) Discuss the major amino acids biosynthetic pathways with suitable examples.	[CLO1, PLO1, C2]	4.0
	(b) What are macrominerals and trace minerals? Distinguish between glucogenic and ketogenic amino acids.	[CLO3, PLO7, C4]	4.0