



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: DMI
Total Marks: 40

Answer the following questions:

		Marks
1 (a)	Define nucleotides. Describe the pathway of <i>de novo</i> 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 <i>de novo</i> and salvage pathways of nucleotide synthesis. Explain how <u>purine nucleotides</u> are synthesized via the <i>de novo</i> 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