

Department of Genetic Engineering and Biotechnology
Faculty of Health and Life Sciences
B. Sc. (Hons.). in Genetic Engineering and Biotechnology
Midterm Examination Summer 2025

Course Code: 0512-1201
Level and Term: L-1, T-2
Time: 1 Hour 30 minutes

Section: 251 A, B

Course Title: Principle of Ge
Course Teacher Initials:
Total Mar

Splitting any answer is strictly prohibited

			Mark
1	(a) State the reasons why Gregor Mendel is referred to as the Father of Genetics.	CLO2, PLO2, C1	3
	(b) List the key reasons why pea plants were selected by Mendel for his genetic experiments.	CLO1, PLO1, C1	2
2	(a) Explain the principles of the Law of Segregation and Law of Dominance with appropriate genetic context.	CLO2, PLO2, C2	3
	(b) Provide two examples of genetically modified organisms (GMOs) and explain their significance.	CLO6, PLO1, C2	2
3	<p>In a flowering plant species: Red petals (R) are dominant over white petals (r) Broad leaves (B) are dominant over narrow leaves (b) Two plants heterozygous for both traits (RrBb) are crossed.</p>		
	(a) Construct the Punnett square for this dihybrid cross and determine the phenotypic ratio of the offspring.	CLO3, PLO7, C3	2
	(b) Analyze the Punnett square to determine what fraction of offspring will exhibit red petals and be homozygous recessive for leaf shape. Demonstrate your reasoning process.	CLO3, PLO7, C4	3
4	(a) Interpret the concept of the Central Dogma of Molecular Biology in your own words.	CLO1, PLO1, C2	3
	(b) Examine the chromosomal locations 4p2 and 12q3 of insulin subunits to deduce relevant information about gene locus.	CLO1, PLO1, C4	2
	(a) How is a pre mRNA converted into functional mRNA?	CLO4, PLO2, C3	2
	(b) Draw a Gene structure diagram and explain the role of promoter.	CLO1, PLO1, C1	3