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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		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.		
	(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
	(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

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