United International University

School of Science and Engineering

Mid-term Examination; Year 2023; Trimester: Spring

Course: BIO 3105; Title: Biology for Engineers; Sec: A-C

Full Marks: 30; Time: 1 hr 45 mins

*There are Five Questions, **1, 2, and 3 are mandatory to answer, and answer 4 or 5 (anyone).***

1.	(a) Describe the importance of check points in the cell division.	1	CO1
	(b) Define tissue and organ.	2	CO1
	(c) Define Genetic code and describe its characteristics.	2	CO1
	(d) Show cell overview.	2	CO1
2.	(a) Apply your idea that can be implemented as business models. The ideas need to be environment friendly.	3	CO2
	(b) The dominant gene for eyes creates a black eye, while a recessive gene creates ash one. If you see 75% of the second-generation children have black eye, what were the traits of the actual parents (2 generations before)?	2	CO2
	(c) Predict the reasons for having interphase in mitosis and meiosis in relation to production of cells.	3	CO2
3.	(a) Can you design a project using nanoparticles in the field of cancer treatment using your own background? Explain how you can implement your expertise there.	3	CO3
	(b) Protein, phospholipid and cholesterol are the integral part of cell membrane. Would you implement the ways of transport of the nutrients across cell membranes.	3	CO3
	(c) One baby has born with 3n and another baby with 2n -1 chromosomes. Create your assumption in which functions of cell division results in formation of these numerical anomalies.	2	CO3
4.	(a) Give logical explanation how Ecosystems and evolution are intertwined?	3	CO4
	(b) Clarify that lysosome acts as cell recycling centre.	4	CO4
5.	(a) Justify DNA is a stable genetic material in comparison to RNA.	3	CO4
	(b) Explain where nuclear envelop dissolves and form in the mitosis. Differentiate the Anaphase of meiosis 1 and mitosis.	4	CO4

CO1: Describe different biological entities.
CO2: Apply the knowledge of biological systems in a real-life problem.
CO3: Design several biological systems with constraints.
CO4: Explain several procedures for solving biological systems within constraints.