United International University

School of Science and Engineering

Mid-term Examination; Year 2025; Trimester: Spring
Course: BIO 3105/3107; Title: Biology for Engineers/Biology;
Sec: All
Full Marks: 30; Time: 1 hr 30 mins

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

1.	a. Comment on the anti-parallel features of DNA strand.	2	CO1
	b. What happens during cell division if the checkpoint malfunctions?	2	CO1
	c. Mention the health benefits of fibre and complex carbohydrate.	1	CO1
	d. List the components that make up a nucleotide.	2	CO1
2.	a. Create your own idea "organ-on-a-chip" can be used in medical sectors?	3	CO2
	b. "DNA double helix has some extraordinary features'-justify the statement.	2	CO2
	c. Do you consider that the cell membrane has a role in transportation? Briefly show the role of cell membrane in transportation.	3	CO2
3.	a. What do you understand by cell? Answer with the light of cell theory.	3	CO3
	b. Argue that genetic diversity arise in meiosis cell division.	3	CO3
	c. How can you design the characteristics of genetic code as per rules.	2	CO3
4.	a. Discuss the function of proteins.	3	CO4
	b. What do you understand by "central dogma of life"? Discuss the role of ribosomes in protein synthesis.	4	CO4
5.	a. In order to maintain controlled cell division and avoid diseases like cancer, how do initiation and inhibition mechanisms control the cell cycle?	3	CO4
	b. Which molecule, DNA or RNA, exhibits more genetic stability and is primarily responsible for storing and transmitting genetic characteristics in living organisms?	4	CO4

CO1 Describe different biological quantities
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