

**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:** 0512-1209

**Course Title:** Computer Fundamentals and Computational Biology

**Level and Term:** L-1, T-2

**Section:** 251 A, B

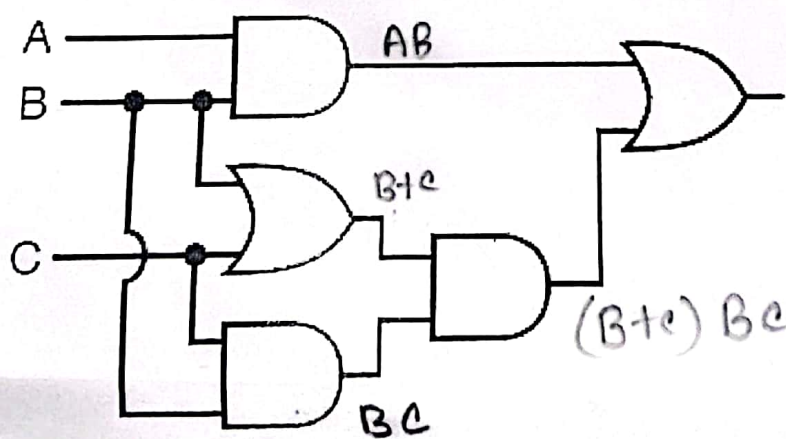
**Course Teacher Initials:** MZA

**Time:** 1 hour 30 minutes

**Total Marks:** 25

**Splitting any answer is strictly prohibited**

			Marks
1	(a) Explain these keywords: Phishing, Malware and Encryption.	CLO1, PLO1, C2	3
	(b) What can you assess about 'The Future of Computing'?	CLO1, PLO1, C5	2
2	(a) Write down the key features of control unit in a processor.	CLO1, PLO1, C1	3
	(b) Describe the GPU system in a computer.	CLO1, PLO1, C2	2
3	(a) Define three basic logic gates and state their respective Boolean expressions	CLO2, PLO3, C1	3
	(b) Explain the role of a truth table in analyzing logic gate operations. Provide an example with AND and OR gates.	CLO2, PLO3, C2	2
4	(a) Design two OR gate using NAND gate and NOR gate.	CLO2, PLO3, C6	3
	(b) State and prove the 2 <sup>nd</sup> statement of De Morgan using truth table.	CLO2, PLO3, C4	2
5	(a) Find out the value of Q with respect to A, B and C.	CLO2, PLO3, C3	2
	(b) Reduce the Q expression as much as possible using Boolean algebra.	CLO2, PLO3, C4	3



$$\begin{aligned}
 Q &= AB + BC(B+C) \\
 &= AB + B \cdot B \cdot C + B \cdot C \\
 &= AB + BC + BC \\
 &= B(A + C + C) \\
 &= B(A + C) \\
 &= AB + BC
 \end{aligned}$$