

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
Course Teacher Initials: MZA
Total Marks: 25

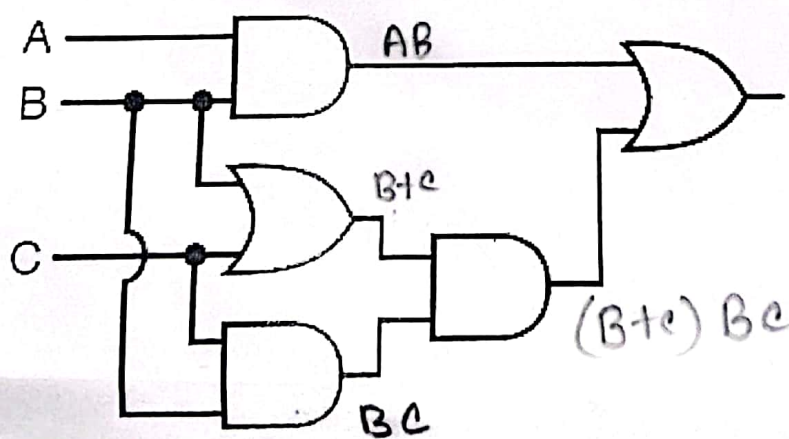
Level and Term: L-1, T-2

Section: 251 A, B

Time: 1 hour 30 minutes

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 nd 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 |



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