BRAC UNIVERSITY
Department of Computer Science and Engineering
CSE 260: Digital Logic Design

Examination: **Quiz 2** Semester: Spring2025
Duration: 25 Minutes Full Marks: 15

Answer the following questions. You **MUST** show your workings/calculations where applicable.
Figures in the right margin indicate marks.

Name:	ID:	Section:

1. CO2	Convert the following function to its corresponding canonical **POS** form using boolean algebraic formulas and find the max terms: F(D, B, A, C) = A'+B+C'+AC [5+3]
2. CO2	Simplify the following function to minimum literals: F(A,B,C,D) = ∑(0,1,3,4,6,7,9,10,11,14,15) [2+5]

1. $F(D,C,A,B) = A' + B + C' + AC$

$= (A' + B + C' + A)(A' + B + C' + C)$

$= (B + C' + 1)(A' + B + 1)$

$= 1 \cdot 1 = 1$

So, there is no max term.

2.

$F(A,B,C,D) = \sum(0,1,3,4,6,7,9,10,11,14,15)$

$= A'B'C'D' + A'B'C'D + A'B'CD + A'BC'D' + A'BCD' + A'BCD + AB'C'D + AB'CD' + AB'CD + ABCD' + ABCD$

$= A'C'D'(B'+B) + B'D(A'C' + A'C + AC' + AC) + BC(A'D' + A'D + AD' + AD) + AB'CD'$

$= A'C'D' + B'D(A' + A) + BC(A' + A) + AB'CD'$

$= A'C'D' + B'D + BC + AB'CD'$

$= A'C'D' + B'(D + ACD') + BC$

$= A'C'D' + B'(D + AC)(D + D') + BC$

$= A'C'D' + B'(D + AC) + BC$

$= A'C'D' + B'D + AB'C + BC$

$= A'C'D' + B'D + C(B + AB')$

$= A'C'D' + B'D + C(A + B)(B + B')$

$= A'C'D' + B'D + AC + BC$ (Ans)