



EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Mid Term I Examination, Fall 2021 Semester

Course: CSE 345 Digital Logic Design, Section-2
Instructor: Musharrat Khan, Senior Lecturer, CSE Department
Full Marks: 40 (20 will be counted for final grading)
Time: 1 Hour and 25 Minutes (Including Submission)

Note: There are FIVE questions, solve ALL of them. Course Outcome (CO), Cognitive Level and Mark of each question are mentioned at the right margin.

1. Perform the following operations using binary arithmetic: [CO1,C2,
Mark: 8]

- a) $141 + 57$
- b) 2's complement of 184
- c) $(10111001) - (01111001)$ [Consider both the numbers as 2's complement signed number]
- d) $(001110111) + (111001011)$ [Consider both the numbers as 2's complement signed number]

2. Prepare truth table for the following Boolean function and also [CO1,C2,
determine the complement of the Boolean function [Do not change the Mark:6+6=12]
form of the given expression]:

$$F(A, B, C, D) = (D' + AB')(AD + C'D') + BD'(A' + C') + B'$$

3. Use algebraic method to determine CPOS and CSOP expression for the [CO1,C3,
following non-standard expression: Mark: 4+4=8]

$$F(A, B, C, D) = (B'C' + AD')(A' + B + D)C'$$

4. Use K-map method to simplify the following Boolean function as POS [CO1,C3,EP1
expression: Mark: 6]

$$F(A, B, C, D) = \sum(0, 6, 8, 10, 13) + \sum_{d.c.}(1, 2, 4, 5, 7, 14, 15)$$

5. Use K-map method to simplify the following Boolean function as SOP [CO1,C3,EP1
expression: Mark: 6]

$$F(A, B, C, D) = \prod(3, 9, 11, 12) \cdot \prod_{d.c.}(1, 2, 4, 5, 7, 14, 15)$$