

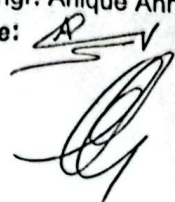


Air University
Mid Semester Examinations: Spring 2025

Student ID: 241803

(To be solved on Answer Books only)

Subject: ...Digital Logic Design....
Class:BSCYS-II-A.....
Section(s): ...A.....
Course Code: ...EE-123....

Time Allowed: 120 Minutes
Max Marks: 70
FM's Name: Engr. Anique Ahmad
FM's Signature: 

INSTRUCTIONS

- Attempt responses on the answer book only.
- Nothing is to be written on the question paper.
- Rough work or writing on question paper will be considered as use of unfair means.
- Tables / calculators are not allowed.

Q1. Express the following numbers in decimal:

CLO-1-Marks (15)

- a) $(10110.0101)_2$
- b) $(16.5)_{16}$
- c) $(26.24)_8$
- d) $(DADA.B)_{16}$
- e) $(1010.1101)_2$

Q2. Find the 9's and the 10's complement of the following decimal numbers:

CLO-1-Marks (15)

- a) 25,478,036
- b) 63, 325, 600
- c) 25,000,000
- d) 00,000,000.

Q3. Simplify the following Boolean expressions to minimum number of literals:

CLO-2-Marks (10)

- a) $xy + xy'$
- b) $(x + y)(x + y')$
- c) $xyz + x'y + xyz'$
- d) $(A + B)'(A' + B)'$
- e) $xy + x(wz + wz')$

Q4. Express the following function as a sum of minterms and as a product of maxterms:

CLO-2-Marks (15)

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

Q5. Simplify the following Boolean functions, using Karnaugh maps:

CLO-2-Marks (15)

1) $F(x,y,z) = \sum (2,3,6,7)$

2) $F(w,x,y,z) = \sum (2,3,12,13,14,15)$

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