S= 980, C= 60

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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