Daffodil International University
Department of Software Engineering
SWE-223 Digital Electronics with Lab
Midterm Examination, Fall2015, Total Marks 20
Time 90 Min, Course Teacher: Tanjila Farah (TF),

Answer **All** questions.

1. Convert the following hexadecimal values to binary & then perform 2's complement subtraction on the binary values. 2.5 + 2.5

$$(13)_{16} - (C)_{16}$$

2. Simplify the following equation using Boolean theorems to:
   a) Minimum number of literals: 2.5

   A'B(D' + C'D) + B(A + A'CD)

   b) Only 2 literals: 2.5

   ABCD + A'BD + ABC'D

3. Consider the following truth table. Build K-map from the truth table. 4+ Derive the simplified Product of Sum from the K-map (POS). 3+ Draw the simplified equation circuit diagram. 3

A	B	C	D	Out
0	0	0	0	0
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0
0	1	0	0	X
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	0
1	0	0	1	X
1	0	1	0	1
1	0	1	1	0
1	1	0	0	X
1	1	0	1	1
1	1	1	0	0
1	1	1	1	X

4. Simplify of the following expression to minimum number of Sum of Product. Use any method you find suitable. 5

$$F(w,x,y,z) = \Pi\,(8,12,10,14)\ \Pi_{d.c.}\,(13,15,9)$$