



Daffodil International University
 Department of Electrical and Electronic Engineering
 Faculty of Engineering
Midterm Examination, Summer-2026

Course Code: 0714-323
 Section: A, B, C, D, E
 Full Marks: 25

Course Title: Digital Electronics
 Level-Term: L3-T1
 Exam Date: June 27, 2026

Teacher's Initial: DAS, BS
 Time: 1.5 Hours

[Notes: Answer all the questions. The number on the rightmost side of the question indicates the marks]

- Q1.** (a) Simplify the following Boolean function to a minimum number of literals using the laws of Boolean algebra.
 $F(A, B, C, D) = (A + B + C' + D)(B' + C' + D)(A' + C + D')$ CO1
(C3) 3+8
- (b) Design a combinational circuit that accepts decimal digits represented in 84-2-1 code as input and generates the corresponding 8421 code as output. CO3
(C3)
- Q2.** (a) Implement the following Boolean function using NOR gates only.
 $F(A, B, C) = \sum(0, 6)$ CO1
(C3) 2+4
- (b) Using K-map find the simplest form in SOP and POS for the following Boolean function:
 $F(w, x, y, z) = \sum(3, 4, 13, 15)$ with the don't care conditions given by
 $d(w, x, y, z) = \sum(1, 2, 5, 6, 8, 10, 12, 14)$ CO1
(C3)
- Q3.** (a) Define noise margin and propagation delay. Explain how the fan out capability of DTL can be increased. CO2
(C2) 5+3
- (b) Draw neat and properly labeled circuit diagrams of the CMOS NOR and NAND gates. CO2
(C2)