Benha University
Faculty of Engineering (at Shoubra)
Electrical Engineering Department
2nd Year (Electronics and Communications Engineering)



Midterm Exam

Subject: Logic Circuits - ECE 224C

Date: Thu 26/03/2015 **Duration:** 1 hour

№ of Questions: 4 in 1 page(s)

Total Mark: 10

Question 1: (4 Marks)

Simplify the following expressions to (1) sum-of-products and (2) products-of-sums:

a)
$$(A' + B + D')(A' + B' + C')(A' + B' + C)(B' + C + D')$$

b)
$$BCD' + ABC' + ACD$$

Attempt the following questions.

Question 2: (2 Marks)

Draw the multiple-level NOR circuit for the following expression: $CD(B+C)A + (BC'+DE') \label{eq:continuous}$

Question 3: (2 Marks)

Derive the circuits for a three-bit parity generator and four-bit parity checker using an odd parity bit.

Question 4: (2 Marks)

Show that the dual of the exclusive-OR is also its complement.

Good Luck
Dr. Islam Elshaarawy