COE 202, Term 131
Digital Logic Design

Quiz# 3

Date: Thursday, Oct. 31

Q1. For the Boolean function F(W, X, Y, Z)=Σ m(**0, 1, 2, 3, 7, 8, 10**), d(W, X, Y, Z)=Σ m(**5, 6, 11, 15**) shown in the k-map below:

WX \ YZ	00	01	11	10
00	1	1	1	1
01	0	x	1	x
11	0	0	x	0
10	1	0	x	1

(i)   Identify all the *prime implicants* and the *essential prime implicants* of F.

(ii) Simplify the Boolean function **F** into a <u>minimal</u> <u>sum-of-products</u> expression.

(iii) Simplify the Boolean function **F** into a <u>minimal</u> <u>product-of-sums</u> expression.

Q2. The following Boolean expression: $A'C' + AC + B'D'$ is a simplified version of the expression: $A'C'D' + A'BC' + ABC + ACD'$. Are there any don`t care conditions? If so, what are they?