**Dept. of EEE, EWU, Summer 2014**

Course Name : Digital Logic Design

Course Code : EEE205

Experiment No : 06

Name of the Experiment : Implementation of Boolean Function Using Quartus-II

Date of Performance : 16/07/2014

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Group no. : 01

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**Objective Of The Experiment**:

In this particular experiment, our main objective was to get familiar with Quartus II and to learn using it for compilation and simulation purpose.

**Answer to the Question 01**

 Given, Z=F(A,B,C,D)= ∏(2,0,6,8,10,11,15,12)= ∏(0,2,6,8,10,11,12,15)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| AB | CD | 00 | 01 | 11 | 10 |
| 00 | 0 | 1 | 1 | 0 |
| 01 | 1 | 1 | 1 | 0 |
| 11 | 0 | 1 | 0 | 1 |
| 10 | 0 | 1 | 0 | 0 |

K-map for Z

Z= ($\overbar{A}$+C+D) (B+D) ($ \overbar{A}$+$\overbar{C}$+$\overbar{D}$) (A+$\overbar{C}$+D)

**Truth table of z:**

|  |  |
| --- | --- |
| Inputs | Output |
| A | B | C | D | Z |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 1 | 0 | 0 |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 0 | 1 |
| 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 1 | 1 |
| 1 | 0 | 1 | 0 | 0 |
| 1 | 0 | 1 | 1 | 0 |
| 1 | 1 | 0 | 0 | 0 |
| 1 | 1 | 0 | 1 | 1 |
| 1 | 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 | 0 |

**Answer to the Question 02**



Figure1: Logic diagram of the given function

**Answer to the Question 03**

The simulation output waveform is attached on the next page.

**Conclusion:**

In this experiment, we have implemented Boolean using quartus-II. It is huge functional software. But it is not user friendly.Here we can simulate circuits easily and find the output of the circuit.