UNIVERSITY OF TEHRAN

Electrical and Computer Engineering Department

Digital Logic Design LAB

Lab3-Deliverables

The report must be written based on the given template. (1)

1- **Waveform Generator (8)**
   a) Present the simulation outcomes for all waveforms listed in Table 1. (6 (1 point for each waveform)
   b) Compare the FPGA resource utilization between the ROM with the *romstyle* keyword and without it. (1)
   c) Provide the synthesis report for the Waveform Generator's design. (1)

2- **PWM (Pulse Width Modulation) (2)**
   a) Briefly explain the operation of the PWM. (1)
   b) Show the simulation results for three data inputs and evaluate the precision of your PWM design. (1)

3- **Frequency Selector (1)**
   a) Show the simulation results for three selected frequencies. (1)

4- **Amplitude Selector (1)**
   b) Confirm the accuracy of your design across three distinct amplitude levels for all waveforms using Modelsim. (1)

5- **Implementation (7)**
   a) Exhibit the schematic diagram of the Function Generator within Quartus. (1)
   d) Demonstrate the Oscilloscope visualization of different waveforms at two distinct amplitude and frequency settings. (6 (1 point for each waveform)