HACETTEPE UNIVERSITY
ELECTRICAL AND ELECTRONICS ENGINEERING
ELE227 FUNDAMENTALS OF DIGITAL SYSTEMS LABORATORY
FALL 2019

Name:
Number:
Quiz 3:

Experiment 3 – Implementation of Combinational Circuits with VHDL

Q) There is a digital device, that contains a combinational logic circuit. This system has 3 binary inputs (x, y, z) and 3 binary outputs (A, B, C). An electrical and electronics engineering student (like you) observes this system by applying all possible inputs and recording all possible outputs. After some observation of the behavior of the system, student has reached following results:

- If the binary inputs are 0,1,2 or 3 (in decimal), output is one greater than the input.
- If the inputs are applied as 4, 5, 6 or 7 output is one less than the input.

With all these given information,

a) Complete the truth table for all possible cases.
b) Design this circuit using only one 3-to-8 decoder and minimum number of OR gates.

x	y	z	A	B	C