**Design Project 1: Design and Implementation of Combinational Circuits**

**Validation Sheet – Page 1**

**The Validation Sheet for Project 1 is two pages long. Make sure that you take both pages of the Validation Sheet to the CEL when you go to have your trainer kit validated.**

**No GTA or student should discuss any aspect of a student’s design with another student. This includes the number of chips that a student uses, the number of segments that a student implements, or the choice of segments that a student makes.**

**All sections of this Validation Sheet must be completed in INK.**

Name:

1. Review the student’s chip-level Quartus schematic. (The student may use an electronic version of the schematic.) If the student has no schematic, **stop the validation**. Have the student return with the schematic before proceeding.
2. Does the schematic reasonably match the layout and wiring of the student’s trainer kit?

**If the answer is NO, briefly describe any major differences between the circuit schematic and the layout and wiring of the trainer kit in the “Comments” section on the next page.**

1. Evaluate the student's wiring efforts. The student starts with 10 points. Deduct **one point** for each item on the following list that you find. If you decide that a fault exists, show it to the student and mark the appropriate space.

Wires are more than one inch above the breadboard.

Wires are cut to random lengths.

Wires are stripped too short.

Wires are stripped too long.

Wires go over the tops of chips.

All of the wires are one color.

Power or ground wires are not color-coded.

Daisy-chained power distribution.

Daisy-chained signal distribution.

Wired pins in the circuit don’t match those in the schematic

**Final Wiring Score**

1. Did the student use more than three 7400 chips or more than two 7404 chips?
2. Does the wired circuit occupy more than one breadboard?

Validated by:

GTA: **Print** your name. GTA: **Sign** your name**.**

**Please continue to the next page.**

**Design Project 1: Design and Implementation of Combinational Circuits**

**Validation Sheet – Page 2**

Name:

The logic switches on the trainer kit represent inputs to a seven-segment LED display driver circuit. The student has implemented at least three of the individual segment drivers. ***Shade in the segments that the student implemented*.**

|  |  |
| --- | --- |
| T  U  V  W  X  Y  Z | NUMBER OF SEGMENTS IMPLEMENTED: |
|  |  |

Apply all ten input combinations and record your observations in the table below by ***shading in the lit segments for each input combination****.* The student should have labeled the logic switches and display segments on the board.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Input Value  (ABCD) | 0011 | 0100 | 0101 | 0110 | 0111 |
| 7-segment LED |  |  |  |  |  |
| Letter | A | b | C | d | E |
| Input Value  (ABCD) | 1000 | 1001 | 1010 | 1011 | 1100 |
| 7-segment LED |  |  |  |  |  |
| Letter | F | g | H | I | J |

**Comments:** (Describe discrepancies or any questionable behaviors in the circuit or validation process.)

**Before signing the validation sheet or allowing the student to leave the CEL, make sure that the student removes the wires from the trainer kit. The student may leave power and ground wires on the board.**

Validated by:

GTA: **Print** your name. GTA: **Sign** your name**.**

Date and Time: