## ECE 150 Digital Logic Design, Fall 2023 Quiz 4, November 15th 2023

## Problem 1 (10 pts).

Consider the common annode 4x4 LED matrix below, with logical variables (A,B,C,D) as row inputs and (a,b,c,d) as column inputs.

(a) For each time instance of the timing diagram below  $(t_1, t_2, t_3, t_4)$ , list the LEDs which are ON. Give answers in (row, column) format (ex. (A,d)).

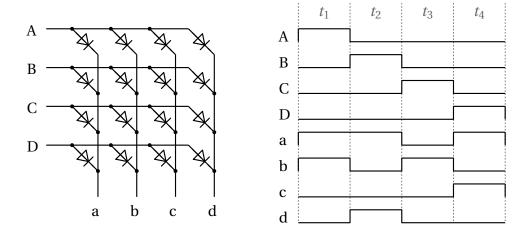


Figure 1: Left: 4x4 common anode LED matrix. Right: row/column timing diagram.