

**CMSC 130: Laboratory Exercise #7: MIXED LOGIC
(COMBINATIONAL CIRCUIT BUILDING BLOCKS)**

1. Design a combinational circuit that accepts a three-bit number and generates as output the 1's complement of the input number. (Use a decoder with external gates)
2. In a national museum, only authorized employees are allowed to enter a particular restricted room. In order to monitor people coming in to this area, you were asked to design a people detector (PD). The detector should turn on whenever the door (D) or the window (W) is open and whenever the motion detector (M) or the sound detector (S) detects someone present in the room. (Note: The circuit should be designed using a multiplexer showing both Logical and Functional forms)