BIRZEIT UNIVERSITY

Faculty of Engineering & Technology – Electrical & Computer Engineering Department

Digital Systems ENCS234 – **HW#4**

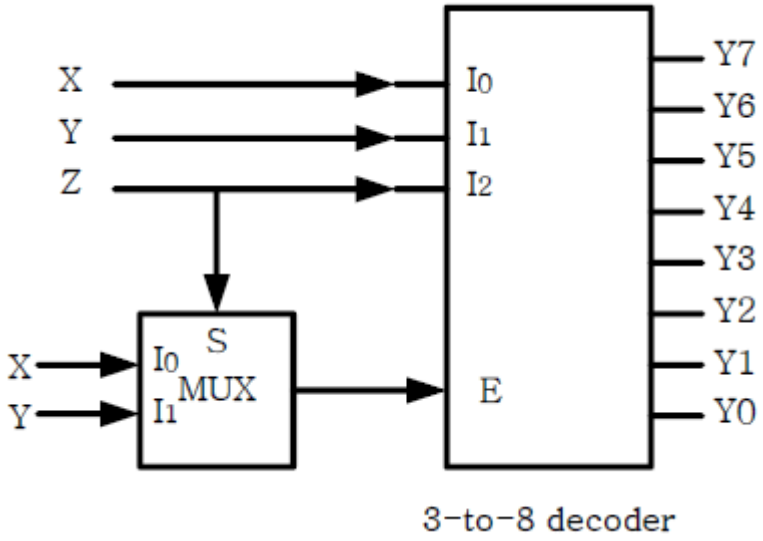
Q1: Design a combinational circuit with three inputs, x, y and z, and the three outputs, A, B, and C. when the binary input is 0, 1, 2, or 3, the binary output is one greater than the input. When the binary input is 4, 5, 6, or 7, the binary output is one less than the input.

a. Implement the above question (Outputs A,B and C) using active high decoder 3*8
b. Implement only output A using mux 8*1

Q2: Implement the Boolean function **F(A,B,C) = AB + A'C + A'B'**
Using a single 4x1 multiplexer.

Q3: Construct a 16 x 1 multiplexer with two 8 x 1 and one 2 x 1 multiplexers. Use block diagrams.

Q4: For the shown logic diagram, determine for each input combination of **X, Y and Z** the value of each output, Y_7 through Y_0.



Q5: Implement a 5 bit adder-subtractor from Full-adders

Q6: Explain the concept of DeMux and 3-state buffer