

INDRAPRASHTHA INSTITUTE OF INFORMATION TECHNOLOGY DELHI
ECE 111 DIGITAL CIRCUITS
QUIZ NO. 3 (RE-QUIZ)

Q1. Let us define a new logic gate called BUT gate. The BUT gate would have four variables X_2, X_1, Y_2 and Y_1 . The function realized; Z is defined by the following conditions:

1. Z is 1 if both X_2 and X_1 are 1 and Y_1 and Y_2 are exclusive.
2. Z is 1 if both Y_2 and Y_1 are 1 and X_1 and X_2 are exclusive.

Realize the above BUT gate using 2 to 1 Multiplexers only.(12 marks)

Q2. Realize the function $F(x, y, z, w) = \sum m(5, 7, 10, 11, 13, 14)$, using the BUT gate (symbol given in Fig. 1) designed above and a minimum number of any universal gate of your choice. (8 marks)



Fig. 1