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COE 200, Term 001
Fundamentals of Computer Engineering
Quiz# 4

Date: Monday, Dec. 11

Q.1. It is required to design a new flip-flop called DT-FF that has two inputs A and B. The characteristic table for this FF is given below:

A	B	$Q(t+1)$
0	0	$Q(t)$
0	1	$Q(t)'$
1	0	0
1	1	1

- (i) Derive the excitation table for the DT-FF.
- (ii) Design a positive-edge triggered DT-FF using a JK-FF.

Q.2. A single-input, single-output sequential circuit is to be designed that recognizes only the input sequence 101101 applied to its input any time it occurs in the input stream. If the sequence is detected the output will be 1, otherwise it will be 0. Draw the state diagram for the sequence detector assuming overlapping of sequences. An example of the output sequence, Z, produced given an input sequence, X, is as follows:

X: 01101011011011011011
Z: 00000000010010010010