# Homework Assignment 4
## (Due Dec. 6<sup>th</sup> at the beginning of the class)

Read the first project reference paper (Project reference 1 in the class website) and answer the following questions.

(1) [**20 points**] Explain how the circuit in Fig. 3 (Time-borrowing static master-slave flip-flop) works. Show all the details.

(2) [**20 points**] Explain how the circuit in Fig. 5 (a) (Explicit-pulsed, hybrid semidynamic flip-flop) works. Show all the details.

(3) [**20 points**] Explain how the circuit in Fig. 5 (b) (Explicit-pulsed, hybrid static flip-flop) works. Show all the details.

(4) [**20 points**] Explain how the circuit in Fig. 9 (a) (Dual-edge-triggered, explicit-pulsed, hybrid static flip-flop) works. Show all the details.