CSV 881: Low-Power Design   
Fall 2013

Homework 3 Problems

Assigned 26/10/13, due 28/10/13

**Problem 1:** The following network supplies clock to flip-flops connected to nodes 1, 2 and 3. Use the Elmore delay formula to compute the source to clock delays for the three flip-flops.

R = 3Ω

C = 2pF

1

R = 3Ω

C = 2pF

2

R = 3Ω

C = 2pF

3

Clock

source

**Problem 2:** For illumination at a major function you are managing, two types of bulbs are available:

|  |  |  |  |
| --- | --- | --- | --- |
| Type of bulb | Illumination (lumens) | Power consumption (watts) | Price (rupees) |
| Incandescent | 1,000 | 100 | 50.00 |
| LED | 1,500 | 25 | 462.50 |

The purchasing budget is limited to 50,000 rupees and the power consumption must not exceed 10kW. How will you maximize the illumination with the given resources? Compare your answer with two cases in which only one type of bulbs is used.