CSE 331

Computer Organizations

Homework 1

Due Date 30/10/2020 Friday 17:00

1. Assume that, today, a wafer containing 120 processor dies costs 10000$. The yield decreases by 10% at each year while the wafer cost also decreases by 20% at each year. Then, what will be the cost of a single chip manufacturing after 4 years? Show your computations. Edit: Assume, today, there is a yield of 80%.

2. A compiler designer wants to compare the performance of two different compilers he designed. The compilers are generating MIPS machine code from a C program. He compiles the same C program using the two compilers.

   a. According to the tables below, find which compiler is better and by how many times it is better than the other?

	R-type ($x10^6$)	I-Type ($x10^6$)	J-Type ($x10^6$)
Compiler A	50	10	2
Compiler B	80	5	1

	R-type	I-Type	J-Type
Required Cycles	2	4	3

   b. What must be the clock speed of the processor so that the program compiled with the better compiler executes in 100ms?

Submit your answers to Moodle before the due date.