NAME:_____ EMAIL:_____

Reading questions for Wednesday, 12/5/2001

"An Efficient Algorithm for Exploiting Multiple Arithmetic Units"
R. M. Tomasulo

Please provide short answer (1-2 sentences) responses to the following and hand it in at the beginning of class.

1) Why are there 17 four-bit tag registers, and why are 4 bits being used for each?

2) Consider this sequence of instructions (in isolation):

```
AD    F0, F1      ; FO = F0 + F1
AD    F0, F0      ; F0 = F0 + F0
AD    F0, F0      ; F0 = F0 + F0
```

How many times would the *data* bits of the actual F0 register be updated (written) and why?

3) Looking at Figure 4, only one instruction can complete per cycle. How would you modify it so that two instructions could complete at the same time?