

# EE360r: Background check

Not to be turned in

These are not completely trivial problems, but if you can't figure out how to proceed, you should see me to make sure you have the relevant background.

1. The initial voltages across the capacitors is zero. At time  $t = 0$ , the voltage at  $A$  is raised from 0 to 1 Volt, it is held constant at 1 Volt from then on. How would you calculate the time take for the voltage at  $B$  to rise to 0.5 volts?

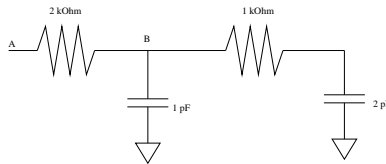


Figure 1: RC timing analysis

2. Label the inputs so that the output is  $a \cdot c$

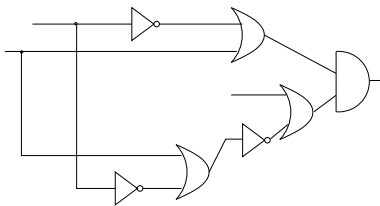


Figure 2: Mystery circuit

3. Here is a code fragment for a simple CPU. BZ  $x$  is “branch if register  $x$  holds 0; B is “unconditional branch”. ( $x$ ) denotes the contents of the memory location whose address is stored in  $x$ . What is the code doing?

```
foo: LOAD R7 (R1)
      BZ R7 bar
      ADD R2 R2 R7
      ADD R1 1
      B foo
bar: ...
```