Digital Electronics

Tutorial Sheet 1

These questions are intended to:

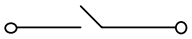
- *involve you in active (not passive) study*
- *help you understand and practice techniques*
- *guide your reading of the text book (you should refer to the text for help/consolidation)*
- *indicate what you are expected to be able to do / understand*
- *give you feedback on how much you understand*

1. * Name two advantages of digital data as compared to analogue data.

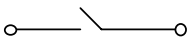
2.** Below is a list of everyday items which contain digital electronic circuits. In one or two sentences per item, describe simply what functions are performed by the digital electronics.

a) Washing machine
b) Gameboy
c) Telephone
d) Sun Workstation

3.*** Given two switches A and B, design a configuration which gives a TRUE output only when A and B are both closed. Include any necessary connections to a 5 Volt power supply, show at which point in the circuit you would measure the output voltage and describe the relationship between the voltage measured and the logical values.

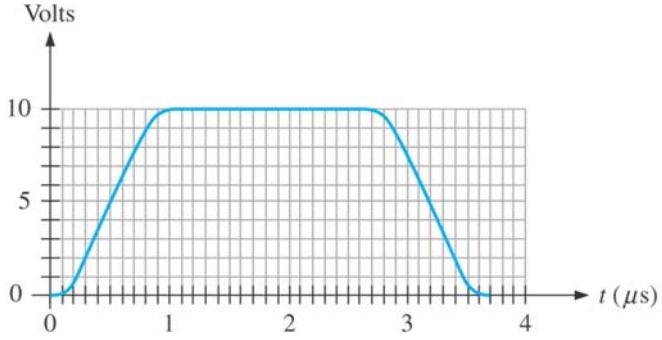


Switch A



Switch B

4. ** For the pulse shown below, determine: a) rise time; b) fall time; c) pulse width; d) amplitude of the waveform.



5. ** Determine the bit sequence represented by the waveform below. A bit period is 1μs. What is the total serial transfer time for the eight bits? What is the total parallel transfer time? Assuming that LSB is sent first, what is being transferred?