Singapore Polytechnic
School of Electrical and Electronics Engineering
ET0104 Embedded Computer Systems DECC 3FT/4EO

Tutorial 2 PC Architecture

1. a) What are the address and data bus sizes (memory and I/O) of the PC/104 bus?
b) What is the data transfer rate of the PC/104 bus?
c) What is the purpose of the AEN pin?
d) Does the bus differentiate between I/O and memory operations? How does it do this.
e) Compare and contrast the two approaches to I/O addressing.

2. Modern digital cameras have computer embedded systems built in. They need to be able to take photographs *quickly*, store and delete them as necessary. The user preferences have to be stored as well.

i) Write down the types of memory you would use in the design.
ii) For each type of memory, describe what you would use it for.
iii) Explain your choice as well.

Think of general camera use, and do not go into too much detail.

3. What are some differences between memory devices used in expansion cards for the PC/104 as compared to those on the main system?

4. In the design of input/output ports, you can either use buffers or latches. Discuss which type would you choose if you wanted to build:

(a) An 8-bit input port (b) an 8-bit output port

5. Describe the boot up process for a PC. How does the BIOS help in the boot up process?