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**CQUPT EE310 2017 Fall Quiz 6a**

**(20min, 30pts)**

1. (2pts) A memory block has 20-bit address bus, what is the maximum number of memory locations does this block support?

Maximum =1Mb memory locations

1. (4pts) What is the full name of FIFO memory? What is the main benefit using a FIFO memory?

First-in-first-out, to connect two systems with different data rate/clock frequency

1. (4pts) What is the full name of DRAM? What are the main advantage and disadvantage of DRAM compared to SRAM?

Dynamic random access memory.

Advantage: small size, simple circuit, high density, low cost

Disadvantage: data need to be refreshed regularly

1. (4pts) Determine the following memory type: volatile or nonvolatile:

a). ROM b). SRAM c). DRAM d). Flash RAM

volatile: b) and c)

nonvolatile: a) and d)

1. (6pts) Explain how you can configure the following DRAM cell to store a logic ‘1’ on the capacitor.

DRAM-storage-cell

Set bit line to high (logic 1), and then set word line to high to turn on the MOSFET.

1. (10pts) Using two of the 8-bit memory block given below, expand the address lines to 9 bits while keep the data buses as 8 bits. Show your connections clearly.

