

**Assignment 5**  
**(Full Score: 100 points)**  
 (Due in class, 4/22/Friday,)

Your name:	Score:

**Short Essay** Questions: for **each** of the following topics, write a short essay (from one paragraph of 5 lines to several paragraphs (less than one page, including pictures and examples, the length depends on how “big” the topic in question is). You must **use your own words**; you may “copy” pictures from other sources to clarify the subject; you may paraphrase any texts by others. Do NOT copy—otherwise, you will receive zero points for this assignment. Please give brief description/definition of each technical concept to show your *understanding* of the topic in a short essay. You may assume that you are giving a presentation: you need to answer the following questions related to the topic: *what* it is, *how* it works, *what example(s)/diagrams/pictures* can be used to help **readers** understand the topic...

**1. Multicore**

- (1) Core
- (2) Dual core
- (3) Multicore (architecture, threads in parallel) and Threading
- (4) Unicore processor vs. multicore processor
- (5) Why multi-core?---Application benefits from multicore (with several examples)
- (6) Multicore examples from Intel and AMD

**2. Pipelining**

- (1) Pipelining in general
- (2) Instruction pipelining
- (3) (you may use the following links: )
  - 2.3.1. [http://www.cs.iastate.edu/~prabhu/Tutorial/PIPELINE/pipe\\_title.html](http://www.cs.iastate.edu/~prabhu/Tutorial/PIPELINE/pipe_title.html)
  - 2.3.2. [http://en.wikipedia.org/wiki/Instruction\\_pipeline](http://en.wikipedia.org/wiki/Instruction_pipeline)

**3. Amdahl’s Law**

**4. GPU**

Hints: in addition to the links given above, use the links provided on the course website under “Supplementary Materials, Multi-Core...” at [http://cs.salemstate.edu/~b\\_yi/2011Spring/CSC295/resources/index.html](http://cs.salemstate.edu/~b_yi/2011Spring/CSC295/resources/index.html),