0907432 Computer Design (Fall 2018)
Quiz 1

الاسم: الرقم التسلسلي: رقم الشعبة: 1

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Instructions: Time **10** minutes. Open book and notes exam. No electronics. Please answer all problems in the space provided and limit your answer to the space provided. **No questions are allowed**.

<Good Luck>

Q1. Assume that you want to design a new processor.

a) State three approaches to design a high-performance processor.

   1) Using smaller an faster transistors enabling faster processor clock rate

   2) Using more cores on the processor chip

   3) Using the higher transistor budget to build better, faster circuits and larger caches and

   busses

b) State three approaches to reduce the power consumption of this processor.

   1) Using lower clock frequency

   2) Using lower power supply

   3) Turning off or reducing the power supply or clock of unused components

Q2. For the 5-stage pipeline processor described in the textbook, briefly describe the execution of the `add` instruction in each of the five stages.

Stage	Execution
Fetch	**Fetching the instruction from the instruction memory and incrementing the program counter.**
Decode	**Reading the two operands from the register file and decoding the instruction to generate its control signals.**
Execute	**Adding the two read operands in the ALU.**
Memory Access	**The addition result is passed through this stage.**
Write Back	**Writing the addition result in the destination register in the register file.**