Chapter 1 - Introduction
   a. What is Microprogramming?
   b. What is the function of the control unit?
   c. Basic IAS Structure, MAR/MBR
   d. Wafers/Chips
   e. Moore's Law
   f. What is an embedded system?
   g. What is cloud computing?
   h. What is Internet of Things?

Chapter 2 - Performance Issues
   a. Performance Balance
   b. Wider vs Deeper memories
   c. I/O Data Rates
   d. Power and RC Delays
   e. Amdahl's Law
   f. (Ignore Little's Law)
   g. AM, GM, HM
      - Impact of performance evaluation
   h. Benchmarks and their roles

Chapter 3 - Buses
   a. Memory Read/Write cycles
   b. Figure 3.5 (10th edition)– Example Program Execution
   c. Classes of Interrupts
      - Soft, hard, timer, I/O
   d. When is a check for an interrupt made?
   e. How are multiple Interrupts handled?
   f. Data Bus, Address Bus, Control Bus
   g. Hierarchical Bus Configuration and elements of bus design
   h. Arbitration - centralized and distributed
   i. Synchronous and Asynchronous Buses
   j. Multi-core QPI configuration (concepts here, not details)
   k. PCI and PCI Express (concepts only, not details)

Chapter 4 - Cache
   • Access/Cycle/Transfer time
   • Sequential/Direct/Random Access
   • Direct Mapping, Associative Mapping, Set Mapping
      - Be able to do problems about these
   • Set-Associative
   • Write Thru/Back
   • Unified and Split Cache Decision
   • Replacement Algorithms
      - LRU
      - FIFO
      - LFU
      - Random
   • Victim Cache
   • Hit Ratios
   • Cost Analysis for Cache and Memory