Please answer all six questions. This is exam is worth 35 points.

1. Problem Solving and Algorithm Design: (5pts)
   a) Distinguish between an object and an object class.
   b) Distinguish between a field and a method.
   c) How can object relate to one another?
   d) Discuss the differences between a top-down design and an object-oriented design.
   e) Distinguish between data abstraction and procedural abstraction.

2. Low Level Programming Languages: (5pts)
   a) What is a machine language?
   b) What is a virtual computer?
   c) What is an operation code?
   d) What is an assembly language?

3. High Level Programming Languages: (10pts)
   a) Distinguish between a compiler and an interpreter.
   b) Name four programming language paradigms and give an example language in each.
   c) What is a Boolean expression?
   d) What is strong typing?
   e) What is a declaration?
   f) Explain the flow of control of the if statement.
   g) How does the case statement differ from an if statement?
   h) What is the flow of control in a while statement?
   i) What is encapsulation?

4. Operating Systems: (5pts)
   a) What is an operating system?
   b) Explain the difference between timesharing and multiprogramming?
   c) What is a real-time system?
   d) Distinguish between logical addresses and physical addresses.
   e) Distinguish between preemptive scheduling and nonpreemptive scheduling.

5. Networking: (5pts)
   a) Distinguish between a local area network (LAN) and a wide area network (WAN).
   b) Distinguish between Transmission Control Protocol (TCP) and the Internet Protocol (IP).
   c) What is a firewall, what does it accomplish, and how does it accomplish it?
   d) What is an IP address and how is it composed?
   e) What is a top-level domain name?
6. Artificial Intelligence: (5pts)
   a) What is the Turing Test?
   b) Name and define two knowledge representation techniques.
   c) What is a semantic network?
   d) Distinguish between depth-first searching and breath-first searching.
   e) What is the role of a synapse?

NOTE: This is due on or before the December 18th, Monday class – Absolutely no late submissions!