No.: _____ Name: _____

Computer Science
Homework for Chapter 2 **Due: March 31, 2010**

For doing this Homework, please refer to Appendix C the "language description table."

1-5. Encode each of the following commands in terms of the machine language described in the language description table.

_____ ROTATE the contents of register 0 to the right by six bit positions.

_____ LOAD register 3 with the bit pattern from the memory cell at address 57.

_____ ADD the contents of registers 5 and 6 as though they represented values encoded in two's complement notation and leave the result in register 6.

_____ JUMP to the instruction at address B2 if the content of register 2 equals that of register 0.

_____ HALT.

_____6. Which of the following is not a form of parallel processing?

A. SISD B. MIMD C. SIMD

_____7. Which of the following is not an activity performed entirely within a CPU?

A. Perform Boolean operations B. Fetch instructions
C. Perform arithmetic operations D. Move data between registers

8-9. The following table shows a portion of a machine's memory containing a program written in the language described in the language description table. Answer the questions below assuming that the machine is started with its program counter containing 00.

address	content	address	content
00	25	07	00
01	03	08	34
02	A5	09	04
03	02	0A	B0
04	35	0B	03
05	03	0C	C0
06	24	0D	00

How many instructions will be executed before the machine halts (including Halt) ? _____
What bit pattern will be in the program counter when the machine halts? _____

10. Using the machine language described in the language description table, write a sequence of instructions that will shift the contents of the memory cell at address A0 three bit positions to the right (using register 4 for the shift operation) while filling the holes at the left end with 0s (using register 5 for the masking operation).

ANSWER: _____

11. In the following table, connect the term to each phrase that gives the best description of the term. (50%)

Term		**Descriptive Phrase**
USB	____	A. The part of a machine instruction that identifies the basic operation to be performed
bus	____	B. A means of encoding instructions
modem	____	C. The process of fetching and executing instructions that is repeated over and over by the CPU
controller	____	D. A location within a CPU for temporary data storage
pipeline	____	E. A means of isolating particular bits within a bit pattern
handshaking	____	F. The communication path between a CPU and main memory
DMA	____	G. The technique of communicating with peripheral devices as though they were memory cells
CISC	____	H. A means of processing more than one instruction at a time
op-code	____	I. Used by the CPU to keep its place in the program being executed main memory from where they can be retrieved and executed
register	____	J. The interface between "a computer" and a peripheral device
machine language	____	K. Modulator-demodulator
memory-mapped I/O	____	L. A serial communication system by which a variety of peripheral devices can be connected to a computer
masking	____	M. A means of measuring the rate of data transfer
machine cycle	____	N. A computer whose machine language contains many complex instructions
bps	____	O. Refers to the two-way communication that takes place between a computer an a peripheral device
program counter	____	P. The ability of a peripheral device to communicate directly with a computer's main memory