NOTE: TO obtain credit for your performance in this exam, you must do all of the following: (1) Select one of the specified choices for multiple-choice questions (do NOT fill in the actual value of your answer, but instead indicate the lettered choice corresponding to it). (2) Sign the Honor Code declaration. (3) Wherever applicable, show your work.

CS-350: Computer Organization

Spring 2003: Quiz # 5 ANSWERS

The Main Memory of a computer containing a Carpinelli-style "Relatively Simple CPU" has the following content in its first few bytes, expressed in hexadecimal:

Address:	0000	0001	0002	0003	0004	0005	0006	0007
Content:	07	00	08	00	09	00	0A	00

Address:	0008	0009	000A	000B	000C	000D	000E	000F
Content:	0B	00	35	36	37	38	39	2A

Register **R** contains the hexadecimal value 0E, and the Index Register (register **X**) contains the hexadecimal value 04. Indicate what content would be present in the Accumulator following the execution of each of the indicated instructions:

A	00
B	07
C	08
D	09
E	0A
F	0B
G	35
H	36
I	37
J	38
K	39
L	2A
M	none of the above

Question #	ASL Statement	Answer
1 *1 pt*	LDAC *R*	**M**
2 *2 pts*	LDAC @*R*	**K**
3 *2 pts*	LDAC @8	**H**
4 *1 pt*	LDAC 2	**C**
5 *1 pt*	LDAC #2A	**L**
6 *3 pts*	LDAC 8(X)	**I**
7 *1 pt*	LDAC 8	**F**

Explanation of answers:

(1) "LDAC R" is in Register Direct addressing mode. Therefore, the value to be loaded is found in the content of register **R**, which is 0E. This value is not found among the enumerated choices, and therefore the correct answer is choice **M.**

(2) "LDAC @R" is in Register Indirect mode. Therefore, Register **R** provides the memory address of the operand, and the content of memory address 0E is the hex value 39, which is choice **K.**

(3) **"**LDAC @8" is in Indirect addressing mode. Therefore the value stored in memory address 0008. which is 000B, is the address where the value to be loaded is stored. The content of that address is hex 36, which corresponds to choice **H.**

(4) "LDAC 2" is in the Direct addressing mode, and therefore the content of address 0002 is loaded into the Accumulator. This is the hex value 08, which corresponds to choice **C.**

(5) "LDAC #2A" is in the Immediate addressing mode, and therefore the immediate operand hex 2A is loaded into the Accumulator. This corresponds to choice **L.**

(6) "LDAC 8(X)" is in Indexed addressing mode. Therefore, we must find the operand at the base location 8 plus the content of the Index Register, which is 04. This resolves to the content of memory location 000C, which is 37, or choice **I.**

(7) "LDAC 8" is in Direct addressing mode, and therefore the data to be loaded are obtained from memory location 0008. This is the value 0B, which corresponds to choice **F.**