

**STS 350**

**Exam #1**

**Name** \_\_\_\_\_

Friday, February 17  
100 pts.



- c. (10 pts.) We attempt to validate theories of cognition by running computer experiments. Many of these experiments come from the field of artificial intelligence. What is Artificial Intelligence?
- d. (10 pts.) Thagard and (in the readings) Anderson tell us about rule-based systems. What are they? As a part of your answer, give an example of a rule in this context.

- e. (10 pts.) Another way to express the fundamental assumption of Cognitive Science is that we are trying to understand human cognition as information processing. David Marr has taught us a way to explain an information processing system in three levels. What are these levels (name and briefly describe them), and how do they relate to each other?

f. (10 pts.) Trying to decide what constitutes intelligent behavior is very difficult. Turing made a slightly tongue-in-cheek stab at the problem with the Turing Test. Describe the Turing Test.

g. (10 pts.) Turing's paper and the brief extract from Descartes can be viewed as a statement from Descartes and a response from Turing. In what way? What statement does Descartes make and how does Turing respond?

- II. Computation. What does it mean for cognition to be computational? What does it mean for anything to be computational? To work towards an answer to this question, we have examined a computer and the basic elements of a programming language, LISP.
- a. (10 pts.) We discussed an architectural sketch of a computer, naming its parts. Provide brief descriptions of the basic parts of the computer as listed below. It is not sufficient simply to say what the letters mean.

ALU

Control Unit

Memory

External Storage

- b. (10 pts.) In our discussion on computers, we listed several things a computer can do. Please list these five things, and give brief examples from LISP to illustrate each one.

- c. (10 pts.) Please write LISP expressions for each of the following. Do not simplify.

Calculate  $3 + 2 * 7$

Calculate  $b * b - 4 * a * c$  (where a, b, and c are variables each having some value)

Find the second item in the list **lst**.

Make a new list from **lst** with the second item removed. For example, from '(a b c d) we want to get '(a c d).