

## FIFTH QUIZ

You have 15 minutes from the start of class to complete this quiz. Give partial answers if you can't give complete ones. Read the questions with care; work with deliberate speed. Don't give us more than we ask for. The usual instructions apply. Good luck!

### Problem 1 (8 points)

Below is a grammar in which terminal symbols are indicated by this typewriter typeface.

Name → Fullname | Fullname Degrees

Fullname → First Middle Last Suffix

First → Huey | Dewey | Louie

Middle → M. | Q. | R.

Last → Duck | Goose | XIV

Suffix → *empty* | , JrSr | Generation

JrSr → Jr. | Sr.

Generation → I | II | III

Degrees → *empty* | , OneDegree Degrees

OneDegree → M.D. | Ph.D.

(a) (6 points) Mark each of the following six sentences “legal” or “illegal” according to this grammar:

Huey Q. Duck, Jr.

Dewey Goose, III

Huey M. Duck, Jr., Sr., III

Louie R. XIV

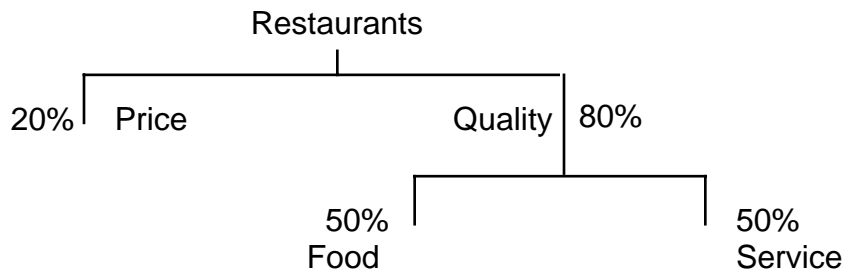
Dewey Q. Duck, Ph.D., M.D.

Louie R. Duck, Jr., M.D., M.D.

(b) (2 points) Draw the parse tree for one of the legal sentences above.

**Problem 2** (8 points)

Below is a relevance tree for restaurants. Fill in the five blanks to calculate the ratings of each alternative. Showing your work might increase your chances of getting partial credit if your arithmetic is wrong.



Overall relevance of each node: \_\_\_\_\_

				Ratings of Alternatives:
Informatics Inn	5	10	10	_____
C. S. Cafe	8	5	5	_____

**Problem 3** (4 points)

(a) (2 points) You and your roommate decide to sell a uniquely-designed Anteater T-shirt at Newport Beach. While you're talking about setting the selling price, your roommate remarks, "Let's charge \$10,000 each. That may be high, but we only have to sell one and we'll be rich!"

How do you explain what's wrong with that reasoning, in terms of probability and expected value?

(b) (2 points) You meet a classmate who is just leaving a room of people. Your classmate says, "I know nothing about any individual in that room, but the probability of at least two of them having the same birthday (month and date) is 1."

For your classmate to be right, what is the smallest number of people there can be in the room? (Think about what this question is asking—you do not need any formulas or heavy computation to answer it.)