24.222 Decisions, Games, and Rational Choice
Spring 2008

SAMPLE EXAM QUESTIONS

Here are a few sample exam questions. There will also be at least one general question about what it means, or might mean, to say that an action or plan of action is rational.

I. For each of the following games, discuss these questions: Does the game have a unique "solution" in some sense? If so, in what sense? Is it clear what the players should do in a game of this form, assuming that it is presumed that each player knows the game, and presumes that both players are rational? What would happen if the game were played ten times in a row, with the players learning the outcome of each round after it is played?

1. You and Alice each name a number, one to three. If the sum is odd, you pay Alice the number of dollars she names, If the sum is even, she pays you the amount you name.

2. You and Alice each name a number, one to ten. If the sum is odd, you get the amount she names, and she gets the amount you name.

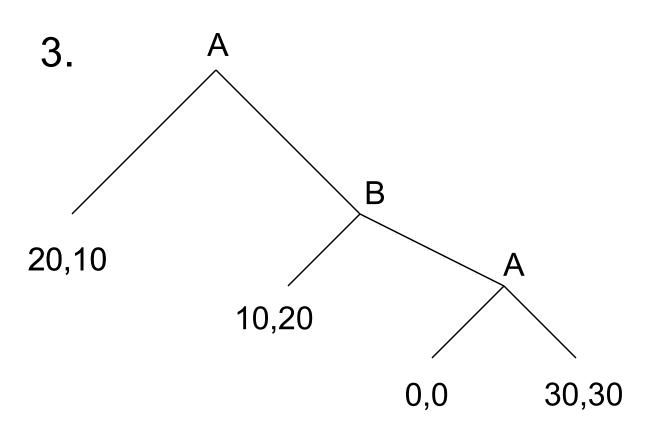3,4(see the tree, and the matrix on the next page)

5. You, Alice and Bert (they are MIT students, but you don't know them) can play the following game: if all agree to play, you each pay $10, and then name a middle eastern nation. If all three name the same one, you win $30 (for a net gain of $20). If you don't all name the same country, you win nothing. Should you play, and what country should you name if you do?.

6. You and nine other players each name heads or tails. If you divide at least almost evenly (four to six heads, and four to six tails), those who say heads each get $2, and those who say tails each get $1. If more than six say heads, or more than six say tails, then no one gets anything.

You are an arbitrator who must choose which of three social arrangements, X, Y and Z should be realized. The choice affects only two people, Bert and Alice, who have the following utility values for the three alternatives:

- Alice: $u(X) = 20$ $u(Y) = 10$ $u(Z) = 0$
- Bert: $u(X) = 20$ $u(Y) = 100$ $u(Z) = 0$.

What outcome should you choose, and why?

3.

A

20,10

B

10,20

A

0,0   30,30

(The numbers are the payoffs for A and B, respectively)

4

	L	R
U	5 / 10	0 / 9
D	0 / 0	20 / 10