

**Quiz #4**  
**(50 Points)**

*Please respond to each question precisely and completely. Use figures and/or equations where it is asked for or helpful in answering the question. Show all your work on the problems in order to receive full credit. Manage your time wisely.*

PLEASE READ THE FOLLOWING ARTICLE FOR QUESTION 1

- (15 Points) 1. a. Using the environmental economics model developed in class, illustrate the negotiating positions of Jennifer Anderson and Dan Thelander. Be sure to compare and contrast the two models.
- b. Dan Thelander is concerned about the competitiveness of Arizona agriculture if more stringent regulations are enforced by DEQ. Use a firm-level economic model to illustrate Mr. Thelander's concern if his costs of operation increase. Be sure to discuss briefly your result.
- c. What is the role of data, risk, and science in this issue?
- (10 Points) 2. Suppose you are faced with the following stream of costs and benefits for a small watershed improvement project.

<u>Year</u>	<u>Costs</u>	<u>Benefits</u>
0	\$15,000	\$ 0
1	20,000	0
2	10,000	5,000
3	1,000	15,000
4	1,000	22,000
5	1,000	26,000

- a. If your agency's discount rate is 7%, should your agency invest in this project? (Use the Benefit-Cost criterion in your analysis and show all your work to receive full credit)
- b. If your agency's discount rate was 15%, how do you think your answer in (a) would change? Why? (Do not recalculate your answer)
- c. What is the ethical content of a discount rate?
- (10 Points) 3. For forty years, Florida tomato producers have successfully used their political power to restrict the flow of fresh tomatoes into the United States. These large-scale farming operations have supported both tariff and non-tariff barriers to restrict trade with Mexico. The North American Free Trade Agreement (NAFTA) phased out most of these barriers. However, three years ago the Florida producers threatened to sue the Mexican industry in U.S. federal court for "dumping" tomatoes on the U.S. market. As a result of this threat, Mexican producers have voluntarily reduced their tomato exports to the U.S. market. Use Tullock's model of rent seeking to illustrate and discuss this example of government failure.
- (10 Points) 4. In the near future, you may be called upon to provide leadership in resolving a natural resource conservation issue. Larry Keown has spent decades observing successful and unsuccessful attempts at resolving environmental and natural resource conflicts. Briefly discuss five guidelines Keown has found useful in collaborative leadership.

(5 Points) 5. What is the net present value of a campground improvement project that has a 8-year planning horizon, a 6% discount rate, and following net cash flows?

<u>Year</u>	<u>\$</u>
0	-50,000
1	-70,000
2	-20,000
3	30,000
4	40,000
5	50,000
6	60,000
7	60,000
8	60,000

**Final Exam**

(75 Points)

*Please respond to each question completely and concisely. Properly label all graphs and show all your work to obtain full credit. Manage your time wisely.*

Read the following article before you respond to Question 1.

- (15) 1. You have just started your first job as a policy analyst for ConAgra, one of the largest food companies in the world. Your supervisor has asked you to make some sense out of the GMO backlash in Europe and the recent demonstrations at the WTO meeting in Seattle. You decide to use the political economy model from AREC 350 to provide a framework for your analysis. Please briefly discuss each component of this framework in light of the "frankenfood monster".
- (10) 2. In his article "Grass Roots Collective Action", Harry Ayer discusses coalition building in the agricultural sector. The emphasis is on insect control. Using the appropriate game theory model, discuss the role of free rider behavior, transaction costs, coalition size, free rider equilibrium, and social optimum in this insect control case among a community of farmers.
- (10) 3. Suppose you are faced with the following stream of costs and benefits for a small watershed improvement project.

<u>Year</u>	<u>Costs</u>	<u>Benefits</u>
0	\$20,000	\$ 0
1	30,000	0
2	10,000	5,000
3	1,000	20,000
4	1,000	26,000
5	1,000	31,000

- a. If your agency's discount rate is 8%, should your agency invest in this project? (Use the Net Present Value criterion in your analysis)
- b. If your agency's discount rate was 12%, how do you think your answer in (a) would change? Why? (Do not recalculate your answer)

(10) 4. In a recent debate between two environmental economists the following statement was overheard.

“This raises a serious issue as to whether environmental policy should rely exclusively or even primarily on consequentialist choice methods based on value, as distinct from deontological methods.”

What does this statement mean?

(10) 5. John W. Garner, in his book *On Leadership* states, “In a vital community, conflict is inevitable and often healthy. The goal is not to eliminate conflict but to prevent it from escalating in destructive ways and to seek peaceable outcomes.”

a. Briefly discuss five critical elements given by Larry Keown in *Conservation Voices* for preventing destructive conflict?

b. Why should community leaders be concerned about transaction costs associated with environmental conflicts?

(10) 6. Anderson Farms operates a 2,000 acre farm in Buckeye, Arizona, a farming community west of Phoenix. Currently, Anderson Farms does nothing about dust control. It appears that the Environmental Protection Agency (EPA) may impose dust reduction levels on farms, requiring the farms to adopt a specific technology. The management of Anderson Farms believes they have an alternative technology that will reduce dust emissions even more at a lower cost. Using a graphical environmental economics model, illustrate this situation and the appropriate equilibrium conditions. Make sure you note the environmental improvement associated with Anderson's technology and show that it may be in Anderson's interest to adopt their technology rather than the EPA's technology.

(10) 7. Choose an example from your textbook or readings of an activity, private or public, that produces an external cost to society.

a. Discuss your example.

b. Use a simple market model to compare and contrast the market equilibrium with the social equilibrium in the presence of these external costs.

c. Why is this a market failure?