Possible topics for Final Exam, Intro to Env. and Res Econ, Fall 2003. There will be no more than 4 questions with 5 parts each, which will be randomly chosen from this list of potential topics.

- The general theme of the class has been one of optimal conditions which balance two things (supply and demand, cost and benefit, costs to firms, net benefits across time) at the margin. Pick your favorite two "marginal this equals marginal that" conditions, and for each case, explain (briefly) 1) the economic issue under consideration, 2) its potential policy implications, and 3) why the "marginal this equals marginal that" solution is or is not socially optimal.

- Throughout the class, we have discussed several examples where the difference between one agent's willingness to pay and another agent's willingness to accept resulted in positive gains from trade. We used this positive gains from trade to argue that a trade would take place between the two agents, and that trade would cease when the gains from trade reached zero. These examples include consumers and producers in a market with no externalities; Coasean bargaining between the party who was not assigned a property right to either pollute or have the right to a pollution-free environment and the party without that property right; two firms facing a pollution abatement requirement, and consumers of a natural resource in the future and owners of that resource in the current time period. Pick your favorite example and 1) graphically illustrate and verbally explain the WTP, WTA, and gains from trade 2) Discuss the equilibrium condition. that we believe will be reached from this trading. What factors are equated at the margin by the trading?

- Public Goods:

    1. Give an example of a public good, define non-excludable and non-rival, and discuss whether your good meets both criteria.
    2. Explain why the optimal level of public goods will not be met by free-market demand (fixed costs, prisoner's dilema, lack of incentives to reveal individual valuation).
    3. Construct the marginal social benefit curve.
    4. Derive the socially optimal level of public good provision.

- Discounting: be able to calculate the present discounted value of a stream of payments. Be able to verbally explain why we discount and the general implications of discounting.

- Non-renewable resources

    1. Calculate the free-market equilibrium if the resource is not limited.
    2. Calculate the socially optimal allocation of the resource if supply does not meet demand for the two time periods.

3. If the good can be stored, discuss whether the free market allocation will be the same as the socially optimal allocation.
4. Discuss how resource use and Hotelling rent will change over time. What role does the discount rate play?

- "Commons" problems

1. Discuss the predictions of the Gordon model for resource exploitation for "commons". (What economic condition will be met in the short run?)
2. Briefly discuss the Hardin and Ostrom predictions for management of common-pool resources
3. Be able to find the Nash equilibrium in a simple commons game, and explain the result

- Cost-benefit analysis–be able to:

1. Discuss the rationale behind doing cost-benefit analysis,
2. Describe and calcuate the socially optimal allocation of a good (social marginal benefits equal social marginal costs),
3. Judge whether or not a project should be implemented, based on the criteria of positive net benefits,
4. Discuss the role the discount rate plays in cost-benefit analysis.

- Non-market valuation:

1. Why do economists attempt to measure non-market values? What role does non-market valuation play in cost-benefit analysis?
2. Give one example each of a non-use and a use value whose values are not revealed in the marketplace.
3. Describe one method for estimating non-market values. What are some of the potential difficulties with this method?
4. Discuss two recommendations for developing a sound contingent valuation study.