

The exam consists of 100 points and 13 questions. Allocate your time appropriately. You can have 10 points of free answers. Please specify which 10 point question or which two 5 point questions you want credit for.

Have a great summer.

Some of my thoughts are inserted.

1. (5 points) Define the following terms: market commodities and nonmarket commodities. Now provide environmental examples of each.

Market commodities are those commodities that can be bought and sold in the marketplace. From the consumer's perspective, price is exogenous and quantity is endogenous.

In contrast, nonmarket commodities are commodities that are not bought and sold in the market place. They are available in levels determined exogenously from the consumer's perspective. The consumer experiences the levels provided/available. The value (total and marginal) a consumer gets from these levels is endogenously determined by his preferences and his other constraints. In this sense, "price" (marginal value) is endogenous and quantity is exogenous.

2. (5 points) Imagine a world where nonuse values are not considered in environmental policy. Ignoring transportation costs, where would toxic waste sites be located in such a world?
3. (10 points) You are at a party talking to Burt Backpacker, and he is arguing that backpacking trips are a costless activity. Argue in a way that Burt would comprehend that he is wrong and explain to him how you could use the costs he incurs to estimate how he values backpacking trips.
4. (10 points) Consider the designation of a new wilderness area in Colorado. Assume that the economics consulting firm of Snerd, Snerd, and Gomer has accurately determined the CV each hiker and back packer would associate with designation and that the sum of all these individual CV's is \$5 million. Snerd, Snerd, and Gomer included all the aspects of the change in their CV calculation for the hikers and backpackers. However, designation of this Wilderness Area will decrease the availability of water to grow Soy beans on the plains of Colorado. This reduction will cause the price of Tofu to rise by \$1 a pound. Assume that before the change, four million pounds of Tofu was produced and sold. This price increase obviously makes Tofu consumers worse off. Note that hikers and backpackers are not in this group; i.e., they never consume Tofu. Convince me whether designating the Wilderness Area is a potential pareto improvement. What if the price

increased by \$1.50 rather than by \$1?

If the price of the tofu increases by \$1 the change is a potential pareto improvement. If it increases by \$1.50, we don't know. Why? When the price increases by \$x the loss to tofu eaters is no more than \$x multiplied by 4 (the level of consumption before the price increase). That is, if the price increases and the consumer does not respond (decrease his consumption), he will be worse off in \$ terms by the amount his cost of consuming the original amount of tofu increases. In the first case, this is \$4 million and 4 is less than 5. In the second case it is \$6 million. So if price increases by \$1.50 and consumers don't respond their loss will be \$6, but they will likely respond and decrease their consumption of tofu, so, given the information provided, we don't know whether the second case is or is not a P.P.I.

5. (10 points) What are choice experiments, and how can they be used to value environmental commodities, As part of your answer, provide some examples.
6. (5 points) Consider an environmental amenity that produces use values but no nonuse values. The consulting firm of Snerd, Snerd, and Snerd has done a high quality hedonic property value study and determined that the total yearly use value from the environmental amenity is \$1 million. Since it costs \$2 million a year to produce the amenity, S,S, and S argue that it does not pass a benefit-cost test. You work for the consulting firm of Guber, Guber, and Gomer. Assume a situation where you can argue that the analysis of S, S, and S significantly underestimates the use values from the amenity. Argue it.

Imagine the following situation. The amenity increases land prices and decreases wage rates. In this case the value of the amenity is capitalized into both wages and land prices. If one only estimated the proportion capitalized into land prices, one will underestimate the use value of the amenity.

7. (10 points) In the simplest and most general terms possible, explain why the market is incapable of efficiently allocating common property resources. Your answer should be general rather than in terms of a specific resource such as a fish stock or a park. Your answer should explain both the intratemporal and intertemporal inefficiencies.
8. (5 points) In his paper "Free Riders en Route to Disaster," Julian Edney states that "Territorial Division of the commons is actually a rather radical solution." Why do I think this statement is silly?

Territorial division of the commons is just the creation of property rights, the foundation of our market economy.

9. (5 points) In the article "Free Riders en Route to Disaster", Edney quotes John Platt, a biophysicist, who states that the common property problem is *caused* "because the short-term rewarding nature of consuming is usually more compelling than the long-term,

negative consequences; reinforcements in the near future determine behavior more than those in the far future." What is John's argument in economic terminology? Is John correct?

John is confused. The discount rate is a given; whether the discount rate is small or large, efficiency is a function of the discount rate. Having a high discount rate does not cause market failure, it just makes us save less for the future. Independent of one's discount rate, one will harvest from a cp resource as if his or her discount rate is infinity. This will be the case whether one's actual discount rate is infinity, zero, or any number in between.

10. (10 points) Explain, as if to an Econ. 3070 student, why a restriction on the size of fishing boats is not an efficient way to regulate access to a common property fishery.

Simply put, efficiency requires that whatever amount of fish is harvested that amount is harvested in the minimum cost way from society's perspective. A restriction on the size of fishing boats will likely cause this condition to be violated. Nice to show with an isoquant/isocost figure.

11. (5 points) Given, the production function, $h = g(x)E$, would the common property nature of a fish stock cause the market to fail if there is no future (i.e., if we live in a one period world)?

The common property nature of the fishery can, in general, cause two types of market failures: intratemporal congestion externalities (anglers get in each other way and don't take this into account when deciding how much to fish) and intertemporal externalities (anglers ignore the impact of their catch on future stocks because they can't influence future stocks). If there is no future, the second problem goes away. If congestion is not possible (constant marginal product of effort) the first problem goes away.

12. (10 points) Develop an economic argument that explains why there has historically been more recycling (particularly of buildings) in Europe than in the U.S. Does our tendency not to recycle imply that we are wasteful in the way we produce goods and services? As part of your answer, define wasteful production.
13. (10 points) What is the *Materials Balance Approach*, and what are its implications for environmental policy? Supplement your answer with a hypothetical example that show how ignoring materials balance can lead to bad environmental policy.