

## RESOURCES PRELIMINARY EXAMINATION

FEBRUARY 2, 1989

This is a closed book examination. You are not allowed to consult with other students, faculty, or staff. Explain your reasoning carefully using economic concepts and logic. Use diagrams or mathematics where appropriate.

### Answer all three questions.

1. In recent years there has been increasing evidence that the earth is undergoing a global warming process. Discuss major economic issues which this warming trend can expect to cause or increase in severity. Given your training in natural resource economics, discuss the economic issues which will result, with particular significance being placed upon economic efficiency, market inefficiencies, and potential for conflict resolution among all affected and acting parties.
2. A complicated system of water rights have evolved in the United States and most other countries to allocate water. This means that water is allocated by institutional arrangements other than a market system. Economists have long advocated the need for a much greater reliance upon the market place for water allocation. Carefully identify and discuss the advantages (benefits) and limitations or disadvantages that would be expected from implementing a water marketing system (allocation of water in a market system).
3. Drivers 1 and 2 derive utility from driving according to utility functions

$$U_1 = U_1(R, G_1) \text{ and } U_2 = U_2(R, G_2)$$

where  $R$  = miles of roadway and

$G$  = gallons of gas consumption by  $i$ .

The production possibility frontier for this two driver economy is given by

$$H(R, G) = 0$$

where  $G_1 + G_2 = G$ .

- (a) Derive a complete set of efficiency conditions for allocating all goods in this economy. [Simplification of your conditions is not required].
- (b) Suppose

$$U_1 = RG_1, U_2 = R^2G_2, \text{ and } H(R, G) = R^2 + G^2 - 16.$$

Give a particular example of efficient consumption and production bundles for this economy.

- (c) How might a market system be modified to drive this economy to the efficient state you identified in part (b)? [Merely discuss. Numbers are unnecessary.]

**Answer any one of the following two questions.**

1. Ex-President Reagan said in his parting speech to the U.S. Congress that the federal deficit problem would not be solved until governmental spending decisions were removed from the "grip of the Iron Triangle composed of special interest groups, governmental agencies, and elected officials". Much discussion (and confusion) has centered on this comment. Please elaborate on this concept of the "iron triangle" and how it affects public decisions for support of public programs in the U.S. or other national governments with which you are familiar.
  
2. Nonmarket valuation techniques are commonly used to value items which are not exchanged in the competitive market system.
  - (a) Describe and discuss the available nonmarket valuation techniques in detail.
  
  - (b) Discuss the logic and economic justification for the use of cost-benefit analysis in public sector decisions.
  
  - (c) Explain the manner in which such nonmarket values could be used in a project benefit-cost analysis which also uses other values derived from existing markets.