

1. In Mark A. Cohen, "The Costs and Benefits of Oil Spill Prevention and Enforcement," *Journal of Environmental Economics and Management* 13 (June 1986), an attempt was made to quantify the marginal benefits and marginal costs of U.S. Coast Guard enforcement activity in the area of oil spill prevention. His analysis suggests (p. 185) that the marginal per-gallon benefit from the current level of enforcement activity is \$7.50 while the marginal per-gallon cost is \$5.50. Assuming these numbers are correct, would you recommend that the Coast Guard increase, decrease, or hold at the current level their enforcement activity? Why?

2. One convenient way to express the willingness-to-pay relationship between price and quantity is to use the inverse demand function. In an inverse demand function, the price consumers are willing to pay is expressed as a function of the quantity available for sale. Suppose the inverse demand function (expressed in dollars) for a product is $P = 80 - q$, and the marginal cost (in dollars) of producing it is $MC = 1q$, where P is the price of the product and q is the quantity demanded and/or supplied. (a) How much would be supplied in a static efficient allocation? (b) What would be the magnitude of the net benefits (in dollars)?

3. Many states are now imposing severance taxes on resources being extracted in their states. In order to understand the effect of these on the allocation of the mineral over time, assume a stable demand curve. (a) How would the competitive allocation of an increasing marginal cost depletable resource be affected by the imposition of a per unit tax (e.g., \$4.00 per ton) if there exists a constant-marginal-cost substitute? (b) Comparing the allocation without a tax to one with a tax, in general terms what are the differences in cumulative amounts extracted and the price paths?

(背面仍有題目,請繼續作答)

4. Recently, a conflict between a paper company and a coalition of environmental groups arose over the potential use of a Maine river for hydroelectric power generation. As one aspect of its case for developing the dam, the paper company argued that without hydroelectric power the energy cost of operating five particular paper machines would be so high that they would have to be shut down. Environmental groups countered that the energy cost was estimated to be too high by the paper company only because it was assigning all of the high-cost (oil-fired) power to these particular machines. That was seen as inappropriate because all machines were connected to the same electrical grid and therefore drew power from all sources, not merely the high-cost sources. They suggested, therefore, that the appropriate cost to assign to the machines was the much lower average cost. Revenue from these machines was expected to be sufficient to cover this average cost. Who was right?
5. When the government allows private firms to extract minerals offshore or on public lands, two common means of sharing in the profits are bonus bidding and production royalties. The former awards the right to extract to the highest bidder, while the second charges a per-ton royalty on each ton extracted. Bonus bids involve a single, up-front payment, while royalties are paid as long as minerals are being extracted.
- (a) If the two approaches are designed to yield the same amount of revenue, will they have the same effect on the allocation of the mine over time? Why or why not?
- (b) Would either or both be consistent with an efficient allocation? Why or why not?
- (c) Suppose the size of the mineral deposit and the future path of prices are unknown. How do these two approaches allocate the risk between the mining company and the government?

(共五題, 每題 20分)