

## Paper details

1. An article in Business Week warned of the dangers of deflation as the collapse of numerous Asian economies was creating worries that Asia might try to "export its way out of trouble" by oversupplying everything from automobiles to semiconductors. Evidence that deflation had become a genuine concern for managers was provided by a statement in the article by John Smith, chairman and CEO of General Motors Corporation: "Fundamentally, something has changed in the economy. In today's age, you cannot get price increases." The article offers advice to managers: "Productivity growth lets companies boost profits even as prices fall." Using short-run production and cost theory comment on this advice.

2. Oversize Transport Inc. supplies custom delivery service for very large construction equipment in the southeast region of United States. The most common lead of the specialty trucker is the Caterpillar model 740 dump truck, which is about 258 feet long. The owner of Oversize Transport, who also drives the firm's single 275-foot long tractor-trailer rig, chooses to lease this huge piece of capital equipment under a five-year contract requiring monthly lease payments of \$5,500 per month. Oversize Transport could not service this profitable market with any rig shorter than 275 feet. A typical delivery takes about a day and a half, so Oversize Transport can make at the most only 20 deliveries per month with its one tractor-trailer rig. Under what circumstances is the tractor-trailer a fixed input? A quasi fixed input?

3. Explain the following terminologies in economics

Spreading the overhead.

A break-even level of production.

The efficiency of mass production?

How does the theory of efficient production apply to managers of government bureaus or departments that are not run for profit? How about non-profit clubs that collect just enough dues from their members to cover the cost of operation?

4. The production function is:

Question 4 equation.png

where  $a > 0$  and  $b > 0$ .

a. The marginal product of labor is:

Question 4 Part a.png

b. The marginal product of labor is:

Question 4 Part b.png

c. The marginal rate of technical substitution is

Question 4 Part c.png

d. Show that the isoquants for this production function are convex. (Show that MRTS diminishes as L increases. Why?)

e. Derive the equation for the long-run expansion path.

5. You are planning to estimate a short run production function for your firm, and you have collected the following data on labor usage and output:

Question 5 Table.png

a. Does a cubic equation appear to be suitable specification given these data? You may wish to construct a scatter diagram to help you answer this question.

b. Using a computer for regression analysis, estimate your firm's short run production function using the data given here. Do the parameter estimates have the appropriate algebra signs? Are they statistically significant at the 5% level?

c. At what point do you estimate marginal product begins to fall?

d. Calculate estimates of total, average and marginal products when the firm employs 23 workers.

e. When the firm employs 23 workers, is short-run marginal cost (SMC) rising or falling? How can you tell?