

國立台灣科技大學九十九學年度碩士班招生試題

系所組別： 企業管理系碩士班甲組、乙組

科 目： 經濟學

(總分為100分)

一. (25分)

- (1) The Green Company produces chemicals in a perfectly competitive market. The Current market price \$40, the firm's total cost is $C = 100 + 4Q + Q^2$.
- Determine the firm's maximizing output. More generally write down the equation for the firm's supply curve in terms of price. (5 points)
 - Complying with more stringent environment regulations increases the firm's fixed cost from 100 to 140. How would the increase in fixed cost affect the market's long equilibrium price? The number of firms? (Assuming that Green's costs are typical in the market) (5 points)
- (2) Consider a natural monopoly with declining average costs summarized by the equation $AC = 16/Q + 1$, where AC is in dollars and Q is in million units. Demand for the natural monopolist's service is given by the price equation $P = 11 - Q$.
- Determine the price and output of the unregulated natural monopolist. (5 points)
 - Suppose a regulator institutes average-cost pricing. What is the appropriate price and quantity? (5 points)
 - Answer part (2) assuming the regulator institutes marginal-cost pricing. What is the enterprise's deficit per unit of output? How might this deficit be made up? (5 points)



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二. (25分)

- (1) One way to lower the rate of auto accidents is strict enforcement of motor vehicle laws (speeding, drunk driving, and so on). However, maximum enforcement is very costly. The payoff table below lists the payoffs of a typical motorist and a city government. The motorists can obey or disobey motor vehicle laws, which the city can enforce or not.

| | | City | |
|----------|------------|------------|---------------|
| | | Enforce | Don't enforce |
| Motorist | Obey | (0, -15) | (0, 0) |
| | Don't obey | (-20, -20) | (5, -10) |

- What is the city's optimal strategy? What is the typical motorist's behavioral in response? (5 points)
- What if the city could commit to a strict enforcement policy and motorists believed that this policy would be used? Would the city wish to do so? (5 points)
- Now suppose the town could commit to enforcing the law part of the time. (The motorist cannot predict exactly when the city's traffic police will be monitoring the roadways.) What is the city's optimal degree (i.e. percentage) of enforcement? (10 points)

Explain.

- (2) Mary consumes goods x and y . Her demand for x is given by $x(P_x, m) = 0.04m - 4.24P_x$. Now her income is \$322, the price of x is \$2, and the price of y is \$1. If the price of x rises to \$3, find the income effect and the substitution effect on her demand for x . (5 points)



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三. Please explain the effects on the price level and the real GDP

graphically using the aggregating demand and supply analysis (i.e. AD-AS framework) for the following changes in conditions.

- a) Spending on national defense doubles.(10%)
- b) The costs of imported goods increase.(10%)
- c) An improvement in technology raises labor productivity.(15%)

四. Why the long-run aggregate supply (LRAS) curve is vertical at

full-employment real GDP? Please explain the analysis using the self-correcting AD-AS model.(25%)

