招生學年度	105	招生類別	碩士班
系所班別	經濟學系碩士班（國際金融暨貿易組、產業暨財務經濟組）		
科目名稱	經濟學		
注意事項	本考科禁止使用掌上型計算機		

1. (25%)

Consider a market containing four identical firms, each of which makes an identical product. The inverse demand for this product is P=100-Q, where P is price and Q is aggregate output.

The production costs for firms 1,2, and 3 are identical and given by

$$C(q_i) = 20q_i,\ i=1,2,3$$

where q_i is the output for firm i. This means that for each of these firms, variable costs are constant at \$20 per unit. The production costs for firm 4 are

$$C(q_4) = (20+\gamma)q_4,$$

where γ is some constant. Note that if $\gamma > 0$, then firm 4 is a high-cost firm, while if $\gamma < 0$, firm 4 is a low-cost firm. Assume that the firms each choose their outputs to maximize profits given that they each act as Cournot competitors.

(1) Identify the Cournot equilibrium output and price for each firm. Also identify the constraint that γ must satisfy for this to be an equilibrium. (10 points)

(2) Assume that firms 1 and 2 merge and that all firms continue to act as Cournot competitors after the merger. What happens to the profits of merged and non-merged firms? Explain intuitively. (5 points)

(3) Now assume that firms 1 and 4 merge. Can this merger be profitable if γ is positive ? What would happen to the profits for firms 2 as a result of this merger? Provide an intuitive explanation. (10 points)

2. (25%)

Suppose you have an utility function given by: $\ln(x_1) + x_2$ The budget constraint is given by: $I \geq P_1X_1 + P_2X_2$, and $P_i >> 0$.

(1) Verify that the Marshallian demand functions for x_1 and x_2 are homogeneous of degree 0, and derive the expressions for price and income elasticity for x_1. (10%)

(2) Verify the weighted average of the income elasticities is unity. Are x_1 and x_2 necessities or luxuries ? Why ? (10%)

(3) Suppose you initially consume the consumption bundle (1,6), You now face the market price, P=(\$3,\$15) How much income would you need to attain the same utility that you enjoyed at your initial consumption bundle? Round your answer to 2 decimal points (5%)

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3. (20%)

Price (dollars per ride)	Quantity demanded (rides per month)
3	160
4	140
5	120
6	100
7	80

The number of taxicabs in Hualien and the taxicab fares are regulated. The fare currently charged is $5 a ride. Hualien taxicab drivers want to obtain government's permission to raise the fare to increase their revenues and ask you to be their economic adviser. After studying the market, you come up with the above demand schedule for taxicab rides:

(1) Calculate the price elasticity of demand for taxicab rides as the fare rises from $5 to $6. (Use the midpoint method in your calculations.) (5%)
(2) What happens to the taxicab drivers' total revenue if the fare rises from $5 to $6? How can you use your answers in part 1 to answer this question? Should the drivers try to obtain permission to raise the fare? (2.5%)
(3) Calculate the price elasticity of demand for taxicab rides as the fare falls from $5 to $4. (Use the midpoint method in your calculations.) Is the demand price elastic or inelastic for this fare decrease? (5%)
(4) What happens to the taxicab drivers' total revenue if the fare falls from $5 to $4? How can you use your answers in part 3 to answer this question? Should the drivers try to obtain permission to lower the fare? (2.5%)
(5) What fare will maximize the taxicab drivers' total revenue? Explain. (5%)

4. (30%)
In the country of Happyland, autonomous consumption expenditure is $60 million, and the marginal propensity to consume is 0.6. Investment is $110 million, government expenditure is $70 million, and there are no income taxes. Investment and government expenditure are constant. The nation does not trade with the rest of the world.

(1) Draw the aggregate expenditure curve. (5%)
(2) What is the autonomous aggregate expenditure? (5%)
(3) What is the size of the multiplier in Happyland's economy? (5%)
(4) What is aggregate planned expenditure and what is happening to inventories when real GDP is $800 million? (5%)
(5) What is the economy's equilibrium aggregate expenditure? (5%)

Now Happyland begins to trade with foreign countries. The export is $50 million, autonomous import is $40 million, and the marginal propensity to import is 0.1.

(6) What is the multiplier with trade? (5%)