

國立台灣科技大學九十六學年度博士班招生試題

系所組別：企業管理系博士班乙組

科目：經濟學

[總分 100 分]

1. TSMC (denoted as firm 1) and UMC (denoted as firm 2) are two major firms in the semiconductor foundry industry. Suppose both have the following total cost of production:

$$TC_1 = 10 Q_1$$

$$TC_2 = 10 Q_2$$

Let demand curve be given by $P = 100 - Q_1 - Q_2$

- (1) Define the Cournot equilibrium. (5%)
 - (2) Draw the reaction curves for these two firms. (5%)
 - (3) Find the output levels for both firms in the Cournot equilibrium state. (5%)
 - (4) What would be the market equilibrium price? (5%)
 - (5) What would be the profit levels for each firm? (5%)
 - (6) TSMC is contemplating an investment in a new production technology. The onetime sunk cost of implementing this technology is \$200. Once this technology investment is made, marginal cost would be reduced to \$5. UMC has no access to this technology, or any other cost-saving technology, and its marginal cost will remain at \$10. TSMC's financial consultant observes that the investment should not be made, because the total cost resulted from a cost reduction of \$5 on each unit of output at current output level is less than \$200. Is the consultant analysis accurate or not? Justify your answer. (10%)
2. The payoff in the following shows the teamwork of two employees, A and B. If both shirk, they receive salaries of \$2000. If both work hard, they receive bonus. However, they experience disutility from working hard. The payoff, net of disutility, is \$3000. If employee A works hard and employee B shirks, they meet the task target and each receives a payoff \$4000. However, being the only one to exert effort, employee A incurs a back injury. His payoff is \$0. The opposite payoff occurs if B works hard and A shirks.

	B-shirks	B-works
A-shirks	(2000,2000)	(4000, 0)
A-works	(0, 4000)	(3000,3000)

- (1) Define the Nash equilibrium in this single-period setting. (5%)
- (2) What are the payoffs of each player in the Nash equilibrium? (5%)
- (3) Do you see any special feature in this teamwork game? Explain it. (5%)

國立台灣科技大學九十六學年度博士班招生試題

系所組別： 企業管理系博士班乙組

科 目： 經濟學

3. 請回答下面問題：

- (1) 首先，請分別解釋消費者剩餘(consumer's surplus)、補償變量(compensating variation)與等價變量(equivalent variation)的意涵；其次，請闡釋三者之異同。(10分)
- (2) 我勞委會在今(96)年4月30日呈報行政院提議：基本工資調9.09%、額度從15,840調高到17,280元，以及最低時薪從66升到95元。根據行政院最新表示，7月1日調漲基本工資的方向不變。為因應基本工資調漲，勞委會還提出配套措施，針對雇用滿3個月、目前時薪不滿95元的打工族，額外每人每小時補貼業者10元，也就是業者僅需出資每小時85元，作為新政策實施第一年的緩衝，並設定特定行業，如速食業和超商業者。請你針對政府此項基本工資調整政策以及其所建議補貼政策，分別從經濟的效率性與公平性加以評估之。(15分)

4. 下列為對基本金屬產業27家廠商之投入與產出資料(Hildebrand and Liu(1957))所估計之產業生產函數($\ln(\text{output}) = \alpha_0 + \alpha_1 \ln(\text{labor}) + \alpha_2 \ln(\text{capital})$)的迴歸統計結果：

Number of observations: 27			
Standard error of regression: 0.18840			
Sum of squared residuals: 0.85163			
R-squared: 0.94346			
Adjusted R-squared: 0.93875			
Variable	Coefficient	Standard Error	T Ratio
Constant	1.171	0.3268	3.583
Ln(labor)	0.6030	0.1260	4.787
Ln(capital)	0.3757	0.0853	4.402
Estimated Covariance Matrix of the Estimates			
	Constant	Ln(labor)	Ln(capital)
Constant	0.1068		
Ln(labor)	-0.01984	0.01568	
Ln(capital)	0.00189	-0.00961	0.00728

請回答：

- (1) 所估計產業的生產函數為何？(5分)
- (2) 在利潤極大化下，該產業之最適要素(包括資本與勞動)需求函數分別為何？(10分)
- (3) 請問所估得之生產函數是否能滿足“固定規模報酬(Constant Returns to Scale)”的假說？(10分)