考 試 科 目	個體經濟學 2161	所　別	經濟所 2161	考 試 時 間	3 月 1 日（日）第一節

Please answer the following FOUR questions. Show your work because (i) partial credit will sometimes be awarded and (ii) full credit may not be awarded for answers that appear without accompanying work.

1. (30%) Vicky the witch makes invisible potions with two inputs, willow leaves (W) and Lizard tails (T), according to the following recipe:

$q = \min\{ \sqrt{W}, 4T \}$.

(a) (5%) Graph three of Vicky's isoquant curve in terms of (W,T) for various levels of output. Demonstrate on your diagram that regardless of the prices for willow leaves and lizards, Vicky will not alter the way she makes the potion. Let P_W denote the price for willow leaves and P_T denote the price for lizard tails.

(b) (10%) Write down Vicky's cost minimization problem. Find her expansion path and contingent factor demands. What is Vicky's cost function in the long run?

For the following questions, assume that the price for one leaf is $P_W = \$1$ and the price for one lizard tail is $P_T = \$4$.

(c) (5%) Due to that it takes time for the lizards to regenerate their tails, in the short run lizard tails are fixed at the level T=16. What is Vicky's short-run cost function? At which value of output is the short-run average cost minimized?

(d) (10%) Vicky is the monopolist of invisible potions in town, so her supply curve for invisible potion is her marginal cost curve above the short-run average cost curve. [True or False, please explain in detail.]

2. (20%) For centuries, Vicky's family has been the monopolist in Hollow town. By the time she inherited her family's business, the demand for invisible potion is D(P)=219-3P. Her cost function is $C(q) = q + q^2$.

(a) (5%) Charlie the wizard arrives in town and enters the invisible potion business. Charlie's cost function is $C(q) = q + q^2$. On the day that Charlie enters the market, Vicky and Charlie compete in quantities. What is the equilibrium? What are their profits?

(b) (15%) After Charlie's entry, Vicky and Charlie continue to compete in quantities daily. Should Vicky and Charlie cooperate and split the joint monopolist's output equally? Do they have the incentive to maintain this collusion? Please explain.

備　　註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。

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3. (30%)台灣的基本工資自 2007 年以後曾經歷七次的調整，以月薪而言從 2007 年的 17,280 元至現行的 19,273 元。請以圖形及文字回答以下問題：

a、　(3 %)假設整體勞動市場是一個完全競爭市場，請分析基本工資調整對於台灣失業率的影響為何？

b、　(12%)假設基本工資只適用於某些產業或部門，而社會中其實有另一些產業或部門不受到基本工資的限制，請問這時候基本工資調整對於台灣失業率的影響為何？不受基本工資限制的部門其規模對於你的分析結論有何影響？

c、　(10%)很多人認為現今的產業競爭是一個「贏家全拿」的時代，市場上只有少數廠商能夠生存。考慮以下極端情形：請以獨買模型分析基本工資調整對於台灣失業率的影響為何？

d、　(5 %)如同 c.考慮勞動市場並非完全競爭市場，請問遷徙成本下跌對於基本工資與失業率之間的聯繫有何影響？

4. （20%） Suppose there are n individuals in an economy, and each individual i, where i=1…n, is endowed with y_i^* amount of private good. Each person can choose to consume some of his or her y directly or to devote some portion of it to the production of a single public good, x. The amount contributed by each person i is given by y_i^s, and the public good is produced according to the production function

$$x = G(\textstyle\sum_i y_i^s) \qquad (a)$$

Resulting utility for each person in this economy then is given by

$$U^i[x, (y_i^* - y_i^s))] \qquad (b)$$

a、　(4 %) **Briefly** explain the two main attributes of public goods.

b、　(4 %) Please relates the two attributes of public goods to the setup of the utility function given in (b).

c、　(2 %) **Briefly** explain why a Pareto optimal contribution of public good can be solved based on the following utility maximization problem of the social planner (Hint: think about the definition of Pareto optimality)

$$\max U = U^1(x, (y_1^* - y_1^s))$$

Subject to

$$U^2 \geq K_2, U^3 \geq K_3, …, U^n \geq K_n$$

d、　(2 %) Solve the above social planner's problem and find the first-order condition that must be satisfied to achieve optimality.

e、　(3 %) **Briefly** explain the intuition behind the first-order condition you derived in d.

f、　(5 %) Comparing the first-order condition you derived in d. and the first-order condition under a competitive equilibrium to comment on the failure of a competitive market. In particular, discuss through the first-order conditions why public good is under-provided in a competitive market.

備　　　　註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。