


注意：考試開始鈴響前，不得翻閱試題，  
並不得書寫、畫記、作答。

國立清華大學 108 學年度碩士班考試入學試題

系所班組別：經濟學系

考試科目(代碼)：個體經濟學(4601)

### — 作答注意事項 —

1. 請核對答案卷(卡)上之准考證號、科目名稱是否正確。
2. 作答中如有發現試題印刷不清，得舉手請監試人員處理，但不得要求解釋題意。
3. 考生限在答案卷上標記「由此開始作答」區內作答，且不可書寫姓名、准考證號或與作答無關之其他文字或符號。
4. 答案卷用盡不得要求加頁。
5. 答案卷可用任何書寫工具作答，惟為方便閱卷辨識，請儘量使用藍色或黑色書寫；答案卡限用 2B 鉛筆畫記；如畫記不清(含未依範例畫記)致光學閱讀機無法辨識答案者，其後果一律由考生自行負責。
6. 其他應考規則、違規處理及扣分方式，請自行詳閱准考證明上「國立清華大學試場規則及違規處理辦法」，無法因本試題封面作答注意事項中未列明而稱未知悉。

國立清華大學 108 學年度碩士班考試入學試題

系所班組別：經濟學系(0546)

考試科目（代碼）：個體經濟學(4601)

共 3 頁，第 1 頁 \*請在【答案卷、卡】作答

1. Suppose anyone with a driver's license is capable of supplying one trip from the high rail station to the downtown exhibition center in Hsinchu on any given day. The long-run supply curve of such trips is horizontal at  $p = \$50$ , which is the average cost of such trips.

Suppose daily demand is  $Q = 1000 - 10p$ .

- a. Work out the competitive equilibrium quantity. [5 points]
- b. Now suppose that the Hsinchu government requires drivers supplying such trips to own a special license, and the government will issue only 300 licenses. Calculate the change in consumer surplus, producer surplus and the deadweight loss. (hint: a graph will help). [10 points]

2. Suppose a person's utility for leisure (L) and consumption (C) can be expressed as  $U = C + \ln(L)$ . Assuming a wage rate of \$10 per hour and the price of consumption is \$80 and time endowment  $T=24$  (i.e. 24 hours a day)

- a. Solve the optimal value of consumption (C) and leisure (L) and how many hours (H) would this person work ? [10 points]
- b. What happens to the person's labor supply curve when the person wins a lottery prize equivalent to \$5000 per day. [5 points]

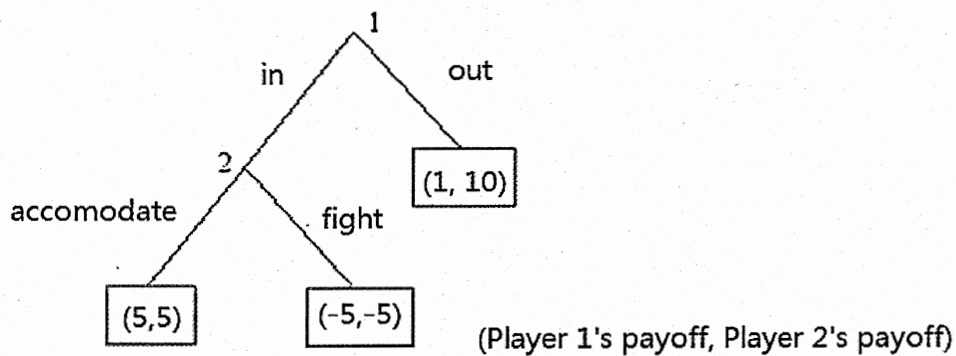
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共 3 頁，第 2 頁 \*請在【答案卷、卡】作答

3. Consider the game below:



a. Player 1 considers whether to enter or to stay out of one industry. Player 2 is the incumbent of the industry. And upon observing whether player 1 enters or stays out of the industry, Player 2 can choose whether to accommodate or fight Player 1. The numbers in brackets represent the payoff to player 1 and player 2 respectively. Use backward induction to find the subgame perfect Nash equilibrium to the game. [10 points]

b. Model the game with a strategic grid (i.e. a game table). Find all Nash Equilibrium to the normal-form game. Why is your answer different than in (a)? [10 points]

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共 3 頁，第 3 頁 \*請在【答案卷、卡】作答

4. A firm produces two good A and B. The firm earns a profit of 300 from each unit of good A, and 200 from each unit of B. There are three stages of the manufacturing process. Good A require 6 hours in production, then 4 hours in assembly, and finally 5 hours of packing. The corresponding numbers for B are 3, 6, and 5, respectively. The total number available for the three stages are 54, 48, and 50 respectively.

(a) Formulate and solve the Linear Programming problem of maximizing profits subject to the given constraints. 【5%】

(b) Write down and solve the dual problem. 【15%】

(c) By how much would the optimal profit increase if the firm gets 2 hours more production time and 1 hour more packing time. 【10%】

5. A firm produces  $x$  units of one commodity and  $y$  units of another. Their respective selling prices per unit are determined by the demand relations

$$p = a - 2x^2$$

$$q = by^{-1/2}$$

The cost function is  $C(x, y) = cx + dy + e$ . The constants  $a, b, c, d, e$  are positive, with  $a > c$ .

(a) Determine the values of  $x$  and  $y$  that maximize the firm's net profits,  $N$ . 【10%】

(b) Find the elasticity of  $N$  with respect to  $y$ . What is the elasticity at the maximum net profit? 【10%】