

國立清華大學 命題紙

98 學年度 經濟學 系(所) 組碩士班入學考試

科目 個體經濟學 科目代碼 4401 共 2 頁第 1 頁 *請在【答案卷卡】內作答

1. [20 points.] Consider an exchange economy with two agents, A and B , and two goods, x and y . The preferences of the two agents are:

$$U_A(x_A, y_A) = x_A^{\frac{1}{2}} y_A^{\frac{1}{2}}, \quad U_B(x_B, y_B) = \min\{x_B, y_B\}.$$

A 's endowment is $(\omega_A^x, \omega_A^y) = (1, 0)$, and B 's endowment is $(\omega_B^x, \omega_B^y) = (0, 1)$.

- (a) Draw the Edgeworth box for this economy. Find the Pareto optimal allocations and indicate them in the diagram. (5 points)
- (b) Find the Walrasian equilibrium price and allocation. (10 points)
- (c) Use this example to explain the First Fundamental Theorem of Welfare Economics. (5 points)
2. [15 points.] A monopolist faces two types of consumers: the young and the elder. The demand curve of the young people is given by $p_1 = 3 - q_1$; and the demand curve of the elder people is given by $p_2 = 4 - 2q_2$. The (constant) marginal cost of production for the monopolist is 1 per unit.
- (a) Suppose the monopolist is allowed to discriminate (i.e., he can set different prices for different markets). What is the profit-maximizing price in each market? (5 points)
- (b) Suppose the monopolist is **NOT** allowed to discriminate. Compared with (a), the social welfare increases or decreases under the nondiscriminatory policy? (10 points)
3. [15 points.] Mike is a college student and plans to pursue a master degree. The present period of time is $t = 0$ and the entrance exam takes place at $t = T$. Suppose in each period $t = 0, 1, \dots, T$, he has one unit of time. All he does is prepare the exam and play games. That is, in each period t , he spends u_t unit of time in playing games and r_t unit in reading, and $u_t + r_t = 1$. In order to pass the exam, he needs to work at least a total of P unit of time.
- Suppose Mike only derives utility from playing games, and his utility function is $U = \sum_{t=0}^T \beta^t \log u_t$, where β is the discount factor.
- (a) To pass the exam, what is the optimal path for preparing the exam, r_t ? (10 points)
- (b) Discuss how the criterion to pass the exam, P , affects the optimal path. Provide an intuition for your answer. (5 points)

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4. Consider two commodities and answer the following questions by drawing clear pictures.

- (a) (3%) How does the budget constraint of a consumer change if the government imposes a quantity tax on one of the commodities?
- (b) (7%) How does the budget constraint change if the government imposes an income tax that raises the same amount of revenue as the quantity tax does?
- (c) (10%) Which taxing scheme is better?

5. Please draw clear pictures to answer the following questions:

- (a) (2%) How do average cost curve and marginal cost curve intersect?
- (b) (3%) How does the picture change if the fixed cost decreases?
- (c) (5%) How does this decrease in fixed cost affect the short-run supply curve of individual firms, the short-run supply curve of the industry, and short-run equilibrium, and the firm's profit?
- (b) (10%) If a firm is a monopoly, is it possible that this firm makes zero profit?

6. (10%) 下表顯示 3 位女士(A, B, C)與 3 位男士(D, E, F)彼此之間愛慕程度之排序。每對數字(x,y)代表某一對男女對對方的排名。其中的第一個數字 x 代表這位男士在這位女士心中的排名;第二個數字 y 代表這位女士在這位男士心中的排名。舉例來說, A 女士最喜歡 D 男士、其次為 F 男士、最不喜歡 E 男士。而 E 男士最喜歡 A 女士、其次為 C 女士、最不喜歡 B 女士, 依此類推。請你幫這 3 對男女配對。配對的結果需要是「穩定」的, 也就是說配對完之後沒有任何一對沒被配對在一起的男女彼此雙方都希望重新配對再一起, 也就是說不會有「外遇」的情況產生。

	A 女士	B 女士	C 女士
D 男士	(1,3)	(2,2)	(3,1)
E 男士	(3,1)	(1,3)	(2,2)
F 男士	(2,2)	(3,1)	(1,3)