

考試科目	財政學	系所別	財政學系	考試時間	2月2日(四)第四節
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考生應答注意：

- 一、「答題如使用題目未給定之數學符號與參數、變數及其上、下標等，以及製圖之座標軸與點、線等，務必清楚標示並佐以文字說明。」
- 二、作答於試題上者，不予計分。
- 三、試題請隨卷繳交。

1. (20%)

The evaluation of the allocation of resources is an important subject in public finance; answer the following two questions on the allocation of goods and services.

- (1). Consider an economy of two goods,  $x$  and  $y$ . Use the horizontal axis to denote good  $x$ , and the vertical axis to denote  $y$ , draw—in one figure—a graph that shows the allocation of goods  $x$  and  $y$  is in overall (exchange as well as production) efficient.
- (2). What is the relationship between the Pareto efficiency allocation of goods and services and the competitive equilibrium outcome?

2. (30%)

Consider an economy with 15 individuals and one pure public good—street lights. Denote  $Q$  as the quantity of installed street lights. Among the individuals, 5 of them are high demand consumers for street lights with marginal benefit:  $MB^H = 100 - 5Q$ , and 10 of them are low demand consumers for street lights with marginal benefit:  $MB^L = 50 - .25Q$ . Suppose the marginal cost of street lights:  $MC = 25$ . Answer the following questions, and show your calculation in the answer sheet.

- (1). (5%) Compute the marginal social benefit, MSB, of street lights, and the number of street lights  $Q^*$  to be installed as suggested by the Samuelson condition.

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- (2). (5%) Compute the tax prices and quantity at the Lindahl equilibrium. How does the equilibrium number of street lights  $Q^{LE}$  compare to the  $Q^*$  calculated in (1)?
- (3). (5%) Explain that there can be a deficit at the Lindahl equilibrium calculated. On the other hand, they can also be a surplus at the equilibrium.
- (4). (5%) Compute the consumer surplus for any of the low demand consumers at the Lindahl equilibrium.
- (5). (10%) Use your result in (4) to argue that for any one of the low-demand individuals, there is an incentive to free-ride at the Lindahl equilibrium, and therefore, the Lindahl scheme is prone to free-rider problems.
3. (10%) In 1996 James Mirrlees (together with William Vickrey) was awarded the Nobel Prize in economics for his contribution on the theory of optimal taxation. Mirrlees proved that the marginal tax rate on the highest-income individual in the economy should be zero—the so called “zero-rate-at-the-top” result. Suppose the top tax rate in some economy is 40 percent and that the top-earning individual makes \$500 million in a year before tax. Explain why Mirrlees suggested that the optimal marginal income tax rate should be zero for the top earning individual?
4. (15%) Denote  $P^*, Q^*$  as the pretax equilibrium price and quantity in the market,  $\eta^D$  as the compensated demand elasticity at the equilibrium, and  $t$  as the tax rate. The well-known excess burden formula of an *ad valorem* tax:

$$\frac{1}{2} \eta^D P^* Q^* t^2,$$

for simplicity, assumes perfectly elastic supply. Denote  $\eta^S$  as the compensated supply elasticity, derive the generalized excess burden formula when  $\eta^S > 0$ . Show your derivation.

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5. 請回答以下時事問題：

- (1). (15%) 何謂「超徵」？你對行政院日前決議「還稅於民」的政策有何看法？
- (2). (10%) 2022 年 3 月 25 日，立法院以出席立委 109 人全數贊成的票數三讀通過「18 歲公民權修憲案」，明定年滿 18 歲中華民國國民，依法有選舉、罷免、創制、複決、參加公投及被選舉權。2022 年 11 月 26 日（與地方公職人員選舉同日）舉行上述修憲案之公民複決投票，結果卻為不通過。請試以公共選擇理論解釋之。



備註

- 一、作答於試題上者，不予計分。
- 二、試題請隨卷繳交。