考 試 科 目	財政學	系 所 別	財政學系	考 試 時 間	2 月 11 日(五)第四節

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，務必有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. (10%) An economy emits 180 units of pollution per year; two polluters, Bart and Homer, each emits 90 units. Suppose the government has estimated that the efficient amount of pollution is to emit 100 units per year between the two of them. Suppose the costs of pollution reduction are $x^2/2$ and $2x^2$ for Bart and Homer respectively. In order to achieve the efficient amount of pollution reduction, what is the cost effectiveness emissions fee per unit of pollution? Given the emissions fee, how should the reduction in pollution be divided between Bart and Homer? What are the amounts of emissions fee that Bart and Homer each pays? Show your calculation in the answer sheet.

2. The COP26 summit rejuvenates discussions on the effects of cap-and-trade vs. emissions fee (or a carbon tax). Please discuss practical differences between a cap-and-trade system and an emissions fee program in terms of: (5% each sub-question, 20% in total)

(1). Responsiveness to inflation.

(2). Responsiveness to cost changes.

(3). Responsiveness to the uncertainty in the costs of pollution reduction; e.g., the cost of pollution reduction is higher than what expected at the planning stage.

(4). Distributional effects.

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3. Suppose gardening is a pure public good among 5 residents: Mike, Jan, Franklin, Susan, and Megan. The marginal benefit and marginal cost per gardener vary according to the following table:

	Number of Gardeners			
	1	2	3	4
	Marginal Benefits			
Mike	325	275	225	175
Jan	225	150	75	0
Franklin	75	50	25	0
Susan	75	50	25	0
Megan	50	25	0	0
	Marginal Costs			
	150	200	250	300

Answer the following questions: (5% each sub-question, 20% in total)

(1). If each resident is assigned a tax share of $50, what is the political equilibrium under majority rule?

(2). Solve the Lindahl equilibrium.

(3). Show that the Lindahl equilibrium in (2) will result in a budget surplus, and calculate the amount of the surplus.

(4). What is the efficient number of gardeners to be hired?

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4. Evaluate the following two statements: (5% each sub-question, 10% in total)

(1). Increasing tax rates on some goods increases the overall excess burden of the tax system.

(2). It is possible to reduce the overall excess burden of the tax system if we introduced a small subsidy on some good.

5. Suppose two workers earn labor incomes of $20,000 per year in each of three accounting periods. One worker saves 20% of her labor earnings in each of the first two periods and spends all her savings and accumulated interest in the final period. The other worker never saves any of her labor earnings. The market rate of interest is 10%.

(1). (10%) Calculate the discounted present value of taxes paid over the three periods for each of the workers under a 15% comprehensive income tax.

(2). (10%) What would be the effect of substituting a comprehensive consumption tax for a comprehensive income tax? Comment on the equity and efficiency aspects of each of the two taxes.

6. 請回答以下時事問題：

(1). (10%) 目前正在進行中的全球稅改 BEPS2.0 有哪些主要內容？

(2). (10%) 請以你所理解的財政學架構，討論縣市合併升格議題。

備 註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。