考試科目	個體經濟學	所別	經濟學系	考試時間	2 月 26 日(六) 第二節

1. **(25%)** An individual has the utility function $U(h,c) = \min\{h,c\} + c$ (h: leisure, c: consumption, P_c: price of c and it is \$1). There are 24 hours in a day, and w is the market wage rate per hour ($w >$ \$1). Non-earned income is \$$I$.
   a. Are the preferences represented by the utility function complete, transitive, and continuous?
   b. Find the individual's labor supply function and indirect utility function.
   c. Suppose the government decides to impose an income tax on both wage and non-earned income. The income tax rate is 50%. Please compute the substitution effects and income effects to the hours worked. What are the compensating variation and equivalent variation to this individual from this tax policy?

2. **(25%)** An exchange economy has three consumers and three goods. Consumers' utility functions ($U^i(.)$) and initial endowments (e^i) are as follows:

$$U^1(x_1, x_2, x_3) = \min(x_1, x_2), \quad e^1 = (1,0,0)$$
$$U^2(x_1, x_2, x_3) = \min(x_2, x_3), \quad e^2 = (0,1,0)$$
$$U^3(x_1, x_2, x_3) = \min(x_1, x_3), \quad e^3 = (0,0,1)$$

   a. Define the Pareto efficient allocations for this economy.
   b. Define the Walrasian equilibrium allocations for this economy.
   c. Given a clear statement of the First Welfare Theorem.
   d. Give a clear statement of the Second Welfare Theorem.
   e. Briefly discuss why the First and Second Welfare Theorem are considered economically significant.
   f. Find <u>all</u> the Walrasian equilibrium allocations for this economy.

3. **(20%)** There are two firms, Izuz and Eker, in an industry of hardware, called *Netlet*. The market size is \$16 billion. Each firm can choose whether to advertise. Advertising costs \$4 billion for each firm that chooses to do so. If one firm advertises and the other does not, then the former captures the whole market. If both firms advertise, they split the market equally and pay for the advertising. If neither advertises, they split the market equally but without the expense of advertising. We assume zero production costs for both firms.
   a. Write down a payoff table for Izuz and Eker in the Netlet market, and find out the equilibrium when both firms move simultaneously.
   b. Use the story in part (a), are Izuz and Eker better in the case that they meet each other twice? Explain your answer.
   c. From the joint perspective of Izuz and Eker, how could these two firms do better? Elaborate why the solution you propose is sustainable.

請注意：背面還有試題。

備註	試題隨卷繳交

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4. **(30%)** Macroware has two types of customers for its computer design software: home users and business users. Each user will purchase only one copy of the software. Macroware is considering producing two versions of the software. Version X contains full features of the Macroware software. Version Y is the same as version X in every aspect except that it does not allow users to design in color. Willingness to pay of business and home users for Macroware's software is given below:

Version	X	Y
Business	$4,000	$2,000
Home	$1,600	$1,300

There are 100 business users and 100 home users. For simplicity, assume also that Macroware incurs zero costs for both versions.

a. If Macroware can tell business and home users apart and can charge them different prices, what prices of version X will Macroware set for business and home users?
b. Continue on part (a), how will Macroware deal with version Y? Compare your answers with those in part (a).
c. Now suppose that Macroware cannot distinguish business and home users and thus cannot charge them different prices for the same version. However, Macroware can charge different prices for version X and version Y. How much will Macroware charge for version X? How much for version Y? Write down Macroware's objective function and associated constraints before solving the problem.
d. How might your analysis in part (c) change if there were 150 business users and 50 home users?

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