考試科目	個體經濟學	所別	經濟學系	考試時間	5月12日(六) 第一節

1. (26%) True or false? If you believe a statement is false, give a counter example. Otherwise, explain why you believe it is true. You will not receive points for answers without explanation.

(a) (8%) A Pareto optimum can never be a Nash equilibrium.

(b) (8%) If a player has a dominant strategy, he also has a dominated strategy.

(c) (10%) In an infinitely repeated prisoners' dilemma, there exists an equilibrium in which both players play the strategy "do always cooperate".

2. (24%) Suppose a firm introduces a new product. A consumer buys x units of this new product and y units of another good. If the new product lives up to the claims made by the firm, a consumer's utility is given by

$$u = x^{1/2}y^{1/2}$$

However, with probability 1/2, the new product does not live up to expectations and delivers only 1/4 of the expected flow of services. In this case the consumer's utility is given by

$$u = (1/4x)^{1/2}y^{1/2}$$

Assume that for the consumer both goods cost 1 per unit, it is impossible to test the new product before purchase, and there is no return policy. The consumer has an income of 32.

(a) (6%) How much of the new product does the consumer buy?

(b) (6%) If the new product delivers its expected services with certainty, how much of it does the consumer buy? How much does the reduction in uncertainty raise his welfare?

(c) (12%) Suppose the probability that the new product does not live up to its expectations is 1/2 as originally specified. Suppose the price of this product is reduced to 16/25. How much of the new product does the consumer buy? Is the expected utility as high as in (b)? Explain.

備註	試題隨卷繳交	【請注意，背面還有試題。】

考試科目	個體經濟理論	所別	經濟學系	考試時間	5月12日(六)第一節

3. (40%) An insurance company offers life insurance policies that provide a fixed benefit b in case the insured party dies during the coming year. The type of a customer is θ, where θ is the likelihood that the customer will die during the upcoming year. A customer privately knows his type θ. There is a continuum of potential customers, where θ is uniformly distributed on [0,1]. We thus regard the closed interval [0,1] as the set of potential customers. Customers and the insurance company are risk neutral and *there is no discounting* of the benefit b on the grounds that it is paid some time after the policy is sold.

(a) (8%) Suppose all customers work for the same university, which wants to purchase a policy for each of its employees. What is the "break even" price that the insurance company can charge the university per policy (i.e., the price at which the insurance company earns a zero expected profit) to cover every employee?

Suppose next that each customer makes his own decision on whether or not to spend his own money to purchase a policy. Each customer is risk neutral so that he maximizes his expected benefit from a policy minus its price. Assume that every customer has a lot of money and can afford to purchase a policy at the prices considered in this problem.

i. (8%) Which types of customers are willing to pay a price $p \leq b$ for a policy?

ii. (8%) What is the expected type of the customers who buy policies at the price p?

iii. (8%) Show that the insurance company has an expected loss on any policy that it sells for a price $p < b$.

(b) (8%)What is *adverse selection* in the context of this question and in what sense does a cause a loss of welfare? Compare your answers in (a) and (b) in answering the question.

4. (10%) True, False, Uncertain (Explain)

A consumer reveals demands for goods 1 and 2 at two different price vectors. For a price vector $(p_1, p_2) = (2, 4)$ the demand is $(q_1, q_2) = (1, 2)$. For a price vector of $(p_1, p_2) = (6, 3)$ the demand is $(q_1, q_2) = (2, 1)$. These choices are consistent with utility maximization.

備註	試題隨卷繳交

國立政治大學 101 學年度 博士班 招生考試試題

考試科目	總體經濟學	所別	經濟學系	考試時間	5月12日(六) 第二節

1. (25%) Consider a Ramsey-Cass-Koopmans economy that is on its balanced growth path. Suppose that there is a tax rate τ on the investment income such that the after-tax interest rate equal $(1-\tau)r(t)$. The government returns the revenue it collects from this tax through lump-sum transfers. If the tax rate has been raised to a higher level τ' at time 0,
   (a) On the phase diagram, please show how the $\dot{c}=0$ locus and the $\dot{k}=0$ locus move after the increase in the tax?
   (b) How does the economy respond to the increase of the tax at time 0? What are the dynamics after time 0?
   (c) How do the values of c and k on the new balanced growth path compare with their values on the old balanced growth path?

2. (15%) Use Solow's growth model to explain the convergence between rich and poor countries.

3. (20%) Consider a real business cycle (RBC) model where the representative individual maximizes the expected value of $E_0\sum_{t=0}^{\infty}u(C_t)/(1+\rho)^t$, $\rho>0$. The instantaneous utility function, $u(C_t)$ is $u(C_t)=C_t^{1-\theta}/(1-\theta)$, $\theta>1$. The budget constraint of the household can be written as:

$$C_t = x_t + (1+r_t)a_t - a_{t+1}$$

where a_t is the bonds and x_t is the income from labor supply and the ownership of firm. Please answer the following questions:

(a) Find the first-order condition (Euler equation) relating C_t and expectations of C_{t+1}.

(b) Loglinearize the Euler equation.

4. (40%) Answer the following questions:
(a) (15%) Keynes assumes that the consumption is a linear function of income: $C=a+bY$ where a and b are constants. Please explain the implication of this consumption function for the average propensity to consume (APC). Also explain briefly whether the empirical studies support its implication for the APC.
(b) (10%) Explain the Lucas critique.
(c) (15%) What are the *neutrality* and *superneutrality* of money respectively? Does monetary neutrality hold in an economy with monopolistic competition under flexible prices? Explain.

備註	試題隨卷繳交