銘傳大學九十三學年度管理研究所博士班招生考試

經濟學　試題

注意：可使用計算機

1. (20%) An individual purchases only two goods, Good A and Good B, and the individual's income is$1,500 per month. The individual purchases 20 units of Good A at a price of $50 per unit and 20 units of Good B at a price of $25 per unit. The individual states that with this bundle, the marginal utility from Good A is equal to the marginal utility from Good B. Therefore this is the best bundle available. Do you agree or disagree? Explain your answer.

2. (20%) Consider the cost function:

$$C(r_1, r_2, Q) = \frac{r_1 r_2}{r_1 + r_2} Q \ ,$$

where Q denotes output and r_1 denotes the price of the i^{th} input. Derive the (conditional) input demands and the production function which underlies this cost function.

3. (30%) The expenditure function of a consumer is given by:

$$E(p,\mu) = \alpha \mu^{1/\alpha} \prod_{i=1}^{n} \left[\frac{p_i}{\alpha_i}\right]^{\alpha_i/\alpha}$$

where $\alpha_i > 0 \quad \forall i$, and $\sum_{i=1}^{n} \alpha_i = \alpha$.

Please derive the following (in any order that you choose)

a) $x^h(p,\mu)$ (Hicksian demand function)

b) $V(p,y)$ (indirect utility function)

c) $D(x,\mu)$ (distance function)

d) $\mu(x)$ (direct utility function)

e) $x^m(p,y)$ (Marshallian demand function)

f) $p^m(x)$ (inverse Marshallian demand function)

g) $p^h(x,\mu)$ (inverse Hicksian demand function)

4. (30%) There is a two-period model of labor supply and consumption which is to identify the possibility of interpemporal substitution of leisure for labor supply.

At the beginning of the first period (indexed by t) a representative household decides on current consumption of the composite good C_t and current labor supply ℓ_t (that is, the fraction of the total time available that is allocated to market work). At the same time, the household also makes a contingency plan for second-period (indexed by t+1), consumption C_{t+1} and second-period labor supply ℓ_{t+1}. The predetermined level of household's wealth is Ω. The nominal wage rates are W_t and W_{t+1}, and prices of consumption goods are P_t and P_{t+1} respectively. The household's interpemporal budget constraint is given by

$$C_t - \frac{W_t}{P_t}\ell_t + \frac{P_{t+1}}{P_t(1+r)}C_{t+1} - \frac{W_{t+1}}{P_t(1+r)}\ell_{t+1} = \Omega$$

The objective of the problem is to maximize a time –separable utility function of the form

$$V = U(C_t, \ell_t) + \frac{1}{1+\beta}U(C_{t+1}, \ell_{t+1})$$
$$= \left[(1-\sigma)\ln(C_t) + \sigma\ln(1-\ell_t)\right] + \frac{1}{1+\beta}\left[(1-\sigma)\ln(C_{t+1}) + \sigma\ln(1-\ell_{t+1})\right],$$

where U is a concave, single-period utility function, $\beta > 0$ is the representative household's rate of time preference, and σ denotes the weight of leisure relative to consumption in the utility function. Please derive and interpret the first order conditions for this optimization problem.