

元智大學 100 學年度研究所 碩士班 招生試題卷

系(所)別： 管理學院商學碩士班 組別： 財務金融碩士學程 科目： 經濟學 用紙第 1 頁共 2 頁

●不可使用電子計算機

第一部分 填空題 (每題 5 分) , 請勿附上計算過程與說明 , 否則不予計分。

1. There is only one firm in a product market, and its total cost function is $TC=100+Q+Q^2$. Please write down the supply curve of this product market, if any: _____.
2. The demand curve is $Q^d=10-P$, and supply curve is $Q^s=P$. If the government taxes a lump-sum tax \$1 on every producer, then please calculate the equilibrium price=_____.
3. Following previous question, if the government turns to tax a lump-sum tax \$1 trillion on every producer, then please calculate the equilibrium price=_____.
4. An utility function $U(x,y)=\max\{x, y\}$. Prices are $P_x=2$ and $P_y=1$. Income is 10. Please find the optimal consumption on x =_____.
5. Given three firms with 20%, 40% and 40% market shares in a product market, please compute the Herfindahl-Hirschman Index=_____.
6. In an aggregate market, C (consumption) is determined by $10+0.25Y$ where Y is the aggregate income. Please compute the multiple effect=_____.
7. A money demand is specified as $M^d/P=100+0.1Y-20R$, in which P is the price level, Y is income, R is interest rate. The money supply function is $M^s/P=50$. Please find the income function Y of interest rate R : $Y(R)$ =_____.
8. In an aggregate market, the effect that increases in government purchases result in decreases in consumptions and investments is called _____.

第二部分 簡答題 , 每題計算過程與說明請限制在 100 字以內 , 超過不予計分。

9. Two firms A and B compete in a Cournot-style duopoly market. They have the same cost function $TC_A=cq_A$, and $TC_B=cq_B$. q_A and q_B are output levels of firms A and B. The inverse demand function is $P=A-Q$. Please answer following question in order:
 - (a) [10%] If A obtains a new technology that reduces marginal cost c to c_A for free. find the equilibrium output level for q_A and q_B . We assume this new technology is non-transferable. Condition $(2c-A < c_A < c)$ is assumed.
 - (b) [10%] If this new technology costs, please find the maximum willing to pay for this new technology for firm A.
 - (c) [5%] If this new technology is provided by another firm R, find the condition that R will sell this new technology to one firm (rather than two firms). To simply the question, we assume firm R is able to price at the level of the willing to pay by any firm.
10. Given a production function of a society is $Y=\ln(K)$, Y is output level and K is net capital input. $K=d(K_0+I)$, where K_0 is initial capital, I is investment and d is depreciation rate. R is the nominal interest rate. π is inflation rate. Real interest rate $r=(1+R)/(1+\pi) - 1$. Please answer following question in order:
 - (a) [5%] Please find the investment function $I(r)$.
 - (b) [5%] Now we consider the consumption. For an intertemporal utility function $U(C, C_1)=C^{0.5}C_1^{0.5}$,

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C is the consumption today, C_1 is the consumption at time 1, the endowments are W and W_1 for today and time 1. Please find the consumption function $C(r)$ for today.

(c) [10%] We further consider the government spending G . Aggregate supply is a constant Y_0 . Find the aggregate demand function $AD(r)$ which is a function of nominal interest rate r , and then prove that the increase in G would result in decreases in C and I under equilibrium.

11. Few sheep stay on a circle path with juicy grass. Each of sheep decides to allocate at a spot and start to eat grass. It eats grass along the path in one direction only (either to the right side or the left side). It is possible that one sheep eats from the right while another eats from the left. Please plot the Nash equilibrium about the allocations under following scenarios. (If there are multiple Nash equilibriums, then you need to plot at least two cases)

- (a) [5%] There are two sheep (A, B) on the path.
- (b) [5%] There are three sheep (A, B, C) on the path.
- (c) [5%] There are four sheep (A, B, C and D) on the path.

