

臺灣綜合大學系統 111 學年度學士班轉學生聯合招生考試試題

科目名稱	經濟學	類組代碼	共同考科
		科目碼	E0021
※本項考試依簡章規定各考科均「不可」使用計算機		本科試題共計 3 頁	

I (90pts, 5pts each) For each of the following statements, determine whether it is true or false. If your answer is True, justify by quoting a definition or theorem, or by giving a proof. If your answer is False, provide the correct statement. No credit is given to any answer without correct reasoning.

1. The Phillips curve describes a relationship between inflation and money supply.
2. The gross domestic product (GDP) can be measured by

$$Y = C + I + X - M,$$

where  $C, I, (X - M)$  denote the consumption expenditure, investment, and net exports of goods and services, respectively.

3. The official foreign reserves will increase when a country has a trade surplus.
4. The consumer price index (CPI) is the only measure of price level.
5. XXX and YYY are two neighboring countries. XXX can either produce 300 pounds of rice or 100 bushels of corn in a year, while YYY can either produce 500 pounds of rice or 200 bushels of corn. So XXX should specialize in producing rice and trade rice for corn with YYY.
6. In perfect competition, environmental externalities need not distort the allocation of resources providing transactions costs are zero.
7. If the central bank of Taiwan would like to peg the TWD at an undervalued level, it will have to sell TWD and buy USD.
8. The Taylor principle is

$$\begin{aligned} \text{Short-run interest rate} = & \text{Long-run target} + \rho_{\pi}(\text{Inflation} - \text{Inflation target}) \\ & + \rho_y(\text{output gap on percentage points}) \end{aligned}$$

where the coefficients are  $0 < \rho_{\pi} < 1$ , and  $0 < \rho_y < 1$ .

9. The equilibrium real interest rate will decrease but equilibrium quantity of credit will rise when there is a significant increase in the amount of government borrowing to issue shopping voucher.

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10. The procyclical behavior of interest rates (rising during business cycle expansions and falling during recessions) might lead to procyclical movements in the money supply.
11. The production function  $Y = \sqrt{KL}$  exhibits diminishing returns to scale and diminishing marginal productivities for  $K$  and  $L$ .
12. The following two utility functions:

$$U(x, y) = \sqrt{xy}$$

and

$$U(x, y) = \log x + \log y$$

represent the same preferences.

13. If utility is given by  $u(x, y) = x^2 + 2xy + y^2$ , this person's indifference curves are concentric circles.
14. If an individual's utility function for beer ( $x$ ) and pizza ( $y$ ) is given by  $u(x, y) = \min(x, 5y)$ , with budget constraint:  $p_x x + p_y y = M$ . The demand function for beer is given by:

$$x^d = \frac{M}{p_x + 0.2p_y}$$

15. Consider a two-period model with two types of households in the economy. Type A with constant endowment  $w_A$  over time and type B with constant endowment  $w_B$ , with  $w_B = (1 + 10\%)w_A$ . Both of them begin with 0 initial assets. Households have preferences

$$U = u(c_1) + \beta u(c_2)$$

where  $\beta \in (0, 1)$  is the discount factor and the utility function is

$$u(c_t) = \frac{c_t^{1-\theta} - 1}{1-\theta}, \quad \theta > 1$$

Also, assume the risk-free interest rate  $r$  is constant, and  $\beta(1+r) = 1$ . Denote the optimal consumption for type-A household as  $(c_1^A, c_2^A)$ , and  $(c_1^B, c_2^B)$  for type-B household. Then we know type-B household will have relatively lower consumption in the first period, i.e.,

$$c_1^B < (1 + 10\%)c_1^A$$

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16. Andy wants to buy a used laptop from an online exchange Web site. He expects 50 percent of the used laptop to have some defect. He is willing to pay up to \$80 for a laptop without any defect and \$0 for a defective laptop. An owner of a good-quality laptop is likely to sell if he gets a price of \$70. According to the above scenario, there exists a problem of moral hazard.

17. A monopolist has marginal revenue  $MR(Q)$  and marginal cost  $MC(Q, \theta)$ , where  $\theta$  is some factor shifting marginal costs up. Let  $Q^*$  denote the equilibrium output. If the monopolist's profit function is concave in  $Q$ , then

$$\frac{dQ^*}{d\theta} < 0.$$

18. Consider a static economy with a representative consumer that has the following utility function:

$$U(C, L) = \log(C) + \log(L)$$

and is subject to the budget constraint  $C = w(1 - L)$ . Where  $C$ ,  $L$  and  $w$  represent consumption, leisure, and wage rates. The optimal labor supply,  $1 - L$ , is an increasing function of the wage rate.

**II (10pts, 5pts each) Please explain your answer. No credit is given to any answer without correct reasoning.**

There are  $N$  lions and 1 sheep in a field. All the lions really want to eat the sheep, but the problem is that if a lion eats a sheep, it becomes a sheep. A lion would rather stay a lion than be eaten by another lion because there is no other way for a lion to die.

1. If there were 100 lions and 1 sheep, would one of the lions eat the sheep?
2. If there were 101 lions and 1 sheep, would one of the lions eat the sheep?