

考試科目	經濟學	系別	財政系	考試時間	7月7日 星期六	第2節
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一、是非評論題(請注意關鍵字句-需說明論點才給分;若能佐以數學式、圖形等工具更佳):

(1) 若消費者之偏好可藉由一標準化(normalized)的 Cobb-Douglas 效用函數來呈現,則各商品需求量的相對比例不會因為商品價格波動而有所改變。(5分)

(2) Nothing is more useful than water; but it will purchase scarce anything; scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it

- Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*

根據上述引文,可知水的邊際效用遞減,但鑽石的邊際效用持平,甚至遞增。

【5分】

(3) 某獨佔廠商利潤在追求極大化的目標(未行使差別取價)下,目前生產水準所對應之平均成本為每單位 5 元,邊際成本為每單位 3 元。該廠商獨佔獲利必然為正。【5分】

二、某消費者將所得全數用於購買兩種商品-書本(單價 P_b)和服裝(單價 P_c)。目前她目前所預定購買的商品數量,使得消費書本的邊際效用是消費服裝之邊際效用的 3 倍。在邊際效用遞減的前提下,她的經濟顧問為確保最適選擇,建議現階段的商品組合應作調整:增加消費服裝數量,並減少書本消費量。由以上資訊,是否可推知 P_b, P_c 間的相對關係?【15分】

三、某一產品之需求為 $Q = 800 - 100P$ 。生產此產品之產業為完全競爭之型態。廠商之長期平均成本的極小值為每單位 4 元(於 20 單位之產量)。某一廠商「創新王」目前正評估一研發計劃。此計劃之研發成本為 D ,一旦投入 D 後,研發成果可使邊際成本降至 $\$2$ (總成本可視為 $TC(q) = 2q + D$)。其他廠商現階段並不具研發能力。

(1) 若「創新王」的法務部門肯定此研發成果可取得專利保護,因而形成一獨占局面,但研發部門估算研發投入規模(D 值)需 800 元,「創新王」的執行長是否應批准該項投資?。(10分)

(2) 若「創新王」已知此研發成果不能取得專利保護,且另一廠商「複製達人」可輕易複製「創新王」開發之新技術(無須投入研發成本),將邊際成本同樣降至 $\$2$,若「創新王」預期與乙於研發成功後,市場結構將是 Cournot Competition,「創新王」是否仍有意願從事該項研發(研發部門估算研發投入規模(D 值)需 800 元)?(10分)

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四、解釋下列名詞：(25%，每小題 5 分)

- (1) 國內生產毛額 (gross domestic product)
- (2) 流動性陷阱 (liquidity trap)
- (3) 實質景氣循環理論 (real business cycle theory)
- (4) 痛苦指數 (misery index)
- (5) 外匯存底 (foreign exchange reserves)

五、中央銀行宣布自 6 月 22 日起調高重貼現率、擔保放款融通和短期融通利率各 1 碼 (0.25 個百分點)；外幣存款準備率調高至百分之五。(25%)

試問：(1) 此項政策，主要目的為何？(8%)

(2) 假設其他條件不變，調高重貼現率，對均衡物價水準和所得水準的影響如何？(8%)

(3) 除了重貼現率外，中央銀行還有哪些貨幣政策工具，可用來穩定物價水準和促進所得水準？(9%)

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1. (25%) The following information is available for the Art Corporation:

Art Corporation
Balance Sheets
At December 31

	2007	2006
Assets:		
Cash.....	\$ 24,640	\$ 23,040
Accounts receivable	32,180	29,400
Merchandise inventory.....	73,125	61,710
Long-term investments.....	55,900	56,400
Equipment	175,500	145,500
Accumulated depreciation.....	<u>(33,550)</u>	<u>(31,200)</u>
Total assets	<u>\$327,795</u>	<u>\$284,850</u>
Liabilities:		
Accounts payable	\$ 65,000	\$ 40,380
Income taxes payable.....	10,725	10,200
Bonds payable	<u>48,750</u>	<u>66,000</u>
Total liabilities.....	\$124,475	\$116,580
Equity:		
Common stock	117,000	96,000
Contributed capital in excess of par	13,000	9,000
Retained earnings.....	<u>73,320</u>	<u>63,270</u>
Total equity.....	<u>\$203,320</u>	<u>\$168,270</u>
Total liabilities and equity.....	<u>\$327,795</u>	<u>\$284,850</u>

Art Corporation
Income Statement
For Year Ended December 31, 2007

Sales	\$240,000
Cost of goods sold.....	\$80,900
Depreciation expense	29,400
Other operating expenses	48,000
Interest expense	<u>2,000</u> (160,300)
Other gains (losses):	
Loss on sale of equipment.....	<u>(8,400)</u>
Income before taxes	71,300
Income taxes expense.....	<u>(27,650)</u>
Net income	<u>\$ 43,650</u>

Additional Information:

- (1) There was no gain or loss on the sales of the long-term investments, nor on the bonds retired.
- (2) Old equipment with an original cost of \$37,550 was sold for \$2,100 cash.
- (3) New equipment was purchased for \$67,550 cash.
- (4) Cash dividends of \$33,600 were paid.
- (5) Additional shares of stock were issued for cash.

Prepare a complete statement of cash flows for calendar-year 2005 using the **direct** method.

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2.(25%)The following information is from Omi Corporation's balance sheets as of December 31, 2006, and 2007 and its income statement for 2007:

	<u>2007</u>	<u>2006</u>
Assets:		
Cash.....	\$ 18,000	\$ 22,000
Marketable securities.....	25,000	0
Accounts receivable	38,000	42,000
Inventory	61,000	52,000
Prepaid insurance	6,000	9,000
Long-term investments.....	49,000	20,000
Plant assets, net	<u>218,000</u>	<u>225,000</u>
Total assets	<u>\$415,000</u>	<u>\$370,000</u>
Net income	\$ 62,250	
Sales (all on credit).....	305,000	
Cost of goods sold.....	123,000	
Interest expense	15,600	
Income tax expense	27,000	

From the above information, calculate the following ratios for 2007:

- (a) Inventory turnover.
- (b) Accounts receivable turnover.
- (c) Return on total assets.
- (d) Times interest earned.
- (e) Total asset turnover.

3. (5%) Timmy Company had a January 1, balance in its Allowance for Doubtful Accounts of \$7,000 for the current year. The following transactions and events affected the Allowance for Doubtful Accounts during the current year:

- Apr. 15 Bard's account receivable of \$5,700 was deemed uncollectible.
- July 1 Drake paid the full amount of a previously written-off account receivable. This receivable of \$2,300 had been written off in the prior year.
- Dec. 31 Bad debts expense of \$7,500 was recorded.

What amount should appear in the allowance for doubtful accounts in the December 31, balance sheet for the current year?

4. (5%) A company reported net income of \$478,000 and paid \$5,500 in preferred cash dividends during the current year. The company had 100,000 common shares issued, and 10,000 common shares in treasury. The year-end market price per common share was \$43.05. Calculate the company's price-earnings ratio.

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5. (20%) On September 30 of the current year, a company acquired and placed in service a machine at a cost of \$700,000. It has been estimated that the machine has a service life of five years and a salvage value of \$40,000. Using the double-declining-balance method of depreciation, prepare a schedule showing depreciation amounts for the current year and the next 4 years (round answers to the nearest dollar). The company closes its books on December 31 of each year. Please use the format shown below.

Year	Depreciation for the Period			End of Period	
	Beginning of Period Book Value	Depreciation Rate	Depreciation Expense	Accumulated Depreciation	Book Value
1					
2					
3					
4					
5					
6					

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6. (20%) A company issued 10%, 5-year bonds with a par value of \$2,000,000, on January 1, 2005. Interest is to be paid semiannually each June 30 and December 31. The bonds were sold at \$2,162,290 to yield the buyers an 8% annual return. The company uses the effective interest method of amortization.

Prepare an amortization table for the first two semiannual payment periods using the format shown below.

Semiannual Interest Period	Cash Interest Paid	Bond Interest Expense	Premium Amortization	Unamortized Premium	Carrying Value
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- Find the total area between the curve $y = 1 - x^2$ and the x-axis over the interval $[0, 2]$. (15 points)
- Evaluate the double integral $\int_0^2 \int_{y/2}^1 e^{x^2} dx dy$ by reversing the order of integration. (15 points)
- Find the general solution of the differential equation, $y' = \frac{x}{y} - \frac{x}{1+y}$. (15 points)
- Use implicit differentiation to find dy/dx for the Folium of Descartes $x^3 + y^3 = 3xy$. Find an equation for the tangent line to the Folium of Descartes at the point $(\frac{3}{2}, \frac{3}{2})$. (20 points)
- Generate or sketch a graph of the equation $y = [2x^2 - 8]/[x^2 - 16]$ and identify the exact locations of the intercepts, relative extrema, inflection points, and asymptotes. (20 points)
- Use the eighth-degree Taylor polynomial for e^{-x^2} to approximate the definite integral $\int_0^1 e^{-x^2} dx$. (15 points)