



The Association for
Accountants and
Financial Professionals
in Business

CMA Learning System™

Part 2: Financial Decision Making

Practice Essay Questions and Answers.

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The Institute of Management Accountants

CMA Learning System™

Part 2: Financial Decision Making

Essay Questions

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Practice Essay Questions

The following essay questions, and the answers that appear at the end, were adapted from the Revised CMA exam, Questions and Answers: Part 4 (2005 and 2008) books supplied by the Institute of Certified Management Accountants and are used with their permission.

The focus of the questions will be on the test taker's ability to apply concepts presented in the part being tested to a business scenario.

The answers supplied are meant to serve as samples of answers that address 80% or more of the points listed on the question grading guide. There are generally more points on the grading guide than points that can be awarded (i.e., there may be 110 possible points but only 100 that can be awarded in total), so answers scoring 80% may vary among test takers. Thus, the answers presented here represent one possible answer, not a definitive correct answer.

Part 2 Section A Questions

Question 2A-ES01

The accounting staff of CCB Enterprises has completed the preparation of financial statements for the 2005 calendar year. The Statement of Income for the current year and the Comparative Statement of Financial Position for 2005 and 2004 are reproduced below.

The accounting staff calculates selected financial ratios after the financial statements are prepared. Average balance sheet account balances are used in computing ratios involving income statement accounts. Ending balance sheet account balances are used in computing ratios involving only balance sheet items. The ratios have not been calculated for 2005. Financial ratios that were calculated for 2004 and their respective values are as follows.

- Times interest earned 5.16 times
- Return on total assets 12.5%
- Return on operating assets 20.2%
- Return on common stockholders' equity 29.1%

CCB Enterprises	
Statement of Income	
Year Ended December 31, 2005	
(\$000 omitted)	
Revenue	
Net sales	\$800,000
Other	<u>60,000</u>
Total revenue	<u>\$860,000</u>
Expenses	
Cost of goods sold	\$540,000
Research and development	25,000
Selling and administrative	155,000
Interest	<u>20,000</u>
Total expenses	<u>\$740,000</u>
Income before income taxes	120,000
Income taxes (40% tax rate)	<u>48,000</u>
Net income	<u>\$ 72,000</u>

CCB Enterprises Comparative Statement of Financial Position		
December 31, 2005 and 2004		
(\$000 omitted)		
	<u>2005</u>	<u>2004</u>
<u>Assets</u>		
Current assets		
Cash and short-term investments	\$ 26,000	\$ 21,000
Receivables, less allowance for doubtful accounts (\$1,100 in 2005 and \$1,400 in 2004)	48,000	50,000
Inventories, at lower of FIFO cost or market	65,000	62,000
Prepaid items and other current assets	<u>5,000</u>	<u>3,000</u>
Total current assets	<u>\$144,000</u>	<u>\$136,000</u>
Other assets		
Investments, at cost	\$106,000	\$106,000
Deposits	<u>10,000</u>	<u>8,000</u>
Total other assets	<u>\$116,000</u>	<u>\$114,000</u>
Property, plant and equipment		
Land	\$ 12,000	\$ 12,000
Buildings and equipment, less accumulated depreciation (\$126,000 in 2005 and \$122,000 in 2004)	<u>268,000</u>	<u>248,000</u>
Total property, plant and equipment	<u>\$280,000</u>	<u>\$260,000</u>
Total assets	<u>\$540,000</u>	<u>\$510,000</u>

	<u>Liabilities and</u>	
	<u>Stockholders' Equity</u>	
Current liabilities		
Short-term loans	\$ 22,000	\$ 24,000
Accounts payable	72,000	71,000
Salaries, wages, and other	<u>26,000</u>	<u>27,000</u>
Total current liabilities	\$120,000	\$122,000
Long-term debt	<u>160,000</u>	<u>171,000</u>
Total liabilities	<u>\$280,000</u>	<u>\$293,000</u>
Stockholders' equity		
Common stock, at par	\$ 44,000	\$ 42,000
Paid-in capital in excess of par	<u>64,000</u>	<u>61,000</u>
Total paid-in capital	\$108,000	\$103,000
Retained earnings	<u>152,000</u>	<u>114,000</u>
Total stockholders' equity	<u>\$260,000</u>	<u>\$217,000</u>
Total liabilities and stockholders' equity	<u>\$540,000</u>	<u>\$510,000</u>

Questions

A. Explain how the use of financial ratios can be advantageous to management.

B. Calculate the following financial ratios for 2005 for CCB Enterprises (round your answer to three decimal places):

1. times interest earned.
2. return on total assets.
3. return on operating assets.
4. return on common stockholders' equity.
5. total debt ratio.
6. total debt/equity ratio.
7. current ratio.
8. quick (acid test) ratio.

Question 2A-ES02

Renbud Computer Services Co. (RCS) specializes in customized software development for the broadcast and telecommunications industries. The company was started 30 years ago by three people to develop software primarily for a national network to be used in broadcasting national election results. After sustained and manageable growth for many years, the company has grown very fast over the last three years, doubling in size. This growth has placed the company in a challenging financial position for the coming year.

Within 30 days, RCS will need to renew its \$300,000 loan, a current liability, with the Third State Bank of San Marcos. Harvey Renbud, president of RCS, is concerned about renewing the loan because of the low amount of cash on hand. The bank has requested RCS's last year's income statement, comparative balance sheets for the last two years, and six ratios relating to operating performance and liquidity.

RCS Financial Statements

Renbud Computer Services Co.		
Income Statement		
Last Year		
Net revenues		\$2,500,000
Expenses		
Cost of product services	\$1,500,000	
Selling and administration	300,000	
Depreciation and amortization	200,000	
Interest	60,000	
Income taxes	150,000	
Total expenses		<u>\$2,210,000</u>
Net income		<u>\$ 290,000</u>

Renbud Computer Services Co.		
Balance Sheet		
Past Two Years		
	Last Year	Two Years Ago
Assets		
Cash	\$50,000	\$50,000
Accounts receivable, net	350,000	250,000
Operating supplies and other	70,000	60,000
Equipment, net	1,100,000	900,000
Furniture and fixtures, net	120,000	100,000
Other long-term assets	<u>240,000</u>	<u>200,000</u>
Total assets	<u>\$1,930,000</u>	<u>\$1,560,000</u>
Liabilities and shareholders' equity		
Accounts payable	\$150,000	\$130,000
Taxes payable	140,000	120,000
Note payable (Third State Bank)	300,000	200,000
Bonds payable (due in 2002)	<u>400,000</u>	<u>400,000</u>
Total liabilities	990,000	850,000
Capital stock (1,000 shares)	100,000	100,000
Retained earnings	<u>840,000</u>	<u>610,000</u>
Total shareholders' equity	940,000	710,000
Total liabilities and shareholders' equity	<u>\$1,930,000</u>	<u>\$1,560,000</u>

Questions

A. Explain why the Third State Bank of San Marcos would be interested in Renbud

B. Computer Services Co.'s comparative financial statements, ratio calculations, and industry ratios.

Calculate the following financial ratios for Renbud Computer Services Co.

- Current ratios for the past two years.
- Accounts receivable turnover for last year.
- Total asset turnover for last year.
- Return on shareholders' equity for last year.
- Debt to equity ratio for the last two years.

- Net income ratio (return on sales) for last year.

C. Discuss briefly the limitations and difficulties that can be encountered in using ratio analysis.

Question 2A-ES03

In the Statements of Financial Accounting Concepts, the Financial Accounting Standards Board (FASB) set forth the fundamentals on which financial accounting and reporting standards are to be based. Specifically, the FASB intends that these concept statements establish objectives and concepts that can be used to develop standards for financial accounting and reporting, and to resolve new and emerging problems. Knowledge of the FASB objectives and concepts should enable those affected by financial accounting standards to better understand the content and limitations of the information provided by financial accounting and reporting. **Statement of Financial Accounting Concepts No. 1** discusses the objectives of financial reporting by business enterprises, and **Statement of Financial Accounting Concepts No. 5** recommends the composition of a full set of financial statements.

Question

Identify and describe the major sections of the Statement of Cash Flows.

Section 2A: Question 2A-ES04

Sentech Scientific Inc., a manufacturer of test instruments, is in contract negotiations

with the labor union that represents its hourly manufacturing employees. Negotiations have reached an impasse, and it appears that a strike is imminent. The controller has called the general accounting manager into his office to discuss liquidity issues if and when a strike does occur.

The controller asks the accounting manager to recommend measures to assess liquidity if a strike were to occur. Although some of the nonunion employees could probably produce test instruments during a strike, the controller would rather be conservative and assume no shipments during this time frame. Since the customers may go to other sources to obtain the products they need during a strike, cash receipts for current outstanding amounts owed by customers may not be paid on a timely basis.

Questions

A. Define liquidity and explain its importance to Sentech.

B. Identify three measures that could be used to assess liquidity and explain how to calculate these measures.

C. Determine which liquidity measure identified above would **best** fit the controller's requirements, and explain why. Include in your discussion the reasons why the other measures would not be as appropriate.

Part 2 Section B Questions

Question 2B-ES01

The Gershenfeld Foundation was established 25 years ago to encourage, promote, and support research in the physical sciences. A wide range of industrial corporations contribute money in support of the foundation's work. The foundation has awarded research grants at a rate commensurate with its contributions and portfolio earnings.

Gershenfeld's contributions have increased significantly the past few months. The results of the foundation's recent fund drive exceeded the expectations of the Board of Trustees. New research grants are being reviewed and evaluated, but a final decision on which grants to fund and the amount of funding will not be made for at least 60 days. Thus, Gershenfeld has an excess cash position that is expected to continue for two months.

The Board of Trustees has instructed the foundation's Executive Director to invest the excess cash during this interim period. The Executive Director has been instructed to earn the highest possible yield while maintaining marketability and safety of principal. The types of investments that the Executive Director is considering for the use of \$3.5 million of excess cash are (1) certificates of deposit, (2) U.S. treasury bills, and (3) preferred stock of domestic corporations.

Questions

A. Define each of the following financial instrument characteristics and explain the effect each has on the yield of investments.

1. Default risk.
2. Marketability.
3. Maturity.

B. Evaluate each type of investment being considered by Gershenfeld's Executive Director in terms of default risk, marketability, and maturity.

C. Discuss the suitability of each type of investment being considered by the Executive Director for Gershenfeld Foundation's particular situation.

Question 2B-ES02

Atrax Corporation is now a diversified company that was originally founded as a textile and milling company by Adam Traxal. During the 1980s and early 1990s before any diversification, Atrax's earnings had leveled off to about \$2.25 per share. The growth possibilities in this industry were limited so that the demand for expansion funds has been low. There were large internal cash flows during this period, and Atrax regularly paid out 65% of its earnings as cash dividends. By the middle 1990s, this large dividend payout had become a trademark of Atrax's common stock.

The firm began diversifying into high-technology, growth companies in 1994 in an effort to reduce its business risk from its dependence on a single source of sales. Traxal thought such diversification was essential to maintain Atrax's financial health. The diversification program has been successful as far as Traxal is concerned. Atrax is no longer completely dependent on a single source of sales. The earnings have grown moderately to \$2.80 per share since 1994 despite the issuance of additional common shares. The price of the Atrax common stock has increased so that the P/E ratio is slightly higher than it was in 1994. In addition, the 65% cash dividend payout ratio has been maintained during the expansion period.

The diversification program at first was easily financed by the excess funds that were generated internally. Eventually though, the firm began to recognize the need to use external sources—long-term debt and/or additional issues of common stock—to finance its expansion programs. One consequence of the several common stock offerings was to dilute Traxal's control over the firm because he was unable to purchase his pro rata share of the additional offerings due to a shortage of personal funds. The Traxal family holdings amounted to 54% of the firm's stock in 1994 but their ownership has now fallen to around 35%. However, Traxal is still able to maintain effective control over the firm because no other stockholder owns more than 4% of the total stock.

Traxal believes that continued expansion is important for Atrax. Traxal is against any additional issues of common equity because he still cannot generate the personal funds necessary to purchase additional stock to maintain his present equity position. However, further expansion could be greatly hampered if additional issues of common equity are not employed. Traxal has instructed his staff to suggest alternative proposals which would allow him to maintain control of Atrax and still continue the firm's diversification program. A summary of three proposals follow.

Proposal 1

The acquisition program would continue and be financed out of earnings not paid out as dividends and from long-term debt issues and preferred stock issues. The current 65% cash dividend payout ratio would be maintained, and

there would be no additional issues of common stocks. However, there would be an increase in long-term debt and preferred stock issues.

Proposal 2

The acquisition program would continue, and cash dividends would be reduced. The staff estimates that acquisitions could be financed with internally generated funds and a minimum amount of long-term debt. No additional common equity would be required. Atrax could probably distribute cash dividends equal to 10%-20% of earnings. This proposal would not significantly change Atrax's present debt to equity relationship. In an attempt to appease stockholders who face a drop in their cash dividends, a stock dividend would be paid.

Proposal 3

The acquisition program would continue and be financed entirely by internally generated funds by reducing the cash dividend payout rate to zero, if necessary. No additional long-term debt or shares of common stock would be employed.

Questions

A. Adam Traxal finds Proposal 1 interesting but wonders what effect this would have on the rest of the firm and on the market value of Atrax Corporation's common stock. Assuming that the price of a firm's stock is the product of its current earnings per share and its historical price-earnings ratio, indicate the ways in which implementing Proposal 1 would operate to affect the market price of Atrax's common stock.

B. Adam Traxal considers Proposal 3 to be the least attractive because cash dividends might be reduced to zero. Explain what the probable short-term and long-term effects would be on the market price of Atrax's common stock if the acquisition program is dependent upon reducing the cash dividend payout ratio to zero.

C. Adam Traxal considers Proposal 2 the most appealing because dividends would still continue to be distributed.

1. Would Traxal be able to maintain his current equity position of 35% if stock dividends were distributed? Explain your answer.

2. Explain how, if at all, the market price of Atrax's common stock would probably be affected if this proposal is adopted.

3. Compare and contrast Proposal 2 with Proposal 3 in terms of the probable effects on the market price of Atrax's common stock.

Question 2B-ES03

Kravel Corporation is a diversified company with several manufacturing plants. Kravel's Dayton Plant has been supplying parts to truck manufacturers for over 30 years. The last shipment of truck parts from the Dayton Plant will be made December 31, 2006. Kravel's management is currently studying three alternatives relating to its soon-to-be-idle plant and equipment in Dayton.

Alternative 1

Wasson Industries has offered to buy the Dayton Plant for \$3,000,000 cash on January 1, 2007.

Alternative 2

Harr Enterprises has offered to lease the Dayton facilities for four years beginning on January 1, 2007. Harr's annual lease payments would be \$500,000 plus 10% of the gross dollar sales of all items produced in the Dayton Plant. Probabilities of Harr's annual gross dollar sales from the Dayton Plant are estimated as follows.

<u>Annual Gross Dollar Sales</u>	<u>Estimated Probability</u>
\$2,000,000	0.1
4,000,000	0.4
6,000,000	0.3
8,000,000	0.2

Alternative 3

Kravel is considering the production of souvenir items to be sold in connection with upcoming sporting events. The Dayton Plant would be used to produce 70,000 items per month at an annual cash outlay of \$2,250,000 during 2007, 2008, and 2009. Linda Yetter, Vice President of Marketing, has recommended a selling price of \$5 per item and believes the items will sell uniformly throughout 2008, 2009, and 2010.

The adjusted basis of the Dayton Plant as of the close of business on December 31, 2006, will be \$4,200,000. Kravel has used straight-line depreciation for all capital assets at the Dayton Plant. If the Dayton Plant is not sold, the annual straight-line depreciation charge for the plant and equipment will be \$900,000 each year for the next four years. The market value of the plant and equipment on December 31, 2010, is estimated to be \$600,000.

Kravel requires an after-tax rate of return of 16% for capital investment decisions and is subject to corporate income tax rates of 40% on operating income and 20% on capital gains.

Questions

A. Calculate the present value (at December 31, 2006) of the expected after-tax cash flows for each of the three alternatives available to Kravel Corporation regarding the Dayton Plant. Assume all recurring cash flows take place at the end of the year.

B. Discuss the additional factors, both quantitative and qualitative, Kravel Corporation should consider before a decision is made regarding the disposition or use of the idle plant and equipment at the Dayton Plant.

Question 2B-ES04

Langley Industries plans to acquire new assets costing \$80 million during the coming year and is in the process of determining how to finance the acquisitions. The business plan for the coming year indicates that retained earnings of \$15 million will be available for new investments. As far as external financing is concerned, discussions with investment bankers indicate that market conditions for Langley securities should be as follows.

- Bonds with a coupon rate of 10% can be sold at par.
- Preferred stock with an annual dividend of 12% can be sold at par.
- Common stock can be sold to yield Langley \$58 per share.

The company's current capital structure, which is considered optimal, is as follows.

Long-term debt	\$175 million
Preferred stock	50 million
Common equity	275 million

Financial studies performed for Langley indicate that the cost of common equity is 16%. The company has a 40% marginal tax rate. (Ignore floatation costs for all calculations.)

Questions

A. Determine how Langley should finance its \$80 million capital expenditure program, considering all sources of funds. Be sure to identify how many new shares of common stock will have to be sold. Show your calculations.

B. Calculate Langley's weighted incremental cost of capital that it could use to assess the viability of investment options.

C. Identify how each of the following events, considered individually, would affect Langley's cost of capital (increase, decrease, no change). No calculations are required.

1. The corporate tax rate is increased.
2. Banks indicate that lending rates will be increasing.

3. Langley's Beta value is reduced due to investor perception of risk.
4. The firm decides to significantly increase the percent of debt in its capital structure since debt is the lowest cost source of funds.

Part 2 Section C Questions

Question 2C-ES01

Microeconomic theory suggests that the quantity demanded for any good is a function of relative prices, consumer real income, and consumer tastes. If tastes are held constant, then changes in the other two independent variables will induce a change in the dependent variable, i.e., the quantity demanded for a particular good. The concept that measures the responsiveness of quantity demanded to changes in the independent variable is called elasticity.

Questions

- A. Define the concept of price elasticity.
 - B. Explain the significance of the price elasticity concept for a firm's management.
-

Question 2C-ES02

Candice Company has decided to introduce a new product. The new product can be manufactured by either a capital-intensive method or a labor-intensive method. The manufacturing method will not affect the quality of the product. The estimated manufacturing costs for each of the two methods are as follows.

	<u>Capital-Intensive</u>	<u>Labor-Intensive</u>
Raw materials	\$5.00	\$5.60
Direct labor	.5DLH @ \$12 6.00	.8DLH @ \$9 7.20
Variable overhead	.5DLH @ \$ 6 3.00	.8DLH @ \$6 4.80
Directly traceable incremental fixed manufacturing costs	\$2,440,000	\$1,320,000

Candice's market research department has recommended an introductory unit sales price of \$30. The incremental selling expenses are estimated to be \$500,000 annually plus \$2 for each unit sold regardless of the manufacturing method used.

Questions

- A. Calculate the estimated breakeven point in annual unit sales of the new product if Candice Company uses the
 1. capital-intensive manufacturing method.
 2. labor-intensive manufacturing method.
- B. Determine the annual unit sales volume at which Candice Company would be indifferent between the two manufacturing methods.

C. Candice's management must decide which manufacturing method to employ. One factor it must consider is operating leverage.

1. Explain operating leverage and the relationship between operating leverage and business risk.
2. Explain the circumstances under which Candice should employ each of the two manufacturing methods.

D. Identify the business factors other than operating leverage that Candice must consider before selecting the capital-intensive or labor-intensive manufacturing method.

Question 2C-ES03

The City of Blakston owns and operates a community swimming pool. The pool is open each year for 90 days during the summer months of June, July, and August. A daily admission is charged to patrons of the pool. By law, 10% of all recreational and sporting fees must be remitted to a state tourism promotion fund. The City Manager has set a goal that pool admission revenue, after subtracting the state fee and variable costs, must be sufficient to cover the fixed costs. Variable costs are assumed to be 15% of gross revenue. Fixed costs for the three-month period total \$33,000. The following budget for the pool has been prepared for the current year.

Adult admissions: 30 per day x 90 days x \$5.00	\$13,500
Student admissions: 120 per day x 90 days x \$2.50	<u>27,000</u>
Total revenue	40,500
State tourism fee	<u>4,050</u>
Net revenue	36,450
Variable costs	6,075
Fixed costs	<u>33,000</u>
Expected deficit	<u><u>\$ (2,625)</u></u>

The City Manager is trying to determine what admission mix is necessary to break even and what actions could be taken to eliminate the expected deficit.

Questions

- A.** Given the anticipated mix of adult and student admissions, how many total admissions must the pool have in order to break even for the season?
- B.** Regardless of the admissions mix, what is the highest number of admissions that would be necessary to break even for the season?
- C.** Regardless of the admissions mix, what is the lowest number of admissions that would be necessary to break even for the season?

Question 2C-ES04

Kolobok, Inc. produces premium ice cream in a variety of flavors. Over the past several years, the company has experienced rapid and continuous growth and is planning to increase manufacturing capacity by opening production facilities in new geographic areas. These initiatives have put pressure on management to better understand both their potential markets and associated costs. Kolobok’s management identified three aspects of their current operation that could affect the new market expansion decision: (1) a highly competitive ice cream market, (2) the company’s current marketing strategy, and (3) the company’s current cost structure.

Since the company began operations in 1990, Kolobok has used the mark-up approach for establishing prices for six-gallon containers of ice cream. The product prices include the cost of materials and labor, a markup for profit and overhead cost (a standard \$20), and a market adjustment. The market adjustment is used to appropriately position a variety of products in the market. The goal is to price the products in the middle of comparable ice creams offered by competitors while maintaining high quality and high differentiation. Sales for 2007 based on Kolobok’s mark-up pricing are presented below by product.

Product	Material & Labor	Markup	Market adjustment	Unit Price	Boxes sold	Total Materials & Labor	Total Sales
Vanilla	\$29.00	\$20.00	\$1.00	\$50.00	10,200	\$295,800	\$510,000
Chocolate	28.00	20.00	7.00	55.00	12,500	350,000	687,500
Caramel	26.00	20.00	2.00	48.00	12,900	335,400	619,200
Raspberry	27.00	20.00	2.00	49.00	13,600	367,200	666,400
Total					49,200	\$1,348,400	\$2,483,100

For the year 2007, Kolobok’s before-tax return on sales was 7%. The company’s overhead expenses were \$500,000, selling expenses \$250,000, administrative expenses \$180,000, and interest expenses were \$30,000. Kolobok’s marginal tax rate is 30%.

Kolobok is considering replacing mark-up pricing with target costing and has prepared the table below to better compare the methods. Kolobok tries to appeal to the top 30% of the retail sales customers, including restaurants and cafes. In positioning Kolobok’s products, three dimensions are considered: price, quality, and product differentiation. Accordingly, there are three main competitors in the market as follows.

Competitor A – Low cost, low quality, high standardization

Competitor B – Average cost, moderate quality, average differentiation

Competitor C – High cost, high quality, high differentiation

<i>Product</i>	<i>Competitor A Pricing</i>	<i>Competitor B Pricing</i>	<i>Competitor C Pricing</i>	<i>Kolobok Target Prices</i>
Vanilla	\$49	\$55	\$55	\$53
Chocolate	50	53	56	53
Caramel			51	50
Raspberry		51	52	50

Kolobok has also been reviewing its purchasing, manufacturing, and distribution processes. Assuming that sales volumes will not be affected by the new target prices, the company believes that improvements will yield a \$125,000 decrease in labor expense and a 25% reduction in overhead expense.

Questions

- A.** Describe target costing.
- B.** Analyze and compare the two alternative pricing methods: mark-up pricing and target costing.
- C.** Assuming that the sales volumes will not be affected by the new product pricing based on target costing and that the process improvements will be implemented, calculate Kolobok’s before-tax return on sales using the proposed target prices.
- D.** Recommend which pricing method (mark-up or target) Kolobok should use in the future and explain why.

Part 2 Section D Questions

Question 2D-ES01

Miranda Wells joined Sycamore Corporation four months ago as a financial analyst and has been assisting Jake Richter, the controller, in evaluating capital projects. Shortly, Wells will be making her first presentation to the management committee responsible for selecting capital projects, and she has been working diligently to ensure that her analysis is correct. The management committee will be considering the following two mutually exclusive projects at this meeting. Both projects require the same initial investment and have the same project lives. Wells has used several capital budgeting methods to evaluate each project and presents the data as a table.

	<u>Project A</u>	<u>Project B</u>
Accounting rate of return	34%	26%
Internal rate of return	16%	19%
Net present value	\$2.6 million	\$3.5 million
Payback period	4 years	5 years

After completing her analysis, Wells believes Project B is superior to Project A. She intends to recommend Project B to the management committee and Richter agrees.

Questions

- A.** For each of the four capital budgeting methods used by Miranda Wells to evaluate the two projects at Sycamore Corporation, explain the merits and limitations of each method.
- B.** Explain why Miranda Wells and Jake Richter believe that Project B is superior to Project A.
- C.** Identify three qualitative considerations that generally should be considered in capital budget evaluations.

Question 2D-ES02

Cambridge Automotive Products (CAP) Inc., a multinational corporation, is a major supplier of a broad range of components to the worldwide automobile and light truck market. CAP is in the process of developing a bid to supply an ignition system module to Korea Auto Corporation (KAC), a South Korean automobile manufacturer, for a new line of automobiles for the next four-year production cycle. The Request for Proposal issued by KAC specifies a quantity

of 200,000 modules in the first year and 250,000 units in years 2 through 4 of the contract. CAP marketing specialists believe that, in order to be competitive, a bid of 100,000 South Korean Won (KRW) per unit is appropriate. Other relevant data are shown below.

- Manufacturing specialists estimate that a \$12 million (U.S. Dollars) investment in equipment (including installation) is required.
- The equipment is expected to last the 4-year life of the contract, at which time it would cost \$1.4 million to remove the equipment which would be sold for a scrap value of \$900,000.
- Direct labor and material expenses are estimated at \$40 per unit.
- The change in indirect cash expenses associated with this contract is expected to be \$3 million per year.
- The new product will require additional investment in inventory and accounts receivable balances at the outset, amounting to \$1.2 million during the four-year time period. This investment will be recovered at the end of the four-year contract.
- CAP is subject to U.S. income tax at an effective rate of 40%.
- For tax purposes, assume that the initial \$12 million cost of the equipment is depreciated evenly over the four-year period.
- The company economist estimates that the exchange rate will average 1,250 KRW per U.S. Dollar for the four-year time period.

Questions

A. Calculate the after-tax incremental cash flows in U.S. Dollars for the following periods:

1. Period 0.
2. Period 1.
3. Period 4 operating cash flow

B. The assumptions used to develop the cash flows are subject to various degrees of estimation error. For each of three different cash flow variables, identify and discuss one potential risk that could affect the estimates made by CAP.

Question 2D-ES03

Grubstake Mining Ltd. (GML) owns and operates the Dusty Coal Mine, among its other business ventures. The Dusty Coal Mine is a strip mine that has been in operation for a number of years and is expected to operate for another 15

years. Environmental regulations require mine operators to reclaim the land and restore it to its original configuration and vegetation state once mining ceases. GML has been setting aside money for this purpose in an external trust fund managed by a major commercial bank, and the balance in the fund is currently \$3 million. Assume that income tax regulations currently allow both the deposits to the trust fund and the earnings on the funds to be exempt from taxation.

GML would like to establish a uniform charge per ton for reclamation costs to be included in contracts with customers for future sales. It is estimated that the reclamation cost in today's dollars is \$14 million, and that amount is expected to increase by 4% per year. The trust fund is expected to earn income at a rate of 7% per year on its investments. Annual sales from the mine are expected to be 1,350,000 tons per year over the next 15 years.

Questions

A. Calculate the cost per ton that GML should include in its contracts in order to accumulate a sufficient amount in the trust fund to be able to pay the cost to reclaim the land at the end of the 15-year period.

B. Identify and discuss four uncertainties that GML faces over the 15-year period as far as reclamation is concerned. For each uncertainty, describe what the effect would be on the reclamation cost per ton.

C. Without performing any calculations, discuss the effect on GML if the following changes were to be made in the tax regulations.

1. Amounts collected for reclamation would be considered taxable income, even if they are deposited in external trust funds.
2. Earnings on the trust funds are currently taxable.

Question 2D-ES04

Ultra Comp is a large information technology firm with several facilities. The firm's Audit Committee has determined that management must implement more effective security measures at its facilities. A Security Improvement Team has been formed to formulate a solution. Janet Lynch is the financial analyst assigned to the team. She has determined that a six-year time horizon is appropriate for the analysis and that a 14% cost of capital is applicable. The team is investigating the following three vendors.

- Vendor A is a new entrant to the security industry and is in the process of introducing its security system which utilizes new technology. The system would require an initial investment of \$4 million and have a life of six years. A net cash outflow of \$500,000 per year for salaries, operation, maintenance, and all costs related to the system would also be required.

- Vendor B is an established firm in the security industry and has a security system that has been on the market for several years. The system requires an initial investment of \$1 million and will have a useful life of three years. At the end of the three-year period, Ultra Comp would have to replace the hardware at an estimated cost of \$1,250,000, based on current technology. A net cash outflow of \$750,000 per year for salaries, operation, maintenance, and all other related costs would also be required.
- Vendor C is a nationally recognized firm in the security industry and has proposed to Ultra Comp that it provide a total security solution. Vendor C would provide all hardware and personnel to operate and maintain a security system as called for by the specifications of Ultra Comp for all its locations. Ultra Comp would be required to sign a six-year contract at a cost of \$1,400,000 per year.

Questions

- A.** Ultra Comp utilizes the Net Present Value (NPV) method to quantify the financial aspects of corporate decisions. Calculate the NPV of each of the three alternatives.
 - B.** Based on financial considerations, which of the three alternatives should the team recommend? Explain why.
 - C.** Define sensitivity analysis and discuss how Ultra Comp could use this technique in analyzing the three vendor alternatives.
 - D.** Identify and briefly discuss three non-financial considerations that the Ultra Comp team should consider prior to making a recommendation to senior management.
-

Part 2 Section E Questions

Question 2E – ES01

The government of a developing country invited several companies to bid on a project to enhance its telecommunications infrastructure. Robert James is Vice President of Global Sales for SouthComm, a large telecommunications company based in the U.S. Mr. James obtained all of the details required to bid on the project and was able to submit the bid before the deadline. A few weeks after the deadline had passed, he telephoned the deputy minister of the country to find out the status of the project. During that conversation, the deputy minister invited Mr. James to a special meeting to present SouthComm’s proposal in detail. Mr. James spent several days preparing for the meeting and then traveled to the country for the meeting. During the meeting, Mr. James presented the details of SouthComm’s proposal for over an hour to the deputy minister and vice deputy. He then answered questions from the men for about twenty minutes. When there were no more questions, Mr. James told the deputy and vice deputy that SouthComm was extremely interested in winning the bid for the project and asked if there was anything else he could do to convince them that SouthComm was the best company to select to do the project.

The deputy and vice deputy then spoke amongst themselves in their native language for several minutes. Finally, the vice deputy told Mr. James that SouthComm’s bid would be guaranteed to win if a commission of \$1 million were paid to the country’s government. Mr. James knew that this “commission” request was nothing more than a bribe, and explained that such a payment would be against U.S. laws as well as SouthComm’s corporate policy. The vice deputy then stood up, said goodbye and shook Mr. James’ hand.

Questions

A. Why would SouthComm have a corporate policy against these types of payments?

B. Mr. James later shared this experience with Rita Lane, who holds a similar position with a large U.S. multinational company. Ms. Lane said that such requests are “commonplace” in global business and that she would do it as long as that practice is acceptable in the foreign country. Do you agree with Ms. Lane’s opinion?

Question 2E – ES02

Morgan Company manufactures engine lubricants. During the manufacturing process, some by-products are produced which have no resale value. The by-products are considered hazardous to the environment and should be disposed of in a very specific manner, following hazardous material protocol. Morgan pays an outside company to come onsite and haul away the hazardous materials. Morgan's sales have been much lower than expected this quarter and there is a lot of pressure to lower costs.

John Lark has worked in the company's Controller's Office for ten years and is very familiar with the plant floor processes. While walking the plant floor one day, he sees that one of the workers is putting the by-product in the large trash receptacle instead of placing it in the hazardous material bin. When he inquires about why that is being done, the worker explains he is following a management directive, and that disposing of the by-product in the trash would save the company the money that would have to be paid to the hazardous materials company.

Questions

A. Is the management of Morgan Company acting in an ethical manner? What are some of the potential risks that Morgan Company will expose itself to by making decisions like this in order to cut costs?

B. What changes should be made to create a stronger ethical environment? What are some of the potential benefits that Morgan Company could realize by creating a more ethical corporate culture?

Part 2 Section A Answers

Answer to Question 2A-ES01

Answer A:

Among the management accountants' responsibilities is the measurement of economic events and transactions and the communication of information about them to interested parties including management. Financial ratios are a part of this communication process that includes analysis, interpretation, and evaluation of the financial statements. Ratios display a relationship between various elements of financial data and are used to assist management in interpreting and explaining financial statements and can be effective tools in evaluating a company's liquidity, debt position and profitability. Financial ratios are an important part of evaluating a company's past performance and are useful in projecting its financial future.

Answer B:

$$1. \text{ Times interest earned} = \frac{\text{Income before income taxes} + \text{Interest expense}}{\text{Interest expense}}$$

$$= \frac{\$120,000 + \$20,000}{\$20,000}$$

$$= 7 \text{ times}$$

$$2. \text{ Return on total assets} = \frac{\text{Net income} + \text{Interest expense} - \text{Tax savings}}{\text{Average total assets}}$$

$$= \frac{\$72,000 + \$20,000 - (\$20,000 \times 0.4)}{(\$540,000 + \$510,000) \div 2}$$

$$= 0.16 = 16\%$$

$$3. \text{ Return on operating assets} = \frac{\text{Operating income}}{\text{Average operating assets (total - other)}}$$

$$= \frac{(\text{Income before taxes}) - (\text{Other Revenue}) + \text{Interest expense}}{[(\text{'05 Total Assets} - \text{Other assets}) + (\text{'04 Total Assets} - \text{Other assets})] \div 2}$$

$$= \frac{\$120,000 - \$60,000 + \$20,000}{[(\$540,000 - \$116,000) + (\$510,000 - \$114,000)] \div 2}$$

$$= 0.195 = 19.5\%$$

$$\begin{aligned}
 4. \text{ Return on common stockholders' equity} &= \frac{\text{Net income}}{\text{Average common stockholders' equity}} \\
 &= \frac{\$72,000}{(\$260,000 + \$217,000) \div 2} \\
 &= 0.302 = 30.2\% \\
 5. \text{ Total debt ratio} &= \frac{\text{Total liabilities}}{\text{Total assets}} \\
 &= \frac{\$280,000}{\$540,000} \\
 &= 0.519 = 51.9\% \\
 6. \text{ Total debt/equity ratio} &= \frac{\text{Total liabilities}}{\text{Total stockholders' equity}} \\
 &= \frac{\$280,000}{\$260,000} \\
 &= 1.077 \\
 7. \text{ Current ratio} &= \frac{\text{Current assets}}{\text{Current liabilities}} \\
 &= \frac{\$144,000}{\$120,000} \\
 &= 1.2 \\
 8. \text{ Quick (acid-test) ratio} &= \frac{\text{Cash and short-term investments} + \text{Net receivables}}{\text{Current liabilities}} \\
 &= \frac{\$26,000 + \$48,000}{\$120,000} \\
 &= 0.617
 \end{aligned}$$

Answer to Question 2A-ES02

Answer A:

The Third State Bank would be interested in comparative financial statements so that it could analyze trends in data and operating results. Trends are important because they may point to basic changes in the nature of the business.

Ratio analysis would give some indication of the company's short-term solvency and help Third State Bank assess the level of risk involved. The ratios would also be useful in analyzing how RCS is performing compared to industry averages, and thus serve as a benchmark for comparison to other companies. Ratios reduce absolute dollar amounts to more meaningful data in order for the bank to compare ratios to prior periods, other companies, and the industry. Ratios can be used to show how well the company is being managed and to highlight areas for further investigation. If the ratios do not appear favorable compared to the company's own past and to other companies in its industry, the bank may consider adjusting the dollar level and/or the interest rate of the note or may even decide not to renew the note.

Answer B:

Calculations of selected financial ratios for Renbud Computer Services Co. are presented below.

Current Ratio

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{\text{Cash} + \text{Net A/R} + \text{Operating Supplies}}{\text{A/P} + \text{Taxes payable} + \text{Note payable}}$$

$$\text{Last Year: (in '000)} = \frac{\$50 + \$350 + \$70}{\$150 + \$140 + \$300} = \frac{\$470}{\$590} = 0.797 \text{ to } 1$$

$$\text{Two Years ago: (in '000)} = \frac{\$50 + \$250 + \$60}{\$130 + \$120 + \$200} = \frac{\$360}{\$450} = 0.8 \text{ to } 1$$

Accounts Receivable Turnover

$$\text{A/R Turnover (in '000) times} = \frac{\text{Net sales}}{\text{Average Receivables}} = \frac{\$2,500}{(\$350 + \$250) \div 2} = \frac{\$2,500}{\$300} = 8.333$$

Asset Turnover

$$\text{Asset Turnover times} = \frac{\text{Net sales}}{\text{Average Assets}} = \frac{\$2,500}{\text{Average Assets}} = \frac{\$2,500}{\text{Average Assets}} = 1.433$$

(in '000) Average Total Assets $(\$1,930 + \$1,560) \div 2$ \$1,745

Return on Shareholders' Equity

Return on S.E. = $\frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Average Common Equity}} = \frac{\$290 - \$0}{\$825} = \frac{\$290}{\$825} = 0.352$
 = 35.2%

(in '000) Average Common Equity $(\$940 + \$710) \div 2$ \$825

Debt to Equity Ratio

D/E Ratio = $\frac{\text{Total Current \& Long term debt}}{\text{Total Shareholders' equity}}$

Last Year: = $\frac{\$990,000}{\$940,000}$ = 1.053 to 1

Two Years ago: = $\frac{\$850,000}{\$710,000}$ = 1.197 to 1

Net Income Ratio (Return on Sales)

Net Income Ratio = $\frac{\text{Net Income}}{\text{Net Sales}} = \frac{\$290}{\$2,500} = 0.116 = 11.6\%$
 (in '000)

Answer C:

The difficulties and limitations of ratio analysis include the following.

- Although ratios are useful as a starting point in financial analysis, they are not an end in themselves. Ratios can be used as indicators of what to pursue in a more detailed analysis.
- Difficulties can arise in making industry average comparisons.
 - Topic 1: Different companies could use different accounting methods (e.g., FIFO versus LIFO inventory valuation).
 - Topic 2: Even though two companies are in the same industry, they may not be comparable because they are focused on a different aspect of the business. For example, two companies may be in the oil industry, but one may be primarily a marketer of oil and the other may be a refinery.
 - Topic 3: Companies may be conglomerates that operate in many different industries.
- The ratios are only as good as the data upon which they are based. If accounting policies are questionable, the resulting ratios would also be questionable.

Answer to Question 2A-ES03

The major sections of the Statement of Cash Flows describe the cash flows from

- operating activities, which involves the cash effects of transactions that enter into the determination of net income, such as cash receipts from sales and cash payments to suppliers and employees.
 - investing activities, which includes making and collecting loans, and obtaining and disposing of investments and long-term assets.
 - financing activities, which includes borrowing and repaying cash from creditors (long-term debt), and obtaining funds from owners (investments) while providing a return on their investment (dividends).
-

Answer to Question 2A-ES04

Answer A:

Liquidity is the ability of an asset to be converted into cash without significant price concessions. Liquidity is important to Sentech because current obligations will continue if there is a strike. Understanding the company's ability to meet its obligations even if normal cash receipts are not forthcoming would give management an indication of whether or not – and for how long – it could weather a strike. Lack of liquidity can limit a company's financial flexibility, making it unable to take advantage of discounts and other profitable opportunities. Liquidity problems can also lead to financial distress or bankruptcy.

Answer B:

Measures of liquidity include the following.

- Current ratio: current assets/current liabilities
- Quick ratio (or acid-test ratio): (cash + marketable securities + accounts receivable)/current liabilities
 - Topic 4: The quick ratio excludes inventory and prepaid expenses from cash resources.
- Cash ratio: (cash + marketable securities)/current liabilities
 - Topic 5: Only cash and securities that are easily convertible into cash are used.
- Net working capital: current asset – current liabilities
- Net working capital ratio: net working capital/total assets
- Sales to working capital: sales/average net working capital
- Accounts receivable turnover: net sales/average gross receivables
 - Topic 6: This ratio can also be calculated in days.

- Inventory turnover: $\text{cost of goods sold} / \text{average inventory}$
Topic 7: This ratio can also be calculated in days.

Answer C:

Based on the parameters set down by the controller, either the quick ratio or the cash ratio would be best. The reason that these ratios are best is because they focus on the most liquid assets, excluding prepaid expenses and inventories. During a strike, inventories would not be a source of cash. The cash ratio excludes receivables as well, and would be the most conservative measure. The cash ratio would reflect the fact that the collection of receivables would be slowed during a strike.

Part 2 Section B Answers

Answer to Question 2B-ES01

Answer A:

1. Default risk is the probability of a security issuer being unable to meet its contractual obligations of interest and principal payments. A greater default risk increases the yield because the investor is paid a premium for the default risk.
2. Marketability of a security is the ability to buy and sell the security on a secondary market and relates to the owner's ability to convert it into cash. A lower marketability increases the yield because the investor is paid a premium for the lack of marketability.
3. Maturity is the length of time remaining until a security is redeemed by the original issuer. A longer maturity means an investor has a greater exposure to risk. This risk increases the yield.

Answer B:

Type of Investment	Default Risk	Marketability	Maturity
Certificate of Deposit	Default risk is that of the issuing bank failing, a probability that is low in most cases.	A poor secondary market exists for the negotiable CDs of the large money-market banks.	Original maturities are short-term and generally range from 30 days to one year.
U.S. Treasury Bills	Default risk is negligible because the bills are guaranteed by the U.S. government.	The market activity is excellent and the transaction costs involved in the sale in the secondary market are small.	Treasury bills are auctioned weekly by the treasury with short-term maturities of three months, six months and one year.
Preferred stock of domestic corporations	Not applicable.	Marketability is very good for a listed issue. The realized price dimension of marketability is not as good because of the volatility of preferred stock prices.	Preferred stock has no maturity.

Answer C:

Certificates of deposit (CD) are a suitable investment for Gershenfeld in this situation. The most common denomination is \$100,000, so its appeal is mostly to large investors such as Gershenfeld. CDs carry an acceptable default risk, and can be purchased with the desired maturity of two months. Yields on CDs are greater than those on U.S. Treasury bills.

U.S. Treasury bills also are a suitable investment for Gershenfeld in its situation. They are the most conservative of the three types of investments being considered, having the lowest default risk and greatest marketability. However, the yield on U.S. Treasury bills would be less than the yield on CDs.

Preferred stock of domestic corporations is not a suitable investment for Gershenfeld in this situation. Such a stock purchase is generally considered a long-term investment.

Answer to Question 2B-ES02

Answer A:

An increase in long-term debt and preferred stock issues would increase Atrax's degree of financial leverage and its debt-to-equity ratio. This action has two primary effects from the stockholders' perspective:

- The variability of earnings per share (EPS) and return on equity will be greater, and EPS and return on equity will increase at a faster rate and be at a higher level whenever the firm earns more than its cost of capital. The increased EPS will exert an upward influence on the value of Atrax's common stock.
- The variability of EPS and return on equity increases Atrax's financial risk. This increased risk exposure will exert a downward influence on the common stock value and will be reflected in a lowered price-earnings ratio.

The net effect on the price of Atrax's common stock will depend upon which influence is stronger. The price of the stock will probably rise because Atrax is continuing to diversify for the purpose of reducing its business risk exposure. Therefore, investors are likely to accept the increased financial risk as long as stockholders believe that Atrax is not over-using debt and preferred stock, i.e., is not going beyond its optimal capital structure.

Answer B:

The short-term effect will probably be a decrease in the market price of Atrax's common stock. Atrax's high payout ratio coupled with its limited earnings growth means Atrax has probably attracted conservative investors dependent upon dividend income. These investors will probably sell their stock due to the change in dividend policy. In addition, the elimination of cash dividends may be interpreted by investors that there has been a decrease in earnings.

The long-term effect will probably be an increase in the market price of the stock. The funds diverted from the payment of cash dividends will be used in the capital expansion and diversification program. This should lead to

increased earnings in the future while also decreasing Atrax’s business risk. Investors interested in capital gains (rather than dividend income) would probably be attracted to Atrax which should be also result in a positive effect on the market price of the stock.

Answer C:

1. Yes, Traxal would be able to maintain his current equity position of 35% if stock dividends were distributed because all stockholders will receive additional shares of stock in proportion to their current ownership interest in Atrax.
2. The probable short-term effect would be a decrease in the market price of Atrax’s stock, because current investors will seek to sell their stock as a consequence of the change in dividend policy and the implied connotations of reduced earnings. The stock dividends give no substantive value to the stockholder who expects a cash dividend. However, the price of the stock may not fall as much as reducing the payout ratio to zero because some current investors may misinterpret the nature of a stock dividend or may accept the reduced cash dividends in the short-term when coupled with the hope for potential capital gains in the long-term.
3. The probable long-term effect would be an increase in the market price of Atrax’s stock because growth-oriented investors should be attracted to Atrax for the capital gain potential. In addition, a nominal dividend payout will act as a downward stabilizer on stock price movements. Furthermore, if Atrax’s diversification program is successful, the reduced business risk and increased future earnings should exert a positive influence on the stock price.
4. Proposal 2 is more likely to result in a smaller drop in the stock price than Proposal 3 in the short-term due to the higher cash dividends and less negative reaction to an implied earnings decline. The long-term effect on stock prices is less certain. Proposal 3 would probably result in higher stock prices due to increased future earnings growth because all internally generated funds could be reinvested.

Answer to Question 2B-ES03

Answer A:

Alternative 1 — Wasson Industries

Adjusted basis of Dayton Plant	\$4,200,000
Less: Proceeds from sale of plant to Wasson	<u>3,000,000</u>
Loss on sale of plant	\$1,200,000
Multiply by: Applicable income tax rate ¹	<u>40%</u>
Decrease in income taxes	<u>\$ 480,000</u>

Determine the After-tax cash flow and apply the discount factor.

Proceeds from sale of plan to Wasson	\$3,000,000
Add: Decrease in income taxes	<u>480,000</u>
After-tax cash flow	\$3,480,000
Multiply by: Discount factor	<u>1.00</u>
Present value of after-tax cash flows	<u>\$3,480,000</u>

¹When net losses exceed net gains, the loss is treated as ordinary income for income tax purposes; thus, the 40% tax rate is used.

Alternative 2 — Harr Enterprises

Cash flows from annual lease payments

Annual Gross Dollar Sales	Estimated Probability	Expected Value of Sales
\$2,000,000	0.1	\$ 200,000
4,000,000	0.4	1,600,000
6,000,000	0.3	1,800,000
8,000,000	0.2	<u>1,600,000</u>
Expected annual gross sales		\$ 5,200,000
Multiply by: Percentage payable to Kravel		<u>.10</u>
Variable portion of lease payment		\$ 520,000
Add: Fixed portion of lease payment		<u>500,000</u>
Before-tax cash flow from lease		\$ 1,020,000
Less: Income tax (40%)		<u>408,000</u>
After-tax cash flow from lease		\$ 612,000
Multiply by: Discount factor		<u>2.798</u>
Present Value of After-tax cash flow from lease		<u>\$ 1,712,376</u>

Depreciation tax shield

Annual depreciation	\$ 900,000
Multiply by: Tax rate	<u>.4</u>
Income tax shield from depreciation	\$ 360,000
Multiply by: Discount factor	<u>2.798</u>
Present Value of Depreciation tax shield	<u>\$1,007,280</u>

Sale of Dayton Plant (12/31/2010)

Estimated cash value of plant (12/31/2010)	\$ 600,000
Gain or loss computation on sale of plant	
Adjusted basis 12/31/2006	\$4,200,000
Less: Depreciation (900,000 x 4)	<u>3,600,000</u>
Adjusted basis 12/31/2006	600,000
Less: Proceeds	<u>600,000</u>
Gain/loss	<u>-0-</u>
After-tax cash flow from sale	\$ 600,000
Multiply by: Discount factor	<u>.552</u>

Present value of Sale of Dayton Plant \$331,200

Present value of after-tax cash flows

PV of After-tax cash flow from lease \$1,712,376
 PV of Depreciation tax shield 1,007,280
 PV of Sale of Dayton Plant 331,200
 Total Present value of after-tax cash flows \$3,050,856

Alternative 3 — Souvenir Items

	2007	2008	2009	2010
Revenue (70,000 x 12x \$5) \$	-0-	\$4,200,000	\$4,200,000	
\$4,200,000				
Annual cash outlays	2,250,000	2,250,000	2,250,000	
-0-				
Annual cash flows	\$(2,250,000)	\$1,950,000	\$1,950,000	
\$4,200,000				
Less income taxes ²	-0-	780,000	780,000	
780,000				
After-tax cash flows	\$(2,250,000)	\$1,170,000	\$1,170,000	
\$3,420,000				
Depreciation tax shield ³	-0-	360,000	360,000	
720,000				
Salvage ⁴	_____	_____	_____	_____
<u>600,000</u>				
Net after-tax cash flows	\$(2,250,000)	\$1,530,000	\$1,530,000	
\$4,740,000				
Discount factors	<u>.862</u>	<u>.743</u>	<u>.641</u>	_____
<u>.552</u>				
Present value of after-tax cash flows	<u>\$(1,939,500)</u>	<u>\$1,136,790</u>	<u>\$ 980,730</u>	
<u>\$2,616,480</u>				

Net present value of after-tax cash flows:

2007	\$-1,939,500
2008	1,136,790
2009	980,730
2010	<u>2,616,480</u>
Total	<u>\$ 2,794,500</u>

² The income taxes should be recognized in the years in which the sales occur. The amount of tax is based on sales revenue less costs excluding the depreciation. The depreciation tax shield is shown separately; refer to footnote 3. The income tax charge is \$780,000 [(\$4,200,000 – 2,250,000) x .40].

³ The depreciation charge would be included in the calculation of cost of goods sold. Thus, the recognition of the depreciation charge for income tax purposes in 2007, 2008, and 2009 would be deferred one year. The depreciation tax shield for 2007 and 2008 is \$360,000 ($\$900,000 \times .40$). The depreciation recognized for income tax purposes in 2010 would be \$1,800,000 which consists of the 2009 depreciation charge included in the 2010 cost of goods sold and the 2010 depreciation charge recognized in 2010 when the plant is presumably being used as a warehouse. Thus, the depreciation tax shield in 2010 is \$720,000 ($\$1,800,000 \times .40$).

⁴ There is no gain or loss on the sale of the plant; thus, the cash flow is equivalent to the proceeds (see Alternative 2).

Answer B:

The additional factors Kravel Corporation should consider before making a decision regarding the disposition or use of the idle plant and equipment at the Dayton Plant includes the following.

- Kravel should consider the risks involved for each of the alternatives. Alternative 1 is the least risky because it would be completed on January 1, 2007, whereas Alternatives 2 and 3 would involve activities through 2010.
 - Kravel should consider the accuracy of the cash flow estimates and discount rates used in the cash flow analysis.
 - Kravel should consider the fit between the timing of the cash flows for each alternative and the cash needs of the corporation.
 - Kravel should consider the likelihood of an opportunity to resume the production of truck parts at the Dayton Plant. Alternative 1 eliminates that possibility and Alternative 2 precludes it until 2011.
-

Answer to Question 2B-ES04

Answer A:

Financing plan (dollars in millions):

	Current structure	Percent of total	Funds Needed	Retained earnings	External sources
Debt	\$175	35%	\$28		\$28
Preferred	50	10%	8		8
Common	275	55%	44	\$15	29
Totals	\$500	100%	\$80	\$15	\$65

Financing sources will be as follows:

New Debt	\$28 million
New Preferred stock	8 million
Retained earnings	15 million
New Common stock ¹	<u>29 million</u>
Total	<u>\$80 million</u>

¹ \$29 million ÷ \$58 per share = 500,000 new common shares

Answer B:

Weighted incremental cost of capital

	% of Capital Structure	Cost	Weighted Cost
Debt	35%	6.00% ¹	2.10%
Preferred	10%	12.00%	1.20%
Common	55%	16.00%	8.80%
Cost of Capital			12.10%

¹ Pre-tax 10% x (1 – tax rate) = 6.00%

Answer C:

1. If the corporate tax rate was increased, the after-tax cost of debt would be reduced, thereby reducing the cost of capital. In other words, the tax shield of debt becomes more valuable to the firm.
2. When the banks indicate they are raising rates, the rest of the debt market generally raises rates. The higher cost of debt will increase the overall cost of capital.
3. Beta is a measure of risk. According to the Capital Asset Pricing Model, the cost of equity is directly related to risk. As risk is reduced the cost of equity is reduced and correspondingly the overall cost of capital is reduced.
4. In general, a significant increase in the percent of debt in the capital structure (especially in this case where the current structure is deemed optimal), results in more risk for the firm. This increases its cost of debt and its cost of equity. The increase in the cost of equity will most likely offset the

fact that debt has a lower relative. The result here is that the cost of capital should increase.

Part 2 Section C Answers

Answer to Question 2C-ES01

Price Elasticity

1. Price elasticity is the percentage change in the quantity supplied or demanded of a commodity relative to (divided by) the percentage change in the price of that same commodity.
2. If the price elasticity coefficient of a commodity is greater than one, the demand for that commodity is classified as elastic. This indicates the demand for the commodity is very sensitive to changes in price. If the price elasticity coefficient of a commodity is less than one, the demand for that commodity is classified as inelastic. This indicates the demand for the commodity is not sensitive to a change in price. A commodity with a price elasticity of one is classified as having unitary elasticity.
3. There is a relationship between changes in total revenue and the price elasticity of demand that would be useful to a firm's management. If demand is elastic, a change in price will cause total revenue to change in the opposite direction. If demand is inelastic, a change in price will cause total revenue to change in the same direction. When unit elasticity exists, an increase or decrease in price will leave total revenue unchanged.

Answer to Question 2C-ES02

Answer A:

Breakeven units	=	<u>Total fixed costs</u>		
		Unit contribution margin		
		Capital Intensive		Labor Intensive
Selling price		\$30.00		\$30.00
Variable costs:				
Raw materials		\$5.00		\$5.60
Direct labor		6.00		7.20
Variable overhead		3.00		4.80
Variable selling		2.00	16.00	2.00
				19.60
Contribution margin		<u>\$14.00</u>		<u>\$10.40</u>

$$1. \text{ Breakeven units (capital)} = \frac{\$2,440,000 + \$500,000}{\$14}$$

$$\begin{aligned}
 &= 210,000 \text{ units} \\
 2. \text{ Breakeven units (labor)} &= \frac{\$1,320,000 + \$500,000}{\$10.40} \\
 &= 175,000 \text{ units}
 \end{aligned}$$

Answer B:

Candice Company would be indifferent between the two manufacturing methods at the volume (x) where total costs are equal.

$$\begin{aligned}
 \$16x + \$2,940,000 &= \$19.60x + \$1,820,000 \\
 \$3.60x &= \$1,120,000 \\
 x &= 311,111 \text{ units}
 \end{aligned}$$

Answer C:

1. Operating leverage is the extent to which a firm’s operations employ fixed operating expenses. The greater the proportion of fixed expenses used to produce a product, the greater the degree of operating leverage. Thus, Candice’s capital intensive manufacturing method utilizes a greater degree of operating leverage.

The greater the degree of operating leverage, the greater the change in operating income (loss) relative to a small fluctuation in sales volume. Thus, there is a higher degree of variability in operating income if operating leverage is high. The greater the operating leverage and the resultant variability in operating income, the greater the degree of business risk.

2. Candice should employ the capital intensive manufacturing method if annual sales are expected to exceed 311,111 units and the labor intensive manufacturing method if annual sales are not expected to exceed 311,111 units.

Answer D:

Candice must consider the following business factors other than operating leverage before selecting a manufacturing method:

- variability or uncertainty with respect to demand, both quantity and selling price.
- the ability to produce and market the new product quickly.
- the ability to discontinue the production and marketing of the new product while incurring the least amount of loss.

Answer to Question 2C-ES03

Answer A:

The contribution margin is 75%¹ or \$3.75 per adult admission, and \$1.875 per student admission. The mix is 20% adult (30 ÷ 150) and 80% student (120 ÷ 150). The weighted average contribution margin is:

$$\text{WACM} = .20(\$3.75) + .80 (\$1.875) = \$2.25$$

The breakeven point is Fixed cost ÷ WACM

$$\$33,000 \div \$2.25 = \underline{14,667 \text{ per season.}}$$

¹ 100% – state fee of 10% - variable cost of 15%

Answer B:

The highest number to break even assumes that all admissions are students:

$$\$33,000 \div \$1.875 = 17,600 \text{ per season}$$

Answer C:

The lowest number to break even assumes that all admissions are at the adult rate:

$$\$33,000 \div \$3.75 = 8,800 \text{ per season}$$

Answer to Question 2C-ES04

Answer A:

Target costing is focused on market pricing or the prices of a firm's most direct competitors. The process for determining product pricing involves the following five steps: (1) determine the market price, (2) determine the desired profit, (3) calculate the target cost at market price less the desired profit, (4) use value engineering to identify ways to reduce product cost, and (5) use continuous improvement and operational controls to further reduce costs and increase profits.

Answer B:

The main difference between the two methods of pricing is a different starting point for determining product price. Mark-up pricing is based on existing costs and a desired return. The price is then determined by adding the product cost

and the desired mark-up. This method provides little incentive to reduce costs as long as sales are profitable.

Using target costing, product prices are determined by reviewing competitive pricing and setting prices according to market strategies and positioning. Target costing moves from the existing market prices to the process of managing the product costs in order to earn a desired return. Target costing motivates process improvements. The process is intended to increase or maintain sales while increasing product profitability by reducing product costs through the elimination of non-value added activities.

Answer C:

Calculate earnings before taxes:

Sales*	\$2,528,100	
Less material and labor	1,223,400	(1,348,400 – 125,000)
Less overhead	<u>375,000</u>	(500,000 x .75)
Contribution	929,700	
Selling expense	250,000	
Admin expense	180,000	
Interest expense	<u>30,000</u>	
Earnings before taxes	<u>\$ 469,700</u>	

* Vanilla	\$53 x 10,200	540,600
Chocolate	\$53 x 12,500	662,500
Caramel	\$50 x 12,900	645,000
Raspberry	\$50 x 13,600	680,000

Answer D:

The preferable pricing method for Kolobok is target costing as it is projected to significantly increase the return on sales from 7% to 18.5% (\$469,700 ÷ \$2,528,100) while maintaining the existing sales level. Target costing will also motivate management to improve internal processes to reduce costs to further improve profitability, particularly for any product where the proposed target price is lower than the previous price. This method will also force Kolobok to be continually aware of the actions of its competitors and trends in the marketplace in order to make adjustments when needed.

PART 2 Section D Answers

Answer to Question 2D-ES01

Answer A:

Accounting rate of return: The merits of the accounting rate of return (ARR) method are that the method is relatively simple to use and easy to understand. It considers the profitability of the projects under consideration. The limitations of the ARR method include ignoring cash flows and the time value of money.

Internal rate of return: The merits of the internal rate of return (IRR) method are that it considers the time value of money and measures the true economic return of the project and productivity of the capital invested in the project. The limitations of the IRR method are that the answer is stated as a percentage rather than a dollar amount, making it more difficult to understand and explain to management. The IRR method also unrealistically assumes that cash flows are reinvested at the IRR of the project.

Net present value method: The merits of the net present value (NPV) method are that it considers the time value of money and size of the investment. The NPV method measures the true economic return of the project, the productivity of the capital investment, and the change in the organization's shareholders' wealth. The limitations of the NPV method include the assumption that all cash flows are reinvested at the discount (hurdle) rate, and it does not calculate a project's rate of return.

Payback method: The merits of the payback method are that it considers cash flows and provides a measure of the liquidity and risk of the investment. The limitations of the payback method are that it neglects the time value of money and the project's profitability.

Answer B:

Miranda Wells and Jake Richter are basing their judgment on the results of the net present value and internal rate of return calculations. These are both considered better measures because they include cash flows, the time value of money, and the project's profitability. Project B is better than Project A for both of these measures.

Answer C:

At least three qualitative considerations that should generally be considered in capital budget evaluations include the following.

- Quicker response to market changes and flexibility in production capacity.
- Strategic fit and long-term competitive improvements from the project, or the negative impact to the company's competitiveness or image if it does not make the investment.

- Risks inherent in the project, business, or country for the investment.

Answer to Question 2D-ES02

Answer A:

The analysis shown below yields the following after-tax incremental cash flows:

1. Period 0 (\$13,200,000)
2. Period 1 4,200,000

\$ Millions

<u>Cash Flow Element</u>	<u>Year</u>				
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Revenue		\$16.0	\$20.0	\$20.0	\$20.0
Equipment	(\$12.0)				
Equipment Salvage					\$0.9
Equipment Removal					(\$1.4)
Direct Labor and Materials		(\$8.0)	(\$10.0)	(\$10.0)	(\$10.0)
Indirect Costs		(\$3.0)	(\$3.0)	(\$3.0)	(\$3.0)
Net Working Capital	(\$1.2)				\$1.2
Total Cash Flow Before Tax	(\$13.2)	\$5.0	\$7.0	\$7.0	\$7.7
Cash Taxes		(\$0.8)	(\$1.6)	(\$1.6)	(\$1.4)
Net Cash Flow, After Tax	(\$13.2)	\$4.2	\$5.4	\$5.4	\$6.3

Memo: Calculation of Cash Taxes

Tax Profit Before Tax and Depreciation	\$5.0	\$7.0	\$7.0	\$6.5
Tax Depreciation	(\$3.0)	(\$3.0)	(\$3.0)	(\$3.0)
Tax Profit Before Tax	\$2.0	\$4.0	\$4.0	\$3.5

3. The Period 4 operating cash flow is \$5,400,000 calculated as follows.

Revenue	\$20,000,000
Direct labor and material	(10,000,000)
Indirect costs	<u>(3,000,000)</u>
Before tax cash flow	7,000,000
Tax effect ¹	<u>(1,600,000)</u>
After tax cash flow	<u>\$ 5,400,000</u>

$$^1 \$7,000,000 - \$3,000,000 = \$4,000,000 \times 40\% = (\$1,600,000)$$

Answer B:

Cash flow variables with potential risks that could affect the estimates made by CAP include the following.

- Volume estimates are generally subject to a high degree of estimation error due to the variety of external factors that impact the volume realized in the future. Competitive forces, consumer acceptance of the new product, general economic conditions are just a few of the factors that could influence the ultimate demand realized for the new car by KAC, which would impact the demand for ignition system modules from CAP. Since there are a number of fixed costs, including equipment and indirect costs, deviations in volume could have a significant impact on the cash flows and the financial success of the project.
- Exchange rates are another important variable. Since CAP is a U.S. company with a cost structure consisting of U.S. dollar denominated expenses, there is exchange risk resulting from a revenue stream in the Korean Won. The net cash flows from the project in U.S. dollars will be dependent on the exchange rate in effect when each of the KRW denominated payments is received.
- Direct costs are another potential variance given that the actual productivity of its workforce, the reliability of its manufacturing systems, and unit materials costs could vary substantially from what CAP projects. In a competitive bidding situation, there may be pressure to bid as low as possible to increase the chances for success. If the firm has used “best case” assumptions for its cost structure, negative variances in the assumptions for direct costs could decrease the amount of cash flow generated from the project relative to expectations.
- The estimates for the cost of the equipment removal and the salvage value of the equipment could vary significantly as these costs will occur several years in the future and could negatively impact the expected cash flow.

Answer to Question 2D-ES03

Answer A:

The required cost per ton can be calculated as follows:

Required fund at the end of year 15

Amount in today's dollars	\$14,000,000
Future value factor (15 years, 4%)	1.801
Required fund	<u>\$25,214,000</u>

Value of current fund at the end of year 15

Current fund value	\$ 3,000,000
Future value factor (15 years, 7%)	2.759
Value in 15 years	<u>\$ 8,277,000</u>

Estimated additional amount needed in year 15

Required fund	\$ 25,214,000
Value of current fund in 15 years	8,277,000
Additional amount needed	<u>\$ 16,937,000</u>

Annual funding required

Additional amount needed	\$ 16,937,000
FV of Annuity factor (15 years, 7%)	÷ 25.129
Annual funding required	<u>\$ 674,002</u>

Cost per ton

Annual funding required	\$ 674,002
Annual output (Tons)	÷ 1,350,000
Cost per ton	<u>\$ 0.50</u>

Answer B:

Major uncertainties and their effect on the charge per ton could include the following.

- Estimate of the cost in today's dollars for the reclamation. Since the reclamation will not be done for 15 years, there is considerable uncertainty. The technology could change, resulting in higher or lower cost. The law or associated regulations could also change.
- Rate of escalation of the reclamation cost. Future cost increase levels are difficult to project.
- Estimated earnings level of the fund. The 15-year horizon is a long period of time. Investment returns from the equities and fixed income markets can fluctuate significantly from year to year.
- Tax regulations can change. This would affect the annual amount deposited to the fund because earnings could become taxable.
- The mine output could change. Total output could be different and/or the yearly amounts may not be uniform as projected.

Answer C:

Changes in tax regulations could affect the analysis in the following ways.

1. If amounts collected for reclamation and deposited in external funds were taxable,

- GML would have to charge its customers more each year.
- the charge per ton would initially be adjusted by dividing the amount by (1-tax rate) and offsetting that by an amount equal to the present value of the tax benefit in 15 years when reclamation occurs and a tax benefit is received.

2. If the earnings on the fund were taxable,

- the charge per ton would have to increase to offset the tax payments.
 - GML may want to communicate to the trustee that it should be more aggressive (i.e., take more risk) so it earns higher pre-tax returns.
 - GML may want the trustee to invest in tax exempt instruments. This decision should take into account the yields of tax exempt vs. taxable instruments.
-

Answer to Question 2D-ES04**Answer A:**

Net present value of each of the alternatives

	Time	Amount	14% PV Factor	Present Value
Vendor A				
Initial investment	0	\$4,000,000	1.000	\$4,000,000
Annual cash outflow	1-6	500,000	3.889	1,944,500
NPV				\$5,944,500
Vendor B				
Initial investment	0	\$1,000,000	1.000	\$1,000,000
Replacement	3	1,250,000	0.675	843,750
Annual cash outflow	1-6	750,000	3.889	2,916,750
NPV				\$4,760,500
Vendor C				
Annual cash outflow	1-6	\$1,400,000	3.889	5,444,600
NPV				\$5,444,600

Answer B:

Ultra Comp should select Vendor B. It is the optimal choice from a financial point of view as it meets the requirements at the lowest cost. Since the decision has already been made to implement a new security system, the issue is to decide on a system that meets the requirements at the lowest cost.

Answer C:

Sensitivity analysis is a tool to test the impact of changing investment assumptions on the resulting net present values. The method helps determine the “sensitivity” of outcomes to changes in the parameters. It shows how the output of the model depends on the input of the model.

Answer D:

Non-financial factors that Ultra Comp should consider prior to making a recommendation include the following.

- Vendor A technology may be more effective in the long term even though it is the highest cost solution. However, there is a risk involved in the fact that this is new technology and may not prove effective.
- Vendor B technology is known to be effective and should be satisfactory for the near term. However, there is uncertainty in the long term.
- Since Vendor C is a nationally recognized leader, it may be in a better position to manage the security of Ultra Comp, especially as new developments arise.
- Ultra Comp should review the management capability and the financial stability of each of the vendors.
- Ultra Comp should contact previous clients of each of the vendors to determine their level of satisfaction with the quality and customer service of each vendor.

Part 2 Section E Answers

Answer to Question 2E-ES01

Answer A:

SouthComm may have a corporate policy against these types of payments because such a policy is in alignment with the Foreign Corrupt Practices Act (FCPA). The FCPA forbids any U.S. company doing business overseas to pay bribes to a foreign government for obtaining contracts or business. Firms or any of their representatives who violate the FCPA are subject to both civil and criminal penalties. The “commission” mentioned in this scenario is not a commission, but would be classified as a bribe. So, in addition to being unethical, the bribe in this scenario would also be illegal.

Answer B:

Ms. Lane is assuming that as long as a practice such as this is done on a regular basis, then that would make it acceptable. However, that is not the case. The FCPA forbids U.S. companies from paying bribes to obtain business – regardless of the local laws or customs.

Answer to Question 2E-ES-02

Answer A:

No, Morgan Company is not acting in an ethical manner. Knowingly disposing of hazardous materials without taking necessary precautions is unethical and may also be illegal. If discovered by individuals outside the company, the long-term effect on the company’s reputation as well as the environment would significantly outweigh any short-term cost savings that the company may realize.

Answer B:

Morgan Company should consider the following changes:

- Set a strong “tone from the top” regarding ethical behavior. A strong and consistent message from top management often has a noticeable effect on the corporate culture and employee behavior.
- Create an ethics code of conduct and have regular training sessions for all employees to ensure that they are all aware of the company’s ethics policies.
- Establish a process for employees to report possible ethics violations, such as a “whistleblower” framework. This process could also be in place for employees who wish to seek advice on possible questionable issues.
- Re-examine the company’s budget to ensure that it is reasonable and that favorable results can be achieved without resorting to unethical behavior.

Creating a more ethical corporate culture could result in many benefits for Morgan Company, some of which include:

- A more positive organizational culture
- Lower turnover rate among employees
- Higher employee productivity
- Improved business reputation in the community
- Improvements in business and financial performance