2005 CFA® Level III Examination

Morning Session – Essay

Candidate Number:

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The following list contains the **command words** used on the Morning Session of the 2005 CFA Level III Examination. Candidates may want to refer to this list as they formulate their answers.

Calculate: To ascertain or determine by mathematical processes.

Characterize: To describe the essential character or quality of.

Criticize: To consider the merits and demerits of and judge accordingly; to find fault with.

Describe: To transmit a mental image, an impression, or an understanding of the nature and characteristics of.

Determine: To come to a decision as the result of investigation or reasoning; to settle or decide by choice among alternatives or possibilities.

Explain: To give the meaning or significance of; to provide an understanding of; to give the reason for or cause of.

Formulate: To put into a systematized statement or expression; to prepare according to a formula.

Give: To yield or furnish as a product, consequence, or effect; to offer for the consideration, acceptance, or use of another.

Identify: To establish the identity of; to show or prove the sameness of.

Judge: To form an opinion about through careful weighing of evidence and testing of premises.

Justify: To prove or show to be valid, sound, or conforming to fact or reason; to furnish grounds or evidence for.

Prepare: To put into written form; to draw up.

Recommend: To bring forward as being fit or worthy; to indicate as being one's choice for something or as otherwise having one's approval or support.

Select: To choose from a number or group–usually, by fitness, excellence, or other distinguishing feature.

Show: To set forth in a statement, account, or description; to make evident or clear.

Support: To provide with verification, corroboration, or substantiation.

The Morning Session of the 2005 CFA Level III Examination has 12 questions. For grading purposes, the maximum point value for each question is equal to the number of minutes allocated to that question.

Question	Topic	Minutes
1	Portfolio Management	18
2	Portfolio Management	18
3	Portfolio Management	9
4	Portfolio Management	10
5	Portfolio Management	16
6	Portfolio Management	18
7	Portfolio Management	25
8	Portfolio Management	12
9	Portfolio Management	10
10	Portfolio Management	9
11	Asset Valuation	19
12	Asset Valuation	16
	Total:	**180**

QUESTION 1 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 18 MINUTES.

Jonathan Fiertz is a U.K.-based investment manager whose institutional clients include a defined benefit pension plan sponsored by British Chemical Plc (BC Plc), a mature U.K.-based multinational firm. The BC Plc defined benefit pension plan is not available to new employees, who are only eligible to participate in a recently established defined contribution scheme. Fiertz is aware that the pension plan has experienced a declining ratio of plan assets to plan liabilities, and he has decided to compare workforce, pension plan, and company information for BC Plc with similar information for an average company in the FTSE 350 Index; his comparison is given in Exhibit 1-1.

Exhibit 1-1
BC Plc Comparison with Average FTSE 350 Company
Workforce, Pension Plan, and Company Information

	Workforce Information		Pension Plan Information		Company Information	
	Average Age of Workforce (years)	Average Service with Company (years)	Ratio of Plan Assets to Plan Liabilities	Ratio of Retired Lives to Active Lives Relative to Average	Profitability Relative to Average	Debt Ratio Relative to Average
BC Plc	48	24	0.83	Higher	Lower	Higher
Average FTSE 350 Company	43	17	0.97	---	---	---

Assets and liabilities of the pension plan are legally separate from BC Plc. The pension plan is managed by a board of trustees whose duty under trust law is to act solely in the best financial interests of the beneficiaries. The pension plan portfolio is invested in U.K. gilts (bonds) and U.K. equities. Dividends paid to the portfolio are taxable. An extended period of low interest rates and weak equity markets has resulted in poor returns recently. For actuarial purposes, the assumed long-term rate of return on plan assets is 8 percent annually and the current discount rate applied to the plan liabilities is 7 percent.

The trustees have asked Fiertz to examine the pension plan's current investment policy statement. They are particularly concerned about the plan's risk tolerance and two of the plan's constraints: the liquidity requirement and the time horizon. The trustees have also asked Fiertz to evaluate the plan's actuarial assumptions.

A.   **Judge** whether the BC Plc pension plan has below average, average, or above average risk tolerance compared with the average FTSE 350 company pension plan. **Support** your response with *four* reasons based on the specific circumstances of BC Plc and/or the BC Plc pension plan.

(9 minutes)

B.   **Characterize**, for the BC Plc pension plan relative to the average FTSE 350 company pension plan, *each* of the two plan constraints of concern to the trustees:

    i.   Liquidity requirement
    ii.   Time horizon

Justify *each* of your responses with *two* reasons.

Answer Question 1-B in the Template provided on page 6.

(6 minutes)

C.   **Judge** whether a change to 6 percent in the discount rate applied to the plan liabilities would cause the funded status of the BC Plc pension plan to deteriorate or improve, given that the assumed long-term rate of return on plan assets remains unchanged. **Support** your response with specific reference to the BC Plc pension plan.

(3 minutes)

Answer Question 1 on This Page

Template for Question 1-B

Constraint	Characterize, for the BC Plc pension plan relative to the average FTSE 350 company pension plan, *each* of the two plan constraints of concern to the trustees (circle one)	Justify *each* of your responses with *two* reasons
i. Liquidity requirement	Lower Similar Higher	1. 2.
ii. Time horizon	Shorter Similar Longer	1. 2.

QUESTION 2 HAS TWO PARTS (A, B) FOR A TOTAL OF 18 MINUTES.

Jonathan Fiertz is meeting with the trustees of the BC Plc pension plan to discuss risk budgeting and risk measurement issues. Established benchmarks include the FTSE All Share Index for the U.K. equities portfolio and the FTSE U.K. Gilts Index for the U.K. fixed income portfolio.

During the meeting, trustee Gerta Hammer makes the following statements:

- "Surplus-at-risk is most accurately interpreted as the likelihood that the plan's tactical asset allocation might underperform the plan's strategic asset allocation by a specified percentage within the next year."

- "Two fixed income portfolios could have identical durations and substantially different levels of Value at Risk (VAR)."

- "If we reduce the tracking error of the manager with the highest active risk, this is very likely to reduce the plan-wide active risk of the overall portfolio."

A. **Determine** whether *each* of the three statements by Hammer is correct or incorrect. If incorrect, **give** *one* reason why the statement is incorrect.

Answer Question 2-A in the Template provided on page 11.

(9 minutes)

As the meeting continues, Fiertz makes several statements to the trustees about evaluating risk-adjusted performance:

- "Standard deviation is more useful than VAR in evaluating new managers and new portfolio strategies."

- "Beta does not measure the potential underperformance of our equity portfolio compared with the FTSE All Share Index."

- "For a fixed income portfolio, duration measures the probability associated with price changes for specific securities in the portfolio in response to changes in market interest rates."

B. **Determine** whether *each* of the three statements by Fiertz is correct or incorrect. If incorrect, **give** *one* reason why the statement is incorrect.

Answer Question 2-B in the Template provided on page 12.

(9 minutes)

Answer Question 2 on This Page

Template for Question 2-A

Statement	Determine whether *each* of the three statements by Hammer is correct or incorrect (circle one)	If incorrect, give *one* reason why the statement is incorrect
"Surplus-at-risk is most accurately interpreted as the likelihood that the plan's tactical asset allocation might underperform the plan's strategic asset allocation by a specified percentage within the next year."	Correct Incorrect	
"Two fixed income portfolios could have identical durations and substantially different levels of Value at Risk (VAR)."	Correct Incorrect	
"If we reduce the tracking error of the manager with the highest active risk, this is very likely to reduce the plan-wide active risk of the overall portfolio."	Correct Incorrect	

Answer Question 2 on This Page

Template for Question 2-B

Statement	Determine whether *each* of the three statements by Fiertz is correct or incorrect (circle one)	If incorrect, give *one* reason why the statement is incorrect
"Standard deviation is more useful than VAR in evaluating new managers and new portfolio strategies."	Correct Incorrect	
"Beta does not measure the potential underperformance of our equity portfolio compared with the FTSE All Share Index."	Correct Incorrect	
"For a fixed income portfolio, duration measures the probability associated with price changes for specific securities in the portfolio in response to changes in market interest rates."	Correct Incorrect	

QUESTION 3 HAS TWO PARTS (A, B) FOR A TOTAL OF 9 MINUTES.

The Lourie Foundation is also an institutional client of Jonathan Fiertz. Lourie is a small U.K.-based philanthropic organization whose stated goal is to enrich the lives of disadvantaged children. Fiertz has developed an investment policy statement for Lourie, whose risk tolerance and return requirement are summarized in Exhibit 3-1.

Exhibit 3-1
Lourie Foundation
Risk Tolerance and Return Requirement

Risk Tolerance	Above average (maximum 15 percent annual standard deviation of returns)
Return Requirement	To earn an average annual return to meet a spending rate of 7.5 percent (including expected inflation) and management/administration fees of 0.6 percent

To help Lourie's directors assess the appropriate strategic asset allocation for Lourie's portfolio, Fiertz has prepared Exhibit 3-2, which describes eight corner portfolios and a risk-free portfolio.

Exhibit 3-2
Lourie Foundation
Corner Portfolios

Corner Portfolio	Portfolio Weights					Expected Return (%)	Expected Standard Deviation (%)	Sharpe Ratio
	U.K. Equities (%)	Ex-U.K. Equities (%)	U.K. Intermediate-term Bonds (%)	U.K. Long-term Bonds (%)	U.K. Real Estate (%)			
1	100.0	0.0	0.0	0.0	0.0	8.9	18.0	0.272
2	76.2	23.8	0.0	0.0	0.0	8.7	16.8	0.280
3	64.6	24.0	0.0	0.0	11.4	8.5	16.0	0.281
4	55.6	22.6	0.0	9.5	12.3	8.2	14.9	0.282
5	53.2	24.7	13.3	0.0	8.8	8.0	14.1	0.284
6	32.6	26.2	41.2	0.0	0.0	7.1	11.0	0.282
7	0.0	24.8	75.2	0.0	0.0	5.7	7.7	0.221
8	0.0	15.5	84.5	0.0	0.0	5.5	7.5	0.200
Note: A risk-free portfolio is available and is expected to return 4 percent.								

Lourie's charter prohibits short positions or the use of margin, but allows investment in any portfolio, or combination of portfolios, described in Exhibit 3-2. In addition to satisfying the risk tolerance and return requirement, Lourie's directors consider the Sharpe ratio to be a dominant factor in asset allocation decisions.

A.   Using mean-variance analysis:

     i.   **Select** the portfolios to be combined in the optimal strategic asset allocation for the Lourie Foundation. **Justify** your response with *one* reason other than meeting Lourie's return requirement.

     ii.   **Determine** the appropriate portfolio weights for U.K. equities and U.K. intermediate-term bonds in the optimal strategic asset allocation.

(6 minutes)

One of Lourie's directors asks Fiertz about the sensitivity of the strategic asset allocation to changes in key variables:

     "How would the strategic asset allocation change, for instance, if the return requirement for the endowment, including expected inflation and management/administration fees, was only 6 percent and the endowment's risk tolerance was consistent with a maximum 12 percent annual standard deviation of returns?"

B.   **Select**, using mean-variance analysis, the portfolios to be combined in a new strategic asset allocation based on the information in the director's question. **Justify** your response with specific reference to the tangency portfolio.

(3 minutes)

QUESTION 4 HAS TWO PARTS (A, B) FOR A TOTAL OF 10 MINUTES.

Beth Stewart is an investment analyst for the U.S.-based Empire Pension Fund. One of Empire's external portfolio managers is Temple Group, which manages a U.S. small-capitalization equity portfolio for Empire. Stewart conducts a portfolio-based style analysis of Temple's performance for 2004. Her analysis uses 31 December 2004 holdings and annual return data for 2004; a global broad market index for valuation comparisons; and 31 December 2003 sector weights to evaluate Temple's sector exposures.

A.   **Criticize** *two* aspects of Stewart's portfolio-based style analysis of Temple Group's performance.

<p align="center">(4 minutes)</p>

Empire is considering the addition of two recently established U.S. large-capitalization equity mutual funds to its asset mix. Stewart utilizes return-based style analysis to prepare Exhibit 4-1, which compares the performance of the Foreman Fund and the Copeland Fund.

<p align="center">Exhibit 4-1
Foreman Fund and Copeland Fund
Comparative Analysis for 2004</p>

	S&P 500 Index	Foreman Fund	Copeland Fund
R^2	---	68.5%	99.4%
Annual Return (gross)*	6.8%	9.2%	7.0%
Portfolio Turnover	---	45%	15%

     * Management fees and administrative charges have not been deducted.

Based on the data in Exhibit 4-1, Stewart concludes that Foreman is an actively managed fund, that Copeland is an index fund, and that Foreman outperformed Copeland for 2004. Her colleague, Edmond Ong, tells Stewart that her conclusions may not be accurate, and makes the following statements:

- "Even though Foreman has a low R^2 with the S&P 500 Index, Foreman may not be an actively managed fund."

- "Copeland may be an actively managed fund even though Copeland has low portfolio turnover."

- "Foreman may not have had superior risk-adjusted performance compared with Copeland for 2004."

B.	**Describe**, for *each* of the three statements by Ong, *one* circumstance in which the statement could be correct.

Note: No circumstance may be described more than once.

Answer Question 4-B in the Template provided on page 26.

(6 minutes)

Answer Question 4 on This Page

Template for Question 4-B

Statement	Describe, for *each* of the three statements by Ong, *one* circumstance in which the statement could be correct Note: No circumstance may be described more than once.
"Even though Foreman has a low R^2 with the S&P 500 Index, Foreman may not be an actively managed fund."	
"Copeland may be an actively managed fund even though Copeland has low portfolio turnover."	
"Foreman may not have had superior risk-adjusted performance compared with Copeland for 2004."	

QUESTION 5 HAS TWO PARTS (A, B) FOR A TOTAL OF 16 MINUTES.

In 1997, Morehouse Asset Management contracted with Smyth Investment Management to manage the emerging markets sector portfolios of Morehouse's mutual fund, separately managed accounts, and company pension fund. Smyth has managed emerging markets sector portfolios exclusively since the inception of the firm on 1 January 1995.

On 1 January 2003, Morehouse acquired Smyth, including all emerging market portfolios then managed by Smyth. Smyth has claimed compliance with Global Investment Performance Standards (GIPS®) since 1 January 2000. Morehouse wants to use Smyth's historical track record for marketing purposes.

A.   **Give** *two* of the five requirements set forth by the GIPS standards for linking the performance data of Morehouse and Smyth to create a surviving composite that is compliant with the GIPS standards.

Answer Question 5-A in the Template provided on page 31.

(4 minutes)

Morehouse has determined that the firm meets the portability requirements of the GIPS standards and may link to Smyth's track record. In January 2004, Morehouse is updating its Emerging Markets Composite. Morehouse has prepared a performance presentation (given in Exhibit 5-1) for the period since the inception of Smyth Investment Management through 31 December 2003, using Smyth's records.

B.   **Prepare** *four* corrections or additions that are necessary to bring the performance presentation given in Exhibit 5-1 into compliance with the requirements of the GIPS standards.

Answer Question 5-B in the Template provided on page 32.

(12 minutes)

Exhibit 5-1
Morehouse Asset Management
Performance Results
Emerging Markets Composite
1 January 1995 through 31 December 2003

Year End	Total Return (%)	Benchmark MSCI Emerging Markets Index (%)	Number of Portfolios	Composite Assets at Beginning of Period	Composite Standard Deviation	% of Firm's Assets	Total Firm Assets at End of Period
1995	–7.68	–5.21	9	152	1.8	95	166
1996	1.23	6.03	18	367	0.2	94	385
1997	–14.83	–11.59	32	548	1.4	96	570
1998	–17.62	–25.34	45	671	1.9	96	700
1999	59.33	66.41	57	1,074	3.4	92	1,500
2000	–19.88	–30.61	62	983	2.9	96	1,000
2001	–3.82	–2.37	60	1,579	0.6	95	1,750
2002	–7.23	–6.00	72	2,037	1.3	97	2,050
2003	60.93	56.28	65	1,998	4.6	12	16,750

Morehouse has prepared and presented this report in compliance with the Global Investment Performance Standards (GIPS®), except for the inclusion of a model portfolio since the inception of the composite.

Morehouse Asset Management is an investment management firm with offices in the United States. On 1 January 2003, Morehouse acquired Smyth Investment Management. Information for periods from 1995 to 2002 represents that of Smyth Investment Management. Local laws and regulations do not differ from GIPS requirements. A complete list and description of the firm's composites is available upon request.

The Emerging Markets Composite ("Composite") includes all accounts benchmarked to the MSCI Emerging Markets Index. The Composite was created in January 2000 and consists of all emerging markets portfolios managed by Smyth and includes Smyth's entire track record. Effective 1 January 2003, the Composite includes a non-fee paying account. The minimum asset level for portfolios in the Composite is $5,000,000.

Performance results are calculated monthly, on a trade date basis, and are net of non-reclaimable withholding taxes. The Composite uses the same source of foreign exchange rates as the benchmark. The dispersion of annual returns is measured by the standard deviation across equal weighted portfolio returns represented within the Composite for the full year.

As of 31 December 2003, 10 percent of the Composite's assets are invested in developed countries, which are not included in the MSCI Emerging Markets Index. Historically, the Composite has been invested less than 10 percent in developed countries.

Answer Question 5 on This Page

Template for Question 5-A

Give *two* of the five requirements set forth by the GIPS standards for linking the performance data of Morehouse and Smyth to create a surviving composite that is compliant with the GIPS standards
1.
2.

Answer Question 5 on This Page

Template for Question 5-B

Prepare *four* corrections or additions that are necessary to bring the performance presentation given in Exhibit 5-1 into compliance with the requirements of the GIPS standards
1.
2.
3.
4.

QUESTION 6 HAS TWO PARTS (A, B) FOR A TOTAL OF 18 MINUTES.

Zach Butler and Amy Ryan are economic consultants advising the trustees of a pension plan. The trustees are responsible for setting the plan's investment policy statement, including the return assumption for the plan.

Butler recommends using an equity risk premium that is consistent with long-term historical levels. Ryan disagrees:

> "Based on my analysis of the three components of the equity risk premium, I recommend using a lower equity risk premium to determine the plan's return assumption."

Ryan identifies the following conditions to support her recommendation:

- Dividend yields are expected to be well below the historical average and companies are expected to buy back less stock through share repurchases.

- Future financial and technological innovations will continue to give investors easier access to the financial markets and allow effective diversification of risks.

- Real corporate profits are expected to grow steadily and inflation is expected to be relatively stable.

A. **Identify** and **describe** the specific component of the equity risk premium associated with *each* of the three conditions identified by Ryan. **Determine** whether *each* of the three conditions supports or does not support Ryan's recommendation to use a lower equity risk premium.

Answer Question 6-A in the Template provided on pages 37 and 38.

(12 minutes)

Because the pension fund is diversified globally, the trustees also ask Butler and Ryan for advice on the future direction of exchange rates. Butler recommends that the trustees consider using the monetary model to forecast exchange rates. He makes the following statements about the monetary model:

- "Because the monetary model focuses on money supply and exchange rate expectations, the model does not require estimates of real output for the relevant countries."

- "The monetary model has the advantage of using input data that are known with relative precision."

B. **Determine** whether *each* of the statements by Butler is correct or incorrect. If incorrect, **give** *one* reason why the statement is incorrect.

Answer Question 6-B in the Template provided on page 39.

(6 minutes)

Answer Question 6 on This Page

Template for Question 6-A

Condition	Identify and describe the specific component of the equity risk premium associated with *each* of the three conditions identified by Ryan	Determine whether *each* of the three conditions supports or does not support Ryan's recommendation to use a lower equity risk premium (circle one)
Dividend yields are expected to be well below the historical average and companies are expected to buy back less stock through share repurchases.	Component: Description:	Supports Does not support
Future financial and technological innovations will continue to give investors easier access to the financial markets and allow effective diversification of risks.	Component: Description:	Supports Does not support

Answer Question 6 on This Page

Template for Question 6-A (continued)

Condition	Identify and describe the specific component of the equity risk premium associated with *each* of the three conditions identified by Ryan	Determine whether *each* of the three conditions supports or does not support Ryan's recommendation to use a lower equity risk premium (circle one)
Real corporate profits are expected to grow steadily and inflation is expected to be relatively stable.	Component: Description:	Supports Does not support

Answer Question 6 on This Page

Template for Question 6-B

Statement	Determine whether *each* of the statements by Butler is correct or incorrect (circle one)	If incorrect, give *one* reason why the statement is incorrect
"Because the monetary model focuses on money supply and exchange rate expectations, the model does not require estimates of real output for the relevant countries."	Correct Incorrect	
"The monetary model has the advantage of using input data that are known with relative precision."	Correct Incorrect	

Questions 7 through 9 relate to individual investor Elizabeth Yeo. A total of 47 minutes is
allocated to these questions. *Candidates should answer these questions in the order
presented.*

QUESTION 7 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 25 MINUTES.

Elizabeth Yeo, aged 55, will retire one year from now as managing director of Sawit Palm Oil
Industries, a Malaysia-based palm oil plantation company. At retirement, Yeo will receive a
MYR450,000 taxable lump sum cash payment from Sawit and a MYR500,000 tax-exempt lump
sum cash payment from the Employees' Provident Fund, the country's retirement savings plan.
Upon retirement, Yeo will also receive MYR8.5 million as proceeds from the sale of her stock in
Sawit. Her original investment in the Sawit stock was MYR1.5 million.

Yeo is widowed and has a son, Jonathan Lok, who will be attending a foreign university. She
intends to pay all expenses associated with his four-year undergraduate education. She estimates
the first year's expenses will be MYR150,000 payable one year from now, and that these
expenses will increase approximately 6 percent annually as a result of inflation in educational
costs.

Yeo maintains a money market fund currently valued at MYR1.2 million and earning 2.5 percent
annually. To honor her late husband, she plans to make a non-tax deductible fixed donation of
MYR100,000 annually, beginning one year from now, to a Malaysian charity. Yeo's current
after-tax salary is equal to her current living expenses of MYR250,000 annually. Both she and
Lok currently reside in the family home, which has a current value of MYR1.4 million. She
intends to give the house to Lok as part of her estate upon her death. She has expressed a desire
to maintain the real value of her investable assets.

Yeo is taxed at 28 percent on salary, benefits, and investment income. Capital gains are not
taxable under Malaysian tax law. Her living expenses are expected to grow at an annual
inflation rate of 3 percent throughout her retirement period, which is expected to be 25 years
given her family's mortality history.

Yeo is working with Ismail Hamid, her financial advisor, to prepare an investment policy
statement for her retirement period.

A.   **Formulate** the return objective in Yeo's investment policy statement. **Calculate** the
        after-tax nominal rate of return that is required to achieve this objective for her first year
        of retirement. **Show** your calculations.

(10 minutes)

In an interview with Hamid, Yeo admits to having little knowledge about investing, as evidenced
by her preference to maintain all excess cash reserves in the money market fund. She tells
Hamid that she also views the money market fund as a way to safeguard the wealth she has
"worked so hard for." She adds that regardless of her wealth situation, she is habitually
conservative in all decisions except where she believes she has control. Citing a case in point,
Yeo told Hamid about her aggressive leveraging of Sawit to expand capacity in order to

guarantee a customer's purchase order. In contrast she describes two different occasions where she did not take advantage of potentially attractive personal investment opportunities because she could not be certain of the outcomes.

B.   **Characterize** Yeo as below average, average, or above average with respect to *each* of the three components of the risk objective in her investment policy statement:

  i.   Ability to take risk
  ii.   Willingness to take risk
  iii.   Overall risk tolerance

Justify *each* of your responses with *one* reason based on Yeo's specific circumstances and/or her interview with Hamid.

Answer Question 7-B in the Template provided on page 46.

(9 minutes)

C.   **Formulate** *each* of the following constraints in Yeo's investment policy statement:

  i.   Time horizon
  ii.   Tax concerns

Justify *each* of your responses with *one* reason based on Yeo's specific circumstances and/or her interview with Hamid.

Answer Question 7-C in the Template provided on page 47.

(6 minutes)

Answer Question 7 on This Page

Template for Question 7-B

Component	Characterize Yeo as below average, average, or above average with respect to *each* of the three components of the risk objective in her investment policy statement (circle one)	Justify *each* of your responses with *one* reason based on Yeo's specific circumstances and/or her interview with Hamid
i. Ability to take risk	Below average Average Above average	
ii. Willingness to take risk	Below average Average Above average	
iii. Overall risk tolerance	Below average Average Above average	

Answer Question 7 on This Page

Template for Question 7-C

Constraint	Formulate *each* of the following constraints in Yeo's investment policy statement	Justify *each* of your responses with *one* reason based on Yeo's specific circumstances and/or her interview with Hamid
i. Time horizon		
ii. Tax concerns		

QUESTION 8 HAS ONE PART FOR A TOTAL OF 12 MINUTES.

Three years have passed and Elizabeth Yeo is meeting with Ismail Hamid for their annual review of her investment portfolio. Yeo has committed to make a one-time donation of MYR2 million to a Malaysian charity, with payment to be made 10 years from now. She also wants to maintain a cash reserve equal to six months of living expenses. With these facts in mind, Hamid estimates that a minimum nominal after-tax rate of return of 7 percent annually is now required. Yeo and Hamid agree that Yeo's overall risk tolerance has increased somewhat compared with three years ago. Yeo is still taxed at 28 percent on investment income, and capital gains remain nontaxable under Malaysian tax law. Hamid prepares a summary of asset class characteristics, shown in Exhibit 8-1.

Exhibit 8-1
Elizabeth Yeo
Asset Class Characteristics

Asset Class	Expected Annual Return (%)	Expected Annual Standard Deviation of Returns (%)	Expected Interest Rate or Dividend Yield (%)
Money Market	2.5	0.3	2.5
Domestic Bond	5.2	2.1	5.2
Domestic Equity: Income	13.5	13.7	7.5
Domestic Equity: Growth	12.5	13.9	0.0

For purposes of preparing a strategic asset allocation, Hamid asks Yeo to consider the asset class allocation ranges shown in Exhibit 8-2.

Exhibit 8-2
Elizabeth Yeo
Asset Class Allocation Ranges

Asset Class	Allocation Ranges
Money Market	0% to 10%
	11% to 20%
	21% to 30%
Domestic Bond	31% to 40%
	41% to 50%
	51% to 60%
Domestic Equity: Income	0% to 10%
	11% to 20%
	21% to 30%
Domestic Equity: Growth	0% to 10%
	11% to 20%
	21% to 30%

Recommend for Yeo the *most* appropriate allocation range for *each* of the asset classes in Exhibit 8-2. **Justify** *each* of your responses with *one* reason based on Yeo's specific circumstances.

Answer Question 8 in the Template provided on page 53.

(12 minutes)

Answer Question 8 on This Page

Template for Question 8

Asset Class	Recommend for Yeo the *most* appropriate allocation range for *each* of the asset classes in Exhibit 8-2 (circle one)	Justify *each* of your responses with *one* reason based on Yeo's specific circumstances
Money Market	0% to 10% 11% to 20% 21% to 30%	
Domestic Bond	31% to 40% 41% to 50% 51% to 60%	
Domestic Equity: Income	0% to 10% 11% to 20% 21% to 30%	
Domestic Equity: Growth	0% to 10% 11% to 20% 21% to 30%	

QUESTION 9 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 10 MINUTES.

Ismail Hamid is considering the addition of international investments to ElizabethYeo's portfolio. He explains to Yeo his methodology for developing capital market expectations and determining a recommended asset allocation. In his approach to developing capital market expectations, Hamid utilizes sample statistics from the most recent twenty years of market, security, and foreign exchange price data as estimates of asset class expected returns, expected volatilities of returns, and expected correlations of returns.

A.   **Give** *two* specific limitations of Hamid's approach to developing capital market expectations.

(4 minutes)

Hamid recommends that Yeo consider a possible allocation of investment assets to Hong Kong real estate, because prices of real estate tend to lag returns from the stock market. With the Hang Seng Index registering strong positive returns recently, Hamid expects that the wealth gains from the equity market will now be a positive factor for real estate prices.

B.   **Identify** *one* problem in using historical estimates of return correlations for alternative assets such as real estate. **Explain** how that problem biases the formulation of expectations for real estate investments.

(3 minutes)

Hamid shows Yeo an economic research report recently published by his firm; the report contains the following conclusion:

> "Because of recent speculative forces on the Malaysian ringgit (MYR), it is highly likely that Malaysia will impose sustained currency controls to regulate the flow of capital into the country."

C.   **Judge**, given the likelihood that Malaysia will impose sustained currency controls, whether Yeo should lower, not change, or raise her expected long-term investment risk premiums. **Support** your response with *one* reason.

(3 minutes)

QUESTION 10 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 9 MINUTES.

Five years ago, Crown Airlines, an Irish airline company, merged with a major Dutch airline company to form C-K Air. The companies had equal market capitalization at the time of the merger. As a result of the merger, Crown Airlines stock (CRO) now represents 50 percent of the share capital of C-K Air, and a Dutch stock listing (KNV) represents the remaining 50 percent. CRO is currently trading substantially below its intrinsic value, primarily because of selling on pessimism by a group of irrational investors. KNV, which is a perfect substitute for CRO, is also currently trading below its intrinsic value. Within the Irish airline sector, C-K Air has only one major competitor, Atlantic Airways, whose stock (ATL) is currently trading at its intrinsic value. ATL and CRO are not perfect substitutes.

Joshua Lavinsky, portfolio manager of a domestic Irish equity market-neutral fund, follows both CRO and ATL. He is considering the following long-short position:

- a long position in CRO
- an equal and opposite short position in ATL

Sam Blake, portfolio manager of a Pan-European equity market-neutral fund, also follows CRO. Because CRO is currently trading at a premium relative to KNV, Blake is considering the following short-long position:

- a short position in CRO
- an equal and opposite long position in KNV

A.   **Identify** the specific risk that both Lavinsky and Blake would face in establishing their respective positions. **Explain** how that risk would limit both Lavinsky and Blake in seeking to exploit a mispricing.

<div align="center">

(3 minutes)

</div>

B.   **Identify** the specific risk that Lavinsky would face but that Blake would not face in establishing their respective positions. **Explain** how that risk would limit Lavinsky in seeking to exploit a mispricing.

<div align="center">

(3 minutes)

</div>

Six months later, Lavinsky and Blake have liquidated their respective positions. CRO is now trading at a one percent premium relative to KNV. The cost of trading Dutch and Irish equities is approximately 35 basis points (bps) each way. The total cost of borrowing Dutch and Irish equities is an additional 40 bps.

C.   **Determine** if an opportunity to exploit a mispricing now exists with respect to CRO and KNV. **Support** your response with *one* reason.

<div align="center">

(3 minutes)

</div>

QUESTION 11 HAS TWO PARTS (A, B) FOR A TOTAL OF 19 MINUTES.

Easton Bakery makes a variety of brand name products sold in major grocery chains throughout North America. Easton is a closely held public company that has been operated by the Rucoin family for three generations. The company has been publicly traded for three years and has 50,000,000 shares outstanding. Until his death six months ago, Carlton Rucoin ran the company. His estate now plans to sell its 45 percent stake in the company.

The executor of the estate asked Raj Vinepal, CFA, to provide a valuation of Easton in preparation for the sale. The executor is especially concerned about the marketability discount associated with the Rucoin family's plan to sell its Easton shares. Vinepal has researched several potential marketability discount factors, which are given in Exhibit 11-1.

Exhibit 11-1
Easton Bakery
Potential Marketability Discount Factors

1. The Rucoin family is not interested in continuing as shareholders of Easton Bakery. The family wants to sell its entire position for cash.
2. Easton stock has consistently traded in a narrow range of price/earnings ratios over the last three years.
3. The baked goods industry is currently fragmented and consolidating.
4. Easton's only institutional shareholder has indicated that, while it is supportive of the company, it does not intend to increase the size of its position at this time. No other institutional buyers have been identified.
5. Easton maintains an Employee Stock Ownership Plan (ESOP) that has a policy of acquiring company stock on a quarterly basis.
6. The liquidity of Easton stock has declined substantially over the past three years. The current average daily trading volume of 100,000 shares is relatively low in relation to the number of shares outstanding.

A.   **Judge** whether *each* of the factors given in Exhibit 11-1 is likely to decrease, have no effect on, or increase the size of the marketability discount associated with the Rucoin family's plan to sell its Easton shares. **Support** *each* of your responses with *one* reason.

Note: The first factor in the Template for Question 11-A is completed as an example.

Answer Question 11-A in the Template provided on pages 67, 68, and 69.

(15 minutes)

One year later, the financial condition of both Easton and the industry has deteriorated substantially. Easton has suspended interest and principal payments on its senior and subordinated debt.

B.   **Explain** how a hedge fund manager could:

i.   use Easton securities to construct a position popularly described as distressed debt arbitrage.

ii.   earn a distressed debt arbitrage return whether Easton's financial condition continues to deteriorate or improves.

(4 minutes)

Answer Question 11 on This Page

Template for Question 11-A

Note: The first factor in the Template for Question 11-A is completed as an example.

Factor	Judge whether *each* of the factors given in Exhibit 11-1 is likely to decrease, have no effect on, or increase the size of the marketability discount associated with the Rucoin family's plan to sell its Easton shares (circle one)	Support *each* of your responses with *one* reason
Example: 1. The Rucoin family is not interested in continuing as shareholders of Easton Bakery. The family wants to sell its entire position for cash.	**Example:** Decrease Have no effect on (Increase)	**Example:** The Rucoin family owns a large block (45 percent) of the company. Larger blocks tend to have larger marketability discounts than smaller blocks because larger blocks may attract fewer potential buyers and be more difficult to finance.
2. Easton stock has consistently traded in a narrow range of price/earnings ratios over the last three years.	Decrease Have no effect on Increase	

Template for Question 11-A continued on pages 68 and 69

Answer Question 11 on This Page

Template for Question 11-A (continued)

Factor	Judge whether *each* of the factors given in Exhibit 11-1 is likely to decrease, have no effect on, or increase the size of the marketability discount associated with the Rucoin family's plan to sell its Easton shares (circle one)	Support *each* of your responses with *one* reason
3. The baked goods industry is currently fragmented and consolidating.	Decrease Have no effect on Increase	
4. Easton's only institutional shareholder has indicated that, while it is supportive of the company, it does not intend to increase the size of its position at this time. No other institutional buyers have been identified.	Decrease Have no effect on Increase	

Answer Question 11 on This Page

Template for Question 11-A (continued)

Factor	Judge whether *each* of the factors given in Exhibit 11-1 is likely to decrease, have no effect on, or increase the size of the marketability discount associated with the Rucoin family's plan to sell its Easton shares (circle one)	Support *each* of your responses with *one* reason
5. Easton maintains an Employee Stock Ownership Plan (ESOP) that has a policy of acquiring company stock on a quarterly basis.	Decrease Have no effect on Increase	
6. The liquidity of Easton stock has declined substantially over the past three years. The current average daily trading volume of 100,000 shares is relatively low in relation to the number of shares outstanding.	Decrease Have no effect on Increase	

QUESTION 12 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 16 MINUTES.

John Samy, CFA, is advising the Northumberland Endowment (NE) about the global investment exposure in the endowment's portfolio. The NE directors are examining both passive and active management approaches to global investing. NE's investment mandate prohibits the use of derivatives and margin.

In a board meeting, director Louis Langford states:

> "We should consider indexing for our global exposure. Using a synthetic replication index strategy, for example, would have two advantages: First, the synthetic portfolio will closely track the chosen index at relatively low cost. Second, there are essentially no constraints on NE's implementation of such a strategy."

A. **Determine**, for a synthetic replication index strategy, whether *each* of the advantages cited in Langford's statement is accurate or inaccurate. **Support** *each* of your responses with *one* reason.

  Answer Question 12-A in the Template provided on page 75.

(6 minutes)

Several of the directors ask Samy about structuring NE's global portfolio for the long term. Samy outlines the following process:

> "To build a portfolio that optimally represents global asset classes, including developed and emerging markets as separate asset classes, you could use several external managers who are specialists in the various asset classes. You could then create a global benchmark with various sub-benchmarks for each asset class."

B. **Describe** *two* approaches to determining the benchmark weights for the global asset classes in the process outlined by Samy.

(4 minutes)

Samy is concerned that the NE portfolio has unhedged currency exposure and asks the NE directors to consider a hedging program. During a discussion of hedging approaches, director Donna Lee makes the following statements:

- "If we are concerned about the short-term volatility of the global portion of our portfolio, there is no strong reason to undertake anything other than a full hedging approach."

- "A full hedging approach is more appropriate than a no hedging approach for an investor who has a long-term liability structure."

C. **Determine** whether *each* of the statements by Lee is correct or incorrect. If incorrect, **give** *one* reason why the statement is incorrect.

  Answer Question 12-C in the Template provided on page 77.

(6 minutes)

Answer Question 12 on This Page

Template for Question 12-A

Advantage	Determine, for a synthetic replication index strategy, whether *each* of the advantages cited in Langford's statement is accurate or inaccurate (circle one)	Support *each* of your responses with *one* reason
The synthetic portfolio will closely track the chosen index at relatively low cost.	Accurate Inaccurate	
There are essentially no constraints on NE's implementation of such a strategy.	Accurate Inaccurate	

Answer Question 12 on This Page

Template for Question 12-C

Statement	Determine whether *each* of the statements by Lee is correct or incorrect (circle one)	If incorrect, give *one* reason why the statement is incorrect
"If we are concerned about the short-term volatility of the global portion of our portfolio, there is no strong reason to undertake anything other than a full hedging approach."	Correct Incorrect	
"A full hedging approach is more appropriate than a no hedging approach for an investor who has a long-term liability structure."	Correct Incorrect	

2005 CFA Level III Examination
Morning Session – Essay

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1. Write your candidate number in the space provided on the front cover of this examination book.

2. Complete, read and sign the pledge located inside the front cover of this examination book. Your examination will not be graded unless the pledge is signed. Do not remove the pledge. CFA Institute will detach the pledge prior to grading.

3. Write your answers in blue or black ink on the designated answer pages in the examination book.

4. Label each part of your answer (A, B, C, D or i, ii, iii, etc.).

5. Only answers written on the correct answer pages will be graded. You may make marks and notes on the question pages, but these marks will not be graded.

6. If you use all of the designated pages, check the box at the bottom of the last page of your answer and continue your answer on the unnumbered extra pages at the back of the examination book. Label extra pages with the correct question number.

7. Use *only* the Texas Instruments BAII Plus calculator (including Professional and Business Analyst) or Hewlett Packard 12C calculator (including 12C Platinum). Use of any other calculator will result in the submission of a Violation Report to CFA Institute.

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The Morning Session of the 2006 CFA Level III Examination has 12 questions. For grading purposes, the maximum point value for each question is equal to the number of minutes allocated to that question.

Question	Topic	Minutes
1	Portfolio Management	34
2	Portfolio Management	12
3	Asset Valuation	6
4	Portfolio Management	24
5	Portfolio Management	10
6	Portfolio Management	12
7	Portfolio Management	9
8	Portfolio Management	15
9	Asset Valuation	14
10	Asset Valuation	17
11	Portfolio Management	15
12	Portfolio Management	12
	Total:	**180**

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QUESTION 1 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 34 MINUTES.

Rodolfo Serra is a professional soccer player with FA Milan, a leading soccer team in Italy's Serie A league. He has been well paid over his career including an initial, one-time signing bonus of €2 million, which he immediately invested in a start-up company designing training equipment. This aggressive venture eventually went bankrupt. At 34 years old, Serra is now at his professional peak with an annual pre-tax salary of €5 million: €4 million paid throughout the year and a €1 million year-end bonus. His salary is taxed at 40 percent.

Since the beginning of his career Serra has managed his own investments. He has had mixed results in his growth equity portfolio. One of his worst performing equity holdings is B&K, an investment he initially made three years ago. On several occasions, in reaction to an extended decline in B&K's share price, Serra used a portion of his year-end bonus to acquire additional shares in an effort to lower his average cost per share. He avoids the technology sector after incurring severe investment losses in the late 1990's. The remainder of his growth equity portfolio has performed satisfactorily. He also has commercial real estate investments that are expected to be cash-flow neutral this year. A summary of his personal assets is shown in Exhibit 1.

Exhibit 1
Rodolfo Serra: Personal Assets
(all amounts in €)

Cash savings	4,000,000
Growth equity portfolio*	40,000,000
Commercial real estate investments	14,000,000

* All dividends are reinvested

Serra expects the annual after-tax interest income on his cash savings to be €100,000 at the end of the year.

Serra will retire from professional soccer one year from now at the age of 35. He will pay cash for a personal home costing €4.5 million when he receives his year-end bonus. Having grown up in poverty, Serra recently established a children's welfare foundation. He will legally gift all his commercial real estate investments to the foundation upon his retirement. After retirement, Serra intends to volunteer all of his time to the foundation and does not expect to receive any compensation from other sources.

Serra has been divorced for two years and has a 7-year-old son who lives with his mother in Italy. He makes annual family support payments amounting to €800,000. The annual family support payments will stop when his son reaches age 18. Serra's living expenses are expected to be €1.2 million this year. Both family support payments and living expenses will grow at an average annual inflation rate of 4 percent. All income net of expenses is currently reinvested in his growth equity portfolio. Serra has expressed his desire to maintain the real value of his portfolio during retirement, which is expected to last a minimum of 40 years.

Serra recently hired a portfolio manager, Patrick Schneider, CFA, who expects the after-tax nominal annual return for growth equity to be 8.5 percent.

A.   i.   **Formulate** the return objective in Serra's investment policy statement.
      ii.   **Calculate** the *after-tax* nominal rate of return that is required during his first year of retirement. **Show** your calculations.

      Note: Assume there are no tax benefits or tax liabilities related to Serra's gifting commercial real estate, or paying family support and living expenses.

(13 minutes)

B.   i.   **Identify** *two* factors in Serra's personal situation that increase his ability to take risk.
      ii.   **Identify** *two* factors in Serra's personal situation that decrease his ability to take risk.
      iii. **Judge**, considering all factors, whether Serra has below-average, average, or above-average ability to take risk.

      Answer Question 1-B in the Template provided on page 7.

(6 minutes)

C.   **Formulate** *each* of the following constraints in Serra's investment policy statement:

      i.   Liquidity requirement
      ii.   Time horizon

      Support *each* response with *one* reason based on Serra's specific circumstances.

      Answer Question 1-C in the Template provided on page 8.

(6 minutes)

D.   **Determine** which *one* action taken by Serra *best* illustrates *each* of the following psychological biases:

      i.   Snake-bite effect
      ii.   House-money effect
      iii. Trying-to-break-even effect

      Conclude whether *each* psychological bias indicates Serra is more willing to take risk, less willing to take risk, or has no effect on Serra's willingness to take risk.

      Answer Question 1-D in the Template provided on page 9.

(9 minutes)

2006

Answer Question $\boxed{1}$ on This Page

Template for Question 1-B

Identify *two* factors in Serra's personal situation that increase his ability to take risk
1.
2.
Identify *two* factors in Serra's personal situation that decrease his ability to take risk
1.
2.
Judge, considering all factors, whether Serra has below-average, average, or above-average ability to take risk (circle one)
Below-average   Average   Above-average

Answer Question 1 on This Page

Template for Question 1-C

Constraint	Formulate *each* of the following constraints in Serra's investment policy statement. Support *each* response with *one* reason based on Serra's specific circumstances.
i. Liquidity requirement	
ii. Time horizon	

Answer Question 1 on This Page

Template for Question 1-D

Psychological Bias	Determine which *one* action taken by Serra *best* illustrates *each* of the following psychological biases	Conclude whether *each* psychological bias indicates Serra is more willing to take risk, less willing to take risk, or has no effect on Serra's willingness to take risk (circle one)
i. Snake-bite effect		More willing Less willing No effect
ii. House-money effect		More willing Less willing No effect
iii. Trying-to-break-even effect		More willing Less willing No effect

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Questions 2 and 3 relate to Lucinda Kennedy. A total of 18 minutes is allocated to these questions. *Candidates should answer these questions in the order presented.*

QUESTION 2 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 12 MINUTES.

Lucinda Kennedy, a 65-year-old retiree, has accumulated investment assets of $3 million and has a life expectancy of 20 years. Kennedy meets with Richard Bulloch, CFA, to develop an asset allocation that will provide for her retirement spending needs. Her needs are significant and it would be very difficult to reduce her spending. Kennedy informs Bulloch that her biggest fear is outliving her assets because she has no other sources of income.

Kennedy and Bulloch agree to use a life expectancy of 20 years for planning purposes. Bulloch presents Kennedy with three alternative portfolio allocations shown in Exhibit 1. Kennedy believes that a conservative allocation will provide the safety she needs. However, she wonders whether a more aggressive allocation to increase the value of the portfolio would be better over the long term.

Exhibit 1
Alternative Portfolio Allocations (%)

Asset Class	Conservative	Moderate	Aggressive
U.S. equities	10	30	40
Non-U.S. equities	10	30	40
Global fixed income	60	30	15
Cash equivalents	20	10	5

Bulloch states:

"Given your circumstances, an asset-liability management approach to strategic asset allocation is more appropriate than an asset-only approach."

A.   **Explain** *two* advantages of using an asset-liability management approach in Kennedy's situation.

(4 minutes)

Bulloch decides to use Monte Carlo simulation to determine the most appropriate asset allocation for Kennedy's portfolio.

B.   **Explain** *two* ways that Monte Carlo simulation differs from mean-variance analysis in a multi-period setting.

(4 minutes)

Bulloch prepares a Monte Carlo simulation using his capital markets expectations. The likely outcomes for the conservative, moderate, and aggressive portfolio allocations are shown in Exhibit 2. Bulloch explains Exhibit 2 to Kennedy. Using the conservative allocation as an example, there is a 75 percent probability that the terminal value will be less than or equal to $986,000 and a 25 percent probability that the terminal value will be greater than $986,000.

Exhibit 2
Monte Carlo Simulation Results
Projected Portfolio Terminal Values at 20 Years

Percentile	Terminal Values ($ thousands)*		
	Conservative	Moderate	Aggressive
95th	1,701	5,936	11,938
90th	1,313	3,972	7,243
75th	986	3,064	4,818
50th	621	1,632	2,271
25th	343	718	777
10th	3	98	0
5th	0	13	0

* After Kennedy's retirement spending needs have been met

C.   **Recommend** the *most* appropriate portfolio allocation for Kennedy based upon the results of the Monte Carlo simulation. **Justify** your response with *one* reason.

(4 minutes)

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QUESTION 3 HAS ONE PART FOR A TOTAL OF 6 MINUTES.

After determining the appropriate asset allocation to meet Lucinda Kennedy's needs, Richard Bulloch, CFA, invests a portion of Kennedy's assets in two fixed income investment funds.

Trinity Index Fund – a passively managed portfolio of global bonds designed to track the Lehman Brothers® Global Aggregate Bond (LGAB) Index using a pure bond indexing strategy. The management fee is 15 basis points annually.

Montego Global Bond Fund – an actively managed portfolio of global bonds designed to outperform the LGAB net of fees. The management fee is 50 basis points annually.

Six months after investing in these funds, Kennedy and Bulloch review the performance data shown in Exhibit 1.

Exhibit 1
Total Returns on Index and Funds

Index or Fund	Six-month Return
LGAB Index	3.21%
Trinity Index Fund*	3.66%
Montego Global Bond Fund*	3.02%

* Net of Fees

Kennedy makes the following statements regarding her fixed income investments:

1. "The Trinity Index Fund is being managed well."

2. "I expected that, as an active manager, Montego would outperform the index; therefore, the fund should be sold."

Determine whether you agree or disagree with *each* of Kennedy's statements. **Justify** your response with *one* reason for *each* statement.

Note: Each justification can only be used once.

Answer Question 3 in the Template provided on page 21.

(6 minutes)

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Answer Question ③ on This Page

Template for Question 3

Statement	Determine whether you agree or disagree with *each* of Kennedy's statements (circle one)	Justify your response with *one* reason for *each* statement Note: Each justification can only be used once.
1. "The Trinity Index Fund is being managed well."	Agree Disagree	
2. "I expected that, as an active manager, Montego would outperform the index; therefore, the fund should be sold."	Agree Disagree	

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Questions 4 and 5 relate to American Cruise Lines. A total of 34 minutes is allocated to these questions. *Candidates should answer these questions in the order presented.*

QUESTION 4 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 24 MINUTES.

American Cruise Lines (ACL) is a leading global cruise ship company with few major competitors and a market capitalization of $10 billion. The assets of the ACL Defined Benefit Pension Plan (ACLP) have a current market value of $100 million. Using a 5 percent discount rate (the current yield to maturity on a long-term U.S. Treasury bond), ACLP's actuary calculates the value of its Projected Benefit Obligation to be approximately $100 million with a duration of 15 years. ACLP has an early retirement feature which includes annuity and lump-sum pay-out options for long-term employees over 50 years old. Few employees are currently planning to retire early. ACLP is directed and managed by an independent investment committee that is subject to a fiduciary obligation to act in the best interests of its beneficiaries.

ACLP's investment committee has recruited Emily Wilson, CFA, to manage ACLP's investment portfolio. Wilson conducts research on ACL and concludes the company is financially sound with a stable workforce. Compared to the averages for the cruise industry, ACL has a lower debt/equity ratio and a higher return on equity.

Wilson prepares Exhibit 1 which summarizes the workforce characteristics of ACL and the cruise industry.

Exhibit 1
Comparison of ACL and the Cruise Industry

Workforce Characteristics	ACL	Cruise Industry Average
Average age of active employees	33 years old	40 years old
Active long-term employees over age 50	14%	17%
Active employees/Retired employees	85% /15%	90% /10%

Wilson meets separately with ACLP's investment committee and with ACL's President John Johnson to listen to their ideas on ACLP's investments.

Investment Committee: "Our investment objective is to build a pension surplus in ACLP by setting a return objective that is 200 basis points above ACLP's minimum required return. We have determined that this investment objective is consistent with ACLP's current risk tolerance."

Johnson: "In today's environment, ACLP should be able to produce returns of at least 10 percent per year.

In addition, according to industry analysts, the increasing popularity of cruises should translate into increased growth and profitability for the cruise industry over the next 10 to 15 years. The investment committee should increase ACLP's investment in cruise industry equities from its current level of 10 percent to at least 15 percent of plan assets."

Wilson's first task is to draft an ACLP investment policy statement (IPS) to present to its investment committee.

A. **Formulate** the return objective of an IPS for the American Cruise Line's Defined Benefit Pension Plan (ACLP). **Show** your calculation.

(3 minutes)

B. **Indicate** whether ACLP has a below-average, average, or above-average ability to take risk compared with the average for the cruise industry with respect to *each* of the following risk factors:

    i.   Sponsor financial status and profitability
    ii.   Workforce age
    iii.   Retired employees

    Justify *each* response with *one* reason.

    Answer Question 4-B in the Template provided on page 29.

(9 minutes)

C. **Indicate** whether *each* of the following factors increases, leaves unchanged, or decreases ACLP's ability to take risk:

    i.   Sponsor (ACL) and pension fund (ACLP) common risk exposures
    ii.   Retirement plan features

    Justify *each* response with *one* reason.

    Answer Question 4-C in the Template provided on page 30.

(6 minutes)

D. **Formulate** *each* of the following constraints in ACLP's investment policy statement:

    i.   Liquidity requirement
    ii.   Time horizon

    Justify *each* response with *one* reason.

    Note: Your answer should specifically address ACLP's circumstances.

    Answer Question 4-D in the Template provided on page 31.

(6 minutes)

2006

Answer Question 4 on This Page

Template for Question 4-B

Risk factor	Indicate whether ACLP has a below-average, average, or above-average ability to take risk compared with the average for the cruise industry with respect to *each* of the following risk factors (circle one)	Justify *each* response with *one* reason
i. Sponsor financial status and profitability	Below-average Average Above-average	
ii. Workforce age	Below-average Average Above-average	
iii. Retired employees	Below-average Average Above-average	

Answer Question 4 on This Page

Template for Question 4-C

Factor	Indicate whether *each* of the following factors increases, leaves unchanged, or decreases ACLP's ability to take risk (circle one)	Justify *each* response with *one* reason
i. Sponsor (ACL) and pension fund (ACLP) common risk exposures	Increases Leaves unchanged Decreases	
ii. Retirement plan features	Increases Leaves unchanged Decreases	

Answer Question ④ on This Page

Template for Question 4-D

Constraint	**Formulate *each* of the following constraints in ACLP's investment policy statement. Justify *each* response with *one* reason.** Note: Your answer should specifically address ACLP's circumstances.
i. Liquidity requirement	
ii. Time horizon	

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QUESTION 5 HAS TWO PARTS (A, B) FOR A TOTAL OF 10 MINUTES.

Several years have passed. American Cruise Line's Defined Benefit Pension Plan (ACLP) now has $200 million in assets and has a funding surplus due to the successful execution of the policies adopted by ACLP's investment committee.

American Cruise Lines (ACL) has experienced a decline in sales related to a sustained downturn in travel. The company is now faced with material restructuring expenses. As part of the restructuring, ACLP will be required to make lump-sum payments averaging $200,000 to each of 100 retiring employees over the next 12 months.

Because of these changes and considering current market conditions, the investment committee adopts the following policy objectives:

- a return requirement of 8.5 percent.
- a shortfall risk objective of –8.0 percent. Shortfall risk is defined as the portfolio expected return minus two standard deviations.
- match assets and liabilities in the short and long term.
- reduce exposure to equities highly correlated with the plan sponsor.

Emily Wilson, CFA, is instructed to reassess the portfolio's asset allocation and recommend any necessary changes. Wilson's analysis results in the asset allocation alternatives shown in Exhibit 1.

Exhibit 1
Alternative Asset Allocations and Return/Risk Measures

Asset Class	Portfolio Allocations (%)				
	A	**B**	**C**	**D**	**E**
Cash equivalents	3	10	4	10	5
Global fixed income	45	30	40	35	35
U.S. equities	17	30	16	35	30
Non-U.S. equities	15	15	20	10	15
Cruise industry equities	15	5	0	0	0
Real estate	5	10	20	10	15
Total	100	100	100	100	100
Portfolio Measures	**Return and Risk Measures (%)**				
	A	**B**	**C**	**D**	**E**
Expected total return	9.25	9.06	8.59	9.04	9.07
Expected standard deviation	8.43	8.83	7.83	8.19	8.57

Wilson notes that all the portfolios have an expected return that meets the policy objectives of ACLP. She is considering other reasons for making her selection.

A.   **Select** the *most* appropriate portfolio for ACLP. **Discuss** how the selected portfolio satisfies *two* investment committee policy objectives, other than meeting the return requirement.

(6 minutes)

B.   **State**, for *each* of the four portfolios not selected, *one* reason why it is *not* the most appropriate.

(4 minutes)

QUESTION 6 HAS ONE PART FOR A TOTAL OF 12 MINUTES.

Vrieland Foundation is an independent foundation with the objective to fund children's music education programs. Sophie Arnold is interviewing for the position of portfolio manager at Vrieland. Arnold previously managed her former employer's defined benefit pension plan. During her interview, Arnold makes the following statements:

- "The sole return objective of both Vrieland and a defined benefit pension plan is to maintain purchasing power."

- "Vrieland, unlike a defined benefit pension plan, does not need to consider the correlation between plan sponsor financial performance and the performance of the portfolio."

- "Like a defined benefit pension plan, the liquidity needs of Vrieland fluctuate over time."

- "The primary objective of both Vrieland and a defined benefit pension plan is to exist in perpetuity, resulting in an infinite investment time horizon."

Determine whether you agree or disagree with *each* of the four statements made by Arnold. If you disagree, **support** your opinion with *one* reason related to portfolio management.

Note: Supporting your opinion by simply reversing an incorrect statement will receive no credit.

Answer Question 6 in the Template provided on page 43.

(12 minutes)

Answer Question 6 on This Page

Template for Question 6

Statement	Determine whether you agree or disagree with *each* of the four statements made by Arnold (circle one)	If you disagree, support your opinion with *one* reason related to portfolio management Note: Supporting your opinion by simply reversing an incorrect statement will receive no credit.
"The sole return objective of both Vrieland and a defined benefit pension plan is to maintain purchasing power."	Agree Disagree	
"Vrieland, unlike a defined benefit pension plan, does not need to consider the correlation between plan sponsor financial performance and the performance of the portfolio."	Agree Disagree	
"Like a defined benefit pension plan, the liquidity needs of Vrieland fluctuate over time."	Agree Disagree	
"The primary objective of both Vrieland and a defined benefit pension plan is to exist in perpetuity, resulting in an infinite investment time horizon."	Agree Disagree	

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NOT BE GRADED**

QUESTION 7 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 9 MINUTES.

Hartej Chanrai is a consultant to the board of directors of Vrieland Foundation. The board asks Chanrai to recommend an asset allocation for Vrieland. Chanrai reviews the current Vrieland investment policy statement, key aspects of which are shown in Exhibit 1.

Exhibit 1
Vrieland Foundation
Key Aspects of Investment Policy Statement

Return objective:
>   The required rate of return on the investment portfolio is 9.5 percent.

Risk objectives:
>   1. Diversify the portfolio consistent with prudent investment practices.
>   2. A maximum standard deviation of portfolio returns of 10.6 percent is
>   acceptable.

Constraint:
>   Liquidity is needed to fund the annual contribution to the operating budget.
>   (There are no other relevant constraints.)

For the strategic asset allocation analysis, Chanrai has generated the corner portfolios shown in Exhibit 2.

Exhibit 2
Corner Portfolios
(Risk-free Rate = 4.0%)

Corner Portfolio Number	Expected Return (%)	Expected Standard Deviation (%)	Sharpe Ratio	Asset Classes (Portfolio Weights, %)					
				U.S. Equities	Non-U.S. Equities	Long-term U.S. Bonds	Inter-mediate-term U.S. Bonds	Non-U.S. Bonds	Real Estate
1	10.8	16.1	0.42	100.0	0.0	0.0	0.0	0.0	0.0
2	10.4	14.2	0.45	82.4	0.0	0.0	0.0	0.0	17.6
3	10.3	13.6	0.46	74.1	4.0	0.0	0.0	0.0	21.9
4	9.1	9.1	0.55	33.7	12.0	36.7	0.0	0.0	17.6
5	8.9	8.7	0.56	31.4	12.0	26.7	13.0	0.0	16.9
6	8.5	7.4	0.60	25.0	11.8	0.0	45.3	3.4	14.5
7	7.3	5.2	0.62	0.0	13.7	0.0	53.0	27.1	6.2
8	7.2	5.1	0.61	0.0	11.2	0.0	53.0	31.5	4.3

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Answer Parts A, B, and C using mean-variance analysis:

A. **Select** the *two* adjacent corner portfolios to be used in finding the *most* appropriate strategic asset allocation for Vrieland's investment portfolio, assuming that the purchase of securities using borrowed money (margin) is not allowed.

(3 minutes)

B. **Determine** the *most* appropriate strategic asset allocation between the two adjacent corner portfolios selected in Part A, assuming that the purchase of securities using borrowed money (margin) is not allowed.

(3 minutes)

C. **Determine** the percentage amount of the *most* appropriate strategic asset allocation (determined in Part B) that should be invested in U.S. equities.

(3 minutes)

2006

QUESTION 8 HAS ONE PART FOR A TOTAL OF 15 MINUTES.

Peter Thompson, Vice President of Marketing, and Anthony Nichol, CFA, Compliance Officer, work for First Trust Company. While preparing for Global Investment Performance Standards (GIPS®) compliance, they meet to review a draft of marketing materials containing performance information for the year ended 31 December 2005.

At the meeting, Thompson and Nichol discuss whether the following First Trust Company policies are in compliance with GIPS.

1. Returns are calculated monthly and cash flows are weighted as of mid-month.

2. The Firmwide Composite includes all equity, fixed income, and balanced accounts managed by the firm.

3. Returns on asset classes held in balanced portfolios, excluding cash, have been carved out and included in the equity and fixed income composites.

4. Composite returns are calculated by asset-weighting the individual portfolio returns using beginning-of-period values and time-weighted external cash flows.

5. The Balanced Growth Composite includes large-capitalization equity and taxable fixed income securities. The Balanced Growth Composite is measured against a benchmark composed of 60 percent S&P 500® Equity Index and 40 percent Lehman Brothers® Government/Credit Index. Information about rebalancing of the benchmark is available upon request.

Determine whether *each* of the five policies, considered independently, meets the requirements of GIPS. **Recommend**, for *each* policy not in compliance with GIPS, the appropriate change that must be made to bring First Trust Company into compliance with GIPS.

Answer Question 8 in the Template provided on pages 53 and 54.

(15 minutes)

Answer Question 8 on This Page

Template for Question 8

Policy	Determine whether *each* of the five policies, considered independently, meets the requirements of GIPS (circle one)	Recommend, for *each* policy not in compliance with GIPS, the appropriate change that must be made to bring First Trust Company into compliance with GIPS
1. Returns are calculated monthly and cash flows are weighted as of mid-month.	Yes No	
2. The Firmwide Composite includes all equity, fixed income, and balanced accounts managed by the firm.	Yes No	
3. Returns on asset classes held in balanced portfolios, excluding cash, have been carved out and included in the equity and fixed income composites.	Yes No	

Template for Question 8 continued on page 54

Answer Question $\boxed{8}$ on This Page

Template for Question 8 (continued)

Policy	Determine whether *each* of the five policies, considered independently, meets the requirements of GIPS (circle one)	Recommend, for *each* policy not in compliance with GIPS, the appropriate change that must be made to bring First Trust Company into compliance with GIPS
4. Composite returns are calculated by asset-weighting the individual portfolio returns using beginning-of-period values and time-weighted external cash flows.	Yes No	
5. The Balanced Growth Composite includes large-capitalization equity and taxable fixed income securities. The Balanced Growth Composite is measured against a benchmark composed of 60 percent S&P 500® Equity Index and 40 percent Lehman Brothers® Government/Credit Index. Information about rebalancing of the benchmark is available upon request.	Yes No	

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NOT BE GRADED**

QUESTION 9 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 14 MINUTES.

Corinthian Bank has been asked to finance the construction of a local hospital expansion. The cash flow needs for the hospital expansion are as follows:

- $20 million in 6 months
- Additional $40 million in 1 year

Corinthian is offering to lend at a floating rate of LIBOR plus 50 basis points, reset every six months, with a maximum allowable increase of 300 basis points over the initial lending rate, for the life of the loan. The entire principal of the $60 million loan is to be repaid 5 years from today.

Noah Dudley, an analyst in Corinthian's treasury department, has been asked to review two funding proposals for Corinthian's Asset and Liability Committee (ALCO). He specifically has been asked to discuss the risks of using marketable certificates of deposit (CDs) as the funding vehicle.

Dudley tells the ALCO that they face two risks with this asset-liability structure and reviews the following proposed funding solutions to eliminate these risks:

1.   Interest Rate Risk: Issue 6-year fixed rate CDs. By issuing CDs with a term longer than the loan, Corinthian would eliminate interest rate risk.

2.   Cap Risk: Issue floating rate CDs that cannot be withdrawn prior to maturity. Floating rate CDs would eliminate cap risk.

A.   **Determine** whether you agree or disagree with *each* of the proposed funding solutions. If you disagree, **justify** your answer with *one* reason related to asset-liability management.

Note: Justifying your answer by simply reversing an incorrect proposed funding solution will receive no credit.

Answer Question 9-A in the Template provided on page 61.

(6 minutes)

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Corinthian reviews its interest rate forecasts, and decides to fund the hospital loan by issuing 5-year fixed rate CDs at the times the cash flows are needed. The CDs cannot be withdrawn prior to maturity.

Six months pass. Corinthian issues 5-year fixed rate CDs for $20 million to fund the first drawdown.

An additional six months later, Corinthian issues 5-year fixed rate CDs for $40 million to fund the second drawdown. After the issuance, the market value of the assets related to the hospital transactions is $60 million. There is an economic surplus of $4 million related to the hospital transactions.

B.   **Determine** the present value of the liabilities funding the hospital loan immediately following the second drawdown.

(3 minutes)

Immediately following the second drawdown, the assets and liabilities of Corinthian related to the hospital transactions have the characteristics shown in Exhibit 1.

Exhibit 1
Characteristics at Second Drawdown

	Assets (Loans)	Liabilities (CDs)
Modified duration	0.50	4.00
Weighted average maturity (years)	4.00	4.83

C.   **Determine** whether the economic surplus would increase or decrease if interest rates increase by 50 basis points for both assets and liabilities. **Calculate** the change, in dollars, in the economic surplus. **Show** your calculations.

(5 minutes)

2006

Answer Question 9 on This Page

Template for Question 9-A

Proposed funding solutions	Determine whether you agree or disagree with *each* of the proposed funding solutions (circle one)	If you disagree, justify your answer with *one* reason related to asset-liability management Note: Justifying your answer by simply reversing an incorrect proposed funding solution will receive no credit.
1. Issue 6-year fixed rate CDs to eliminate interest rate risk	Agree Disagree	
2. Issue floating rate CDs that cannot be withdrawn prior to maturity to eliminate cap risk	Agree Disagree	

QUESTION 10 HAS TWO PARTS (A, B) FOR A TOTAL OF 17 MINUTES.

Marc Coleman, a portfolio manager, is preparing to make a presentation to the investment committee of an endowment fund about the merits of using hedge funds and commodity futures to provide diversification in its portfolio.

Coleman would like to identify an appropriate hedge fund index to use as a benchmark. Selected features of the Global Long/Short Hedge Fund Index are shown in Exhibit 1.

Exhibit 1
Global Long/Short Hedge Fund Index
Selected Features

1.	When a new manager is added to the index, the index administrator adds the manager's entire return history to the index.
2.	Managers are free to stop reporting at any time. All data associated with their funds are removed after they stop reporting.
3.	Managers who close their funds to new investment remain in the index as long as they report their return information on a timely basis.

A.   **Determine** whether *each* of the features described above is appropriate or inappropriate for an index used as a benchmark. If inappropriate, **explain**, with *one* reason, why the feature limits the usefulness of the index as a benchmark.

   Answer Question 10-A in the Template provided on page 67.

   (9 minutes)

After Coleman makes his presentation to the endowment fund investment committee, committee members ask the following questions:

- "What is an implied hedge fund hurdle rate?"

- "In your presentation you state that an appropriate implied hedge fund hurdle rate, for hedge funds as a group, is 125 basis points above cash returns. Why is the hurdle rate so low?"

- "Commodity futures have higher volatility than equities, so how can adding commodity futures to the portfolio decrease overall portfolio risk?"

- "Why may rising inflation correlate with strong performance for commodity futures?"

B.   **Prepare** an appropriate response for *each* of the four questions from the committee members.

   Answer Question 10-B in the Template provided on page 68.

   (8 minutes)

2006

Answer Question 10 on This Page

Template for Question 10-A

Global Long/Short Hedge Fund Index Selected Features	Determine whether *each* of the features is appropriate or inappropriate for an index used as a benchmark (circle one)	If inappropriate, explain, with *one* reason, why the feature limits the usefulness of the index as a benchmark
1. When a new manager is added to the index, the index administrator adds the manager's entire return history to the index.	Appropriate Inappropriate	
2. Managers are free to stop reporting at any time. All data associated with their funds are removed after they stop reporting.	Appropriate Inappropriate	
3. Managers who close their funds to new investment remain in the index as long as they report their return information on a timely basis.	Appropriate Inappropriate	

Answer Question 10 on This Page

Template for Question 10-B

Questions from committee members	Prepare an appropriate response for *each* of the four questions from the committee members
"What is an implied hedge fund hurdle rate?"	
"In your presentation you state that an appropriate implied hedge fund hurdle rate, for hedge funds as a group, is 125 basis points above cash returns. Why is the hurdle rate so low?"	
"Commodity futures have higher volatility than equities, so how can adding commodity futures to the portfolio decrease overall portfolio risk?"	
"Why may rising inflation correlate with strong performance for commodity futures?"	

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QUESTION 11 HAS TWO PARTS (A, B) FOR A TOTAL OF 15 MINUTES.

Sean Wood, a portfolio manager at Hymark Asset Management, decides to make an investment in Ontario Technical Services (Ticker Symbol: OTS).

- At 2:00 pm, the Hymark trader receives an order from Wood: Buy 100,000 shares of OTS. The current market price is $15. The trader was given discretion with regard to the timing and number of shares to be purchased.

- At 3:10 pm, the trader places a buy order with a broker. The market price is $15.50.

- At 3:30 pm, the broker executes a buy of 60,000 shares at $15.75 plus an additional $0.05 commission.

- Because of market conditions, the remaining order for 40,000 shares is canceled by the trader.

- OTS closes that day at $16.00 on volume of 120,000 shares.

- Fifteen days later, OTS closes at $18.00.

A.   **Describe** how *each* of the following four components of trading costs is measured:

i.   Commission
ii.   Price impact
iii.   Trader timing
iv.   Opportunity

Calculate *each* component cost and total trading cost for this OTS investment on a per share basis.

Answer Question 11-A in the Template provided on page 73.

(9 minutes)

When Wood receives the trading reports, he is concerned as to whether he has received best execution.

B.   **Identify** the *two* widely used methods of benchmarking best execution for trades. **Describe** *two* weaknesses common to both of these methods.

(6 minutes)

2006

Answer Question 11 on This Page

Template for Question 11-A

Trading cost component	Describe how *each* of the following four components of trading costs is measured	Calculate *each* component cost and total trading cost for this OTS investment on a per share basis
i. Commission		
ii. Price impact		
iii. Trader timing		
iv. Opportunity		
Total trading cost		

QUESTION 12 HAS ONE PART FOR A TOTAL OF 12 MINUTES.

Mill Creek Advisors is one of the large-capitalization equity managers for the Forster Companies Pension Fund. Forster requires its managers to comment on U.S. economic performance.

Mike Jernigan, the U.S. economist for Mill Creek, is writing his monthly report on the U.S. economy subsequent to the release of two critical economic indicators, the unemployment rate and retail sales. Jernigan prepares information on the unemployment rate and retail sales as shown in Exhibit 1.

Exhibit 1
U.S. Economic Indicators (% Annualized)

Economic Indicator	5-year Average	1-year Average	Previous Month	Current Month
Unemployment rate	4.6%	5.3%	5.7%	6.0%
Retail sales change	3.2%	2.5%	1.8%	1.0%

State, viewing *each* economic indicator in isolation, the *most likely* impact the release of the current month data would have on the value of *each* of the following investments:

i.   5-year U.S. Government bond
ii.   S&P 500® Equity Index fund

Justify *each* of your responses with *one* reason related to economics.

Answer Question 12, "Unemployment Rate," in the Template provided on page 77.
Answer Question 12, "Retail Sales Change," in the Template provided on page 78.

(12 minutes)

Answer Question 12 on This Page

Template for Question 12

Unemployment Rate		
Investment	**State, viewing *each* economic indicator in isolation, the *most likely* impact the release of the current month data would have on the value of *each* of the following investments (circle one)**	**Justify *each* of your responses with *one* reason related to economics**
i. 5-Year U.S. Government bond	Rise Remain unchanged Fall	
ii. S&P 500® Equity Index fund	Rise Remain unchanged Fall	

Answer Question 12 on This Page

Template for Question 12 (continued)

Retail Sales Change		
Investment	**State, viewing *each* economic indicator in isolation, the *most likely* impact the release of the current month data would have on the value of *each* of the following investments (circle one)**	**Justify *each* of your responses with *one* reason related to economics**
i. 5-Year U.S. Government bond	Rise Remain unchanged Fall	
ii. S&P 500® Equity Index fund	Rise Remain unchanged Fall	

Level III

The Morning Session of the 2007 Level III CFA Examination has 10 questions. For grading purposes, the maximum point value for each question is equal to the number of minutes allocated to that question.

Question	Topic	Minutes
1	Portfolio Management – Individual	33
2	Portfolio Management – Individual	20
3	Portfolio Management – Institutional/Behavioral	12
4	Portfolio Management – Individual	14
5	Portfolio Management – Institutional	23
6	Portfolio Management – Institutional	23
7	Portfolio Management – Institutional	13
8	Portfolio Management – Institutional/Equity	14
9	Portfolio Management – Performance Evaluation	9
10	Portfolio Management – Economic Analysis	19
	Total:	**180**

Level III

QUESTION 1 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 33 MINUTES.

Jack and Ruth Ingram, each 50 years old, live in Canada and have recently retired. Jack worked for much of his career at Pitt Manufacturing, a publicly traded, small-capitalization (small-cap) Canadian firm. Jack has agreed to join Pitt's board of directors without compensation. The Ingrams are in good health and have adequate medical insurance coverage.

Jack has accumulated Pitt common stock currently valued at C$1,000,000 through the company's employee stock ownership program. Since the Pitt stock has appreciated significantly in recent years, Jack's holdings have a low average cost basis. Pitt stock and options on the Pitt stock are traded in active and liquid markets on a national exchange.

The Ingrams have recently inherited C$2,400,000 net of taxes consisting mostly of small-cap Canadian equities. The inheritance, the Pitt stock Jack has accumulated, and C$800,000 in bonds and cash equivalents represent their total financial assets. The Ingrams live in a house with a market value of C$1,250,000. They have decided to donate the house to a provincial park upon their death.

Their only child, Paul (22 years old), has a well-paying job and is economically independent.

The Ingrams are meeting with Caleb Swann, CFA, their long-time advisor, to discuss financial planning issues. The Ingrams agree that their current annual pre-tax income need is C$200,000. The Ingrams expect that their inflation-adjusted expenses will remain constant during retirement. They plan to fund their living expenses by taking annual distributions from their portfolio with the first distribution to occur immediately. Swann believes an appropriate long-term inflation rate is 2.5 percent and an appropriate planning horizon is 35 years.

Upon their death, the Ingrams wish to leave gifts to Paul and to a local charity. They wish to maintain the purchasing power of these gifts to be equivalent to C$2,000,000 and C$1,000,000, respectively, in today's dollars.

In order to better understand his clients, Swann has found it useful to classify each of them as one of four investor personality types:

- Cautious
- Methodical
- Spontaneous
- Individualist

Swann believes he has gathered enough information about the Ingrams to determine their personality types. A summary of this information is presented in Exhibit 1.

Exhibit 1
Personality Information Gathered on Jack and Ruth Ingram

- Jack often reads about investing and realizes that achieving higher returns is accompanied by taking higher risk.
- Jack and Ruth both agree they will accept a lower return if it means they can take less risk.
- Jack likes to be presented with facts rather than generalities, and he is always interested in discussing articles about investing.
- When Ruth was a child, her parents experienced significant financial difficulty as a result of poor performance of their equity investments.
- Ruth is concerned whenever the Ingrams' portfolio experiences moderate fluctuations in value.

In assessing the Ingrams' willingness to take risk, Swann concludes that a shortfall risk (defined as the expected return minus two standard deviations) of –12 percent in any one year would be the most the Ingrams could tolerate.

A. **Prepare** the nominal pre-tax return objectives of an investment policy statement (IPS) for the Ingrams. **Show** your calculations.

(12 minutes)

B. **Characterize** the Ingrams as below-average, average, or above-average in their ability to take risk. **Justify** your response with *three* reasons based on the Ingrams' specific circumstances.

Answer Question 1-B in the Template provided on page 7.

(7 minutes)

C. **Select** the investor personality type for:

i.   Jack
ii. Ruth

Justify *each* selection with *one* fact from the information about the Ingrams presented in Exhibit 1.

Answer Question 1-C in the Template provided on page 8.

(4 minutes)

D. **Prepare** the constraints section of an IPS for the Ingrams.

Answer Question 1-D in the Template provided on page 9.

(10 minutes)

Answer Question $\boxed{1}$ on This Page

Template for Question 1-B

Characterize the Ingrams as below-average, average, or above-average in their ability to take risk. (circle one)	Justify your response with *three* reasons based on the Ingrams' specific circumstances.
Below-average	1.
Average	2.
Above-average	3.

Answer Question $\boxed{1}$ on This Page

Template for Question 1-C

Select the investor personality type for i. Jack and ii. Ruth. (circle one for each)		Justify *each* selection with *one* fact from the information about the Ingrams presented in Exhibit 1.
i. Jack	Cautious Methodical Spontaneous Individualist	
ii. Ruth	Cautious Methodical Spontaneous Individualist	

Answer Question 1 on This Page

Template for Question 1-D

Prepare the constraints section of an IPS for the Ingrams.

Level III

QUESTION 2 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 20 MINUTES.

After developing the investment policy statement (IPS) for Jack and Ruth Ingram, Caleb Swann, CFA, reviews their current portfolio, shown in Exhibit 1.

Exhibit 1
Ingrams' Current Portfolio (%)

Asset Class	Current Allocation	Expected Annual Total Return	Expected Annual Standard Deviation
Cash equivalents	13.0	3.1	3.2
Canadian bonds:			
Corporate	4.0	4.5	6.0
Government	9.0	4.0	4.5
Canadian equities:			
Large-capitalization	8.0	8.0	12.5
Small-capitalization	41.0	9.5	17.2
Pitt Manufacturing stock	25.0	6.5	34.1
Total portfolio	100.0	7.1	12.1

Swann recognizes that the concentration in the small-capitalization Pitt Manufacturing stock is too high. The Ingrams have given Swann three specific instructions related to their holding of Pitt stock:

- Defer the realization of capital gains and the associated capital gains taxes.
- Significantly reduce the downside risk associated with their holding of Pitt stock, but preserve some upside potential.
- Do not use leverage in the portfolio.

Swann notes that Pitt stock, exchange funds, and put and call options on Pitt stock all have liquid markets. Swann reviews the following four strategies for achieving the goals of the Ingrams:

- Outright sale
- Equity collar
- Exchange fund
- Completion portfolio

A.   **Determine** which of the four strategies is the *most* appropriate given the Ingrams' instructions. **Justify** your response with *two* reasons.

Answer Question 2-A in the Template provided on page 15.

(5 minutes)

B.   **State**, for *each* of the strategies not selected in Part A, *one* reason why it is *not* the most appropriate for the Ingrams.

Note: Justifying your answer by simply reversing your response to Part A will receive no credit.

Answer Question 2-B in the Template provided on page 16.

(6 minutes)

In addition to the high concentration in Pitt, Swann recognizes several other problems in the Ingrams' current asset allocation.

C.   **Identify**, based on the Ingrams' IPS, *three* other problems in the current asset allocation. **Support** *each* of your responses with *one* reason.

Answer Question 2-C in the Template provided on page 17.

(9 minutes)

Answer Question 2 on This Page

Template for Question 2-A

Determine which of the four strategies is the *most* appropriate given the Ingrams' instructions. (circle one)	Justify your response with *two* reasons.
Outright sale Equity collar	1.
Exchange fund Completion portfolio	2.

Answer Question 2 on This Page

Template for Question 2-B

Strategies not selected in Part A	State, for *each* of the strategies not selected in Part A, *one* reason why it is *not* the most appropriate for the Ingrams. Note: Justifying your answer by simply reversing your response to Part A will receive no credit.
1.	
2.	
3.	

Answer Question 2 on This Page

Template for Question 2-C

Identify, based on the Ingrams' IPS, *three* other problems in the current asset allocation.	Support *each* of your responses with *one* reason.
1.	
2.	
3.	

QUESTION 3 HAS ONE PART FOR A TOTAL OF 12 MINUTES.

John Nultione was recently hired as a portfolio manager with Equity Advisors (EA). As part of his responsibilities, Nultione prepares market forecasts for the firm's chief investment officer, Walt Hyatt. The U.S. equity market declined by 20 percent last year. After constructing a model of factors affecting the market, Nultione becomes convinced that U.S. market returns will be 13.47 percent for the first half of this year followed by an 11.21 percent return for the second half of this year.

Nultione remembers similar conditions several years ago when his forecast was too pessimistic and he missed a significant buying opportunity. He does not want to miss another market low. Nultione proposes a large increase in EA's portfolio allocation to U.S. equities, which will move his position from underweight to overweight. By contrast, Hyatt believes the recent downward trend in the market will continue, and any gains from restructuring EA's portfolio allocation would not be worth the risk of relative underperformance.

After preparing his forecast, Nultione reads reports by several respected analysts, including Harinder Singh. Nultione disagrees with Singh's forecast of a continued decline in the market. Hyatt, however, attended a conference where Singh presented his market forecast. Hyatt found Singh's analysis convincing and agreed with his forecast. Nultione points out that since the conference, several key variables in Singh's analysis have changed. Despite this evidence, Hyatt remains convinced that Singh's forecast is correct.

Hyatt believes that Nultione's proposed portfolio allocation could result in a significant underperformance of EA's portfolio compared to its peers. Hyatt believes such underperformance could harm his own position at the firm. As a result, Hyatt asks Nultione to review the work of the top 20 equity analysts and reassess his forecast. Nultione presents his review of the 20 analysts to Hyatt, focusing on the views of three analysts who agree with Nultione's optimistic market view.

For *each* Nultione and Hyatt:

i.   **Identify** *two* psychological traps they have fallen into.
ii.   **Justify** your position by stating evidence from the information provided.

Note: Four different psychological traps must be identified.

Answer Question 3 in the Template provided on page 23.

(12 minutes)

Answer Question 3 on This Page

Template for Question 3

For *each* Nultione and Hyatt:		
i. Identify *two* psychological traps they have fallen into. **Note: Four different psychological traps must be identified.**		**ii. Justify your position by stating evidence from the information provided.**
Nultione	1.	
	2.	
Hyatt	1.	
	2.	

Level III

QUESTION 4 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 14 MINUTES.

Stephen Maddrey, CFA, has been hired to develop an investment policy statement and strategic asset allocation for the $3.25 million portfolio of Alan Thornhill. Prior to their first meeting, Thornhill sends Maddrey the e-mail shown in Exhibit 1.

Exhibit 1
Thornhill's E-mail

To: Stephen Maddrey, CFA From: Alan Thornhill I am excited to be working with you. I would like you to invest my funds in asset classes chosen from the following comprehensive list of permissible asset classes: • Money market instruments • U.S. balanced fund • Nominal U.S. corporate bonds • Nominal U.S. government bonds • S&P 500 Index fund I do not want to use short-selling in my portfolio. Thank you.

Maddrey believes Thornhill has made several fundamental errors in specifying the asset classes for his portfolio. In addition, Maddrey recommends inflation-protected bonds be considered because they constitute a separate asset class distinct from nominal bonds. In support of his statement, Maddrey prepares Exhibit 2.

Exhibit 2
Expected Correlation of Returns for Selected Asset Classes

Asset Class	Nominal U.S. Corporate Bonds	Nominal U.S. Government Bonds	Inflation-protected Bonds
Nominal U.S. corporate bonds	1.00	---	---
Nominal U.S. government bonds	0.85	1.00	---
Inflation-protected bonds	0.71	0.80	1.00

A. **Support** Maddrey's recommendation with *two* reasons.

(4 minutes)

B. **Describe** *two* fundamental errors in Thornhill's specification of asset classes for his portfolio.

(4 minutes)

Maddrey is developing a strategic asset allocation for Thornhill. Maddrey has experience conducting mean-variance optimization using unadjusted historical mean returns, variances, and covariances. He is considering integrating the Black-Litterman approach into the asset allocation process.

C. **Describe** how integrating the Black-Litterman approach into the asset allocation process would affect the:

   i. specification of expected return inputs.
   ii. level of market diversification of the resulting portfolio.

(6 minutes)

QUESTION 5 HAS FIVE PARTS (A, B, C, D, E) FOR A TOTAL OF 23 MINUTES.

Covell University (CU) is a private, tax-exempt, educational institution in the U.S. CU has an endowment with the purpose of providing financial support to the university budget. Currently, the spending rule for the endowment is 4 percent of the market value of its investment portfolio as of the previous year-end. Based on the endowment's 2006 year-end market value of $500 million, the annual distribution represents 5 percent of the operating budget for CU, just meeting CU's desired level of endowment support. CU expects a similar dollar level of endowment support, indexed to inflation in its costs, in future years.

The university's operating expenses are expected to grow at a nominal rate of 3.25 percent per year for the foreseeable future. The inflation rate in the U.S., as measured by the Consumer Price Index (CPI), is expected to be 2.5 percent per year for the foreseeable future.

The endowment investment committee is concerned because the endowment has not met its stated return requirement over the last four years. The investment committee has hired Jerome Palmer, CFA, as an investment consultant. Palmer prepares Exhibits 1 and 2 in his review of the endowment and suggests the committee formulate an investment policy statement (IPS).

Exhibit 1
Spending History of CU Endowment

Year Ending 31 December	Market Value of Endowment	4% Spending Allowance for the Following Year
2002	$490,000,000	$19,600,000
2003	$530,000,000	$21,200,000
2004	$495,000,000	$19,800,000
2005	$550,000,000	$22,000,000
2006	$500,000,000	$20,000,000

Exhibit 2
Comparison of CU Endowment and the Average University Endowment

Portfolio Characteristics as of 31 December 2006	CU Endowment	Average University Endowment
Market value of endowment	$500,000,000	$425,000,000
5-year annualized rate of return	7.08%	8.75%
Investment management expense	0.65%	0.68%

A.   **Formulate** the return requirement for CU endowment's IPS. **Show** your calculations.

(4 minutes)

Level III

B.   **Indicate** if *each* factor below increases or decreases the endowment's ability to take risk:

      i.   CU endowment's role in the university's operating budget
      ii.   The CU endowment's past performance as reflected in the year-end market values of the endowment

      Justify *each* of your responses with *one* reason.

(6 minutes)

C.   **Prepare** the liquidity and time horizon constraints of CU endowment's IPS.

(4 minutes)

Two years have passed since Palmer was hired, and the endowment's investment portfolio now has an asset allocation of 55 percent global equities, 40 percent global fixed income, and 5 percent cash. A newly established goal of CU is to enhance its scholarship program in order to attract a larger number of top-rated students. The endowment investment committee asks Palmer to develop a funding strategy for the additional scholarships. Palmer suggests the CU endowment adopt a rolling three-year average spending rule, in which the 4 percent spending calculation is based on the average ending market value over the previous three years.

D.   **Justify** the adoption of a rolling three-year average spending rule by the CU endowment.

(3 minutes)

Palmer suggests the endowment investment committee consider adding alternative investments to improve the portfolio's returns and to offer greater diversification benefits. The endowment investment committee is willing to assume additional risk, but is opposed to investing in asset classes that significantly reduce the liquidity of the overall portfolio. Palmer suggests reducing global equities to 45 percent of the portfolio and global fixed income to 35 percent of the portfolio, and investing the proceeds equally in indirect real estate, commodity futures, and hedge funds. He compiles the data on the historical performance of the asset classes shown in Exhibit 3 and adjusts the data to approximate "net-of-fees" returns for a client of CU's size. Palmer expects these data will be representative of future investment performance.

Exhibit 3
Historical Data for the Period 1990 – 2006

Measure	MSCI World Equity	Lehman Global Aggregate Bond	NAREIT Indirect Real Estate	GSCI Commodity	HFCI Hedge Funds
Annualized return (adjusted)*	10.94%	7.70%	12.71%	7.08%	13.46%
Standard deviation	14.65%	3.91%	12.74%	19.26%	5.71%
Sharpe ratio	0.45	0.87	0.66	0.15	1.61
Correlation with MSCI World Equity	1.00	0.13	0.35	–0.08	0.59
Correlation with Lehman Global Aggregate Bond	0.13	1.00	0.18	0.05	0.19

* Returns are on a "net-of-fees" basis.

E.   **Evaluate** the impact of Palmer's proposed asset allocation with reference to the portfolio's:

    i.   return
    ii.   risk
    iii.   liquidity

    Note: No calculations are required.

(6 minutes)

Level III

QUESTION 6 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 23 MINUTES.

Pawtucket Mutual Life Insurance Co., a U.S.-based mutual insurance company, primarily underwrites term and whole life insurance. In 2005, the company sold a portion of its whole life business line and acquired a fixed-rate annuity business. These actions did not result in any changes in the company's regulatory status. Exhibit 1 reflects the business mix of Pawtucket Mutual for the last three years.

Exhibit 1
Pawtucket Mutual Life Insurance Co.
Revenue by Business Line and Duration
Years Ending 31 December

Business Line	Revenue ($ millions)			Duration of Liabilities
	2004	**2005**	**2006**	**2006**
Whole life	$2,000	$1,000	$1,100	14.2
Term life	$2,500	$2,750	$2,500	12.7
Fixed-rate annuities	$500	$1,300	$1,400	5.7

As a result of the change in business mix, the company's surplus has fallen from $500 million to $475 million and the duration of its liabilities has dropped from 12.6 to 11.1.

The board of directors has hired Samantha Leander, CFA, to analyze the impact of Pawtucket Mutual's changing business mix on the firm's operating and financial condition.

A.   **Identify** *two* constraints in the investment policy statement that are affected *solely* by the change in business mix using the information given in Exhibit 1. **Justify** your response with *one* reason for *each* constraint.

   Answer Question 6-A in the Template provided on page 45.

   (6 minutes)

B.   **Determine** whether Pawtucket Mutual's ability to take risk has increased or decreased based *solely* on the change in business mix. **Justify** your response with *two* reasons.

   Answer Question 6-B in the Template provided on page 46.

   (5 minutes)

The board asks Leander to assess the investment portfolio's asset allocation. The board provides Leander with a summary of Pawtucket Mutual's asset-liability statistics along with the investment portfolio's asset allocation, as shown in Exhibits 2 and 3. Pawtucket Mutual marks to market its portfolio.

Exhibit 2
Pawtucket Mutual Life Insurance Co.
Asset-Liability Statistics
Years Ending 31 December

Statistic	2004	2006
Duration of liabilities	12.6	11.1
Duration of assets	12.7	12.1
Portfolio return	5.7%	5.4%

Exhibit 3
Pawtucket Mutual Life Insurance Co.
Investment Portfolio Asset Allocation

Sector	Current Allocation
Cash	2%
Fixed income – investment grade	31%
Fixed income – high yield	11%
Mortgage-backed securities	31%
Equities	14%
Real estate	11%

Leander forecasts a rising interest rate environment along with widening credit spreads. She wishes to assess the effect of her forecasts on each of the following risks contained in Pawtucket Mutual's investment portfolio:

1. Valuation risk
2. Cash flow volatility risk
3. Credit risk
4. Reinvestment risk

C. **Discuss** the source of *each* risk contained in Pawtucket Mutual's investment portfolio based on Exhibits 2 and 3. **Indicate** the likely effect (positive, negative, or no effect) of *each* risk on Pawtucket Mutual's surplus if Leander's forecast is correct.

Answer Question 6-C in the Template provided on page 47.

(12 minutes)

Answer Question 6 on This Page

Template for Question 6-A

Identify *two* constraints in the investment policy statement that are affected *solely* by the change in business mix using the information given in Exhibit 1.	Justify your response with *one* reason for *each* constraint.
1.	
2.	

Answer Question 6 on This Page

Template for Question 6-B

Determine whether Pawtucket Mutual's ability to take risk has increased or decreased based *solely* on the change in business mix. (circle one)	Justify your response with *two* reasons.
Increased	1.
Decreased	2.

Answer Question 6 on This Page

Template for Question 6-C

Risk	Discuss the source of *each* risk contained in Pawtucket Mutual's investment portfolio based on Exhibits 2 and 3.	Indicate the likely effect (positive, negative, or no effect) of *each* risk on Pawtucket Mutual's surplus if Leander's forecast is correct. (circle one)
1. Valuation risk		Positive Negative No effect
2. Cash flow volatility risk		Positive Negative No effect
3. Credit risk		Positive Negative No effect
4. Reinvestment risk		Positive Negative No effect

Level III

QUESTION 7 HAS TWO PARTS (A, B) FOR A TOTAL OF 13 MINUTES.

The investment committee of China Pingshi Life Insurance Company (Pingshi) is considering including international fixed income and domestic real estate in its investment portfolio.

Sarah Yap, investment consultant to Pingshi, recommends a strategic asset allocation and a percentage-of-portfolio rebalancing strategy, as shown in Exhibit 1. Corridor widths are based on a fixed range of ±10 percent of the target weight of each asset class.

Exhibit 1
China Pingshi Life Insurance Company
Recommended Strategic Asset Allocation

Asset Class	Target Asset Class Weight	Corridor Width
Domestic equities	15%	± 1.5%
Domestic fixed income	50%	± 5.0%
International fixed income	20%	± 2.0%
Domestic real estate	15%	± 1.5%
	100%	

Several months later, a member of the investment committee asks Yap to consider the effects on optimal corridor widths resulting from the following revised market expectations:

- Long-term positive correlations of domestic fixed income with the other asset classes are expected to fall.

- International fixed income volatility is already relatively high and is expected to rise further due to increased foreign currency fluctuation. Pingshi's policy is not to hedge foreign currency risk.

- Liquidity in the domestic real estate market is expected to decline, and transaction costs are expected to rise.

A. **Determine**, for *each* revised market expectation, whether the stated asset class corridor widths in Exhibit 1 should be wider, unchanged, or narrower. **Justify** *each* of your responses with *one* reason.

   Note: No calculations are required.

   Answer Question 7-A in the Template provided on page 55.

   (9 minutes)

Liang Xi, portfolio manager for Pingshi's domestic equity portfolio, has asked that he be permitted to invest a portion of the domestic equity allocation in risk-free securities. He indicates that the strategy for the domestic equities/risk-free securities mix would be based on Pingshi's forecast for the performance of the domestic equity market. Xi states that the strategy selected would be one of three types: a constant-mix strategy, a buy-and-hold strategy, or a constant-proportion portfolio insurance (CPPI) strategy.

Yap asks Xi to investigate the implications of his suggestion for the overall portfolio's risk and return, ignoring transaction costs. Xi decides to compare the return performance of:

- a constant-mix strategy allocated 90% to domestic equities and 10% to risk-free securities, and
- a CPPI strategy with a floor value of 10% of the current market value of the domestic equity portfolio.

Pingshi's forecast for the domestic equity market is for flat returns in the long term with periods of significant market volatility.

B.   **Compare** the expected performance of the constant-mix and CPPI strategies assuming Pingshi's forecast proves correct.

Note: No calculations are required.

(4 minutes)

Answer Question 7 on This Page

Template for Question 7-A
Note: No calculations are required.

Asset class and revised market expectation	Determine, for *each* revised market expectation, whether the stated asset class corridor widths in Exhibit 1 should be wider, unchanged, or narrower. (circle one)	Justify *each* of your responses with *one* reason.
Domestic fixed income: Long-term positive correlations of domestic fixed income with the other asset classes are expected to fall.	Wider Unchanged Narrower	
International fixed income: International fixed income volatility is already relatively high and is expected to rise further due to increased foreign currency fluctuation. Pingshi's policy is not to hedge foreign currency risk.	Wider Unchanged Narrower	
Domestic real estate: Liquidity in the domestic real estate market is expected to decline, and transaction costs are expected to rise.	Wider Unchanged Narrower	

Level III

QUESTION 8 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 14 MINUTES.

John Taylor is evaluating equity portfolio managers for the Xenius Corporation retirement plan. Asset Value Advisors (AVA) is a top quartile manager in the U.S. equity large-capitalization value category. AVA states that it uses the Russell 1000 Value Index as its benchmark.

Taylor uses returns-based style analysis to evaluate AVA's investment style and selects the following style benchmarks for the study:

1. Russell 1000 Value Index (large-capitalization)
2. Russell 1000 Growth Index (large-capitalization)
3. Russell 2000 Value Index (small-capitalization)
4. Russell 2000 Growth Index (small-capitalization)

Taylor analyzes data on AVA's rolling three-year monthly Sharpe style weights from 2002 to 2006. The results are provided in Exhibit 1. Taylor also calculates that between 2002 and 2006, AVA's style fit is 88 percent.

Exhibit 1
Asset Value Advisors
Returns-based Style Analysis: 2002 – 2006

Style Index	Rolling Three-year Monthly Sharpe Style Weight				
	2002	**2003**	**2004**	**2005**	**2006**
Russell 1000 Value Index	98%	96%	96%	97%	96%
Russell 1000 Growth Index	0%	1%	3%	2%	3%
Russell 2000 Value Index	2%	2%	1%	0%	0%
Russell 2000 Growth Index	0%	1%	0%	1%	1%
	100%	100%	100%	100%	100%

A.   **Determine** whether AVA's equity portfolios were actively managed between 2002 and 2006. **Support** your answer with *one* reason.

 Note: No calculations are required.

(3 minutes)

B.   **Determine** whether AVA experienced significant style drift between 2002 and 2006. **Support** your answer with *one* reason.

(3 minutes)

Xenius recently revised the investment policy statement (IPS) for its retirement plan portfolio. The return objective for equities is to earn 1 percent above the return on a broad market index,

after portfolio management and trading expenses, with no more than 2 percent tracking error relative to the benchmark.

Taylor identifies an enhanced index manager that he expects would satisfy the IPS objectives for both return and risk. Taylor believes it is possible to improve the portfolio's risk-adjusted return by also adding active equity managers. He recommends a core-satellite portfolio strategy for the equity portion of the plan's portfolio as shown in Exhibit 2. Taylor determines that the active returns of the selected managers are not correlated.

Exhibit 2
Recommended Core-satellite Portfolio

Equity Managers	Allocation	Expected Active Return*	Expected Active Risk	Fees
Enhanced index	70.0%	1.2%	1.3%	0.2%
Active A	20.0%	2.0%	4.0%	0.4%
Active B	10.0%	3.6%	10.5%	0.8%
Core-satellite portfolio	100.0%	1.6%	1.6%	0.3%

*Returns are net of trading expenses and gross of fees.

C.   **Calculate** the information ratio of the core-satellite portfolio. **Show** your calculations.

(3 minutes)

D.   **Determine** whether Taylor's recommended core-satellite portfolio is appropriate for Xenius. **Justify** your response with *two* reasons specific to Xenius.

(5 minutes)

QUESTION 9 HAS ONE PART FOR A TOTAL OF 9 MINUTES.

Australia Invest magazine recently published a review of the one-year performance for Worldwide Metals Fund (WMF), an active fund of funds specializing in global mining sector funds. WMF is available only to Australian investors.

Exhibit 1 contains a summary of the WMF portfolio and one-year return decomposition in local and base currencies. Local index returns are presented in local currency.

Exhibit 1
Worldwide Metals Fund
Portfolio and One-year Return Decomposition

Fund	Local Currency	Portfolio Weights	Local Currency			Base Currency (AUD)	
			Security Total Return	Weighted Return	Local Index Return	Security Total Return	Weighted Return
Proxidio Partners Metals Fund (PPM)	U.S. Dollar (USD)	30%	8.5%	2.6%	1.0%	6.2%	1.9%
South Capital Minerals Fund (SCM)	South African Rand (ZAR)	45%	15.4%	6.9%	10.7%	3.4%	1.5%
Collings Trust Mining Fund (CTM)	Australian Dollar (AUD)	25%	13.5%	3.4%	3.4%	13.5%	3.4%
Total	---	100%	---	12.9%	---	---	6.8%

All return figures are net of costs. There were no cash flows into or out of the portfolio during the one-year period.

Calculate *each* of the following components of return for the WMF portfolio:

i.   Market return
ii.   Currency
iii.   Security selection

Show your calculations.

(9 minutes)

Level III

QUESTION 10 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 19 MINUTES.

Greta Steiner, an analyst at Shopond Research, has been asked to develop an estimate of the aggregate operating profit margin for the companies in the S&P 500 Index. She is using the S&P 500 as a representation of the overall U.S. economy. Steiner first reviews the U.S. economic data presented in Exhibit 1. She notes that U.S. firms cannot raise prices to fully compensate for inflation because of the current elasticity of demand.

Exhibit 1
U.S. Economic Data

Variables	Year			
	2004	2005	2006	2007 Forecast
Capital expenditures growth rate (%)	6.9	6.4	7.0	7.4
Inflation rate (%)	3.3	3.4	3.7	4.0
Corporate tax rate (%)	32.0	32.0	33.0	33.5
Capacity utilization rate (%)	76.1	76.5	76.9	77.3
Three-month Treasury bill rate (%)	2.2	3.9	4.8	5.0
Depreciation expense (% of fixed assets)	14.0	14.2	15.1	16.0
Unit labor costs (% change)	1.0	–0.1	–0.3	–0.5

A.   i.   **Identify** *three* variables from Exhibit 1 that are used to estimate the S&P 500 aggregate operating profit margin.

ii.   **Determine**, for *each* identified variable, the expected effect of the 2007 forecast on the S&P 500 aggregate operating profit margin.

Note: Consider each variable independently and assume all other variables remain constant.

iii.   **Justify** your answer to Part ii with *one* reason for *each* identified variable.

Answer Question 10-A in the Template provided on page 73.

(12 minutes)

A client of Shopond is considering adjusting her allocation to the U.S. equities market and has asked Steiner to estimate the nominal expected return for that market. Steiner decides to use the Grinold-Kroner model instead of the Gordon Growth model to forecast the expected return on U.S. equities. To implement the Grinold-Kroner model, Steiner gathers the data shown in Exhibit 2.

Exhibit 2
2007 Economic Expectations

U.S. Data	
Standard deviation of equities	18%
U.S. equities integration factor	0.8
Dividend yield	2%
Real long-term growth rate	4%
Share repurchase yield	1%
Per period % change in P/E ratio	0.25%
Illiquidity premium	0.1%
Global Data	
Sharpe ratio for global investment market (GIM)	0.28
Correlation coefficient GIM, U.S. equities	0.8

B. **Support** Steiner's decision to use the Grinold-Kroner model with *two* reasons, based on the information provided.

(4 minutes)

C. **Calculate** the expected return on U.S. equities, using the Grinold-Kroner model, based on the data in Exhibit 1 and Exhibit 2. **Show** your calculations.

(3 minutes)

Answer Question 10 on This Page

Template for Question 10-A

i. Identify *three* variables from Exhibit 1 that are used to estimate the S&P 500 aggregate operating profit margin.	ii. Determine, for *each* identified variable, the expected effect of the 2007 forecast on the S&P 500 aggregate operating profit margin. Note: Consider each variable independently and assume all other variables remain constant. (circle one)	iii. Justify your answer to Part ii with *one* reason for *each* identified variable.
1.	Increase Decrease No Change	
2.	Increase Decrease No Change	
3.	Increase Decrease No Change	

The following are representative of questions on the 2008 Level III exam, Morning Session. These questions and guideline answers illustrate how each topic area was tested on the 2008 Level III exam. For grading purposes, the maximum point value for each question is equal to the number of minutes allocated to that question.

Question	Topic	Minutes
1	Portfolio Management – Individual	36
2	Portfolio Management – Individual/Behavioral	9
3	Portfolio Management – Institutional	36
4	Portfolio Management – Asset Allocation	17
5	Portfolio Management – Fixed Income Investments	13
6	Portfolio Management – Alternative Investments	11
7	Portfolio Management – Risk Management	17
8	Portfolio Management – Execution of Portfolio Decisions	14
9	Portfolio Management – Monitoring and Rebalancing	9
10	Portfolio Management – Performance Evaluation	9
11	Portfolio Management – Global Context	9

Total: 180

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NOT BE GRADED**

QUESTION 1 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 36 MINUTES.

Roberto and Mariana Carvalho live in a large city in Brazil with their two children, ages four and two. Roberto is 30 years old and Mariana will be 30 years old later this month. Roberto is a manager in a manufacturing facility and Mariana is a musician in the local symphony orchestra.

Roberto and Mariana's annual salaries total 120,000 Brazilian reais (BRL) after tax. Their salaries just cover their living expenses. The average annual inflation rate is four percent and their salaries and expenses are expected to increase at this rate. They are healthy and believe their jobs and earning potential are secure. The Carvalhos' salaries, dividends, and interest are taxed at 20 percent, and capital gains at 15 percent.

Mariana's parents have significant wealth and funded an irrevocable personal trust for her. Brazil has a wealth transfer tax that applies to transfers into trusts and to inheritances. Brazil has adopted the Prudent Investor Rule for the administration of trusts. The current value of the trust is BRL 1,500,000. The terms of the trust state that when Mariana reaches the age of 30, she will receive a tax-free distribution of half the value of the trust. The balance of the trust will remain invested and will distribute in total to her when she reaches age 40. Since she does not have access to the remaining balance for ten years, this balance is not considered a part of the Carvalhos' investable assets, but is part of their total net worth. In addition, Mariana expects to inherit a substantial sum of money upon the death of both parents.

The Carvalhos have BRL 500,000 in investable assets, currently all in short-term bank deposits. It is their intention to maintain at least this amount in investable assets, on an inflation-adjusted basis, in the future.

The Carvalhos currently live with Mariana's parents, but are now purchasing a home. The purchase price of the home is BRL 850,000. The down payment is 30 percent of the cost of the home and will be funded from the trust distribution. The Carvalhos will take out a fixed rate mortgage for the balance of the purchase price. The after-tax mortgage cost will be fixed at BRL 55,000 (principal and interest) annually for 30 years, with the first annual payment due one year from now.

The Carvalhos' immediate investment goal is to have their investment portfolio cover the cost of the mortgage, while maintaining the portfolio's inflation-adjusted value. They plan to retire at the age of 60 and their long-term goal is to have an investment portfolio that will provide an annual income comparable to their current salaries adjusted by inflation. Their family health insurance is provided by Roberto's employer, both now and in retirement. They are hopeful their two children will attend the local university at no cost. The university does not charge tuition fees for qualified students who pass its entrance exam. Those who do not pass the exam are required to pay full tuition, which is high relative to the Carvalhos' living expenses.

In order to meet their investment goals, the Carvalhos realize they need to consider investments other than short-term bank deposits. The Carvalhos hire Luiz Oliveira, CFA, to manage an investment portfolio that they will fund with their BRL 500,000 in bank deposits and the net proceeds of Mariana's trust distribution at age 30.

A.   i.   **Prepare** the return objectives portion of the Carvalhos' investment policy statement (IPS).

        ii.   **Calculate** the after-tax nominal rate of return that is required for the next year. **Show** your calculations.

<div align="center">

(12 minutes)

</div>

B.   i.   **Identify** *two* factors in the Carvalhos' situation that increase their ability to take risk.

        ii.   **Identify** *two* factors in the Carvalhos' situation that decrease their ability to take risk.

        iii.   **Determine** whether the Carvalhos have below-average, average, or above-average ability to take risk.

     Answer Question 1-B in the Template provided on page 7.

<div align="center">

(10 minutes)

</div>

C.   **Prepare** the following constraints of the Carvalhos' IPS:

        i.   Liquidity
        ii.   Time horizon

     Answer Question 1-C in the Template provided on page 8.

<div align="center">

(6 minutes)

</div>

Twenty-five years have passed. The Carvalhos are now 55 years old and their two children are grown and financially independent. Mariana's parents passed away earlier this year and left her an inheritance of BRL 8,000,000 after-tax. The Carvalhos have five years remaining on their mortgage and the BRL 55,000 annual mortgage payment will continue to be funded from their investment portfolio. They intend to work another five years and then retire at age 60. Their salaries are expected to continue to cover their living expenses until retirement. Their investment portfolio, including the inheritance, now totals BRL 10,200,000.

The Carvalhos explain to Oliveira that in retirement, they would like to maintain their current standard of living and start a regular program of donating money to their favorite charities. They also hope to leave an inheritance of BRL 5,000,000 to each of their two children at their death. Oliveira calculates they will need a portfolio value of BRL 15,000,000 when they retire in order to support these goals.

D.   i.   **Prepare** the current return objectives portion of the Carvalhos' IPS.

        ii.   **Calculate** the after-tax nominal rate of return that is required for the portfolio. **Show** your calculations.

<div align="center">

(8 minutes)

</div>

Answer Question $\boxed{1}$ on This Page

Template for Question 1-B

i. Identify *two* factors in the Carvalhos' situation that increase their ability to take risk.
1.
2.
ii. Identify *two* factors in the Carvalhos' situation that decrease their ability to take risk.
1.
2.
iii. Determine whether the Carvalhos have below-average, average, or above-average ability to take risk. (circle one)
Below-average   Average   Above-average

Answer Question $\boxed{1}$ on This Page

Template for Question 1-C

Constraint	Prepare the following constraints of the Carvalhos' IPS.
i. Liquidity	
ii. Time horizon	

QUESTION 2 HAS ONE PART FOR A TOTAL OF 9 MINUTES.

Lou Donaldson and his neighbor, both U.S. residents, are meeting at a local restaurant. During lunch, they discuss investing and Donaldson, age 45, makes the following statements:

1.   "My father was a buy-and-hold investor but I am an active trader. To keep trading costs low, I use an online brokerage firm. I have done well investing in technology companies because I know the industry."

2.   "I am holding a large position in Omega Corporation with a large unrealized loss. Omega's stock price declined last year when reported sales and earnings failed to meet analyst expectations. I took advantage of the decline to increase my position. Omega sales growth has continued to slow over the last year, but I believe the stock is still a good investment."

3.   "I read a newspaper article reporting that commercial property values in the city have increased 14 percent annually since 2000. According to the article, the average commercial property in the city sold for $1.5 million last year. This makes me very happy because I just purchased a piece of commercial property last month. There is no doubt that it will be a good investment."

Select the behavioral finance concept (naïve diversification, overconfidence, representativeness, regret avoidance, or self-control) *best* exhibited in *each* of Donaldson's three statements. **Explain** how the behavioral finance concept you selected affects Donaldson's investment decision making.

Note: No behavioral finance concept can be used more than once.

Answer Question 2 in the Template provided on pages 13 and 14.

(9 minutes)

Answer Question 2 on This Page

Template for Question 2

Donaldson's statement	Select the behavioral finance concept *best* exhibited in *each* of Donaldson's three statements. Note: No behavioral finance concept can be used more than once. (circle one)	Explain how the behavioral finance concept you selected affects Donaldson's investment decision making.
"My father was a buy-and-hold investor but I am an active trader. To keep trading costs low, I use an online brokerage firm. I have done well investing in technology companies because I know the industry."	Naïve diversification Overconfidence Representativeness Regret avoidance Self-control	
"I am holding a large position in Omega Corporation with a large unrealized loss. Omega's stock price declined last year when reported sales and earnings failed to meet analyst expectations. I took advantage of the decline to increase my position. Omega sales growth has continued to slow over the last year, but I believe the stock is still a good investment."	Naïve diversification Overconfidence Representativeness Regret avoidance Self-control	

Template for Question 2 continued on page 14

Answer Question 2 on This Page

Template for Question 2 (continued)

Donaldson's statement	Select the behavioral finance concept *best* exhibited in *each* of Donaldson's three statements. Note: No behavioral finance concept can be used more than once. (circle one)	Explain how the behavioral finance concept you selected affects Donaldson's investment decision making.
"I read a newspaper article reporting that commercial property values in the city have increased 14 percent annually since 2000. According to the article, the average commercial property in the city sold for $1.5 million last year. This makes me very happy because I just purchased a piece of commercial property last month. There is no doubt that it will be a good investment."	Naïve diversification Overconfidence Representativeness Regret avoidance Self-control	

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NOT BE GRADED**

QUESTION 3 HAS SEVEN PARTS (A, B, C, D, E, F, G) FOR A TOTAL OF 36 MINUTES.

Titan Airlines is a U.S.-based firm with a global route structure. The firm sponsors the Titan Employees Defined Benefit Pension Plan (TEPP) covering all of its employees. Active employees accrue benefits based on years of service and compensation. TEPP's investments are held in a trust directed and managed by a board of independent trustees. As a U.S.-based pension trust, TEPP's investment income and capital gains are exempt from tax.

Pamela Rich is a pension consultant with Cedar Counselors, an investment policy advisory firm. The TEPP trustees hired Cedar Counselors early in 2008. During the due diligence process, Rich gathers data about TEPP, Titan, and the airline industry as shown in Exhibits 1 and 2.

Exhibit 1
TEPP - Selected Financial Data
2007 Year End
(dollar amounts in millions)

Projected benefit obligation (PBO)	$12,477
Pension assets	$8,734
Funding shortfall (PBO minus pension assets)	$3,743
Payments to beneficiaries, including lump-sum distributions*	$1,092
Average duration of pension liabilities	14 years
Nominal discount rate for calculating PBO	7.00%
Excess return target	2.50%
Asset allocation policy:	
U.S. equities	45%
Non-U.S. equities	15%
U.S. government bonds	40%

  * Calendar year 2007

Exhibit 2
Calendar Year 2007 Selected Data
(dollar amounts in millions)

	Titan Airlines	Airline Industry Average
Total assets*	$26,356	$139,501
Total debt, including capital leases*	$12,540	$54,200
Debt/asset ratio*	0.48	0.39
Operating revenue	$11,621	$67,606
Operating margin	−7.63%	−4.01%

  * 2007 year end

Rich also notes the following information:

- The funding shortfall in TEPP is significantly larger than the airline industry average.
- The average age of TEPP participants in 2008, including retirees, is 47. This is above the industry average.
- TEPP provides retiree benefits in the form of life annuities.
- TEPP annuity payments are not adjusted for inflation.
- TEPP provides that retirees may elect to receive up to 50 percent of the present value of their retirement benefits in a lump sum at the time of retirement with the remainder paid out as a life annuity.
- TEPP provides that employees over age 50 are permitted to retire early.
- Most U.S. airlines do not grant their employees early retirement and lump sum provisions.
- A significant number of older Titan employees recently took advantage of both the early retirement and lump sum provisions. As a result, 30 percent of TEPP participants are retired, a level higher than the airline industry average.
- Titan's 2008 pension contribution, as a percentage of payments to beneficiaries, will be smaller than the airline industry average.

In recent years, the TEPP trustees have set a target for excess return over the nominal discount rate in an effort to reduce the funding shortfall. They intend to maintain the same total return objective for assets in 2008 as they had in 2007. The nominal discount rate for calculating PBO in 2008 will be reduced to 6.5 percent from 7.0 percent in 2007. The nominal discount rate in both 2007 and 2008 includes a component for expected inflation.

Titan contributed $77 million to TEPP in 2006, and $144 million in 2007. Changes to U.S. tax law will require Titan to contribute $927 million in 2008. In its 2007 annual report, Titan's management commented, "We anticipate benefits payments under TEPP will equal $1,030 million in 2008 and exceed $800 million in each of the following three years. TEPP will close to new entrants in 2009. Active participants in TEPP at the end of 2008 will continue to accrue benefits for additional years of service and salary increases."

Titan's corporate risk management committee has set a goal to maintain the market value of pension assets at or above 65 percent of PBO in 2008.

A.   **Evaluate** the *most likely* effect of the change in the discount rate for 2008 on Titan's PBO, holding all else constant.

      Note: No calculations are necessary.

(3 minutes)

B.   **Formulate** TEPP's excess return target for 2008. **Show** your calculations.

(4 minutes)

C.   **State** an appropriate risk objective for TEPP.

Note: No calculations are necessary.

(4 minutes)

D.   **Determine** whether *each* of the following four attributes indicates TEPP's ability to take risk is above or below the airline industry average:

i.   sponsor financial condition
ii.   plan funding status
iii.   plan provisions
iv.   participant characteristics

Justify *each* determination based on *one* comparison between TEPP and the airline industry related to the attribute.

Note: Consider each attribute independently.

Answer Question 3-D in the Template provided on page 24.

(12 minutes)

E.   **Prepare** the liquidity constraint for 2008 for TEPP's investment policy statement. **Show** your calculations.

(3 minutes)

During her first meeting with TEPP's board, Rich notes that TEPP is closing to new participants. Rich suggests dividing TEPP's liabilities into separate portions for active and retired lives, to reflect differences in return objectives, risk, liquidity needs, and time horizon.

F.   **Describe** *one* difference between the active-lives and retired-lives portions of liabilities for *each* of the following:

i.   inflation sensitivity
ii.   duration

(4 minutes)

Roger Barrows represents Titan's management on TEPP's board of trustees. Hank Tate represents employee plan participants. Barrows and Tate make the following statements at the meeting:

Barrows: "To increase the probability that pension plan assets will be sufficient to fund pension plan benefits, TEPP should invest most of its assets with equity managers having the best track records as measured against market index benchmarks."

Tate: "To avoid the risk of market losses making the funding shortfall worse over the next year, we should limit TEPP's investments to short-term, risk-free securities."

G. **Give** *one* reason why *each* statement is *incorrect*, based on the pension plan liabilities.

(6 minutes)

Answer Question ③ on This Page

Template for Question 3-D

Attribute	Determine whether *each* of the four attributes indicates TEPP's ability to take risk is above or below the airline industry average. (circle one)	Justify *each* determination based on *one* comparison between TEPP and the airline industry related to the attribute. Note: Consider each attribute independently.
i. sponsor financial condition	Above Below	
ii. plan funding status	Above Below	
iii. plan provisions	Above Below	
iv. participant characteristics	Above Below	

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QUESTION 4 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 17 MINUTES.

Thurlow Corporation is a U.S.-based manufacturer of skis and snowboards that began operations in 1995. In order to attract skilled labor, Thurlow offers employees attractive benefits which include a defined benefit pension plan and annual wage increases above the rate of inflation. An asset only (AO) approach to strategic asset allocation is currently used for the investment management of the pension plan. Tino Beveridge is a consultant to the board of trustees of Thurlow's pension plan. The board asks Beveridge to recommend a strategic asset allocation for the pension plan given the following investment policy objectives:

Return requirement: Earn an average annual return of 8.7 percent plus management and
                                         administration fees of 0.7 percent.

Risk objective: A maximum standard deviation of portfolio returns of 10.0 percent.

For the strategic asset allocation analysis, Beveridge has generated the corner portfolios shown in Exhibit 1. The Thurlow pension plan investment policy statement (IPS) prohibits short positions and the use of leverage. The IPS allows investment in any single portfolio or combination of portfolios described in Exhibit 1.

Exhibit 1
Corner Portfolios
(Risk-free Rate = 4.5%)

Corner Portfolio Number	Expected Return (%)	Expected Standard Deviation (%)	Sharpe Ratio	Asset Classes (Portfolio Weights, %)				
				U.S. Equities	Non-U.S. Equities	Intermediate-term U.S. Bonds	Non-U.S. Bonds	U.S. Real Estate
1	10.8	16.1	0.39	100.0	0.0	0.0	0.0	0.0
2	10.4	14.2	0.42	82.4	0.0	0.0	0.0	17.6
3	10.3	12.7	0.46	74.1	4.0	0.0	0.0	21.9
4	9.1	9.1	0.51	33.7	12.0	36.7	0.0	17.6
5	8.0	7.4	0.47	25.0	11.8	45.3	3.4	14.5
6	6.9	5.2	0.46	0.0	13.7	53.0	27.1	6.2
7	6.6	4.8	0.44	0.0	11.2	53.0	31.5	4.3

A.   Using traditional mean-variance analysis:

    i.   **Select** the *most* appropriate portfolio or combination of portfolios for the strategic
        asset allocation of the Thurlow pension plan. **Justify** your response with *one*
        reason other than meeting Thurlow's return requirement.

    ii.   **Determine** the weight of total equities (U.S. and non-U.S. combined) in the *most*
        appropriate strategic asset allocation.

(5 minutes)

Beveridge proposes that the IPS be changed to allow borrowing or lending at the risk-free rate, currently 4.5 percent. He suggests that this change would enable Thurlow's pension plan to minimize its expected standard deviation of return while achieving the plan's required return.

B. i. **Determine** the *most* appropriate strategic asset allocation for the Thurlow pension plan based on Beveridge's proposal.

ii. **Explain** how this allocation improves the plan's risk-adjusted return.

iii. **Determine** the weight of total equities (U.S. and non-U.S. combined) in the *most* appropriate strategic asset allocation.

(6 minutes)

In addition to traditional mean-variance analysis, Beveridge also estimates one other form of portfolio optimization: the resampled efficient frontier approach. The board of trustees also asks Beveridge whether an asset/liability management (ALM) approach to strategic asset allocation would be appropriate. The board notes that the pension plan has below-average risk tolerance.

C. i. **Identify** *two* advantages of the resampled efficient frontier approach relative to the traditional mean-variance efficient frontier approach.

ii. **Identify** *one* advantage in Thurlow's situation of the ALM approach compared to the AO approach.

(6 minutes)

QUESTION 5 HAS TWO PARTS (A, B) FOR A TOTAL OF 13 MINUTES.

Jessica Somer manages a diversified U.S. balanced portfolio. Somer has consulted with her firm's strategist who expects a weakening economy. The strategist predicts that over the next two weeks credit spreads will widen significantly and all interest rates will decline significantly.

Somer is evaluating the following trades. Each trade involves buying and selling an equal value of fixed income securities with identical characteristics, except as noted.

      1.   Buy 7-year Ba2/BB industrial corporate bonds;
            Sell 7-year Baa3/BBB industrial corporate bonds.

      2.   Buy 5-year callable corporate bonds;
            Sell 5-year non-callable corporate bonds of the same issuer.

      3.   Buy 7-year high coupon mortgage pass-through bonds;
            Sell 7-year low coupon mortgage pass-through bonds.

A.   **Determine** the expected effect (positive or negative) on the portfolio's value over the next two weeks for *each* potential trade, given the strategist's market expectations. **Justify** *each* expectation with *one* reason.

        Note: Ignore transaction costs.

        Answer Question 5-A in the Template provided on page 35.

(9 minutes)

Somer manages the equity portion of her portfolio using a top-down approach. She has successfully employed sector-rotation trades and would like to use the same strategy in the corporate bond portion of the portfolio.

B.   **Identify** *two* potential disadvantages of sector-rotation trades in the corporate bond market compared to the equity market.

(4 minutes)

Answer Question 5 on This Page

Template for Question 5-A
Note: Ignore transaction costs.

Trade	Determine the expected effect on the portfolio's value over the next two weeks for *each* potential trade, given the strategist's market expectations. (circle one)	Justify *each* expectation with *one* reason.
1. Buy 7-year Ba2/BB industrial corporate bonds; Sell 7-year Baa3/BBB industrial corporate bonds.	Positive Negative	
2. Buy 5-year callable corporate bonds; Sell 5-year non-callable corporate bonds of the same issuer.	Positive Negative	
3. Buy 7-year high coupon mortgage pass-through bonds; Sell 7-year low coupon mortgage pass-through bonds.	Positive Negative	

QUESTION 6 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 11 MINUTES.

Keith Dalk is a portfolio manager for a commodity investment fund. Dalk observes higher economic growth in emerging markets and the resulting higher demand for commodities. He investigates trading opportunities in the copper market. The spot price is 316 cents/lb., and the three-month forward contract price is 313 cents/lb. He decides to implement a reverse cash-and-carry arbitrage to profit from the difference between the spot and forward prices.

A.   **Describe** the *two* components of the synthetic commodity position in this arbitrage.

(4 minutes)

Dalk can borrow or lend cash at five percent, and the lease rate for copper is six percent. These are continuously compounded interest rates.

B.   **Compute** Dalk's profit on a reverse cash-and-carry arbitrage in the copper market.

(4 minutes)

Dalk believes that manufacturers will increase their inventories of copper in expectation of higher sales. This higher demand may increase the convenience yield in this market.

C.   **Explain** how a higher convenience yield for copper would affect the no-arbitrage price range for the forward price.

(3 minutes)

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NOT BE GRADED**

QUESTION 7 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 17 MINUTES.

Red River Ltd. (RR) is a large mining company headquartered in South Africa. The company exports platinum, chromium, and titanium to 15 countries around the world.

To finance its operations, RR has been issuing equity and debt denominated in South African rand (ZAR), its domestic currency. RR recently acquired a copper mine in Chile, financed by a six-month U.S. dollar-denominated syndicated bank loan. The loan represents 20 percent of RR's total debt. It was the first time RR borrowed in a foreign currency.

RR holds an investment portfolio designed to hedge its risks related to commodities prices and foreign exchange fluctuations. The portfolio is composed of structured equity and credit products, over-the-counter (OTC) currency forwards, swaps, and options.

The RR Board has hired a consultant, George Hunt, to identify risks that need to be measured and managed. Hunt reports that RR is exposed to liquidity and settlement risks.

A. **Describe** *one* source of *each* of the following risks facing RR:

   i.   Liquidity risk
   ii.   Settlement risk

   Note: A single source may not be used for both liquidity and settlement risk.

   Answer Question 7-A in the Template provided on page 47.

   (4 minutes)

RR has been using value at risk (VAR) techniques for measuring the key risk exposures in its investment portfolio. Hunt recommends supplementing VAR with stress testing. He uses several stylized scenarios to identify the portfolio's exposure to potential losses. The scenarios involve simulating movements in interest rates and exchange rates. A member of the RR Board reviews the results of Hunt's stylized scenario analysis. She remains concerned that Hunt has not adequately considered the risks to RR's investment portfolio.

B. **Recommend** *one* other stress testing method, in addition to stylized scenarios, to effectively supplement VAR. **Explain** *one* advantage of this method.

   Answer Question 7-B in the Template provided on page 48.

   (4 minutes)

Hunt then begins to review specific risks in the investment portfolio. He wants to evaluate the counterparty credit risk for each of the following three open positions in OTC derivatives.

Forward:
  - short a two-year forward currency contract on Japanese yen (JPY) denominated in ZAR at 15.00 JPY/ZAR forward rate;
  - this forward contract expires today;
  - exchange rate was 14.50 JPY/ZAR when RR entered the contract;
  - the spot (current) rate is now 17.50 JPY/ZAR;
  - compound annual interest rates for the two-year period: 1 percent in JPY and 10 percent in ZAR.

Swap:
  - entered a one-year interest rate swap four months ago;
  - RR receives floating payments based on LIBOR and pays a fixed rate of 5.5 percent;
  - the two-month LIBOR is 5.35 percent;
  - the eight-month LIBOR is 5.45 percent;
  - the next floating payment will be 5.4 percent;
  - assume semi-annual payments based on 30 days in a month, 360 days in a year.

Call option:
  - short a six-month American call option on copper;
  - strike price $350;
  - spot price $370.

C.   **Identify** whether RR or its counterparty bears the credit risk for *each* position. **Justify** *each* response with *one* reason.

       Answer Question 7-C in the Template provided on page 49.

                                         (9 minutes)

Answer Question 7 on This Page

Template for Question 7-A

Risk	Describe *one* source of *each* of the following risks facing RR. Note: A single source may not be used for both liquidity and settlement risk.
i. Liquidity risk	
ii. Settlement risk	

Answer Question 7 on This Page

Template for Question 7-B

Recommend *one* other stress testing method, in addition to stylized scenarios, to effectively supplement VAR.	Explain *one* advantage of this method.

Answer Question 7 on This Page

Template for Question 7-C

Contract	Identify whether RR or its counterparty bears the credit risk for *each* position. (circle one)	Justify *each* response with *one* reason.
Forward	Red River Counterparty	
Swap	Red River Counterparty	
Call option	Red River Counterparty	

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NOT BE GRADED**

QUESTION 8 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 14 MINUTES.

Zack Brock and William Jordan are investment managers at the U.S.-based firm, Excess Value, Inc. (EV). In an effort to improve overall performance, the EV investment committee has begun evaluating trading strategies.

One of the companies that Brock follows is Nano Technology. His independent analysis suggests that Nano's common shares are significantly undervalued. Nano is scheduled to hold a press conference the next day to announce several new products. Brock believes that after the press conference other investors will reach a conclusion similar to his. Brock notes that there is a liquid market for Nano's shares sufficient to absorb a large order without a significant impact on price. Brock wants to place a large "Buy" order and must decide on a trading strategy.

Jordan manages a separate fund for a client who has decided to implement socially responsible investing guidelines over the next six months. The guidelines will require the sale of Jesco Company stock. The total number of shares to be sold would exceed 150 percent of Jesco's average daily volume. Jesco has a high level of institutional investor ownership. Jordan must determine the best trading strategy to sell the Jesco position.

The trading strategies available to Brock and Jordan are: limit order, market order, principal trade order, and crossing networks order.

A.   i.   **Recommend**, from the list of available strategies above, the *best* trading strategy for Brock. **Justify** the recommended strategy with *two* reasons.

      ii.   **Recommend**, from the list of available strategies above, the *best* trading strategy for Jordan. **Justify** the recommended strategy with *two* reasons.

      Note: A correct justification will cite specific information provided in the case.

      Answer Question 8-A in the Template provided on page 55.

                               (6 minutes)

Four months later, the EV investment committee approves the use of algorithmic trading strategies to lower net trading costs. EV managers may select either a volume-weighted average price (VWAP) strategy or an implementation shortfall strategy.

Brock received approval from the investment committee to buy shares in:

- Blue Drugs Company (BDC),
- Community Housing Association (CHA),
- Diamond Pressure Fitters (DPF), and
- Rich Ornamental Designers (ROD).

Brock realizes that it is not appropriate to use only one algorithmic trading strategy in all situations. He wants to determine whether the VWAP strategy or implementation shortfall strategy is suitable for each security. Selected trading characteristics of the securities to be purchased are shown in Exhibit 1.

Exhibit 1
Trading Characteristics by Security

Security	Size of Order (shares)	Average Daily Volume	Price	Bid-ask Spread %	Urgency to Complete Trade	Intra-day Trading Volume Pattern
BDC	220,000	5,000,000	$77.30	Low	High	Even throughout day
CHA	45,000	1,000,000	$21.03	Low	Low	Higher at end of day
DPF	25,000	30,000	$50.44	High	High	Higher at end of day
ROD	38,000	120,000	$11.98	Low	Low	Even throughout day

B.   i.   **Recommend** the security *best* suited to be purchased using a VWAP strategy.

      ii.   **Identify**, for *each* of the securities **not** chosen, *one* trading characteristic that makes it unsuitable to be purchased using a VWAP strategy.

      Note: A trading characteristic cannot be used more than once.

      Answer Question 8-B in the Template provided on page 56.

      (4 minutes)

C.   i.   **Recommend** the security *best* suited to be purchased using an implementation shortfall strategy.

      ii.   **Identify**, for *each* of the securities **not** chosen, *one* trading characteristic that makes it unsuitable to be purchased using an implementation shortfall strategy.

      Note: A trading characteristic cannot be used more than once.

      Answer Question 8-C in the Template provided on page 57.

      (4 minutes)

Answer Question 8 on This Page

Template for Question 8-A

i. Recommend the *best* trading strategy for Brock. (circle one)	Justify the recommended strategy with *two* reasons. Note: A correct justification will cite specific information provided in the case.
Limit order Market order	1.
Principal trade order Crossing networks order	2.

ii. Recommend the *best* trading strategy for Jordan. (circle one)	Justify the recommended strategy with *two* reasons. Note: A correct justification will cite specific information provided in the case.
Limit order Market order	1.
Principal trade order Crossing networks order	2.

Answer Question 8 on This Page

Template for Question 8-B

Recommend the security *best* suited to be purchased using a VWAP strategy. (circle one)	Identify, for *each* of the securities not chosen, *one* trading characteristic that makes it unsuitable to be purchased using a VWAP strategy. Note: A trading characteristic cannot be used more than once.
BDC	
CHA	
DPF	
ROD	

Answer Question 8 on This Page

Template for Question 8-C

Recommend the security *best* suited to be purchased using an implementation shortfall strategy. (circle one)	Identify, for *each* of the securities not chosen, *one* trading characteristic that makes it unsuitable to be purchased using an implementation shortfall strategy. Note: A trading characteristic cannot be used more than once.
BDC	
CHA	
DPF	
ROD	

QUESTION 9 HAS TWO PARTS (A, B) FOR A TOTAL OF 9 MINUTES.

Ashley Grace and James Matlin inherit an investment portfolio from their aunt. After estate taxes, the portfolio was valued at $4 million. Grace and Matlin each receive $800,000 in cash and $1.2 million in an S&P 500 Index fund.

Grace and Matlin meet with Cheri Leonard, CFA, to discuss the management of their portfolios. After their meeting, Leonard considers the most appropriate rebalancing strategies for her clients.

- Grace has a low tolerance for risk and wants to maintain the current 40 percent cash and 60 percent equity portfolio allocation. Leonard determines the constant-mix strategy is appropriate for Grace.

- Matlin is an aggressive investor but does not want the value of his portfolio to fall below $1 million. Leonard determines that constant-proportion portfolio insurance (CPPI) with a 130 percent cushion is appropriate for Matlin.

Leonard implements any necessary initial trades for both portfolios. During the next quarter the U.S. equity markets steadily rise, resulting in an eight percent quarterly return for the S&P 500 Index fund. The return on cash investments is zero for the quarter. Leonard is preparing for the first quarterly rebalancing of the portfolios.

A.   i.   **Calculate** the portfolio value at the end of the quarter for Grace. **Determine** any appropriate rebalancing trades (buy, sell, or no trade of the S&P 500 Index fund) for Grace. **Determine** the dollar size of the trade, if any.

      ii.   **Calculate** the portfolio value at the end of the quarter for Matlin. **Determine** any appropriate rebalancing trades (buy, sell, or no trade of the S&P 500 Index fund) for Matlin. **Determine** the dollar size of the trade, if any.

Answer Question 9-A in the Template provided on page 61.

(6 minutes)

Two years have passed since Leonard began implementing the rebalancing strategies. During that time period, the S&P 500 Index fund returns have been relatively flat with high volatility. Grace and Matlin meet with Leonard to evaluate the effectiveness of the rebalancing strategies. They specifically want to know whether their rebalancing strategies have generated greater returns than if they had followed a buy-and-hold strategy.

B.   **Determine** whether Matlin's actual return resulting from the rebalancing strategy over the past two years was *most likely* higher, the same, or lower, compared to a buy-and-hold strategy. **Justify** your response with *one* reason.

Answer Question 9-B in the Template provided on page 63.

(3 minutes)

Answer Question 9 on This Page

Template for Question 9-A

	Calculate the portfolio value at the end of the quarter.	**Determine any appropriate rebalancing trades (buy, sell, or no trade of the S&P 500 Index fund). (circle one)**	**Determine the dollar size of the trade, if any.**
i. Grace		Buy Sell No trade	
ii. Matlin		Buy Sell No trade	

Answer Question 9 on This Page

Template for Question 9-B

Determine whether Matlin's actual return resulting from the rebalancing strategy over the past two years was *most likely* higher, the same, or lower, compared to a buy-and-hold strategy. (circle one)	Justify your response with *one* reason.
Higher The same Lower	

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NOT BE GRADED**

QUESTION 10 HAS TWO PARTS (A, B) FOR A TOTAL OF 9 MINUTES.

The investment committee of the Paxton Manufacturing Pension Plan is replacing its current U.S. fixed income manager as a result of poor performance and lack of adherence to its stated strategy. The pension plan's investment policy states that the fixed income portion of the fund will be actively managed on a total return basis. The committee is reviewing proposals from two fixed income investment managers with different styles.

Terri Weber, the consultant for the pension plan, has prepared the following comparisons (Exhibit 1) of the two managers' performance to assist the investment committee with its decision to hire a new manager.

Exhibit 1
Managers Proposing to Manage Assets for Paxton's Pension Plan
Performance Attribution Analysis
Year Ending 31 December 2007

		Sullivan Investment Management	Paolello Asset Management
I.	Interest rate effect		
	Expected	5.76%	5.76%
	Unexpected	2.53%	2.53%
	Subtotal	8.29%	8.29%
II.	Interest rate management effect	0.05%	0.58%
III.	Other management effects	−0.12%	0.10%
IV.	Trading activity return	0.15%	0.19%
V.	Total return	8.37%	9.16%

In the proposals, each manager describes its strategy to generate excess returns as follows:

- Sullivan Investment Management: "Our firm identifies undervalued securities and sectors. This process has proven effective in achieving excess returns while minimizing transaction costs."

- Paolello Asset Management: "Our firm achieves excess returns primarily by actively managing the duration and convexity of the securities in the portfolio. We also position the portfolio to take advantage of our expectations of changes in the shape of the yield curve."

Prior to the meeting, Weber is preparing a summary of her findings for the investment committee. She is considering each manager's performance attribution, and how the returns in Exhibit 1 are derived.

A. **Determine** whether *each* manager's performance is consistent with its stated strategies. **Justify** your response with *one* reason.

    i.   Sullivan Investment Management
    ii.   Paolello Asset Management

Note: Use the information presented in Exhibit 1.

(6 minutes)

B.   i.   **Define** the *expected* interest rate effect.

    ii.   **Identify** the change in the interest rate environment that would produce the *unexpected* interest rate effect in Exhibit 1.

Note: No calculations are required.

(3 minutes)

QUESTION 11 HAS TWO PARTS (A, B) FOR TOTAL OF 9 MINUTES.

Makoto Satou manages the Tanaka Global Fund, a Japan-based investment fund, which has USD 900 million invested in the U.S. and EUR 700 million invested in Europe. Tanaka Global Fund's home currency is the Japanese yen (JPY). On 1 July 2008, Satou decides to fully hedge the fund's currency risk for the next two months. Data are presented in Exhibit 1.

Exhibit 1
Foreign Exchange Rates
1 July 2008

Spot rate (JPY/USD)	115.90
Spot rate (JPY/EUR)	155.75
September dollar futures contract (size = USD 100,000) (JPY/USD)	115.70
September euro futures contract (size = EUR 100,000) (JPY/EUR)	156.70

A.   **State** the futures positions the Tanaka Global Fund should take on 1 July 2008, to hedge the fund's currency risk. **Calculate** the number of contracts needed to hedge. **Show** your calculations.

(3 minutes)

On 1 September 2008, Tanaka Global Fund's U.S. portfolio has increased to USD 945 million; its European portfolio has increased to EUR 735 million. Current foreign exchange data are presented in Exhibit 2.

Exhibit 2
Foreign Exchange Rates
1 September 2008

Spot rate (JPY/USD)	110.90
Spot rate (JPY/EUR)	144.75
September dollar futures contract (size = USD 100,000) (JPY/USD)	110.77
September euro futures contract (size = EUR 100,000) (JPY/EUR)	144.80

B.   **Evaluate** the effectiveness of the Tanaka Global Fund's hedge by comparing the fully hedged portfolio return with the unhedged portfolio return. **Show** your calculations.

(6 minutes)

The Morning Session of the 2009 Level III CFA® Examination has 11 questions. For grading purposes, the maximum point value for each question is equal to the number of minutes allocated to that question.

Question	Topic	Minutes
1	Portfolio Management – Individual	26
2	Portfolio Management – Individual	9
3	Portfolio Management – Institutional	24
4	Portfolio Management – Institutional	11
5	Portfolio Management – Economics	19
6	Portfolio Management – Asset Allocation	10
7	Portfolio Management – Equity Investments	17
8	Portfolio Management – Alternative Investments	15
9	Portfolio Management – Risk Management	16
10	Portfolio Management – Monitoring and Rebalancing	15
11	Portfolio Management – Performance Evaluation	18
	Total:	**180**

> **Questions 1 and 2 relate to Patricia and Alexander Tracy. A total of 35 minutes is allocated to these questions.** *Candidates should answer these questions in the order presented.*

QUESTION 1 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 26 MINUTES.

Patricia and Alexander Tracy, both age 59, are residents of Canada. They have twin sons who will enter a four-year university program in one year. Patricia is a long-time employee of a telecommunications company. Alexander is a self-employed sales consultant.

Alexander's annual income is now steady after years of extreme highs and lows. The Tracys have built an investment portfolio through saving in Alexander's high income years. The Tracys' current annual income is equal to their total expenses; as a result, they cannot add to savings currently. They expect that both their expenses and income will grow at the inflation rate. All medical costs, now and in the future, are fully covered through government programs.

The Tracys worry about whether they have saved enough for retirement, and whether they will be able to maintain the real value of their portfolio. Inflation is expected to average 4% for the foreseeable future.

The Tracys have approached Darren Briscoe to help them analyze their investment strategy and retirement choices. The Tracys disagree about the appropriate investment strategy. Patricia prefers not losing money over making a high return. This is partly a result of continuing regret for a loss experienced in an equity mutual fund several years ago. Alexander's history of making frequent changes in their portfolio greatly annoyed Patricia. She thinks Alexander focused only on potential return and paid little attention to risk.

The Tracys currently have all their assets in inflation-indexed, short-term bonds that are expected to continue to earn a return that would match the inflation rate after taxes. After retirement, they are willing to consider changing their investment strategy if necessary to maintain their lifestyle.

The Tracys are eligible to retire next year at age 60. If they do, Patricia will receive annual payments from her company's defined-benefit pension plan and both Patricia and Alexander will receive payments from the Canadian government pension plan. Alexander does not participate in any company or individual retirement plan. Briscoe has compiled financial data and market expectations for the Tracys' retirement, shown in Exhibit 1. Currently, Briscoe estimates that the Tracys' investment portfolio will grow to 1,100,000 Canadian dollars (CAD) by their retirement date next year.

Exhibit 1
Financial Data and Market Expectations
Patricia and Alexander Tracy

	Retirement at Age 60 (2010)
Expected annual expenses	CAD 125,000
Annual pension income (after-tax)	
Patricia's company plan	CAD 40,000
Combined government pension	CAD 40,000
Total annual pension income	CAD 80,000
Expected annual inflation	4.0%
Expected annual after-tax portfolio return	4.0%

Pension income from both Patricia's company plan and the government pension plan is fully indexed for inflation. Briscoe expects a tax rate of 20% to apply to the Tracys' withdrawals from the investment account. The Tracys expect to earn no employment income after retirement. The Tracys' residence is not considered part of their investable assets.

The Tracys have the option to delay retirement until age 65. The Tracys intend to retire together, whether it is in 2010 at age 60 or in 2015 at age 65.

Briscoe determines that if the Tracys retire at age 60, their risk tolerance is below average. If they retire at age 60, they plan to pay off their mortgage and associated taxes by withdrawing CAD 100,000 from their portfolio upon retirement.

Another consideration for the Tracys relates to funding university expenses for their sons. If the Tracys retire at age 60, each son will receive a scholarship available to retiree families from Patricia's company that will cover all university costs.

If the Tracys retire at age 65, all pension income would increase and would almost meet their annual spending needs. If they retire at age 65, the Tracys would pay all university expenses from their investment portfolio through an arrangement with the university. The arrangement, covering both sons, would require the Tracys to make a single payment of CAD 200,000 at age 60.

A.   i.   **Prepare** the return objectives portion of the Tracys' investment policy statement (IPS) that will apply if they retire at age 60.

      ii.   **Calculate** the pre-tax nominal rate of return that is required for the Tracys' first year of retirement if they retire at age 60. **Show** your calculations.

(12 minutes)

B.   **Indicate** specific factors for the Tracys, for *each* of the following, which support
Briscoe's conclusion that the Tracys' risk tolerance is below average:

    i.   Ability to take risk. **Indicate** *two* factors.
    ii.   Willingness to take risk. **Indicate** *one* factor.

(6 minutes)

C.   **Prepare** the current (2009) liquidity constraint for the Tracys' IPS:

    i.   if they retire at age 60.
    ii.   if they retire at age 65.

(4 minutes)

D.   **Prepare** the current (2009) time horizon constraint for the Tracys' IPS:

    i.   if they retire at age 60.
    ii.   if they retire at age 65.

(4 minutes)

> **Questions 1 and 2 relate to Patricia and Alexander Tracy. A total of 35 minutes is allocated to these questions.** *Candidates should answer these questions in the order presented.*

QUESTION 2 HAS ONE PART FOR A TOTAL OF 9 MINUTES.

Patricia and Alexander Tracy both retired five years ago at age 65 and their sons now support themselves. As a result of better than expected investment returns over the past five years, the Tracys' investment portfolio has significantly increased in value. They now think that their future after-tax investment returns will exceed their expenses for their remaining joint life expectancy. Their new investment objective is to maximize the assets their sons will inherit, subject to a review of the Tracys' risk tolerance by their financial advisor.

During retirement, the Tracys' medical costs are fully covered by the government. The Tracys have no earned income during retirement. They have previously paid off all debt and expect to remain debt-free.

Determine whether *each* of the following measures has increased, decreased, or remained unchanged for the Tracys since just prior to retirement:

i.   implied assets
ii.   implied liabilities
iii.   risk tolerance

Justify *each* response with *one* reason.

Answer Question 2 in the Template provided on page 11.

(9 minutes)

Answer Question 2 on This Page

Template for Question 2

Measure	Determine whether *each* of the following measures has increased, decreased, or remained unchanged for the Tracys since just prior to retirement. (circle one)	Justify *each* response with *one* reason.
i. implied assets	Increased Decreased Remained unchanged	
ii. implied liabilities	Increased Decreased Remained unchanged	
iii. risk tolerance	Increased Decreased Remained unchanged	

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QUESTION 3 HAS FIVE PARTS (A, B, C, D, E) FOR A TOTAL OF 24 MINUTES.

Wirth-Moore Corporation is a U.S.-based publisher of educational media. Wirth-Moore sponsors a defined-benefit pension plan. The plan's assets are invested in a broadly diversified portfolio of government and investment grade corporate bonds. Pension plan participants include both active workers and retirees. Pension benefits payments are not adjusted for inflation. The duration and market value of the pension plan's assets are equal to the duration and market value of the plan's projected benefits obligation (PBO). Wirth-Moore believes that it has adequate financial strength and profitability to maintain annual pension contributions based on the pension plan's features and Wirth-Moore's workforce characteristics.

Wirth-Moore recently established the Foundation for the Future (FF), a company-sponsored charitable foundation. FF's mandate from Wirth-Moore is to promote sustainable living through education and research on renewable resources.

FF employs one person to administer grant applications, but does not employ full-time investment professionals. Wirth-Moore donated 10 million U.S. dollars (USD) to FF as a permanent endowment. FF is not restricted to spending only investment income. Wirth-Moore does not plan to make additional donations to FF in the foreseeable future, although FF is permitted to accept donations from others.

FF's board retains Allyson Joy, an investment advisor, to make recommendations for its endowment fund. She summarizes her understanding of FF's investment objectives and related information in Exhibit 1.

Exhibit 1
FF Investment Information

- To minimize taxes under U.S. law, FF's board intends to make annual distributions equal to 5% of its average asset market value.
- The board adopted a goal to increase the value of the endowment by seeking a rate of return exceeding the rate needed to maintain the real purchasing power of the portfolio.
- FF's investment policy limits the amount that can be invested in any single issuer's securities to no more than 5% of the portfolio.
- FF's annual investment management expenses are 0.45% of assets.
- The annual rate of inflation is expected to be 3% in both FF's overhead and in the fields of education and research that FF supports.

A. **Prepare** FF's return objective for next year. **Show** your calculations.

(4 minutes)

B.   i.   **Determine** whether FF or the Wirth-Moore pension plan has greater ability to take risk. **Justify** your determination with *one* reason.

ii.   **Determine** whether FF or the Wirth-Moore pension plan has greater willingness to take risk. **Justify** your determination with *one* reason.

(6 minutes)

C.   **Formulate** the following investment policy constraints for FF:

i.   Liquidity.
       Show your calculations.

ii.   Time horizon.
       Justify your response with *one* reason.

(6 minutes)

FF presently bases its annual spending on the average market value of its assets each year. Noland Reichert, a member of FF's board, is concerned about recent market volatility. Reichert proposes a spending rule based on a rolling three-year average market value. In response to Reichert's proposal, Joy recommends a geometric spending rule, where spending is based on a geometrically declining average of trailing endowment values. FF's external tax counsel advises that there would be no adverse tax consequence from adopting either smoothing rule.

D.   **Explain** the effect on FF's spending of adopting Joy's smoothing rule rather than Reichert's smoothing rule.

(4 minutes)

Reichert also serves on the board of Headwaters University Foundation, an endowment with more than USD 1 billion in assets. Headwaters recently invested in a private equity venture based on the recommendation of its internal investment staff. The venture requires a USD 2.5 million minimum investment by each participant, with a five-year lock-up provision. The private equity venture is not expected to generate income, but has the potential to increase in value at a rate of 20% per year over the next five years. Reichert recommends that FF should participate in this private equity venture.

E.   **Justify**, with *two* reasons, why Reichert's recommendation is inappropriate for FF.

(4 minutes)

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QUESTION 4 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 11 MINUTES.

Setzer is a U.S.-based chain of department stores with operating assets of 1 billion U.S. dollars (USD) in market value terms. Setzer sponsors a defined-benefit pension plan (Pension Plan) that invests exclusively in domestic equities and domestic investment grade corporate bonds. Selected Setzer and Pension Plan financial data are shown in Exhibit 1.

Exhibit 1
Setzer and Pension Plan Financial Data

Setzer (excluding Pension Plan)	
Measure	**Value**
Debt/equity ratio (market value)	1.0
Operating assets market value (USD billion)	1.0
Equity beta	2.0
Debt beta	0.0
Pension Plan	
Measure	**Value**
Equity portfolio beta	1.0
Debt investments beta	0.0
Market value (USD million)	800
Equity allocation (%)	60
Surplus (USD million)	0.0

Setzer hires Tim Bearne to study the implications of the asset allocation of the Pension Plan's investment portfolio on Setzer's financial and operating characteristics. Bearne notes that a defined-benefit pension plan's assets and liabilities can directly affect the sponsoring company's equity price, the equity price volatility, and the amount of operational risk the company is able to assume.

The risk-free rate of return is 3% and the equity risk premium is 9%. Bearne's preliminary analysis does not take the effects of taxes into consideration.

Setzer bases its capital budgeting decisions on the internal rate of return (IRR) and accepts capital projects with IRR greater than Setzer's weighted average cost of capital (WACC). Setzer does not include the Pension Plan's assets and liabilities when calculating its WACC.

A.   **Calculate** Setzer's WACC including the Pension Plan's assets and liabilities.

(4 minutes)

B.   **Discuss** the implications of **not** including the Pension Plan's assets and liabilities in Setzer's capital budgeting decision-making process.

Note: No calculations are required.

(4 minutes)

Six months have passed. As a result of negative returns on the Pension Plan's investment portfolio, the Pension Plan is now underfunded by USD 50 million. The Pension Plan's investment committee, seeking to raise expected returns, increases the investment portfolio's equity allocation to 70%. Immediately after this decision is implemented, Setzer's equity price volatility and beta increase. Assume Setzer's operational assets and its debt/equity ratio (market value) remained constant during the six-month period.

C.   **Discuss** why Setzer's equity beta increases in response to the Pension Plan's change in the asset allocation.

(3 minutes)

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QUESTION 5 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 19 MINUTES.

Robert Spencer is a market forecaster with Windsor Investment Management, a U.K.-based
wealth management firm. Spencer is asked to review the current economic conditions and
market outlook for the U.K. and to set long-term market return expectations for domestic
equities. These expectations will form the basis of Windsor's future client asset allocations.
Spencer gathers the U.K. capital market data displayed in Exhibit 1.

Exhibit 1
U.K. Capital Market Data

Historical Data (past 100 years)	
Equity compounded annual growth rate (%)	11.2
Equity risk premium (%)	5.3
Dividend yield (%)	4.0
Equity repurchase yield (%)	–0.5
Nominal earnings growth return (%)	4.6
Current and Forward Looking Data	
Current equity price-to-earnings ratio	14.6
Expected equities real earnings growth rate (%)	2.7
Expected long-term inflation rate (%)	2.5

A.   **Determine**, using the information in Exhibit 1 and the Grinold-Kroner model, the
         component sources of the historical nominal return for U.K. equities:

        i.   income return
        ii.   earnings growth
        iii.   repricing return

(6 minutes)

A year has passed. The Bank of England (the U.K.'s central bank) has been raising the short-
term interest rate. Business confidence is starting to decline. Spencer is asked to analyze the
U.K. economy and consider how the Bank of England might respond in the short term to
economic conditions. He gathers the economic data shown in Exhibit 2.

Exhibit 2
U.K. Economic Data (%)

Neutral value of the short-term interest rate	3.5
Forecast U.K. GDP growth rate	0.3
Trend U.K. GDP growth rate	2.2
Yield to maturity on 10-year gilt (government bond)	4.2
Yield to maturity on 1-year gilt (government bond)	5.5
Bank of England short-term interest rate	5.5
Target U.K. inflation rate	2.0
Forecast U.K. inflation rate	4.4

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B.   i.   **Determine** the target short-term interest rate for the Bank of England using the
             Taylor rule and the data in Exhibit 2. **Show** your calculations.

      ii.   **Describe** the *most likely* potential negative economic result if the Bank of
             England bases its interest rate policy on the Taylor rule.

                                     (5 minutes)

Nine more months have passed and the U.K. economy has fallen into a recession. Under
pressure to aid the economy, the U.K. Chancellor of the Exchequer (finance minister) announces
a four-part economic plan aimed at improving the long-term growth trend of the U.K. economy
(GDP). The plan includes the following initiatives:

- Introduction of incentives encouraging companies to increase their use of
  information technology;
- An increase in the mandatory retirement age from 65 to 70 years of age;
- A broad increase in taxes to fund programs that provide support for low-income
  families;
- A one-time tax rebate to stimulate consumer spending.

C.   **Determine**, for *each* part of the economic plan, whether the initiative is *most likely* to
      increase, decrease, or leave unchanged the long-term growth trend of the U.K. economy
      (GDP). **Justify** *each* response with *one* reason.

      Note: No calculations are required.

      Answer Question 5-C in the Template provided on page 36.

                                     (8 minutes)

Answer Question 5 on This Page

Template for Question 5-C
Note: No calculations are required.

Initiative	Determine, for *each* part of the economic plan, whether the initiative is *most likely* to increase, decrease, or leave unchanged the long-term growth trend of the U.K. economy (GDP). (circle one)	Justify *each* response with *one* reason.
Introduction of incentives encouraging companies to increase their use of information technology;	Increase Decrease Leave unchanged	
An increase in the mandatory retirement age from 65 to 70 years of age;	Increase Decrease Leave unchanged	
A broad increase in taxes to fund programs that provide support for low-income families;	Increase Decrease Leave unchanged	
A one-time tax rebate to stimulate consumer spending.	Increase Decrease Leave unchanged	

QUESTION 6 HAS ONE PART FOR A TOTAL OF 10 MINUTES.

Kallis Employees Pension Plan (KEPP) is the pension fund of a Finland-based mining company. KEPP is fully funded with 8 billion euros (EUR) in assets and has the following investment policy objectives:

- Earn a 10.3% annual portfolio return.
- Have a maximum Roy's safety-first ratio with a minimum return threshold of 8%.
- Maintain a cash balance sufficient to meet liquidity requirements.
- Maintain a maximum of 10% of assets in a passively managed sub-portfolio that is indexed to the S&P GSCI Precious Metals Index (SPMI).

KEPP expects to pay EUR 320 million in pension benefits this year.

At an investment committee meeting regarding possible changes to KEPP's strategic asset allocation policy, the committee reviews five alternative portfolio allocations that meet KEPP's return objectives. These alternatives are shown in Exhibit 1.

Exhibit 1
KEPP
Alternative Portfolio Allocations (%)

Asset Class	Portfolio Allocations				
	V	W	X	Y	Z
Cash equivalents	3	5	6	5	6
SPMI	10	12	8	7	9
Global bonds	40	40	47	45	41
Global equities	47	43	39	43	44
Total	100	100	100	100	100
Portfolio Measures	**V**	**W**	**X**	**Y**	**Z**
Expected total annual return	11.26	11.19	10.44	10.60	10.87
Expected standard deviation	14.90	14.82	13.93	14.15	14.52

Determine the *most* appropriate portfolio for KEPP. **State**, for *each* portfolio **not** selected, *one* reason why it is **not** the most appropriate.

Answer Question 6 in the Template provided on page 39.

(10 minutes)

Answer Question 6 on This Page

Template for Question 6

Determine the *most* appropriate portfolio for KEPP. (circle one)	State, for *each* portfolio not selected, *one* reason why it is not the most appropriate.
V	
W	
X	
Y	
Z	

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QUESTION 7 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 17 MINUTES.

Chandra Pabst, CFA, is an equity portfolio manager at an advisory firm that provides asset management services to nonprofit organizations. The firm was recently hired by the U.S.-based Aberdeen Family Foundation. Aberdeen's board of directors was dissatisfied with its previous equity manager. Pabst is assigned to develop a strategy for the equity portion of the portfolio.

In her initial meeting with the Aberdeen investment committee, Pabst compiled the following notes:

- The committee agrees that security prices reflect publicly available information.

- The committee expects a decline in interest rates.

- The board fired the previous equity manager because the portfolio had tracking risk exceeding 1%.

- Aberdeen pays taxes on interest, dividends, and realized capital gains.

- The board is willing to accept a low information ratio as long as returns are sufficient to maintain targeted spending.

At the end of the meeting, Pabst recommends that the Aberdeen portfolio be managed using a passive approach. The committee agrees with Pabst's recommendation.

A.   **Justify**, with *three* reasons based only on Pabst's notes, why the use of a passive investment approach is the *most* appropriate for Aberdeen's equity portfolio.

   Answer Question 7-A in the Template provided on page 45.

   (6 minutes)

Pabst next begins to transition Aberdeen's portfolio holdings. She is constructing the portfolio using individual equities and is considering the following methods: full replication, stratified sampling, and optimization. The benchmark for the portfolio is the Russell 3000 Index, which is based on market capitalization and consists of 3,000 large U.S. publicly-traded companies. The value of Aberdeen's equity portfolio is 3,000,000 U.S. dollars (USD). The board prefers not to use complicated mathematical models that would be challenging to explain to donors.

B.   **Determine**, from the three methods Pabst is considering, the *most* appropriate method for constructing the equity portfolio. **Justify** your response with *two* reasons related to Aberdeen's specific circumstances.

   Answer Question 7-B in the Template provided on page 46.

   (5 minutes)

Pabst was just hired to manage the endowment fund for the Forest Trust. The Forest Trust is actively managed and its holdings are shown in Exhibit 1.

Exhibit 1
Forest Trust Portfolio and Benchmark Data

	Portfolio	Portfolio Benchmark
Average market capitalization of stocks	USD 34 billion	USD 72 billion
Number of stocks	150	3,000
Price-to-book ratio	0.9	2.2
Long-term earnings growth rate (median analyst forecast)	5%	13%
Average earnings per share (EPS)	USD 0.02	USD 1.74
Dividend yield	1.3%	1.7%

Pabst is asked to classify the portfolio in one of the four value and growth substyles:

- contrarian
- high yield
- consistent growth
- earnings momentum

C.   **Identify** the substyle that *best* represents the portfolio. **Justify** your response with *two* reasons related to the characteristics of the portfolio relative to the benchmark.

Answer Question 7-C in the Template provided on page 47.

(6 minutes)

Answer Question 7 on This Page

Template for Question 7-A

Justify, with *three* reasons based only on Pabst's notes, why the use of a passive investment approach is the *most* appropriate for Aberdeen's equity portfolio.
1.
2.
3.

Answer Question 7 on This Page

Template for Question 7-B

Determine, from the three methods Pabst is considering, the *most* appropriate method for constructing the equity portfolio. (circle one)	Justify your response with *two* reasons related to Aberdeen's specific circumstances.
full replication stratified sampling optimization	1. 2.

Answer Question 7 on This Page

Template for Question 7-C

Identify the substyle that *best* represents the portfolio. (circle one)	Justify your response with *two* reasons related to the characteristics of the portfolio relative to the benchmark.
contrarian	1.
high yield	
consistent growth	2.
earnings momentum	

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QUESTION 8 HAS TWO PARTS (A, B) FOR A TOTAL OF 15 MINUTES.

Hank Smith is the portfolio manager of U.S.-based PM Hedge Fund (PM), which focuses on precious metals, fixed income, and derivatives. Smith has a strategy of rolling forward a long position in short-dated platinum futures traded on NYMEX. Smith's expectations are as follows:

- Electricity supply disruptions in South Africa, the world's dominant platinum producer, will cause platinum supply to fall and spot prices to rise.
- Interest rates will rise.
- The convenience yield on platinum will increase.

Smith observes that his expectations are not yet reflected in platinum futures prices.

A.   **Determine**, given that Smith's market expectations are correct, whether an increase, a decrease, or no change in *each* of the following return components should be expected:

i.   spot return (price return)
ii.   collateral return (collateral yield)
iii.   roll return (roll yield)

Justify *each* response with *one* reason.

Answer Question 8-A in the Template provided on page 55.

(9 minutes)

PM holds a four-year 120,000,000 U.S. dollars (USD), 6% fixed rate bond that pays interest semi-annually. Smith expects four-year USD interest rates to rise. He wants to reduce the duration of the bond position. Lizelle Hoorn, an analyst at PM, suggests that Smith can reduce the modified duration of this position, which is currently 3, to a more acceptable 0.3 by using an interest rate swap. Smith wants the notional principal on the swap to be as close as possible to the USD 120,000,000 principal of the original bond. Hoorn provides Smith with four possible swaps, shown in Exhibit 1. Assume that the modified duration of the fixed rate component of a swap is 75% of its maturity.

Exhibit 1
Available Swap Positions

Swap	Swap Type	Swap Term	Payment Frequency
1	Pay fixed, receive floating	2 years	Semi-annually
2	Pay floating, receive fixed	4 years	Quarterly
3	Pay fixed, receive floating	4 years	Quarterly
4	Pay floating, receive fixed	2 years	Semi-annually

B.   **Determine** which swap *best* achieves Smith's stated goals. **Justify** your response with *two* reasons.

Answer Question 8-B in the Template provided on page 56.

(6 minutes)

Answer Question 8 on This Page

Template for Question 8-A

Return component	Determine, given that Smith's market expectations are correct, whether an increase, a decrease, or no change in *each* of the following return components should be expected. (circle one)	Justify *each* response with *one* reason.
i. spot return (price return)	Increase Decrease No change	
ii. collateral return (collateral yield)	Increase Decrease No change	
iii. roll return (roll yield)	Increase Decrease No change	

Answer Question 8 on This Page

Template for Question 8-B

Determine which swap *best* achieves Smith's stated goals. (circle one)	Justify your response with *two* reasons.
Swap 1 Swap 2	1.
Swap 3 Swap 4	2.

QUESTION 9 HAS TWO PARTS (A, B) FOR A TOTAL OF 16 MINUTES.

Maple Leaf International is a Canadian corporation with business in Europe and Japan. Maple Leaf's business transactions generate exchange rate risk between the Canadian dollar (CAD) and both the euro (EUR) and Japanese yen (JPY). In order to hedge their exchange rate risk, management endorses the use of currency forwards, options, and swaps. Ian McKinley, chief risk officer, has been asked to present an analysis of the company's currency exposures to Maple Leaf's board of directors and senior managers.

Maple Leaf is long a forward contract on EUR 50 million at 1.63 CAD/EUR, expiring in six months. It is also long 100 JPY put options (European style) with expiration in six months, a strike price of 100 JPY/CAD, and a contract size of JPY 12.5 million. The current spot exchange rates are 1.64 CAD/EUR and 102.5 JPY/CAD. All of Maple Leaf's currency derivatives are traded over the counter (OTC) with North Bank. Key interest rates are displayed in Exhibit 1.

Exhibit 1
Six-month Risk-free Interest Rates
(Annualized)

CAD	3.0%
EUR	4.5%
JPY	0.5%

McKinley makes the following statements regarding the credit risk on currency swaps.

Statement 1:   "The credit risk on currency swaps is greatest at the middle of the swap term."

Statement 2:   "The credit risk on currency swaps is bilateral and isolated to the Maple Leaf-North Bank contracts."

A.   i.   **Determine** *one* reason related to credit risk that makes *each* of McKinley's statements incorrect.

Note: Simply reversing the statements will receive no credit.

ii.   **Discuss** *one* method to reduce credit risk associated with Maple Leaf's OTC currency derivative positions.

(6 minutes)

B.   i.   **Calculate** the amount at risk from a credit loss on the long EUR forward contract. **Determine** which party bears the credit risk. **Show** your calculations.

ii.   **Calculate** the amount at risk from a credit loss on the long JPY put option contract. **Determine** which party bears the credit risk. **Show** your calculations.

(10 minutes)

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QUESTION 10 HAS TWO PARTS (A, B) FOR A TOTAL OF 15 MINUTES.

Jackson Miller, a portfolio manager at Big Trust Bank, arranges a meeting with a client, Jin Huang, to review the performance of her portfolio and discuss Big Trust's market outlook.

At the meeting, Miller suggests examining Huang's portfolio rebalancing strategy to ensure that her portfolio stays consistent with her long-term objectives. The target strategic asset allocation for her portfolio and the corridor widths for Huang's percentage-of-portfolio rebalancing strategy are shown in Exhibit 1.

Exhibit 1
Huang's Strategic Asset Allocation and Corridor Widths

Asset Class	Target Weight	Corridor Widths
Domestic equity	25%	+/- 2.5%
Non-domestic equity	30%	+/- 3.0%
Domestic bonds	30%	+/- 3.0%
Risk-free securities	10%	+/- 1.0%
Alternative investments	5%	+/- 0.5%

Miller informs Huang that Big Trust recently revised its market outlook. Revised expectations are as follows:

- An increase in the price of gold, which is a component of the alternative investments asset class;
- Lower volatility of domestic bond prices as the economy becomes less sensitive to changes in oil prices;
- Lower transactions costs for non-domestic equities resulting from expanded electronic trading.

Huang asks how these revisions will affect the corridor widths associated with the percentage-of-portfolio approach to rebalancing.

A.   **Determine**, for *each* revised expectation, whether the stated asset class corridor width in Exhibit 1 should be wider, narrower, or unchanged. **Justify** *each* of your responses with *one* reason.

Note: No calculations are required.

Answer Question 10-A in the Template provided on page 67.

(9 minutes)

Miller meets with another client, Harriet Kilpatrick. Kilpatrick recently married and plans to have children in the near future. Her current portfolio, which has a value of 2 million U.S. dollars (USD), is invested in equities and risk-free securities. She asks Miller to develop a rebalancing strategy that will prevent her portfolio from dropping below USD 1.25 million.

Miller states that Big Trust's investment outlook predicts that equity prices will be trending upward. Kilpatrick says that she also wants to minimize her allocation to risk-free securities during a rising market in equities.

Miller tells Kilpatrick that his clients use one of three types of rebalancing strategies: a buy-and-hold strategy, a constant mix strategy, or a constant-proportion portfolio insurance (CPPI) strategy.

B.   **Select** the *most* appropriate rebalancing strategy for Kilpatrick's portfolio. **Justify** your selection with *two* reasons.

        Answer Question 10-B in the Template provided on page 68.

                                        (6 minutes)

Answer Question ☐10☐ on This Page

Template for Question 10-A
Note: No calculations are required.

Asset class and revised expectation	Determine, for *each* revised expectation, whether the stated asset class corridor width in Exhibit 1 should be wider, narrower, or unchanged. (circle one)	Justify *each* of your responses with *one* reason.
Alternative investments: An increase in the price of gold, which is a component of the alternative investments asset class;	Wider Narrower Unchanged	
Domestic bonds: Lower volatility of domestic bond prices as the economy becomes less sensitive to changes in oil prices;	Wider Narrower Unchanged	
Non-domestic equity: Lower transactions costs for non-domestic equities resulting from expanded electronic trading.	Wider Narrower Unchanged	

Answer Question 10 on This Page

Template for Question 10-B

Select the *most* appropriate rebalancing strategy for Kilpatrick's portfolio. (circle one)	Justify your selection with *two* reasons.
buy-and-hold	1.
constant mix	2.
CPPI	

QUESTION 11 HAS TWO PARTS (A, B) FOR A TOTAL OF 18 MINUTES.

A fund sponsor has adopted a formal policy to guide its manager evaluations. Cecilia Velasco and Alberto Roca, two staff members, are discussing the performance of hedge fund managers and traditional fund managers.

Velasco and Roca begin by discussing how to evaluate hedge fund managers. Velasco suggests that hedge fund performance should be evaluated by comparing the manager's performance with the median of a universe of hedge funds with similar mandates.

A.   **Justify**, with *three* reasons, why Velasco's suggestion for evaluating hedge fund manager performance is inappropriate.

(6 minutes)

Velasco and Roca also appraise the performance of two traditional European equity managers. As part of the monitoring process, they have collected the information shown in Exhibit 1. Assume that it is appropriate to compare the performance of the two managers.

Exhibit 1
Five-year Performance Data ending 30 April 2009
(Annualized)

Performance Measure	Manager #1	Manager #2
Rate of return (%)	21.13	21.13
Sharpe ratio	1.17	1.21
M^2 (%)	18.72	19.27
Active risk (%)	2.17	4.18
Information ratio	0.52	0.27
Treynor measure (%)	19.15	17.17
Risk-free rate (%)	2.75	2.75

B.   **Determine**, for *each* case below, the *most* appropriate performance measure from Exhibit 1 to compare Manager #1 and Manager #2. **Identify**, in *each* case, which manager outperformed. **Explain** what caused the difference in performance between the two managers.

   i.   Reward per unit of systematic risk incurred
   ii.   Reward per unit of total risk incurred
   iii.   Reward per unit of risk earned by deviating from the benchmark's holdings

   Answer Question 11-B in the Template provided on page 74.

(12 minutes)

Answer Question ⬚11⬚ on This Page

Template for Question 11-B

Case	Determine, for *each* case, the *most* appropriate performance measure from Exhibit 1 to compare Manager #1 and Manager #2.	Identify, in *each* case, which manager outperformed. (circle one)	Explain what caused the difference in performance between the two managers.
i. Reward per unit of systematic risk incurred		Manager #1 Manager #2	
ii. Reward per unit of total risk incurred		Manager #1 Manager #2	
iii. Reward per unit of risk earned by deviating from the benchmark's holdings		Manager #1 Manager #2	

The Morning Session of the 2010 Level III CFA® Examination has 9 questions. For grading purposes, the maximum point value for each question is equal to the number of minutes allocated to that question.

Question	Topic	Minutes
1	Portfolio Management – Individual	35
2	Portfolio Management – Institutional/Behavioral	25
3	Portfolio Management – Institutional	24
4	Portfolio Management – Economics	14
5	Portfolio Management – Asset Allocation	15
6	Portfolio Management – Fixed Income	18
7	Portfolio Management – Risk Management	20
8	Portfolio Management – Monitor/Rebalance/Execution	17
9	Portfolio Management – Performance Evaluation	12
	Total:	**180**

QUESTION 1 HAS FIVE PARTS (A, B, C, D, E) FOR A TOTAL OF 35 MINUTES.

Elisa Lima is a 34-year-old widow residing in a country that uses U.S. dollars (USD) as its currency. She has two children: age 10 and age 6. Lima works as the director of marketing at Relex Corporation. Exhibit 1 presents details of the financial environment in Lima's home country.

Exhibit 1
Selected Data from Lima's Home Country

Taxes	• Flat income tax rate of 25%. • Wages, realized capital gains, and interest are taxed as income. • Dividends are not taxed. • Realized losses may be offset against income and may be carried forward to offset income in future years.
Health insurance	• Government provides at no direct cost to citizens.
Tax-deferred accounts (TDAs)	• Contributions are pretax and annual maximum is USD 40,000. • Income and gains grow tax-deferred and portfolio reallocations are not subject to tax. • Income taxes are paid on full amount of withdrawals. • No penalties on withdrawals for housing or education.

Lima's current pretax annual compensation is USD 140,000 and her current annual living expenses are USD 96,000. Her future salary increases are expected to match any increases in living expenses on a pretax basis. Lima is in good health, owns her home, and has no debt.

Lima is a disciplined investor, but a recent equity market decline caused her great anxiety. She is worried about her ability to fund her children's education and her retirement. Lima meets with her financial advisor, Mark DuBord, to review her financial plan.

DuBord notes the following factors:

- Lima invests USD 12,000 (pretax) in a TDA at the end of every year and intends to continue doing so until she retires. The current value of the TDA is USD 250,000.
- Lima makes annual contributions to charity of USD 6,000. These contributions are included in her annual living expenses.
- She will prepay her children's future education costs at the end of this year.
- Lima participates in Relex's executive retirement program. At the mandatory retirement age of 60, she will receive a pretax payment of USD 1,000,000.

DuBord determines that the prepaid education costs for both children will require a total of USD 50,000, including all taxes. He recommends that Lima purchase a life annuity to fund her retirement. DuBord calculates she will need USD 3,000,000 (pretax) to purchase the annuity at age 60. Lima agrees with DuBord's recommendation.

A.   **Formulate** *each* of the following constraints of Lima's investment policy statement (IPS):

        i.   liquidity
        ii.   time horizon

(4 minutes)

One year later, after prepaying her children's education costs and after making her annual TDA contribution, Lima has USD 225,000 invested in her TDA. Lima's other financial information remains the same.

B.   i.   **State** the return objective portion of Lima's IPS.
        ii.   **Calculate** Lima's required average annual pretax nominal rate of return until her retirement in 25 years. **Show** your calculations.

(12 minutes)

DuBord also advises Abella Rual, Lima's sister, a 37-year-old single woman with no children. Rual works as a bankruptcy lawyer and is president of her own firm. Rual's annual income is USD 450,000 and her annual living expenses are USD 180,000. She is in good health, owns her home, and has no debt.

Rual's investment portfolio is currently valued at USD 1,500,000. Rual is confident that long-term equity market returns will more than offset losses in market downturns. She continues to invest regularly. Rual plans to retire at age 52, sell her business, and donate the proceeds to charity. Her investment portfolio will fund her retirement expenses.

C.   i.   **Identify** *two* factors that increase Lima's ability to take risk.
        ii.   **Identify** *two* factors that increase Rual's ability to take risk.

(8 minutes)

D.   **Determine** whether Lima or Rual has a greater willingness to take risk. **Justify** your response with *one* reason.

(3 minutes)

During a recent review with Rual, DuBord notes that tax law changes, effective next year, will lower the tax on capital gains to 15% but eliminate the ability to offset income with realized losses. To minimize Rual's tax liability, DuBord is considering the optimal location (tax-deferred or taxable) for her assets prior to the tax law changes. DuBord and Rual agree to maintain Rual's current asset allocation. Rual's investment portfolio and asset location are shown in Exhibit 2.

Exhibit 2
Rual's Investment Portfolio

Asset Class	Tax-deferred Account	Taxable Account	
	Current Value (USD)	Current Value (USD)	Cost Basis (USD)
Bonds	250,000	500,000	550,000
Equities	500,000	250,000	150,000
Total	750,000	750,000	700,000

DuBord recommends the transactions necessary to achieve the most tax efficient asset allocation of bonds and equities in each account.

E.   i.   **Determine** the "sell" amount of bonds and the "sell" amount of equities to achieve the *most* tax-efficient allocation in *each* account (tax-deferred and taxable).

      ii.   **Determine** the "buy" amount of bonds and the "buy" amount of equities to achieve the *most* tax-efficient allocation in *each* account (tax-deferred and taxable).

      iii. **Justify**, with *two* reasons, why this is the *most* tax-efficient allocation.

      Note: Assume no transaction costs or liquidity needs.

      ANSWER QUESTION 1-E IN THE TEMPLATE PROVIDED ON PAGE 9.

      (8 minutes)

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Answer Question 1 on This Page

Template for Question 1-E
Note: Assume no transaction costs or liquidity needs.

Asset class	i. Determine the "sell" amount of bonds and the "sell" amount of equities to achieve the *most* tax-efficient allocation in *each* account (tax-deferred and taxable).	
	Tax-deferred Account	**Taxable Account**
Bonds		
Equities		

Asset class	ii. Determine the "buy" amount of bonds and the "buy" amount of equities to achieve the *most* tax-efficient allocation in *each* account (tax-deferred and taxable).	
	Tax-deferred Account	**Taxable Account**
Bonds		
Equities		

iii. Justify, with *two* reasons, why this is the *most* tax-efficient allocation.
1.
2.

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QUESTION 2 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 25 MINUTES.

Island Life Assurance is a specialty life insurance company that markets its products globally. Its sole business is selling fixed-rate and variable annuity contracts. Island Life maintains accounting records in U.S. dollars (USD) and segments its fixed-rate and variable contract assets into separate investment portfolios to better match assets and liabilities.

Both fixed-rate and variable contracts have surrender clauses. The clauses allow the owner to terminate the contract for the original investment plus accrued earnings at the two-year anniversary of the contract. After the two-year period, the contracts cannot be surrendered for the remainder of the original term.

Island Life's fixed-rate annuities are sold with an initial 10-year term. Earning rates are guaranteed and are based on the 10-year U.S. Treasury bond yield at the time the contract is sold. Island Life invests its fixed-rate portfolio in government bonds issued by G7 countries and investment grade corporate bonds. Island Life currently has a small surplus in its fixed rate business. The weighted average duration of the assets is lower than the weighted average duration of the liabilities. Island Life's economist forecasts that global interest rates will rise over the next two years.

Island Life's variable annuity products are sold with an initial 20-year term. These contracts pay a return at maturity based on one of several global stock market index returns over that period.

Island Life pays its corporate tax liabilities at year end. Local tax regulations require:

- insurance companies that consolidate investment portfolios to pay a 10% tax on realized gains from equity investments;
- insurance companies that segment investment portfolios to pay a 10% tax on income and realized gains from all investments.

A. **Determine** the effect (increase, no change, decrease) on *each* of the following characteristics of the fixed-rate portfolio if Island Life's global interest rate forecast is correct:

    i.   surplus
    ii.   reinvestment risk
    iii.   expected surrender rate

Justify *each* response with *one* reason.

ANSWER QUESTION 2-A IN THE TEMPLATE PROVIDED ON PAGE 15.

(9 minutes)

B. **Identify** *two* of Island Life's investment policy constraints that are affected by the surrender clause. **Explain** how *each* constraint is affected.

(6 minutes)

Kyle Stewart manages Island Life's fixed-rate portfolio. Stewart previously managed a fixed income portfolio during a period of rising interest rates. The portfolio experienced large losses that took years to recover.

Global interest rates have ranged from 0.4 to 0.8 times the historical average over the past two years. Based on this information, Stewart forecasts interest rates to rise into a narrow band between 1.15 and 1.20 times the historical average. As a result, Stewart reallocates the fixed-rate portfolio assets to a very short duration relative to the duration of Island Life's fixed-rate liabilities. The government bond portion of Stewart's portfolio reflects his longstanding preference to equally weight all G7 countries.

In the months since he first moved to a short duration strategy, market interest rates have consistently decreased. Stewart continues to maintain his interest rate forecast and portfolio strategy. He states:

> "The primary objective of Island Life's fixed income portfolio is to avoid potential interest rate risk. Since our fixed-rate portfolio is currently at only a 5% surplus, a short duration strategy relative to our fixed-rate liabilities is necessary to prevent a shortfall."

C.   **Explain** how Stewart exhibits *each* of the following behavioral biases:

      i.   gambler's fallacy
      ii.   naïve diversification
      iii.   regret

(6 minutes)

D.   **Describe** *two* examples of Stewart's behavioral bias of overconfidence.

(4 minutes)

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Answer Question 2 on This Page

Template for Question 2-A

Characteristic	Determine the effect (increase, no change, decrease) on *each* of the following characteristics of the fixed-rate portfolio if Island Life's global interest rate forecast is correct. (circle one)	Justify *each* response with *one* reason.
i. surplus	Increase No change Decrease	
ii. reinvestment risk	Increase No change Decrease	
iii. expected surrender rate	Increase No change Decrease	

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QUESTION 3 HAS TWO PARTS (A, B) FOR A TOTAL OF 24 MINUTES.

Ed Schlipp is a pension fund consultant. Clients include Apax Bakers, CarbX Corp, and DataComp. He works with all clients to link assets and liabilities for their respective pension plans.

Apax is a major supplier of bread to retailers and restaurants. Apax generates all of its revenues in the U.S. and has been profitable in recent years. The outlook for future profitability of the company is positive.

Apax operates a defined benefit pension plan with 1 billion U.S. dollars (USD) in assets. Strong investment performance created a pension surplus of USD 95 million. The Apax pension plan has a growing ratio of inactive to active members and is now closed to new participants. Plan benefits are not inflation indexed.

A.   **Identify** *three* factors that affect Apax pension plan's ability to take risk. **Determine** whether *each* factor increases or decreases the plan's ability to take risk. **Justify** *each* response with *one* reason.

ANSWER QUESTION 3-A IN THE TEMPLATE PROVIDED ON PAGE 23.

(12 minutes)

CarbX Corp is an unprofitable U.S.-based producer of automobile engine components. Its defined benefit pension plan has been in deficit for 10 years. A recent agreement between the company and the participants of the CarbX pension plan resulted in the plan being frozen in exchange for CarbX making a one-time payment to fully fund the plan. The plan has a high ratio of inactive to active participants and plan benefits are not inflation indexed.

DataComp is a growing and profitable U.S.-based software company that markets its products globally. Its defined benefit pension plan was recently established and has a surplus. The plan has no inactive participants and is open to future participants. Plan benefits are not inflation indexed.

Schlipp has gathered data on the current asset allocation for each of the three pension plans, which are shown in Exhibit 1.

Exhibit 1
Current Pension Plan Asset Allocations

Asset Class	Apax Bakers	CarbX Corp	DataComp
Nominal bonds	90%	90%	60%
Real rate bonds	10%	0%	20%
Equity	0%	10%	20%

Schlipp's recommendation for all three clients is to create an asset portfolio that better mimics liabilities. He examines various potential trades (shown in Exhibit 2) to achieve this recommendation.

Exhibit 2
Potential Trades

Trade	Sell	Buy
A	10% nominal bonds	10% real rate bonds
B	10% nominal bonds	10% equity
C	10% real rate bonds	10% nominal bonds
D	10% real rate bonds	10% equity
E	10% equity	10% nominal bonds
F	10% equity	10% real rate bonds

B.   **Determine**, from the potential trades in Exhibit 2, which trade would be *most* appropriate to achieve Schlipp's recommendation for *each* company:

i.   Apax Bakers (Trade A, B, C, or D)
ii.   CarbX Corp (Trade A, B, E, or F)
iii.   DataComp (Trade B, C, E, or F)

Justify *each* response with *one* reason.

ANSWER QUESTION 3-B IN THE TEMPLATE PROVIDED ON PAGE 24.

(12 minutes)

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Answer Question 3 on This Page

Template for Question 3-A

Identify *three* factors that affect Apax pension plan's ability to take risk.	Determine whether *each* factor increases or decreases the plan's ability to take risk. (circle one)	Justify *each* response with *one* reason.
1.	increases decreases	
2.	increases decreases	
3.	increases decreases	

Answer Question $\boxed{3}$ on This Page

Template for Question 3-B

Company	Determine, from the potential trades in Exhibit 2, which trade would be *most* appropriate to achieve Schlipp's recommendation for *each* company. (circle one)	Justify *each* response with *one* reason.
i. Apax Bakers	Trade A Trade B Trade C Trade D	
ii. CarbX Corp	Trade A Trade B Trade E Trade F	
iii. DataComp	Trade B Trade C Trade E Trade F	

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QUESTION 4 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 14 MINUTES.

Francisco Martin and Emma Liu are analysts at the same firm. Martin uses the cyclical indicator approach to formulate his equity market outlook, whereas Liu uses microvaluation analysis to develop her equity market outlook. Martin and Liu have conflicting views on the current outlook for the U.S. equity market.

Martin prepares Exhibit 1, a table of recent values of selected U.S. cyclical indicators. He makes the following observation: "Several leading indicators suggest further deterioration in economic conditions. Based on the cyclical indicator approach, these developments are clearly unfavorable for the U.S. equity market."

Exhibit 1
Selected U.S. Cyclical Indicators

Indicator	Value as of 31 December 2009	Value as of 31 March 2010
Average duration of unemployment (weeks)	18.1	18.2
Average prime rate	5.0%	5.0%
Average weekly hours of manufacturing workers	40.3	39.2
Index of consumer expectations	59.8	49.2
Labor cost per unit of output, manufacturing	124.1	125.3
Index of new private housing starts authorized by local building permits	2429	2120
Manufacturing and trade sales (in U.S. dollar billions)	989	920
Ratio of consumer installment credit outstanding to personal income	0.175	0.186
Consumer price index (inflation rate) for services	217.7	216.8
Interest rate spread, 10-year Treasury bonds less federal funds rate	2.22%	2.45%

A.   **Identify** *two* leading cyclical indicators in Exhibit 1 that support Martin's observation regarding the U.S. equity market. **Explain** how the change in value of *each* of these indicators supports Martin's observation.

(6 minutes)

B.   **Describe** *two* general limitations of Martin's approach to formulating an equity market outlook.

(4 minutes)

Liu responds to Martin's observation: "The economy appears to be weakening, but I believe this has already been priced into the market. The S&P 500 Index is currently at 760. Inflation is low and corporate earnings of the S&P 500 Index constituents are $51.80. The dividend yield (on a trailing annual basis) is 3.5% and I expect the dividend growth rate to be constant at 5%. With the risk-free rate at 2%, if I assume a 6% equity risk premium, both the dividend discount model and the earnings multiplier approach indicate that the equity market is undervalued at these levels."

C. **Calculate** the intrinsic value of the S&P 500 Index using the constant growth dividend discount model of market valuation and the information provided by Liu. **Show** your calculations.

(4 minutes)

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QUESTION 5 HAS FIVE PARTS (A, B, C, D, E) FOR A TOTAL OF 15 MINUTES.

Bill Tubduhl is a consultant to the board of directors of the U.S.-based Thompson Foundation. The board asks Tubduhl to recommend an asset allocation for Thompson. Tubduhl reviews key objectives of the Thompson investment policy statement shown in Exhibit 1.

Exhibit 1
Thompson Foundation
Key Objectives of Investment Policy Statement

Return objective:
- Required annual rate of return on investment portfolio is 9.6%.

Risk objectives:
- Diversify the portfolio consistent with prudent investment practices.
- Minimize portfolio risk while achieving return objective.
- Leverage is not allowed.

For the strategic asset allocation analysis, Tubduhl has generated the corner portfolios shown in Exhibit 2.

Exhibit 2
Corner Portfolios
(Risk-free Rate = 3.0%)

| Corner Portfolio Number | Annual Expected Return (%) | Annual Expected Standard Deviation (%) | Sharpe Ratio | Asset Class Portfolio Weights (%) | | | | | |
				U.S. Equities	Non-U.S. Equities	Long-term U.S. Bonds	Inter-mediate-term U.S. Bonds	Non-U.S. Bonds	Real Estate
1	10.9	16.3	0.48	100.0	0.0	0.0	0.0	0.0	0.0
2	10.5	14.7	0.51	82.4	0.0	0.0	0.0	0.0	17.6
3	10.2	13.7	0.53	74.1	4.0	0.0	0.0	0.0	21.9
4	9.4	10.1	0.63	33.7	12.0	36.7	0.0	0.0	17.6
5	8.8	8.6	0.67	31.4	12.0	26.7	13.0	0.0	16.9
6	8.2	7.3	0.71	25.0	11.8	0.0	45.3	3.4	14.5
7	6.9	5.3	0.74	0.0	13.7	0.0	53.0	27.1	6.2
8	6.4	4.9	0.69	0.0	11.2	0.0	53.0	31.5	4.3

Answer Questions 5-A, 5-B, and 5-C using mean-variance analysis:

A.   **Select** the *two* adjacent corner portfolios to be used in finding the *most* appropriate strategic asset allocation for Thompson's investment portfolio.

(3 minutes)

B.   **Determine** the *most* appropriate allocation between the two adjacent corner portfolios selected in Part A.

(3 minutes)

C.   **Determine** the percentage that would be invested in real estate based on the *most* appropriate strategic asset allocation.

(3 minutes)

Tubduhl also advises Jack Slifer, a U.S. investor, who is considering the addition of high yield bonds to his portfolio. Based on Tubduhl's research, U.S. high yield bonds have an expected return of 6.5%, an expected standard deviation of 10.5%, and a predicted correlation with Slifer's portfolio of 0.6. Slifer's portfolio has a Sharpe ratio of 0.46. The risk-free rate is 3.0%.

D.   **Determine**, based on the Sharpe ratio criterion, if Tubduhl should include U.S. high yield bonds in Slifer's portfolio. **Justify** your response with *one* reason. **Show** your calculations.

(3 minutes)

At his next meeting with Slifer, Tubduhl proposes adding Chinese equities to the portfolio. The expected return on Chinese equities is 14.0% with an expected standard deviation of 23.5% (both in local currency). The expected standard deviation of the U.S. dollar/Chinese yuan exchange rate is 6.0% and the predicted correlation between Chinese equity returns in local currency and exchange rate movements is 0.2.

E.   **Calculate** the risk of Slifer's investment in Chinese equities measured in U.S. dollar terms. **Show** your calculations.

(3 minutes)

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QUESTION 6 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 18 MINUTES.

George Frost is a portfolio manager at ALIAB Bank, which has just issued a guaranteed investment contract (GIC). He needs to immunize this GIC, which guarantees a single payment of 80,000,000 U.S. dollars (USD) in 4 years and provides a bond equivalent yield of approximately 3.50%. Frost calculates the present value of the GIC to be USD 69,640,000. This is the amount he intends to invest today to immunize the GIC. He is not permitted to use leverage.

Frost is building a suitable portfolio and already holds the U.S. government bonds shown in Exhibit 1.

Exhibit 1
Existing Portfolio Bonds

Bond	Market Price (USD)	Total Market Value (USD)	Total Dollar Duration
Bond A	102.32	24,556,800	477,139
Bond B	94.90	29,815,000	2,104,939

Frost must choose a U.S. government bond to complete the immunized portfolio. He has gathered the data shown in Exhibit 2.

Exhibit 2
Bonds Available to Complete Immunized Portfolio

Bond	Market Price (USD)	Yield to Maturity	Modified Duration
Bond X	99.97	3.52%	1.333
Bond Y	99.36	3.80%	2.154
Bond Z	99.35	3.85%	1.890

A.   **Determine** which bond (X, Y, or Z) is the *most* suitable for Frost to complete the immunized portfolio. **Justify** your response with *one* reason. **Show** your calculations.

(8 minutes)

A client of Frost, Farm Technology (FT), has entered into a transaction requiring a payment of USD 250,000,000 in two years. FT has USD 235,000,000 available to meet this liability.

Frost recommends a technique called contingent immunization. Under certain market conditions, this technique can provide FT with a safety margin or cushion in meeting its liability. He notes that a U.S. government bond with a bond equivalent yield of 3.82% is available. FT agrees to implement contingent immunization using this bond.

B.   i.   **Determine** the initial dollar safety margin. **Show** your calculations.
     ii.   **Identify** the main advantage to FT of using contingent immunization rather than
           classical immunization.

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(6 minutes)

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Frost discusses other opportunities to use immunization with Victor Smith, a financial manager
at FT. Smith makes the following statements:

Statement 1:   "FT should use corporate bonds for immunization in the future as this will
               achieve a lower cost of immunization."

Statement 2:   "Whenever FT implements a multiple-liability immunization plan, the market
               value of the assets should be compared with the present value of the remaining
               liabilities by discounting the liabilities using zero coupon U.S. Treasury yields."

C.   **Explain** why *each* of Smith's statements is incorrect.

     Note: Simply reversing the statements will receive no credit.

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(4 minutes)

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QUESTION 7 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 20 MINUTES.

Chantal Jacob is a portfolio manager in the U.K. The U.K. has bid to be the host country for a major international sports tournament. The host country will be announced in three weeks.

Jacob believes that the share price of Severn Hospitality plc, a hotel operating company, will be significantly influenced by the outcome of the bid to host the tournament. If the U.K. is selected, she believes that Severn's share price would rise significantly. If the U.K. is not selected, she believes that Severn's share price would fall significantly. Jacob wants to profit from her beliefs by implementing a straddle. She gathers the information shown in Exhibit 1.

Exhibit 1
Severn Hospitality plc Share and Options Data
(GBP = British pound)

Current share price of Severn Hospitality plc	GBP 8.80
Annual risk-free rate	1.50%
Price of one month call option, exercise price GBP 9.00	GBP 0.38
Price of one month put option, exercise price GBP 9.00	GBP 0.57

A.   **Determine** *each* of the following:

     i.   the profit per share on the straddle if the U.K. wins the bid and Severn's share price doubles.
     ii.   the *two* share prices of Severn at which breakeven for the straddle occurs.

     Show your calculations.

(4 minutes)

B.   **Explain** why *each* of the following option strategies is *less* appropriate than a straddle, given Jacob's beliefs:

     i.   bull spread
     ii.   short butterfly spread
     iii.   zero cost collar

(6 minutes)

Jacob manages the equity portion of the Bold Beverages Pension Fund, which is converting its pension plan from defined benefit to defined contribution, effective three months from now. Plan participants have three months to elect various investments for the new plan. The trustees inform Jacob that they wish to keep the value of the pension fund stable during these three months.

Accordingly, Jacob wants to eliminate systematic risk in the equity portion of the fund by using futures on the FTSE 100 Index, which is the benchmark for the fund's equity portfolio. She collects the information shown in Exhibit 2.

Exhibit 2
Bold Beverages Pension Fund and Market Data

Value of Bold Beverages Pension Fund equity portfolio	GBP 235,400,000
Level of FTSE 100 Index	4,650
Level of three-month FTSE 100 futures contract	4,667
Futures multiplier	GBP 10
Beta of Bold Beverages Pension Fund equity portfolio	1.04
Beta of FTSE 100 futures contract	0.98

C.   i.   **State** the target beta for Jacob's hedging strategy.
       ii.   **Determine** the number of futures contracts that Jacob should sell to achieve the target. **Show** your calculations.

(5 minutes)

Three months after Jacob implements the hedge, the FTSE 100 Index is up 3.75%. The equity portion of the Bold Beverages Pension Fund is up 3.50% and the level of the expiring three-month FTSE 100 futures contract that Jacob sold is 4,824. The trustees ask Jacob to assess the effectiveness of the hedge that has been in place.

D.   **Determine** the effective beta of the Bold Beverages Pension Fund equity portfolio, including the futures, assuming that Jacob sold 5,200 futures contracts. **Show** your calculations.

(5 minutes)

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NOT BE GRADED

QUESTION 8 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 17 MINUTES.

Rav Malik, an investment advisor, meets with a new client in the U.K., Ian Brown, to discuss his investment portfolio. Brown has managed his own assets in the past and rebalances his portfolio to target weights at the beginning of each month.

Malik suggests that Brown consider percentage-of-portfolio rebalancing with daily monitoring and rebalancing to target weights. He offers to demonstrate how the two approaches would differ after rebalancing on 1 April, given the allocations shown in Exhibit 1, with tolerance bands or corridor widths set at ± 10% of the target allocation.

Exhibit 1
Brown Asset Allocation

Asset Class	Strategic Asset Allocation: Target Weights	Closing 31 March Allocation
Large-cap U.K. equity	30%	27%
International equity	30%	28%
U.K. fixed income	40%	45%

A.   **Determine** whether Brown's calendar rebalancing method would result in a higher, lower, or the same weighting in international equity holdings on 1 April, as compared to Malik's percentage-of-portfolio rebalancing method. **Explain** your response.

(4 minutes)

Malik tells Brown, "Before adopting percentage-of-portfolio rebalancing, we need to determine the optimal corridor width for each asset class based on market conditions and your circumstances." Malik notes the following information:

- Brown's tolerance for risk has declined as volatility in the international equity markets has increased.

- Brown is concerned about taxes and transaction costs associated with frequent rebalancing. Transaction costs for international equity investments are higher than for Brown's other asset classes.

- Global equity market correlations are increasing and the correlation of international equity with the rest of the portfolio is higher than the correlation of U.K. fixed income with the rest of the portfolio.

Malik then tells Brown, "The optimal corridor width for U.K. fixed income should be narrower than the optimal corridor width for international equity."

B. **Determine** *two* factors that support Malik's conclusion regarding the optimal corridor width for U.K. fixed income relative to international equity.

(4 minutes)

Malik notes that Brown's domestic equity allocation consists of only large-cap equity. He discusses the possibility of adding small-cap equity to the portfolio and Brown agrees.

Malik reviews Brown's portfolio holdings and enters two trades, shown in Exhibit 2, into the firm's order management system.

Exhibit 2
Trading Orders and Market Data on 1 April
(GBP = British pound)

Symbol	Trade	Size (shares)	Average Daily Volume	Last Price (GBP)	Bid-Ask Spread (%)
ABCD	Buy	5,000	13,000	4.15	0.79
EFGH	Buy	40,000	475,000	9.14	0.06

Sean Granger, a trader at Malik's firm, reviews the planned trades for 1 April and notes the following:

- Malik wants to establish a long-term position in ABCD for Brown.
- Malik believes EFGH's earnings report, scheduled to be released tomorrow afternoon, will have a favorable effect on the share price of EFGH.

Granger considers executing the orders using a crossing system, implementation shortfall algorithm, or volume-weighted average price (VWAP) algorithm.

C. **Recommend** the *most* appropriate trade execution tactic (crossing system, implementation shortfall, or VWAP) for *each* order.

   i.   Buy 5,000 shares ABCD
   ii. Buy 40,000 shares EFGH

Justify *each* recommendation with *one* reason.

ANSWER QUESTION 8-C IN THE TEMPLATE PROVIDED ON PAGE 63.

(6 minutes)

That afternoon, Malik reads a research report recommending purchase of small-cap RB Holdings Corporation (RBHC) and decides to take a position. The following sequence of events occurs:

- On 1 April, RBHC closes at GBP 10.25.
- The next morning, Malik directs Granger to enter a limit order expiring at the end of the day to purchase 20,000 shares at GBP 10.25.
- Granger purchases a total of 6,000 shares at GBP 10.24 with commissions of GBP 400.
- On 2 April, RBHC closes at GBP 10.32, and VWAP is GBP 10.27.
- No additional shares were purchased and the remaining order is cancelled.

Granger informs Malik that his trading was successful because he paid less than the day's (2 April) VWAP of GBP 10.27. Malik notes that VWAP does not consider the costs of missed trade opportunities.

D.   **Calculate** the missed trade opportunity cost, in basis points, for the RBHC trade. **Show** your calculations.

(3 minutes)

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Answer Question 8 on This Page

Template for Question 8-C

Order	Recommend the *most* appropriate trade execution tactic (crossing system, implementation shortfall, or VWAP) for *each* order. (circle one)	Justify *each* recommendation with *one* reason.
i. Buy 5,000 shares ABCD	Crossing system Implementation shortfall VWAP	
ii. Buy 40,000 shares EFGH	Crossing system Implementation shortfall VWAP	

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QUESTION 9 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 12 MINUTES.

P&M Capital has been selected to manage a U.S. equity portfolio for a Japanese institutional investor, Tamui Life Company. P&M intends to use an active strategy to manage Tamui's portfolio of approximately 300 equities. Tomoko Sato, an analyst in Tamui's international investment division, is determining a benchmark to evaluate the portfolio's performance. Sato seeks the highest quality benchmark so that investment risk may be effectively managed. Sato concludes that a custom benchmark would be too costly for Tamui. Both parties agree that a broad market index would be most appropriate for this mandate. Sato is asked to evaluate the quality of three possible benchmarks:

- S&P 500
- Russell 1000
- Russell 3000

Sato produces Exhibit 1 to compare Tamui's portfolio to the three possible benchmarks.

Exhibit 1
Comparison of Tamui's Portfolio to Possible Benchmarks

Statistic	Tamui Portfolio	S&P 500	Russell 1000	Russell 3000
Average price-to-book ratio	1.95	2.06	2.13	2.09
Beta relative to the benchmark	---	1.03	0.85	0.92
Median market capitalization (U.S. dollar billions)	5.60	7.98	3.28	0.59
Volatility (annual)	12.0%	18.7%	10.3%	10.4%
Tracking error relative to the benchmark	---	1.87%	4.72%	2.07%
Dividend yield	1.86%	2.45%	2.08%	1.76%

A.   **Recommend**, from among the three possible benchmarks presented in Exhibit 1, the highest quality benchmark for Tamui's portfolio. **Justify** your recommendation with *two* reasons, using information provided in Exhibit 1.

(5 minutes)

Sato is directed by management to prepare a micro-attribution report for Tamui's portfolio using a fundamental factor model. She uses portfolio analysis software to produce Exhibit 2.

Exhibit 2
Fundamental Factor Model Micro-attribution Report for Tamui's Portfolio
for the Quarter Ended 31 March

Returns and Attribution	Portfolio Exposure	Normal Exposure	Active Exposure	Active Impact	Return
Market return					–8.42%
Normal portfolio return					–7.81%
Cash timing	3.20	0.00	3.20	0.16%	
Beta timing	1.17	1.00	0.17	–0.17%	
Total market timing					–0.01%
Growth	1.23	0.87	0.36	–0.30%	
Size	–0.20	0.34	–0.54	0.20%	
Leverage	–0.36	–0.72	0.36	0.09%	
Yield	–0.10	0.00	–0.10	0.35%	
Total fundamental risk factors					0.34%
Total economic sectors					–0.15%
Specific (unexplained)					–0.58%
Actual portfolio return					–8.21%

B.   i.   **Determine** which overweight exposure added the *most* active value to Tamui's portfolio.

       ii.   **Determine** which underweight exposure added the *most* active value to Tamui's portfolio.

(4 minutes)

C.   **Calculate** the value added to Tamui's portfolio through active management for the quarter ended 31 March.

(3 minutes)

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The Morning Session of the 2011 Level III CFA® Examination has 9 questions. For grading purposes, the maximum point value for each question is equal to the number of minutes allocated to that question.

Question	Topic	Minutes
1	Portfolio Management – Individual/Behavioral	15
2	Portfolio Management – Individual	23
3	Portfolio Management – Institutional	26
4	Portfolio Management – Economics	23
5	Portfolio Management – Asset Allocation	20
6	Portfolio Management – Fixed Income	19
7	Portfolio Management – Equity Investments	22
8	Portfolio Management – Risk Management	16
9	Portfolio Management – Performance Evaluation	16
	Total:	**180**

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> **Questions 1 and 2 relate to the Becker family. A total of 38 minutes is allocated to these questions.** *Candidates should answer these questions in the order presented.*

QUESTION 1 HAS TWO PARTS (A, B) FOR A TOTAL OF 15 MINUTES.

Robert Becker, age 75, retired 5 years ago from the building products business that he founded. After his business, Buildco, went public in the 1990's, he remained as CEO and continued to hold shares in the company. After his wife's death, Becker hires Emily Frost, a portfolio manager and trust specialist, to help with his estate planning. Becker establishes a revocable trust and an irrevocable trust.

Income, realized capital gains, and estate assets (at death) are all taxed at a flat 20% rate. For the revocable trust, the cost basis of investments increases to the market value on the date of Becker's death, and the assets are subject to estate taxes. For the irrevocable trust, the cost basis of investments does not change, and the assets are not subject to estate taxes.

Currently, the two trusts each have 2.0 million U.S. dollars (USD) of their assets in Buildco shares, with a cost basis of USD 200,000 each. All Buildco shares have unrealized capital gains.

Becker has the following two immediate objectives as part of his estate planning:

Objective 1: Sell USD 1.0 million of Buildco shares while minimizing total taxes.

Objective 2: Put additional assets into a trust to protect those assets from potential future legal claims against Becker.

A. **Determine** which trust (irrevocable, revocable, or both equally) is more appropriate for *each* objective:

   i.   Objective 1
   ii. Objective 2

Justify your response with *one* reason for *each* objective.

Note: Consider *each* objective independently.

Answer Question 1-A in the Template provided on page 5.

(6 minutes)

Frost meets with Becker to compare their views on investing. Four discussions from that meeting are shown in Exhibit 1.

Exhibit 1
Selected Discussions from Becker – Frost Meeting

Discussion Number	Speaker	Discussion
1	Becker:	The first thing you might notice about my investment style is that I favor growth investments over income-producing assets.
	Frost:	I don't think that is the right approach. Equities might deliver higher long-term returns. However, for a trust portfolio, I prefer that the client knows the size and timing of the cash flows he will be receiving. That's what an investor gets with bonds.
2	Frost:	I notice you hold a significant position in Rolling Mix Cement shares.
	Becker:	Rolling Mix Cement's CEO used to run the western operations for Buildco. He did a wonderful job for us, so I think Rolling Mix shares are great to own.
3	Frost:	I was looking at the mutual funds in your portfolio and can see that you purchased an equal amount across four mutual funds.
	Becker:	I think that mutual fund family offers four great products. So I bought all of them: an EAFE large-cap fund, a U.S. growth fund, a U.S. small-cap fund, and a U.S. corporate bond fund.
4	Frost:	I notice you have many portfolio positions where the current values have been below cost for awhile.
	Becker:	Investing requires patience. You have to give things time to work out.

B.   **Identify** the discussion in which one of the participants *best* illustrates *each* of the following behavioral biases:

   i.   representativeness
   ii.   frame dependence
   iii.   aversion to ambiguity

   Justify *each* response with *one* reason.

   Note: Consider *each* bias independently. Use each discussion only *once*.

   Answer Question 1-B in the Template provided on page 6.

   (9 minutes)

Answer Question 1 on This Page

Template for Question 1-A
Note: Consider *each* objective independently.

Objective	Determine which trust (irrevocable, revocable, or both equally) is more appropriate for *each* objective. (circle one)	Justify your response with *one* reason for *each* objective.
1. Sell USD 1.0 million of Buildco shares while minimizing total taxes.	irrevocable revocable both equally	
2. Put additional assets into a trust to protect those assets from potential future legal claims against Becker.	irrevocable revocable both equally	

Answer Question 1 on This Page

Template for Question 1-B

Note: Consider *each* bias independently. Use each discussion only *once*.

Behavioral bias	Identify the discussion in which one of the participants *best* illustrates *each* of the following behavioral biases (circle the discussion number from Exhibit 1).	Justify *each* response with *one* reason.
i. representativeness	1 2 3 4	
ii. frame dependence	1 2 3 4	
iii. aversion to ambiguity	1 2 3 4	

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> **Questions 1 and 2 relate to the Becker family. A total of 38 minutes is allocated to these questions.** *Candidates should answer these questions in the order presented.*

QUESTION 2 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 23 MINUTES.

Five years have passed. Robert Becker recently died and left his estate to his only child, Michael. Michael and his wife are both 50 years old and have no children. Michael expects to receive his after-tax inheritance of 8.0 million U.S. dollars (USD) at the end of this year. The Beckers both plan to retire at that time, and are meeting with Emily Frost to help them establish an investment plan.

The Beckers currently do not have an investment portfolio and they own a home valued at USD 3.7 million. At the end of this year, the Beckers' outstanding debt will be USD 3.5 million (home mortgage) and USD 150,000 (consumer debts). The Beckers will pay off their mortgage and their consumer debts soon after the inheritance is received.

The Beckers currently have a combined after-tax salary of USD 475,000, current-year living expenses of USD 250,000, plus annual mortgage payments (principal + interest) of USD 225,000. Michael's company pension will pay him USD 48,000 after-tax next year, and then payments will grow at the rate of inflation, which is expected to be 3% annually. His employer will continue to pay all of the Beckers' medical costs until death. Both the pension and health benefits will continue to accrue to Becker's wife, if he dies first. The Beckers expect their living expenses will also continue to grow at the rate of inflation until one of them dies. At that time, they expect the survivor's living expenses will decrease to 75% of their combined expenses, and then continue to grow at the rate of inflation.

The Beckers intend to fund their living expenses with Michael's pension and investment income generated from their investable assets, which do not include their home. The Beckers consider their investment base to be large, and want their portfolio to be invested conservatively. They want to maintain the real value of their investable assets over time, and plan to leave their estate to charity. All income and realized capital gains are taxed at 20%.

A. **Calculate** the after-tax nominal rate of return required for the Beckers' first year of retirement. **Show** your calculations.

(8 minutes)

B. **Discuss** *two* factors specific to the Beckers' situation that decrease their risk tolerance.

(4 minutes)

C.   **Formulate** *each* of the following constraints for the Beckers' investment policy
        statement (IPS):

        i.   liquidity
        ii.   time horizon

                                (4 minutes)

Several years later, the Beckers again meet with Frost. Their investable portfolio is now valued
at USD 7.0 million. The Beckers state that their primary goal is to maintain their current living
standard as long as they live. The Beckers also want to leave a charitable gift of at least
USD 5.0 million from their investable assets after they have both died. However, they are not
willing to risk running out of money in their old age to achieve this secondary goal. The Beckers
agree with Frost to assume a 25-year time horizon.

Frost produces Monte Carlo simulations for the Beckers using two portfolios with different asset
allocations. The simulations use a long series of historical index data for each asset class in the
two portfolios. The resulting distributions of terminal values are shown in Exhibit 1. All
terminal values are after expected taxes and spending needs have been met.

                                Exhibit 1
                        Monte Carlo Simulation Results
                Projected Portfolio Terminal Values at 25 Years

Percentile	Terminal Values (USD thousands)	
	Portfolio A	**Portfolio B**
95th	17,808	35,814
90th	11,916	21,729
75th	9,192	14,454
50th	4,896	8,813
25th	2,154	5,016
10th	294	0
5th	39	0

D.   i.   **Determine**, based on the Monte Carlo simulations, which portfolio (A or B) will
                better allow the Beckers to achieve their goals. **Justify** your response with *one*
                reason related to risk.

        ii.   **Discuss** *two* improvements Frost could make in her Monte Carlo simulations.

                                (7 minutes)

QUESTION 3 HAS FIVE PARTS (A, B, C, D, E) FOR A TOTAL OF 26 MINUTES.

Stacy Bergen is a consultant for the endowments of two American universities – Weymount University (WU) and Slate University (SU). WU is a private university with annual operating expenses of 150.0 million U.S. dollars (USD). WU has an endowment currently valued at USD 750.0 million. Bergen gathers the following information about WU and its endowment:

- The WU endowment's primary goal is to maintain the real value of its assets over the long term.

- The WU endowment's secondary goal is to continue to fund 25% of WU's annual operating expenses, by means of its spending rule.
    ○ Tuition and grants fund the remainder of the annual operating expenses.
    ○ As a private institution, WU receives no government financial support.

- The WU endowment:
    ○ uses a simple spending rule with a 5% annual spending rate based on the endowment's beginning-of-year market value.
    ○ receives private donations and uses these donations, in part, for its liquidity needs.
    ○ evaluates its investment managers based on the endowment's three-year average annual return.
    ○ forecasts the inflation rate of WU's operating expenses to be equal to the growth rate of the Higher Education Price Index (HEPI), which is expected to be 4% annually.
    ○ has an annual 0.55% management expense rate.

A. i. **Formulate** the return objective for the WU endowment.

  ii. **Calculate** the required return for the WU endowment. **Show** your calculations.

(4 minutes)

B. **Determine** how a change in *each* of the following factors, holding all else constant, affects the risk tolerance (increases, decreases, does not change) for the WU endowment:

  i. private donations
  ii. expected inflation

Justify *each* response with *one* reason.

Note: Consider *each* factor independently.

Answer Question 3-B in the Template provided on page 20.

(6 minutes)

C. **Formulate** *each* of the following constraints for the WU endowment's investment policy statement (IPS):

i. liquidity
ii. time horizon

(4 minutes)

A year has passed since Bergen's initial review. Due to significant losses in the market value of the portfolio, the WU endowment now provides less than 25% of WU's operating expenses. In addition, donations have declined. The investment committee asks Bergen to propose measures to maintain the long-term real value of the endowment, and reduce the volatility of the endowment's funding of WU's operating expenses. In response, Bergen suggests the following strategic actions:

Strategic action 1: Decrease the endowment's spending rate.
Strategic action 2: Adopt a rolling three-year average spending rule, based on the endowment's beginning-of-year market value for the last three years.
Strategic action 3: Revise the portfolio's asset allocation to decrease its risk.

D. **Determine** which *one* of Bergen's strategic actions is:

i. *least likely* to assist the endowment in achieving its primary goal.

ii. *most likely* to reduce the volatility of the endowment's funding of WU's operating expenses.

Justify *each* response with *one* reason.

Answer Question 3-D in the Template provided on page 22.

(6 minutes)

Bergen's other institutional client, SU, is a growing public university. SU has an annual operating budget of USD 210.0 million. The SU endowment is currently valued at USD 700.0 million. Bergen gathers the following information about SU and its endowment:

*   The SU endowment's primary goal is to maintain the real value of its assets over the long term.

*   The SU endowment's secondary goal is to continue to fund SU's annual operating budget shortfall (currently 10% of the operating budget), so long as that does not violate its spending rule.
    ◦ 90% of SU's operating budget is funded by government funding and tuition, and this is expected to continue.

- The SU endowment:
  ○ funds SU's operating budget shortfall, but caps its contribution at its spending maximum.
  ○ has a spending maximum that is 5% of the average of the last three years' beginning-of-year market value.
  ○ has experienced significant growth in private donations over the last 10 years.
  ○ evaluates its investment managers based on the endowment's six-year average annual return.
  ○ forecasts the inflation rate of SU's operating budget at 1 percentage point below the growth rate of the HEPI. The HEPI is expected to grow at 4% annually.

E.   **Discuss** *three* factors that suggest the SU endowment has greater risk tolerance than the WU endowment.

(6 minutes)

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Answer Question 3̲ on This Page

Template for Question 3-B
Note: Consider *each* factor independently.

Factor	Determine how a change in *each* of the factors, holding all else constant, affects the risk tolerance (increases, decreases, does not change) for the WU endowment. (circle one)	Justify *each* response with *one* reason.
i. private donations	increases decreases does not change	
ii. expected inflation	increases decreases does not change	

Answer Question ③ on This Page

Template for Question 3-D

Determine which *one* of Bergen's strategic actions is:	Bergen's strategic actions (circle one)	Justify *each* response with *one* reason.
i. *least likely* to assist the endowment in achieving its primary goal.	1 2 3	
ii. *most likely* to reduce the volatility of the endowment's funding of WU's operating expenses.	1 2 3	

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QUESTION 4 HAS FIVE PARTS (A, B, C, D, E) FOR A TOTAL OF 23 MINUTES.

Daniel Wallbank is the chief investment officer of a large global asset management firm. He is considering equity investments in a specific developing country. His primary concern is to determine the intrinsic value of that country's broad equity index relative to its current market value. Wallbank asks the firm's market strategist, Judy Shipp, to assist him with the valuation process.

Shipp suggests using the Cobb-Douglas production function, under the assumption of constant returns to scale, to model the growth in real economic output. Her previous research shows that, over the long term and in a developing country, the growth rate of corporate earnings and dividends, adjusted for inflation, should closely track the growth of real gross domestic product (GDP). Her research on this country provides the projections shown in Exhibit 1.

Exhibit 1
Country Projections (2011 – 2025)

Average annual growth in total factor productivity (TFP)	2.8%
Average annual growth in capital stock	3.6%
Average annual growth in labor input	2.2%
Average unemployment rate	2.0%
Output elasticity of capital	0.4

A.   **Calculate** the projected average annual real GDP growth rate using the Cobb-Douglas production function and the information in Exhibit 1. **Show** your calculations.

(4 minutes)

Shipp tells Wallbank that the Cobb-Douglas projection of GDP growth may be affected by two actions the country's government is considering:

   Action 1:   Issue new regulations to reduce environmental pollution by manufacturers.

   Action 2:   Decrease the minimum retirement age by three years for all workers.

B.   **Determine** the *initial* effect (increase, decrease, or no change) *each* action would most likely have on the country's GDP growth trend. **Justify** *each* response with *one* reason.

   Note: No calculations are required. Consider *each* action independently.

   Answer Question 4-B in the Template provided on page 28.

(6 minutes)

Shipp compiles the data to estimate the intrinsic value of the country's broad equity index. The current annual dividend for the index is 10.00 U.S. dollars (USD). She assumes the initial dividend growth rate is 6.0% and that over 15 years the dividend growth rate will decline linearly by a total of 50%. The assumed discount rate to perpetuity is 5.5%.

C.   **Calculate** the country's broad equity index price level implied by the H-Model. **Show** your calculations.

(4 minutes)

Shipp tells Wallbank there are two alternative models that can be used to determine the fair value of an equity market. These models are the Fed Model and the Yardeni Model. She compiles the data in Exhibit 2 to use with these two models.

Exhibit 2
Capital Market Data

10-year government bond yield	4.05%
10-year A-rated corporate bond yield	4.70%
Forward broad equity index earnings yield	3.95%
Consensus long-term earnings growth forecast	7.50%
Weighting factor, d	0.10

After listening to Shipp explain the differences between the two models, Wallbank questions the use of the Fed Model, since it excludes important factors that the Yardeni Model includes.

D.   **Identify** *one* factor that is excluded from the Fed Model, but is included in the Yardeni Model. **Discuss** whether the Yardeni Model accurately addresses that factor.

(3 minutes)

E.   **Determine**, using the data in Exhibit 2, if the broad equity market is overvalued, fairly valued, or undervalued according to the:

i.   Fed Model
ii.   Yardeni Model

Justify *each* response with *one* reason. **Show** your calculations.

Answer Question 4-E in the Template provided on pages 31 and 32.

(6 minutes)

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Answer Question ⁴ on This Page

Template for Question 4-B
Note: No calculations are required. Consider *each* action independently.

Action	Determine the *initial* effect (increase, decrease, or no change) *each* action would most likely have on the country's GDP growth trend. (circle one)	Justify *each* response with *one* reason.
1. Issue new regulations to reduce environmental pollution by manufacturers.	increase decrease no change	
2. Decrease the minimum retirement age by three years for all workers.	increase decrease no change	

Answer Question 4 on This Page

Template for Question 4-E

Model	Determine, using the data in Exhibit 2, if the broad equity market is overvalued, fairly valued, or undervalued according to the models indicated. (circle one)	Justify *each* response with *one* reason. Show your calculations.
i. Fed Model	overvalued fairly valued undervalued	

Answer Question 4 on This Page

Template for Question 4-E (continued)

Model	Determine, using the data in Exhibit 2, if the broad equity market is overvalued, fairly valued, or undervalued according to the models indicated. (circle one)	Justify *each* response with *one* reason. Show your calculations.
ii. Yardeni Model	overvalued fairly valued undervalued	

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QUESTION 5 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 20 MINUTES.

Colleen Finnegan is 32 years old and lives in Ireland. She worked as an equity analyst for 10 years, but lost her job during a recent bear market. Finnegan's compensation was highly correlated with equity market returns and she expects this will be true for the rest of her working life. She continues to manage her personal portfolio of European equities and bonds, currently valued at 300,000 euros (EUR). Finnegan optimizes and rebalances her portfolio using mean-variance optimization (MVO). Her current allocation is 70% equities and 30% fixed income, including cash. In managing her portfolio, she has been dissatisfied with the frequency of rebalancing required and the amount of transaction costs incurred.

Finnegan has a variable-rate mortgage on her home. If she fails to make her mortgage payments for three months, she risks losing her home. Finnegan does not want to sell assets in her investment portfolio to pay her monthly mortgage payments. She hopes to find a new job before her cash is depleted. Because she is unemployed, her effective tax rate is currently very low, but will increase significantly once she finds a new job.

Finnegan seeks advice on her asset allocation approach from Seamus Welch, a portfolio manager with her former employer. Finnegan tells Welch that she had above-average risk tolerance while she was employed. She now thinks she has below-average risk tolerance until she finds a new job. She also explains that if she starts a new job within the year, she intends to make a deposit of EUR 30,000 on a home for her physically disabled sister. This deposit would be funded by liquidating some assets. Finnegan tells Welch that, as an analyst, she covered European clothing retailers. She continues to maintain a positive view on many firms in this sector and she would like to incorporate these views into her investment strategy.

Welch suggests to Finnegan that, based on her circumstances, the standard MVO process can be improved upon by using a resampled efficient frontier, the Black-Litterman approach, or a Monte Carlo simulation.

A.   **Explain**, compared to the standard MVO process, and based on Finnegan's circumstances:

   i.   *two* advantages of using a resampled efficient frontier.
   ii.   *one* advantage of using the Black-Litterman approach.
   iii.   *two* advantages of using a Monte Carlo simulation.

(10 minutes)

Welch explains to Finnegan that she is currently following an asset-only (AO) approach to strategic asset allocation. He strongly advises her to adopt an asset/liability management (ALM) approach.

B.   **Discuss** *three* reasons, based on Finnegan's circumstances, why an ALM approach would be more appropriate than an AO approach.

(6 minutes)

Welch also suggests that Finnegan consider her human capital in the asset allocation process. He believes that Finnegan should reduce her allocation to equities at this time.

C.   **Discuss** *two* reasons, based on her human capital, why Finnegan's current allocation to equities should be lower.

(4 minutes)

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NOT BE GRADED**

QUESTION 6 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 19 MINUTES.

David Andrews, a fixed income portfolio manager at SM Capital, is meeting with a defined benefit pension fund client. The client has asked Andrews to match the dollar duration of its government bond portfolio to the dollar duration of its liability benchmark. Because of the nature of the liabilities, the duration of the liability benchmark remains constant. At the beginning of the current year, the bond portfolio's dollar duration was equal to the dollar duration of the liability benchmark. At the end of each year, the manager is required to rebalance the portfolio so that the dollar duration of the assets again matches the dollar duration of the liability benchmark, while keeping the portfolio proportions of each bond unchanged. Andrews gathers the data in Exhibit 1 to prepare for rebalancing.

Exhibit 1
Pension Fund Government Bond Portfolio

	End of Year		Beginning of Year	
	Price	**Duration**	**Price**	**Duration**
Bond 1	94.00	4.3	94.50	4.9
Bond 2	93.00	6.3	90.00	7.0
Bond 3	102.00	5.0	103.50	5.5

Note: Each bond has a total par value of 1 million U.S. dollars (USD).
        Bond prices are shown as a percentage of par.

A.   **Calculate** for the pension fund's government bond portfolio:

   i.   the rebalancing ratio.
   ii.   the amount of cash required for rebalancing.

   Show your calculations.

(7 minutes)

Jim Wang, another portfolio manager at SM Capital, actively manages a fixed income portfolio that invests in a particular region of Europe. The firm's chief economist just released her forecast for this region. Contrary to market expectations, she forecasts the following:

- Consumer confidence will increase.
- Unemployment will fall.
- Short-term interest rates will remain unchanged, while long-term rates will increase by 200 basis points.
- Corporate defaults will decrease substantially.

Wang's benchmark index contains three sectors of investment-grade corporate bonds. Relative to his benchmark index, Wang may alter his sector weights, credit quality, and duration. He is

restricted to investing in investment-grade bonds, and only in the three sectors included in the benchmark index. Exhibit 2 provides details of his portfolio versus the benchmark index.

Exhibit 2
Regional European Actively Managed Corporate Bonds
Portfolio and Benchmark Index Summary

Portfolio Characteristics		Wang's Portfolio	Benchmark Index
Sector weights:	consumer cyclicals	46.0%	33.3%
	consumer non-cyclicals	21.0%	33.3%
	utilities	33.0%	33.3%
Average credit quality*		A	A
Duration**		4.8	4.8

    * Bonds in both the portfolio and the benchmark index range in credit quality from BBB (lowest investment grade) to AAA (highest investment grade).
  ** Short-, mid-, and long-term bonds are each 1/3 of both the portfolio and the benchmark index.

B.   **Determine**, assuming the economist's forecast is accurate, whether Wang's portfolio is *most likely* to match, underperform, or outperform its benchmark. **Justify** your response with *one* reason.

(3 minutes)

Given the economist's forecast, Wang is now considering the following trading strategies within his portfolio:

    Trading strategy 1:   sector rotation trades
    Trading strategy 2:   credit adjustment trades
    Trading strategy 3:   yield curve adjustment trades

C.   **Describe** the trades that Wang could use (buy/sell bonds as appropriate) to implement *each* trading strategy. **Justify** *each* trade, based on the economist's forecast.

    Note: Consider *each* strategy independently.

    Answer Question 6-C in the Template provided on page 45.

(9 minutes)

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Answer Question $\boxed{6}$ on This Page

Template for Question 6-C
Note: Consider *each* strategy independently.

Trading strategy	Describe the trades that Wang could use (buy/sell bonds as appropriate) to implement *each* trading strategy.		Justify *each* trade, based on the economist's forecast.
1. sector rotation trades	Bonds to buy:		
	Bonds to sell:		
2. credit adjustment trades	Bonds to buy:		
	Bonds to sell:		
3. yield curve adjustment trades	Bonds to buy:		
	Bonds to sell:		

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NOT BE GRADED**

QUESTION 7 HAS FIVE PARTS (A, B, C, D, E) FOR A TOTAL OF 22 MINUTES.

Nationwide Advisors is considering the purchase of Orca Corporation shares. Over the past several years, Orca, an industrial electronics manufacturer, has experienced a gradual decline in market share. While Orca has maintained profitability, its share price performance over the last 10 years has been significantly below the industry average. Nationwide attributes Orca's loss of market share and poor share price performance to under-investment in new products and new production technologies.

Orca is 65% debt-financed, with a large portion of its debt held by Manley Bank. The market for Orca equity is liquid, with shares trading on both national and foreign exchanges. A mutual fund company, Horizon World Investments, is the largest shareholder. Horizon currently holds its target weighting of 4% of Orca's outstanding equity. Horizon is known for its active trading style, and has above-average portfolio turnover in each of its funds.

Orca's CEO and board chairman is Richard Krass. He and the other key executives of Orca have been at the firm since it was founded 25 years ago. Executive compensation consists of salary, cash bonuses, and relatively small stock grants. For each executive, the cash bonus represents a significant part of total compensation. The cash bonus is based on the firm meeting year-over-year earnings growth targets that are set at the beginning of each year.

Orca's board of directors consists of 10 directors, five of whom are classified as "independent directors" in Orca's annual report. Two of the independent directors are executives of Manley Bank. The other three independent directors are each CEOs of large publicly-traded companies and directors of several other companies. The compensation of Orca's board of directors is a fixed fee of 50,000 U.S. dollars (USD) per year, per director.

A.   **Recommend** *two* measures to improve the management incentive system at Orca. **Justify** *each* response with *one* reason.

(6 minutes)

B.   **Discuss** *two* reasons why Orca's board of directors *most likely* does not represent the best interests of shareholders.

(4 minutes)

C.   **Discuss** *two* benefits that may be realized by Orca replacing some of its debt with equity.

(4 minutes)

D.   **Discuss** *two* reasons why Horizon is *not likely* to be an effective active monitor of Orca.

(4 minutes)

Nationwide is also considering purchasing shares of Acorn Co., a timber harvesting firm in an emerging market. Nationwide believes that Acorn's external corporate governance framework provides poor legal protection of shareholder rights. Nationwide knows that Acorn has been considering the issuance of a cross-listed security such as an American Depository Receipt (ADR). Nationwide believes that a cross listing could improve Acorn's corporate governance.

E.   **Explain** *two* reasons why the issuance of ADRs could have a positive effect on Acorn's corporate governance.

(4 minutes)

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QUESTION 8 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 16 MINUTES.

Sofia Lipka is a risk analyst at Warsaw Bank (WB), an investment bank with operations in Poland, Germany, and Russia. WB is currently expanding its operations to include proprietary trading and is reviewing its risk management policies. WB uses Value at Risk (VaR) models to monitor its risk exposures.

WB's current portfolio of Polish equities contains only long positions. The volatility of Polish equities has recently increased, and Lipka expects volatility to remain high over the next several quarters. As a result, she has hedged the portfolio using equity index options.

A. **Determine** whether the use of the following VaR models is appropriate for the WB Polish equity portfolio:

   i.   Historical VaR
   ii.   Analytical VaR

   Justify *each* response with *one* reason.

(6 minutes)

Lipka is modifying the VaR model used for WB's government bond portfolio. She is required to estimate a monthly VaR to comply with new regulations. The current information for WB's bond portfolio is shown in Exhibit 1. Standard normal z-values for the 0.05 and 0.01 probability levels are 1.65 and 2.33, respectively.

Exhibit 1
Warsaw Bank
Government Bond Portfolio

Portfolio value in Polish zloty (PLN millions)	1,400
Expected annualized return	6%
Standard deviation of annualized return	7%

B. **Calculate** the 1% monthly VaR in PLN for the portfolio in Exhibit 1. **Show** your calculations.

(5 minutes)

Lipka's manager asks her to evaluate the risks of a potential new portfolio denominated in Lithuanian litas (LHS) shown in Exhibit 2. Lipka performs a stress test on the portfolio over a three-month horizon and estimates a total return in PLN using the following assumptions:

   •   The bonds increase in value by 10%.
   •   The equities decrease in value by 20%.

- The principal value of the portfolio is currency-hedged using a three-month forward contract.
- Both the spot and forward exchange rates are 0.87 PLN = 1 LHS at the beginning of month 0.
- The spot exchange rate is 0.80 PLN = 1 LHS at the end of month 3.

Exhibit 2
Warsaw Bank
Lithuanian Litas Portfolio

Security	Market Value (LHS millions)
Bonds	25.0
Equities	10.0
Notional value of currency hedge	35.0

C.   **Calculate** the profit or loss in PLN for the Lithuanian portfolio in Exhibit 2, under the assumptions in Lipka's stress test. **Show** your calculations.

(5 minutes)

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QUESTION 9 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 16 MINUTES.

Monique Cobalt is chairman of the investment committee for the Gladwyne Manufacturing defined benefit pension fund (the Fund), which uses several asset management firms for its investments. Cobalt hired analyst, Lee Chin, to improve the Fund's performance attribution reporting. Chin begins by gathering portfolio returns, valuations, and external cash flows for each asset manager, and then designs new manager attribution reports. Once that is complete, he conducts an asset/liability analysis for the Fund. He then works with the committee to re-evaluate the Fund's risk tolerance, reviewing participant demographic information and Gladwyne's financial stability.

  A.   i.   **Identify** the performance attribution methodology that Chin should use to complete his performance attribution reporting.

          ii.   **Discuss** *two* additional inputs needed to complete this type of analysis.

(6 minutes)

Exhibit 1 presents the performance results for one of the Fund's asset managers, Vermillion Asset Management. This manager invests in a small number of sectors within a broad equity universe. Vermillion's investment objective is to outperform a custom benchmark determined by Gladwyne's investment committee.

Exhibit 1
Vermillion Asset Management
Gladwyne Manufacturing Pension Fund Specialized Equity Portfolio
Performance Results
1 January – 31 March 2011

Industry Sector	Weight (%)		Return (%)	
	Portfolio	Custom Benchmark	Portfolio	Custom Benchmark
Consumer durables	26.30	21.90	4.55	4.90
Consumer nondurables	31.00	34.80	3.60	3.10
Financial	21.20	20.90	3.90	3.30
Technology	21.50	22.40	1.30	–0.20
Total portfolio	100.00	100.00	3.42	2.80

  B.   i.   **Calculate** the pure sector allocation return for the consumer durables sector of the portfolio for the quarter. **Show** your calculations.

          ii.   **Calculate** the within-sector allocation (security selection) return for the technology sector of the portfolio for the quarter. **Show** your calculations.

(4 minutes)

As part of the annual review of the Fund, the investment committee is considering two new fixed income managers. Exhibit 2 presents historic data provided by the managers for portfolios managed to the same benchmark.

Exhibit 2
Potential Fixed Income Managers for
Gladwyne Manufacturing Pension Fund
Performance Attribution Analysis for the Year Ended 31 December 2010

Effect	Manager A (%)	Manager B (%)
Interest rate effect:		
Expected	4.26	4.26
Unexpected	–0.72	–0.72
Subtotal	3.54	3.54
Interest rate management effect	–0.08	0.12
Other management effects	0.11	0.32
Trading activity return	0.14	0.13
Total return	3.71	4.11

To gain insight into their active management practices, Cobalt reviews their performance results. She notes the following statements made by the managers in their proposals:

Manager A: "Our strategy is to add value by actively managing the duration of the fixed income securities in the portfolio."

Manager B: "Our strategy is to add value by identifying undervalued securities and sectors to take advantage of bonds that are mispriced by the market."

C.   **Conclude** (yes, no, cannot determine with the information provided) whether *each* statement made by the managers is consistent with the data in Exhibit 2. **Justify** *each* response with *one* reason.

Answer Question 9-C in the Template provided on page 65.

(6 minutes)

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Answer Question 9 on This Page

Template for Question 9-C

Statement	Conclude (yes, no, cannot determine with the information provided) whether *each* statement made by the managers is consistent with the data in Exhibit 2. (circle one)	Justify *each* response with *one* reason.
Manager A: "Our strategy is to add value by actively managing the duration of the fixed income securities in the portfolio."	yes no cannot determine with the information provided	
Manager B: "Our strategy is to add value by identifying undervalued securities and sectors to take advantage of bonds that are mispriced by the market."	yes no cannot determine with the information provided	

LEVEL III, QUESTION 1

Topic: Portfolio Management-Institutional Investor
Minutes: 18

Reading References:
1.   "Managing Institutional Investor Portfolios," Charles R. Tschampion, Laurence B.
      Siegel, Dean J. Takahashi, and John L. Maginn, *Managing Investment Portfolios: A
      Dynamic Process*, 3rd edition (CFA Institute)

Purpose:
To test the candidate's ability to formulate an investment policy statement for a defined benefit
pension plan.

LOS: The candidate should be able to
1.   "Managing Institutional Investor Portfolios" (Study Session 10)
      b) discuss investment objectives and constraints for defined benefit plans;
      c) appraise pension fund risk tolerance when risk is considered from the perspective of
          the 1) plan surplus, 2) sponsor financial status and profitability, 3) sponsor and
          pension fund common risk exposures, 4) plan features, and 5) workforce
          characteristics;
      d) formulate an investment policy statement for a defined benefit plan;
      e) evaluate the potential effects of a corporate pension fund investment policy on plan
          surplus, the corporation's valuation, and the corporation's constituents.

Guideline Answer:

Part A

BC Plc has below average risk tolerance, compared to the average FTSE 350 company pension
plan, for any four of the following reasons:
   • BC Plc's pension plan is more under-funded. The ratio of plan assets to plan liabilities at
     0.83 is less than 1.0 and below the FTSE 350 average of 0.97.
   • BC Plc's workforce has a higher average age.
   • BC Plc's workforce has a higher ratio of retired lives to active lives.
   • BC Plc's workforce has higher years of service.
   • BC Plc has lower profitability.
   • BC Plc has a higher debt ratio.

Part B

Constraint	Characterize, for the BC Plc pension plan relative to the average FTSE 350 company pension plan, *each* of the two plan constraints of concern to the trustees (circle one)	Justify *each* of your responses with *two* reasons
i. Liquidity requirement	Lower Similar (Higher)	1. Older than average workforce will lead to higher cash outflows sooner. 2. Higher than average ratio of retired lives to active lives requires higher cash outflows. 3. Plan is receiving no contributions from/for new employees, thereby increasing cash outflows required from the pension plan. 4. Higher than average years of service implies higher cash outflows sooner. 5. The under-funded status of the plan will increase liquidity requirements, because the workforce is older than average and therefore there is less time to reach a fully-funded status.
ii. Time horizon	(Shorter) Similar Longer	1. Older than average workforce will lead to more retirements sooner. 2. Higher than average years of service implies more retirements sooner. 3. Plan is not accepting new members, meaning that adverse trends (workforce age, years of service, etc.) will accelerate proportion of retired employees. 4. Higher than average ratio of retired lives to active lives shortens the time horizon due to greater number of current retirees.

Part C

A change to 6 percent in the discount rate applied to the plan liabilities would cause the funded status of the BC Plc pension plan to deteriorate.

Reducing the discount rate (from 7 percent to 6 percent) applied to the plan liabilities would increase the present value of the plan's benefit obligations, while the value of plan assets would not change (the assumed long-term rate of return is unchanged at 8 percent). The widening in the difference between the value of the plan assets and the value of the plan's benefit obligations (due to increase in liabilities) would cause the plan's already under-funded status to deteriorate further. (PV assets – PV liabilities).

LEVEL III, QUESTION 2

Topic: Portfolio Management-Risk Management
Minutes: 18

Reading References:
4.   "Risk Budgeting for Pension Funds and Investment Managers Using VAR," Ch. 6, Michelle McCarthy, *Risk Budgeting: A New Approach to Investing*, Leslie Rahl, ed. (Risk Books, 2000)

Purpose:
To test the candidate's knowledge of risk management for a pension fund.

LOS: The candidate should be able to
4.   "Risk Budgeting for Pension Funds and Investment Managers Using VAR" (Study Session 15)
      a) discuss key market risks for defined benefit plans and defined contribution plans/money purchase plans;
      b) discuss key market risks for an asset management firm;
      c) discuss "risk budgeting" for an investor;
      f) compare risk budgeting to asset allocation, investment guidelines, standard deviation, beta, and duration.

Guideline Answer:

Part A

Statement	Determine whether *each* of the three statements by Hammer is correct or incorrect (circle one)	If incorrect, give *one* reason why the statement is incorrect
"Surplus-at-risk is most accurately interpreted as the likelihood that the plan's tactical asset allocation might underperform the plan's strategic asset allocation by a specified percentage within the next year."	Correct **(Incorrect)**	1. The interpretation given is for implementation risk (tactical asset allocation risk). 2. Surplus-at-risk is most accurately interpreted as being the likelihood that BC Plc might need to contribute a specified amount to the plan within the next year.
"Two fixed income portfolios could have identical durations and substantially different levels of Value at Risk (VAR)."	**(Correct)** Incorrect	
"If we reduce the tracking error of the manager with the highest active risk, this is very likely to reduce the plan-wide active risk of the overall portfolio."	Correct **(Incorrect)**	The individual manager's risk can be offset by other individual managers' portfolio risk. Forcing an individual manager to minimize tracking error or mimic the benchmark could in fact raise plan-wide active risk.

Part B

Statement	Determine whether *each* of the three statements by Fiertz is correct or incorrect (circle one)	If incorrect, give *one* reason why the statement is incorrect
"Standard deviation is more useful than VAR in evaluating new managers and new portfolio strategies."	Correct **(Incorrect)**	Standard deviation typically requires several years before the manager's return history is available, which limits its use in determining the effectiveness of new managers and strategies.
"Beta does not measure the potential underperformance of our equity portfolio compared with the FTSE All Share Index."	**(Correct)** Incorrect	
"For a fixed income portfolio, duration measures the probability associated with price changes for specific securities in the portfolio in response to changes in market interest rates."	Correct **(Incorrect)**	Duration is a measure of the price sensitivity of a fixed income portfolio to a small change in interest rates. Duration is not a probability measure.

LEVEL III, QUESTION 3

Topic: Portfolio Management-Institutional Investor
Minutes: 9

Reading References:
1.   *Strategic Asset Allocation Concepts*, Jerald E. Pinto and Dennis W. McLeavey (AIMR, 2004)

Purpose:
To test the candidate's ability to apply strategic asset allocation concepts to a foundation.

LOS: The candidate should be able to
1.   *Strategic Asset Allocation Concepts* (Study Session 11)
    e) compare and contrast asset-liability and asset-only approaches to strategic asset allocation;
    i) discuss the mean-variance approach to strategic asset allocation, using an investor's risk aversion;
    l) determine and justify a strategic asset allocation, given an investment policy statement, capital market expectations, and the results of a mean-variance optimization.

Guideline Answer:

Part A

i. Corner Portfolios 4 (expected return = 8.2%) and 5 (expected return = 8.0%) should be included in the optimal strategic asset allocation, given Lourie's return requirement of 8.1% (using an additive formulation of the return requirement; 8.145% using a compound formulation).

> Not required but provided as basis for part ii:
> Return requirement = 8.1% = (7.5% + 0.6%)
> 8.1 = 8.0w + 8.2(1 − w)
> w = 0.50
> 1 − w = 0.50. The two corner portfolios are equally weighted.
>
> Return target = 8.145% = (1 + 0.075)(1 + 0.006%) − 1
> 8.145 = 8.0w + 8.2(1 − w)
> w = 0.275
> 1 − w = 0.725
> (weights become 0.25 and 0.75 if return requirement is rounded to 8.15%)

In addition to achieving the return requirement, the appropriate combination of Corner Portfolios 4 and 5:
- has the highest Sharpe ratio among the efficient portfolios that meet Lourie's requirements
- is consistent with Lourie's specified risk tolerance (less than 15% standard deviation)
- is efficient (lies on efficient frontier)

ii. The most appropriate strategic asset allocation for the Lourie Foundation should be determined as follows:

Asset Class	Weight (%), return requirement = 8.1%	Weight (%), return requirement = 8.145%	Weight (%), return requirement = 8.15%
U.K. Equities	54.4 = (53.2 + 55.6)/2	54.94 = (53.2)(0.275) +(55.6)(0.725)	55.0 = (53.2)(0.25) +(55.6)(0.75)
U.K. Intermediate Term Bonds	6.7 = (13.3 + 0.0)/2	3.66 = (13.3)(0.275)+ (0.0)(0.725)	3.3 = (13.3)(0.25)+ (0.0)(0.75)

Note: The weights are given for an additive formulation of the return requirement (8.1%) and for a compound formulation (8.145% or 8.15%, depending on rounding).

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Part B

Corner Portfolio 5 and the risk-free portfolio should be included in the new strategic asset allocation, because some combination of the two portfolios will be mean-variance superior to any other combination of different portfolios that also satisfy the director's revised return requirement and risk tolerance.

The Corner 5 portfolio is the tangency portfolio (the highest-Sharpe-ratio efficient portfolio at 0.284). Combinations of the tangency portfolio (expected return = 8.00%) and the risk-free portfolio (expected return = 4.00%) that place at least a 50% weight on the tangency portfolio will satisfy the director's return requirement [(8% × 0.50) + (4% × 0.50) = 6%] and will lie on the Capital Allocation Line (CAL). Portfolios on the CAL provide the lowest level of risk for a given level of expected return (or highest expected return for a given level of risk). Among the portfolios satisfying the director's return requirement, some—including the 50/50 portfolio mix of Corner Portfolio 5 and the risk-free portfolio—will also be consistent with the director's specified risk tolerance. (For example, the standard deviation of the 50/50 portfolio is 7.05% = (0.5)(14.1), well below the new constraint of 12%). Lourie would choose from among these latter portfolios for the new strategic asset allocation.

LEVEL III, QUESTION 4

Topic: Portfolio Performance Measurement
Minutes: 10

Reading Assignments:
3. "Style Analysis: Asset Allocation and Performance Evaluation," Ch. 1, pp. 1–25 and 36–42, Arik Ben Dor and Ravi Jagannathan, *The Handbook of Equity Style Management*, 3rd edition, T. Daniel Coggin and Frank J. Fabozzi, eds. (Wiley, 2003)
5. "Compared to What? A Debate on Picking Benchmarks," Susan Belden and M. Barton Waring, *The Journal of Investing* (Institutional Investor, Winter 2001)

Purpose:
To test the candidate's understanding of portfolio-based and return-based style analysis.

LOS: The candidate should be able to
3. "Style Analysis: Asset Allocation and Performance Evaluation" (Study Session 16)
    a) discuss the challenges of using portfolio-based style analysis when determining performance attribution of a managed portfolio;
    c) discuss the use of return-based style analysis in distinguishing between active managers and passive managers;
    e) evaluate the use of return-based style analysis in judging the style consistency of a manager over time:
    f) discuss how benchmark selection affects the evaluation of a manager's selection skill;
    g) discuss the pitfalls in interpreting the results of return-based style analysis.

5. "Compared to What? A Debate on Picking Benchmarks" (Study Session 16)
    b) discuss the potential problems (e.g., fund misclassification, stocks changing style, funds changing style, funds with multiple styles, similarities between categories, and inappropriate evaluation of manager's performance) that are present in using the style/size category approach;
    c) discuss the potential problems (e.g., fund misclassification, shifting fund exposure, and inappropriate evaluation of managers' performance) that are present in return-based style analysis;
    d) evaluate the arguments in favor of narrow-based benchmarks as opposed to broad market-based benchmarks.

Guideline Answer:

Part A

Criticisms of Stewart's portfolio-based style analysis of Temple Group's performance for 2004 include:
1. Stewart's portfolio-based style description is for 2004 alone. She should analyze returns over a longer period (e.g., 3 years), for multiple shorter periods (e.g., several periods of one year each) or conduct a rolling year return analysis.
2. It is unclear that 31 December 2004 holdings have any necessary relationship to 2004 returns.
3. Stewart's use of a global broad market index for valuation comparison may not be appropriate, given that Temple is a domestic small-capitalization portfolio.
4. Stewart's use of beginning of year sector weights may result in an incorrect assessment of sector exposures in 2004 because of changes in portfolio composition during 2004.

Part B

Statement	Describe, for *each* of the three statements by Ong, *one* circumstance in which the statement could be correct Note: No circumstance may be described more than once.
"Even though Foreman has a low R^2 with the S&P 500 Index, Foreman may not be an actively managed fund."	1. The S&P 500 may not an appropriate benchmark comparison for the Foreman Fund, resulting in Foreman's low R^2. 2. Limited number of observations makes R^2 unreliable. 3. Using a single-factor model has a lower R^2 than a multi-factor model.
"Copeland may be an actively managed fund even though Copeland has low portfolio turnover."	1. Copeland could be actively managed toward a certain style (e.g., value) and accomplishing that by taking advantage of constant security-specific style shifts rather than by actual trading. 2. Copeland could be actively managed but have low turnover because the portfolio manager has a long time horizon and holds a portfolio that differs from the benchmark for an extended period of time (i.e. a deep value strategy). 3. Copeland could be actively managed but have low turnover because it is a tax-efficient fund/being managed to be tax-efficient. 4. If turnover is defined as the lesser of purchases or sales divided by average net assets, Copeland could be actively growing by buying completely new issues and keeping most old holdings, thus creating low turnover. 5. Copeland could be using derivative products extensively in active management without affecting measured turnover.

"Foreman may not have had superior risk-adjusted performance compared with Copeland for 2004."	1. Foreman may have higher expenses (management fees and administrative charges) resulting in a net return that is below Copeland's net return.
	2. The R^2 reveals information about the two funds' correlations with the S&P 500. In the absence of specific information about the two funds' riskiness, it is possible that Foreman has a higher standard deviation and/or beta, thus resulting in lower risk-adjusted performance as evaluated by a risk-adjusted performance measure such as the Sharpe ratio or Jensen's alpha.
	3. Standard deviations used in risk adjustment may have sampling error because of small sample size.
	4. Foreman's cash flows may not have been precisely captured because of high turnover and discrete time periods within the year.
	5. Foreman may not be well diversified. The unsystematic risk remaining in the portfolio would increase Foreman's overall risk, possibly resulting in a lower risk-adjusted return.

Level III, QUESTION 5

Topic: Portfolio Performance – GIPS® Standards
Minutes: 16

Reading References:
1. *GIPS® Handbook*, Edition 1, CFA Candidate Version, pp 1-116 and 146-148 (AIMR, 2002)
2. "Global Investment Performance Standards – Level III Workbook" (AIMR, 2002)

Purpose:
To test the candidate's knowledge of, and ability to apply, the GIPS® standards.

LOS: The candidate should be able to
1. *GIPS® Handbook* (Study Session 17)
   and
2. "Global Investment Performance Standards – Level III Workbook" (Study Session 17)
   b) describe the relationship between the GIPS standards and country version of GIPS (CVG) and Translation of GIPS (TG);
   d) describe the ways a firm may define itself for the purpose of complying with the GIPS standards;
   e) describe the minimum historical performance record requirement and the proper treatment of a non-compliant performance record;
   f) identify the proper use of the GIPS compliant statement;
   g) discuss the requirements and recommendations of the GIPS standard with respect to the input data, including supporting information portfolio evaluation and accounting methods;
   h) discuss the requirements and recommendations of the GIPS standard with respect to calculation methodology including return calculations, composite return calculations, composite weighting, cash returns, expenses and minimum asset levels;
   i) discuss the requirements and recommendations of the GIPS standards with respect to composite construction including inclusion of all portfolios, composite definitions, terminated portfolios, switching portfolios, carve-out single asset classes, and simulated or model portfolios;
   j) discuss the requirements and recommendations of the GIPS standards with respect to disclosures including the definition of firm, firm assets, list of composites, valuation methodology, asset level requirements, currency used, the use of leverage or derivatives, management and other fees, accounting methods, benchmark discussions, non-fee paying portfolios, conformation to local laws or regulation, compliance periods and cash allocation methods;
   k) discuss the requirements and recommendations of the GIPS standards with respect to presentation and reporting, including time frame of performance records, annual returns, composite and firm assets, dispersion measures, compliance statement, creation date, non-compliant performance linking, annualization, portability of records, carve out asset classes, and benchmarks;

m) evaluate a sample performance presentation and determine whether the presentation complies with GIPS standards;

n) recommend changes to a sample performance presentation that would bring the presentation into compliance with the GIPS standards;

o) create a performance presentation that complies with the GIPS standards.

Guideline Answer:

Part A

Give *two* of the five requirements set forth by the GIPS standards for linking the performance data of Morehouse and Smyth to create a surviving composite that is compliant with the GIPS standards
1. Substantially <u>all</u> of Smyth's investment decision-makers are employed by Morehouse.
2. Smyth's staff and decision making process remain intact and independent within Morehouse.
3. Morehouse discloses that the performance results from Smyth are linked to the performance record of Morehouse.
4. Morehouse has records that document and support the reported performance.
5. Substantially <u>all</u> the assets transfer from Smyth to Morehouse.

Part B

Prepare *four* corrections or additions that are necessary to bring the presentation given in Exhibit 5-1 into compliance with the requirements of the GIPS standards
1. Must disclose whether total return is calculated net or gross of fees.   OR Restating the column heading "Total Return % Gross or Net of Fees".
2. Composite market values must be end of period values, not beginning of period.

3. Correct the GIPS compliance statement to eliminate inclusion of model portfolio.
        OR
Restating "Morehouse Asset Management has prepared and presented this report in compliance with the Global Investment Performance Standards (GIPS®)."
        OR
State that they must recalculate composite returns, removing model portfolio from composite.

4. For each period, must disclose the percentage of the composite composed of non-fee-paying portfolios.   OR Adding the note "This composite includes the assets of a non-fee-paying account which represents xx% of the composite."
5. Must disclose currency used to express performance.   OR Adding the statement "Performance results are expressed in U.S. dollars."

LEVEL III, QUESTION 6

Topic: Portfolio Management-Economics
Minutes: 18

Reading References:
1. "The Equity Risk Premium," Pages 6, 9–12, 14, 15, 17 and 18, Richard Grinold and Kenneth Kroner, *Investment Insights* (Barclays Global Investors, July 2002)
4. "What Determines the Exchange Rate: Economic Factors or Market Sentiment?" Gregory P. Hopper, *Business Review* (Federal Reserve Bank of Philadelphia, September/October 1997), pp. 17–29, especially 18–19.

Purpose:
To test the candidate's understanding of: (1) the components of the equity risk premium and their significance in determining long-term capital market expectations, and (2) fundamental models, especially the monetary model, used to forecast exchange rates.

LOS: The candidate should be able to
1. "The Equity Risk Premium" (Study Session 4)
   a) explain the significance of the equity risk premium in determining long-term capital market expectations;
   b) discuss the components of the equity risk premium.
2. "What Determines the Exchange Rate: Economic Factors or Market Sentiment?" (Study Session 4)
   a) describe the monetary model of exchange rates;
   b) explain why it is difficult to use the monetary model to forecast exchange rates;
   d) evaluate the forecasting performance of approaches based on the monetary model and news about economic fundamentals.

Guideline Answer:

Part A

Condition	Identify and describe the specific component of the equity risk premium associated with *each* of the three conditions identified by Ryan	Determine whether *each* of the three conditions supports or does not support Ryan's recommendation to use a lower equity risk premium (circle one)
Dividend yields are expected to be well below the historical average and companies are expected to buy back less stock through share repurchases.	Component: Income Return	⟨Supports[1]⟩
	Description: Income return is the percent of market value distributed to shareholders as cash during the measurement period, or $D/P - \Delta S$ D/P = dividend yield ΔS = % change in shares outstanding	Does not support
Future financial and technological innovations will continue to give investors easier access to the financial markets and allow effective diversification of risks.	Component: Repricing	Supports
	Description: Repricing is the percent change in the P/E multiple over the measurement period, or ΔPE	⟨Does not support[2]⟩
Real corporate profits are expected to grow steadily and inflation is expected to be relatively stable.	Component: Nominal Earnings Growth OR Real Earnings Growth OR Earnings Growth	Supports
	Description (for Nominal Earnings Growth or Earnings Growth): The sum of the inflation rate and real earnings growth for the measurement period, or $i + g$ *OR* Real Earnings Growth is growth in earnings net of inflation.	⟨Does not support[3]⟩

[1]Low dividend yields and smaller share repurchase would result in a lower income return and a lower equity risk premium.

[2]Such innovations would make investors willing to pay higher prices for a given stream of earnings, which would contribute to an upward repricing going forward and a higher equity risk premium.

[3]Growing real corporate profit growth and stable inflation would contribute to greater nominal earnings growth and a higher equity risk premium.

Part B

Statement	Determine whether *each* of the statements by Butler is correct or incorrect	If incorrect, give *one* reason why the statement is incorrect
"Because the monetary model focuses on money supply and exchange rate expectations, the model does not require estimates of real output for the relevant countries."	Correct (Incorrect)	Real output is an important input to the monetary model, along with money supply and exchange rate expectations. Differences in real output drive price levels, which influence exchange rates.
"The monetary model has the advantage of using input data that are known with relative precision."	Correct (Incorrect)	Output data, money supply data, and expectations are not known with certainty and/or subject to revision and/or unobservable. This is actually a disadvantage of the model.

LEVEL III, QUESTION 7

Topic: Portfolio Management-Individual Investor
Minutes: 25

Reading References:
1. *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute, forthcoming)
    A. "The Portfolio Management Process and the Investment Policy Statement," John L. Maginn, Donald L. Tuttle, Dennis W. McLeavey, and Jerald E. Pinto
    B. "Managing Individual Investor Portfolios," James W. Bronson, Matthew H. Scanlan, and Jan R. Squires
2. Questions 7, 8, and 9, including Guideline Answers, *2001 CFA Level III Examination*, reprinted in *Exams and Guideline Answers, 2001, 2002, and 2003* (AIMR, 2003)

Purpose:
To test the candidate's: (1) understanding of the investment policy statement for an individual investor, (2) ability to assess and differentiate between an investor's ability and willingness to assume risk, and (3) ability to calculate an investor's required return.

LOS: The candidate should be able to
1A. "The Portfolio Management Process and the Investment Policy Statement" (Study Session 9)
    d) distinguish among the types of investment constraints;
    f) explain the elements of an investment policy statement;
    n) discuss the determination of the risk objective and the return objective;
    o) discuss the liquidity requirement and the types of time horizons.
1B. "Managing Individual Investor Portfolios" (Study Session 9)
    i) discuss each of the major objectives that are part of an individual investor's investment policy statement;
    j) distinguish between an individual investor's ability to take risk and willingness to take risk;
    k) discuss each of the major constraints that are part of an individual investor's investment policy statement;
    l) formulate an investment policy statement for an individual investor.
2. Questions 7, 8, and 9, including Guideline Answers (Study Session 9)
    a) formulate and justify an investment policy statement for an individual investor.

Guideline Answer:

Part A

<u>Return Objective:</u>

Yeo's return objective is to earn a total rate of return that is sufficient to maintain the real value of the portfolio, while meeting her son's educational expenses and her annual charitable contributions, as well as support her ongoing living expenses during retirement.

<u>Calculation of after-tax nominal rate of return:</u>

	One year from now (retirement)	*Two years from now (end of 1st year of retirement)*
Inflows	MYR	MYR
Retirement gratuity (taxable)	450,000	-
Interest income from money market fund (taxable)[a]	30,000	-
Sale of Sawit stock (non-taxable)	8,500,000	-
Redemption of provident fund savings (tax-exempt)	500,000	-
Total Inflows	9,480,000	-
Outflows		
Income Tax (at 28%)[b]	(134,400)	-
Living and Miscellaneous[c]		(257,500)
Education for Lok[d]	(150,000)	(159,000)
Donation to Malaysian charity[e]	(100,000)	(100,000)
Total Outflows	(384,400)	(516,500)
Net Additions/Withdrawals	**MYR 9,095,600**	**(MYR 516,500)**

Notes:

[a] MYR1,200,000 * 0.025

[b] (MYR450,000+MYR30,000) * 0.28 · Capital gain of MYR7m (MYR8.5m–MYR1.5m) from sale of Sawit stock is not taxable

[c] Assumed to increase with inflation of 3% per year.

[d] Assumed to increase with education inflation of 6% per year (MYR150,000 * 1.06)

[e] Fixed annual donation

Investable Assets and Required Return

Investable Assets at Retirement	(MYR)
Year 0 Net Cash Flow	9,095,600
Money Market Fund	1,200,000
	MYR 10,295,600

Distributions in Year 1	**(MYR 516,500)**
Required After-Tax Real Rate of Return	5.0167%

Note:
The Yeo's family home is their primary residence, and is not considered to be an investable asset.

Required After-Tax Real Rate of Return =	5.0167%
Plus: 3% annual inflation rate =	3.0000%
Required After-Tax Nominal Rate of Return =	**8.0167%**

Proof:

$10,295,600 \times (1.080167) = 11,120,968$

$11,120,968 - 516,500 = 10,604,468$

$10,604,468 / 1.03 = 10,295,600$
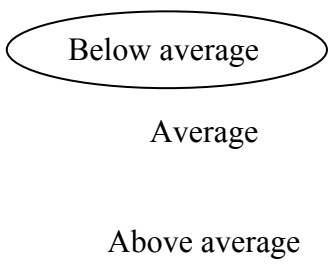
Alternate return calculation:

$10,295,600 \times 0.03 =$ 308,868 to maintain portfolio value
516,500 year 1 distribution
825,368

$825,368 / 10,295,600 = 8.0167\%$

Part B

Component	Characterize Yeo as below average, average, or above average with respect to *each* of the three components of the risk objective in her investment policy statement (circle one)	Justify *each* of your responses with *one* reason based on Yeo's specific circumstances and/or her interview with Hamid
i. Ability to take risk	Below average Average (Above average)	Yeo has on above-average ability to take risk given the 1. long expected time horizon associated with her retirement (life expectancy). 2. large asset base that she will have amassed following the sale of the stake in Sawit, which is more than sufficient to cover her financial objectives.
ii. Willingness to take risk	(Below average) Average Above average	Yeo is strongly below average in her willingness to assume risk in her personal investments. 1. She states that she is habitually conservative when faced with decisions where the future outcome is uncertain. 2. Further evidence is provided by her holding of all cash surpluses in a low-risk, low-return asset. 3. Although she has stated a desire to maintain the real value of the investible assets, she also implies an unwillingness to sustain losses in her statement about the money market fund safeguarding her wealth. 4. She has been unwilling to take advantage of attractive personal investment opportunities because of the perceived risks.

Constraint		
iii. Overall risk tolerance	Below average *(circled)* Average Above average	Yeo has below-average risk tolerance, as she is clearly very risk-averse when faced with uncertain outcomes associated with investing. Her current conservative investment preferences, both stated and implemented, outweigh her above-average ability to assume risk.

Part C

Constraint	Formulate *each* of the following constraints in Yeo's investment policy statement	Justify *each* of your responses with one reason based on Yeo's specific circumstances and/or her interview with Hamid
i. Time horizon	Yeo's time horizon is long-term and consists of two main stages.	This formulation is justified by the following: • The first stage consists of Yeo's initial four years in retirement, which include Lok's university expenses. • The second stage encompasses the rest of her time in retirement, which could be 21 years or more according to Yeo's mortality expectations.
ii. Tax concerns	Malaysia's tax structure differentiates between ordinary income and capital gains.	Because capital gains are not taxable, there is a preference for investment returns from capital gains versus taxable interest and dividend income.

LEVEL III, QUESTION 8

Topic: Portfolio Management-Individual Investor
Minutes: 12

Reading References:
1.   *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute, forthcoming)
       B.   "Managing Individual Investor Portfolios," James W. Bronson, Matthew H. Scanlan, and Jan R. Squires
2.   Questions 7, 8, and 9, including Guideline Answers, *2001 CFA Level III Examination*, reprinted in *Exams and Guideline Answers, 2001, 2002, and 2003* (AIMR, 2003)

Purpose:
To test the candidate's ability to determine an appropriate strategic asset allocation for an individual investor.

LOS: The candidate should be able to
1B.   "Managing Individual Investor Portfolios" (Study Session 9)
       p)   compare and contrast Monte Carlo approaches to traditional deterministic approaches for retirement planning;
       q)   discuss the advantages of the Monte Carlo approach to retirement planning.
2.   Questions 7, 8, and 9, including Guideline Answers (Study Session 9)
       b)   recommend and justify changes in asset allocations, based on stated objectives and expected returns, expected volatility, and expected correlations of returns;
       c)   recommend and justify changes in asset allocations, incorporating all aspects of the investment policy statement.

Guideline Answer:

Asset Class	Recommend for Yeo the *most* appropriate allocation range for *each* of the asset classes in Exhibit 8-2 (circle one)	Justify *each* of your responses with *one* reason based on Yeo's specific circumstances
Money Market (Cash)	**(0% to 10%)** ⬅circled 11% to 20% 21% to 30%	Yeo's need for money market assets is minimal as the only liquidity need mentioned is her desire for a cash reserve of six months of living expenses. In addition, the lowest allocation to money market is justified as its return will drag down total portfolio return. NOTE: The MYR2 million donation is 10 years from now and is not a current liquidity requirement.
Domestic Bonds	31% to 40% 41% to 50% **(51% to 60%)** ⬅circled	Yeo's overall risk tolerance has only increased somewhat, and it remains below average. As such, the highest allocation to bonds is most suitable. NOTE: Bonds have a lower standard deviation than equities. This will provide Yeo with lower overall volatility. While expected bond return is lower than equities, it is higher than money market. As such, bond return should contribute more to the 7% after-tax return objective than money market.
Domestic Equity – Income	**(0% to 10%)** ⬅circled 11% to 20% 21% to 30%	The lowest allocation to this asset class is recommended. *After-tax* expected return is lower than domestic equity growth while the risk (standard deviation) is virtually identical. NOTE: The *after-tax* expected return from domestic equity income is 11.4% [7.5% × (100%-28%) + 6.0%], which is 1.1% lower than the after-tax expected return of 12.5% from domestic equity growth. Because the standard deviation of these two classes is similar, domestic equity growth is preferable.
Domestic Equity – Growth	0% to 10% 11% to 20% **(21% to 30%)** ⬅circled	The maximum allocation to domestic equity growth is warranted. This is one of two asset classes which exceed the 7% required rate of return. The after-tax return for this asset class is higher than that for domestic equity income, but the standard deviation is almost the same. As a result, domestic equity growth has the superior risk-adjusted return.

<u>Sample allocation in correct ranges</u>:

<u>After-tax</u> expected annual returns:
Money Market: $2.5\% \times (1 - 0.28) = 1.80\%$
Domestic Bond: $5.2\% \times (1 - 0.28) = 3.74\%$
Domestic Equity Income: $[7.5\% \times (1 - 0.28)] + 6.0\% = 11.40\%$
Domestic Equity Growth: $[0\% \times (1 - 0.28)] + 12.5\% = 12.50\%$

Funds	Fund Allocation (%)	After-tax Annual Return (%)	Weighted Return (%)
Money Market	5	1.80	0.09
Domestic Bond	55	3.74	2.06
Domestic Equity: Income	10	11.40	1.14
Domestic Equity: Growth	30	12.50	3.75
Portfolio Expected Return			7.04

LEVEL III, QUESTION 9

Topic: Portfolio Management-Individual Investor
Minutes: 10

Reading References:
1.   "Structuring the Global Investment Process," Ch. 13, *International Investments,* 5th edition, Bruno Solnik and Dennis McLeavey (Addison Wesley, 2003)

Purpose:
To test the candidate's understanding of capital market expectations in the context of strategic and tactical asset allocation for an individual investor.

LOS: The candidate should be able to
1.   "<u>Structuring the Global Investment Process</u>" (Study Session 18)
   e) discuss the role of capital market expectations in strategic and tactical asset allocation;
   g) interpret capital market data and capital market expectations in the context of strategic asset allocation for a global investor;
   o) evaluate the implications of a portfolio performance analysis for a global investor.

Guideline Answer:

Part A

Hamid's approach to developing capital market expectations has the following limitations:
- Economic conditions of the past, especially distant past, may not be relevant for the future.
- Past market performance may have resulted from non-repeating specific events, e.g., liberalization of economies, P/E ratio expansion or contraction.
- Past data may be of poor quality.
- Regulatory environment may have changed substantially.
- Correlations may have changed due to market integration over time.
- Asset classes may currently be mis-valued due to excess optimism/pessimism.
- Volatilities may have changed.
- Risk premiums may have changed.

Part B

Alternative assets such as real estate are characterized by infrequent trading, leading to the use of appraised and/or out-of-date transaction prices. This problem results in return data that tend to be smoothed over time, and in a significant downward bias in the measured risk for the asset class in question. For example, correlations among alternative asset returns, or between alternative asset returns and conventional asset returns, are often close to zero. This inaccurate measurement of the true asset class risk causes biases in correlations used in forming expectations for real estate investment.

Part C

Yeo should raise her expected long-term investment risk premiums. Structural economic changes such as currency controls that reduce market integration have the effect of restricting local investors (in this case Yeo) and reducing their diversification ability. These investors should require higher risk premiums (primarily in the form of segmentation premiums) because of the reduced diversification. It can also be argued that currency controls would reduce market liquidity, thereby increasing the liquidity risk faced by investors, who in turn should require an additional illiquidity premium.

LEVEL III, QUESTION 10

Topic: Portfolio Management-Behavioral Finance
Minutes: 9

Reading References:
3.   "A Survey of Behavioral Finance," Ch. 18, pp. 1055−1065, Nicholas Barberis and Richard Thaler, *Handbook of the Economics of Finance*, George M. Constantinides, Milton Harris, and Rene Stulz, eds. (Elsevier Science B. V., 2003)

Purpose:
To test the candidate's knowledge of behavioral finance principles.

LOS: The candidate should be able to
3.   "A Survey of Behavioral Finance" (Study Session 9)
   a)   discuss "fundamental" and "noise trader" risk that may be present in implementing a trade designed to profit from a mispricing of an asset;
   b)   discuss the costs of implementing a trade designed to profit from a mispricing of an asset;
   c)   explain what conditions are sufficient to limit arbitrage and allow deviations from fundamental value to persist.

Guideline Answer:

Part A
Both Lavinsky and Blake face noise trader risk. Noise trader risk arises from the possibility that the mispricing being exploited worsens in the short run.

For Lavinsky, the risk is that the investors who have depressed the price of CRO will become even more pessimistic about CRO, worsening the undervaluation in the short run. Or, conversely, investors become irrationally optimistic about ATL.

For Blake, the risk is that, even though KNV is a perfect substitute for CRO, the investors who have caused KNV to trade at a discount relative to CRO become even more pessimistic about KNV, further widening the discount. Or conversely, investors in CRO become less irrationally pessimistic.

Part B
Lavinsky, but not Blake, faces fundamental risk. Fundamental risk arises from the possibility that, when securities are imperfect substitutes, additional relevant information/news will adversely effect a position.

Lavinsky's position involving ATL and CRO protects Lavinsky somewhat from adverse news about the airline industry as a whole. ATL is an imperfect substitute for CRO, however, so he still faces the risk associated with his position being vulnerable to news that is specific to ATL or CRO. In particular, adverse news about only CRO, or positive news about only ATL, may result in smaller profits or even losses from his position.

Blake's position involves two securities that are perfect substitutes.

Part C
An opportunity to exploit a mispricing does NOT exist, because the implementation costs (110 bps*) of exploiting the mispricing exceed the one percent (100 bps) divergence that now exists between CRO and KNV.

*35 bps each for taking positions in CRO and KNV = 70 bps, plus 40 bps for borrowing CRO stock to short, for a total implementation cost of 110 bps

LEVEL III, QUESTION 11

Topic: Equity Analysis-Alternative Investments
Minutes: 19

Reading References:
3. *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 3rd edition, Shannon P. Pratt, Robert F. Reilly, and Robert P. Schweihs (Irwin, 1995)
   B. "Discounts for Lack of Marketability," Ch. 15, pp. 331–334 and 342–359
6. "A Primer on Distressed Debt Investing," Mark J. P. Anson, *The Journal of Private Equity* (Institutional Investor, Summer 2002)

Purpose:
To test the candidate's understanding of issues relating to investments in private equity and distressed debt.

LOS: The candidate should be able to
3B. "Discounts for Lack of Marketability" (Study Session 8)
   a) discuss the importance of marketability;
   b) discuss the results of the studies of private stock transactions prior to public offerings;
   c) discuss the transactional considerations encountered when attempting to liquidate a controlling interest in a closely held company;
   d) discuss the reasons for differences between private and public company acquisition P/E multiples;
   e) describe the factors that affect the discount for lack of marketability.
6. "A Primer on Distressed Debt Investing" (Study Session 8)
   a) explain factors that promote the growth of the distressed debt market;
   b) explain the investment objectives of distressed debt investors (vultures);
   c) describe the bankruptcy process and explain its relationship with distressed investing;
   d) explain how to use LBO (leveraged buy-out) firms' distressed debt to recycle private equity;
   e) describe the process for investing in distressed buyouts;
   f) explain how to convert distressed debt to private equity in a prepackaged bankruptcy;
   g) describe how to use distressed debt for a takeover;
   h) explain how to profitably invest in distressed debt as an undervalued security;
   i) explain how a distressed debt arbitrage is constructed;
   j) assess the effect of event risk on the skewness and kurtosis of the return distribution of distressed debt;
   k) discuss the major risks in distressed debt investing;
   l) compare private equity investing to distressed debt investing.

Guideline Answer:

Part A

Note: The first factor in the Template for Question 11-A is completed as an example.

Factor	Judge whether *each* of the factors researched by Vinepal is likely to decrease, have no effect on, or increase the size of the marketability discount associated with the Rucoin family's plan to sell its Easton shares (circle one)	Support *each* of your responses with *one* reason
Example: 1. The Rucoin family is not interested in continuing as shareholders of Easton Bakery. The family wants to sell its entire position for cash.	**Example:** Decrease Have no effect on (Increase)	**Example:** The Rucoin family owns a large block (45 percent) of the company. Larger blocks tend to have larger marketability discounts than smaller blocks because larger blocks may attract fewer potential buyers and be more difficult to finance.
2. Easton stock has consistently traded in a narrow range of price/earnings ratios over the last three years.	Decrease (Have no effect on) Increase	There is no evidence to suggest that the marketability discount is related to the width of the P/E multiple trading range. Publicly traded companies (like Easton) tend to realize higher acquisition P/E multiples than privately owned companies, but this speaks to a "private company" discount, not the marketability discount.
3. The baked goods industry is currently fragmented and consolidating.	(Decrease) Have no effect on Increase	In these industry circumstances, industry consolidators would likely be potential buyers. The existence of several (or one strong) acquirers would tend to decrease the marketability discount.

4. Easton's only institutional shareholder has indicated that, while it is supportive of the company, it does not intend to increase the size of its position at this time. No other institutional buyers have been identified.	Decrease Have no effect on (Increase)	The existing institutional investor would have likely been the strongest potential buyer. Because that buyer is not interested and no other buyers have been identified, the marketability discount would tend to increase.
5. Easton maintains an Employee Stock Ownership Plan (ESOP) that has a policy of acquiring company stock on a quarterly basis.	(Decrease) Have no effect on Increase	The ESOP as a regular buyer of shares creates an additional mechanism for additional shares to be absorbed, thus tending to decrease the marketability discount.
6. The liquidity of Easton stock has declined substantially over the past three years. The current average daily trading volume of 100,000 shares is relatively low in relation to the number of shares outstanding.	Decrease Have no effect on (Increase)	The declining liquidity and current low volume are further evidence that the family's 45 percent holding is large, thus tending to increase the marketability discount.

Part B

A hedge fund manager could:

i.　use Easton securities to construct a distressed debt arbitrage by acquiring Easton debt at a distressed price and simultaneously selling Easton's stock short.

ii.　earn a return under either scenario. (1) If Easton's financial condition continues to deteriorate and the price of the stock falls faster than the debt, the profit on the short position will outweigh the loss on the long position. (2) Alternatively, if Easton's financial condition improves and the debt increases in value faster than the stock, then the profit on the long position will outweigh the loss on the short position. If interest payments are reinstated, additional gains would accrue to the long position.

LEVEL III, QUESTION 12

Topic: Equity Analysis-Global Considerations
Minutes: 16

Reading References:
1. "Structuring the Global Investment Process," Ch. 13, *International Investments,* 5th edition, Bruno Solnik and Dennis McLeavey (Addison Wesley, 2003)

Purpose:
To test the candidate's understanding of issues in global investing, including benchmarks and currency hedging.

LOS: The candidate should be able to
1. "<u>Structuring the Global Investment Process</u>" (Study Session 18)
   a) discuss the functions of and relationships among the major participants in the global investment industry;
   b) evaluate the appropriateness, in terms of implementing the investment policy statement and strategic or tactical asset allocation, of fund/manager choices available to a global investor;
   c) compare and contrast the major choices (i.e., active/passive, top-down/bottom-up, style, global/specialized, currency, and quantitative/subjective) available to a global investor in structuring the global investment decision-making process;
   d) discuss the components of a formal investment policy statement;
   e) discuss the role of capital market expectations in strategic and tactical asset allocation;
   f) evaluate the appropriateness of an investment policy statement for a global investor;
   g) interpret capital market data and capital market expectations in the context of strategic asset allocation for a global investor;
   h) discuss the important issues (i.e., scope, weights, and currency allocation) in choosing a global benchmark for strategic asset allocation;
   i) compare and contrast alternative approaches to hedging currency risk in strategic asset allocation;
   j) discuss the determinants of effective global tactical asset allocation;
   k) compare and contrast global strategic and tactical asset allocation;
   l) describe and evaluate the components of the global asset allocation process;
   m) determine an appropriate strategic asset allocation for a global investor;
   n) describe the primary components of portfolio performance analysis in a global context;
   o) evaluate the implications of a portfolio performance analysis for a global investor;
   p) interpret capital market data and capital market expectations in the context of tactical asset allocation for a global investor;
   q) determine an appropriate tactical asset allocation for a global investor;
   r) summarize the primary issues that must be addressed by an investor contemplating global investment.

Guideline Answer:

Part A

Advantage	Determine, for a synthetic replication index strategy, whether *each* of the advantages cited in Langford's statement is accurate or inaccurate (circle one)	Support *each* of your responses with *one* reason
The synthetic portfolio will closely track the chosen index at relatively low cost.	(Accurate) Inaccurate	The synthetic portfolio is created using cash and a futures contract on the index. Fair pricing of the futures results in the index being closely tracked, with low transactions costs. Despite the fact that derivatives are prohibited, Langford's first statement is accurate.
There are essentially no constraints on NE's implementation of such a strategy.	Accurate (Inaccurate)	Because the synthetic portfolio is created using derivative products, the investment mandate prohibiting the use of derivatives will constrain implementation of such a strategy for NE. Also, futures contracts tend to be written on indexes based on subsets of the broad market (especially regionally based), which constrains implementation of a strategy that intends to replicate broadly based indexes.

Part B

The simplest and most common approach is to use a published global market index. The weights are proportional to the relative market capitalizations (caps).* The second approach involves using GDP country weights; this strategy gives each country a weight proportional to its economic output. Custom approach: allocations based on institutional expertise justifies a customized approach.

*Market cap weights are often float-adjusted to reflect shares actually available for investment.

Part C

Statement	Determine whether *each* of the statements by Lee is correct or incorrect (circle one)	If incorrect, give *one* reason why the statement is incorrect
If we are concerned about the short-term volatility of the global portion of our portfolio, there is no strong reason to undertake anything other than a full hedging approach.	Correct (Incorrect)	There are three strong reasons to consider other than a full hedging approach: 1. Currency risk premiums frequently exist. 2. Given correlations between currency risk and asset risk, optimal hedge ratios will not equal one. 3. Relevant risk is not volatility but contribution to total risk, which for currencies is minimal.
A full hedging approach is more appropriate than a no hedging approach for an investor who has a long-term liability structure.	Correct (Incorrect)	Full hedging is not more appropriate for the following reasons: 1. There is substantial evidence that hedged stocks are more volatile over long time horizons than unhedged stocks. 2. Full hedging focuses on minimizing the volatility of the global part of the portfolio, which is not the focus of the specified investor. 3. Because of mean

| | | reversion in exchange rates, the risk-minimizing hedge ratio has been shown to be a function of investment horizon. |
| | | 4. Continued currency hedging over long-term will be costly. |

LEVEL III

Question:	1
Topic:	Portfolio Management – Individual IPS
Minutes:	34

Reading References:
1.   *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute, forthcoming)
    A.   "The Portfolio Management Process and the Investment Policy Statement," Ch. 1, John L. Maginn, Donald L. Tuttle, Dennis W. McLeavey, and Jerald E. Pinto
    B.   "Managing Individual Investor Portfolios," Ch. 3, James W. Bronson, Matthew H. Scanlan, and Jan R. Squires

3.   *The Psychology of Investing*, 2nd edition, John R. Nofsinger (Prentice Hall, 2005)
    D.   "Considering the Past," Ch. 4

Purpose:
*   To test the candidate's understanding of the investment policy statement, assess and differentiate between ability and willingness to assume risk, as well as calculate required nominal rates of return.
*   To test the candidate's ability to recognize investor's reasoning errors and discuss how they impact their ability to create wealth.

LOS: The candidate should be able to:
1.   A.   "The Portfolio Management Process and the Investment Policy Statement" (Study Session 9)
    n)   formulate and justify a risk objective for an investor;
    o)   formulate and justify a return objective for an investor;
    p)   determine the liquidity requirement for an investor and evaluate the effects of a liquidity requirement on portfolio choice;
    r)   determine the tax concerns, legal and regulatory factors, and unique circumstances for an investor and evaluate their effects on portfolio choice.

    B.   "Managing Individual Investor Portfolios" (Study Session 9)
    j)   discuss each of the major objectives that are part of an individual investor's investment policy statement;
    k)   distinguish between an individual investor's ability to take risk and willingness to take risk;
    n)   formulate and justify an investment policy statement for an individual investor.

3.   D.   "Considering the Past" (Study Session 9)
    a)   compare and contrast the "house money," "snake bite," "trying to break even," and "endowment" effects on investor decision-making behaviors;
    b)   explain how various events in the past may affect an investor's future risk taking.

LEVEL III

Question: 1
Topic: Portfolio Management – Individual IPS
Minutes: 34

Guideline Answer:

Part A

(i)
Return Objective:
The return objective for Serra's portfolio is to earn a total rate of return on an after-tax basis that maintains the real value of his portfolio, and supports his annual living and family support expenses during retirement.

(ii)
Calculation of *after-tax* nominal rate of return that is required at age 35:

Year	0 *(year before retirement)*	1 *(first year of retirement)*
Age at beginning of year	34	35
Inflows		
Salary	€ 5,000,000	
Interest income from cash savings (after-tax)	100,000	
Growth equity portfolio (after-tax) *	3,400,000	
Total Inflows	€ 8,500,000	
Outflows		
Income tax (@ 40%)×	€ 2,000,000	
Living expenses+	1,200,000	€ 1,248,000
Family support payments+	800,000	832,000
Purchase of personal home	4,500,000	0
Total Outflows	€ 8,500,000	€ 2,080,000
Net Inflows/(Outflows)	0	€ (2,080,000)

Notes:

* Growth equity portfolio: €40,000,000 ×8.5%

× Income tax: € 5,000,000 × 40%

+ Living and family support expenses adjusted for 4% inflation

LEVEL III

Question: 1
Topic: Portfolio Management – Individual IPS
Minutes: 34

Investable Assets at age 34

Cash savings (beginning year 0)	€ 4,000,000
Growth equity portfolio (beginning year 0)	40,000,000
Total investable assets (beginning of year 0)	€ 44,000,000
Add: Net cash flows during age 35 year 0	0
Total investable assets (at retirement)	€ 44,000,000

Outflows during first year of retirement	**€ 2,080,000**
Required after-tax real rate of return = 2,080,000/44,000,000	4.73%
Add: Inflation rate	4.00%
Required after-tax nominal rate of return	8.73%

Note:
Real estate assets will not generate cash flow in the current year and are not investable due to the pledge to children's welfare foundation.

Personal home is not included in investable assets.

Required after-tax nominal rate of return = 8.73% [4.73%+4.00] (arithmetic)
Required after-tax nominal rate of return = 8.92% [(1.0473) (1.04)–1] (geometric)

Part B
Template for Question 1-B

Identify *two* factors in Serra's personal situation that increase his ability to take risk
The following factors could act to increase Serra's ability to take risk: - He has a long time horizon and thus more ability to recover from any intermediate investment shortfalls.   - He has investable assets that are more than sufficient to cover his retirement objectives.   - He could pursue a second career or pursue endorsement deals.   - He could reduce his living expenses.
Identify *two* factors in Serra's personal situation that decrease his ability to take risk
The following factors could act to decrease Serra's ability to take risk: - His only source of income is his investment portfolio.   - He desires to maintain the real value of the portfolio.   - He could decide to increase his spending needs during retirement.   - He is at the peak of his career and earnings power. He is unlikely to be able to achieve comparable earnings power in the future.

LEVEL III

Question: 1
Topic: Portfolio Management – Individual IPS
Minutes: 34

Template for Question 1-B (continued)

Judge, considering all factors, whether Serra has below-average, average, or above-average ability to take risk (circle one)
Below-average   Average   ⟨Above-average⟩

Part C
Template for Question 1-C

Constraint	Formulate *each* of the following constraints in Serra's investment policy statement. Support *each* response with *one* reason based on Serra's specific circumstances.
i. Liquidity requirement	Serra's portfolio is required to provide sufficient liquidity to meet near-term spending needs during retirement. Liquidity is required for the following: • Annual family support payments • Ongoing living expenses during retirement • One-time liquidity need for house purchase
ii. Time horizon	Serra's time horizon is basically long-term but consists of two stages. This formulation is justified by the following: • The first stage consists of Serra's initial 10 years in retirement until he reaches age 45, when he stops making family support payments. • The second stage encompasses the rest of his time in retirement, which could be 30 years or more according to Serra's mortality expectations.

LEVEL III

Question: 1
Topic: Portfolio Management – Individual IPS
Minutes: 34

Part D
Template for Question 1-D

Psychological Bias	Determine which *one* action taken by Serra *best* illustrates *each* of the following psychological biases	Conclude whether *each* psychological bias indicates Serra is more willing to take risk, less willing to take risk, or has no effect on Serra's willingness to take risk (circle one)
i. Snake-bite effect	Serra avoids investing in technology-related equities, because of the losses he experienced in this sector in the late 1990's.	More willing (Less willing) No effect
ii. House-money effect	Serra used his entire signing bonus to invest in an aggressive start-up firm.	(More willing) Less willing No effect
iii. Trying-to-break-even effect	Serra's repeated purchases of B&K shares as they decline in price.	(More willing) Less willing No effect

LEVEL III

Question: 2
Topic: Portfolio Management – Individual Asset Allocation
Minutes: 12

Reading References:
1. *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute, forthcoming)
   A. "Asset Allocation," Ch. 5, William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey
   B. "Managing Individual Investor Portfolios," Ch. 3, James W. Bronson, Matthew H. Scanlan, and Jan R. Squires

Purpose:
To test candidate's ability to determine an appropriate asset allocation for an individual investor.

LOS: The candidate should be able to:
1. A. "Asset Allocation" (Study Session 11)
   e) contrast asset-only and asset-liability management (ALM) approaches to asset allocation;
   f) explain an advantage and a disadvantage of implementing a dynamic versus a static approach to strategic asset allocation;
   l) compare and contrast the following approaches to asset allocation: mean-variance, resampled efficient frontier, Black-Litterman, Monte Carlo simulation, ALM, and experience based;
   n) determine and justify a strategic asset allocation, given an investment policy statement and capital market expectations.

   B. "Managing Individual Investor Portfolios" (Study Session 9)
   p) determine the strategic asset allocation that is most appropriate given an individual's investment objectives and constraints;
   q) compare and contrast traditional deterministic versus Monte Carlo approaches in the context of retirement planning.

LEVEL III

Question: 2
Topic: Portfolio Management – Individual Asset Allocation
Minutes: 12

Guideline Answer:

Part A
By taking Kennedy's future liabilities and/or quasi-liabilities into account, the asset-liability approach controls risk better than the asset-only method by providing an asset allocation that (1) meets her retirement spending needs and (2) focuses on not outliving her assets.

Part B
The Monte Carlo simulation takes into account the cash flows into and out of the portfolio over time while standard mean–variance analysis does not. Because investment returns can vary significantly from year to year, the timing of these inflows and outflows can create major differences in the final result. In a situation where there will be varying cash flows over the investment period, the ending value of the portfolio is path dependent. (The sequence of the returns and the sequence of the changes in liabilities can be considered in a Monte Carlo simulation, demonstrating the probable range of results. Multiple scenarios can be considered.)

Part C
Moderate Portfolio. The foremost objective of the portfolio is to have funds available to provide for the spending needs for Kennedy's 20-year planning horizon. It is not necessary to achieve the lowest level of risk or the highest return. The Moderate Portfolio is the only portfolio that gives a positive terminal value under all scenarios.

LEVEL III

Question: 3
Topic: Asset Valuation – Fixed Income Valuation
Minutes: 6

Reading References:
1. *Fixed Income Readings for the Chartered Financial Analyst® Program*, 2nd edition, Frank J. Fabozzi, editor
    A. "Introduction to Bond Portfolio Management," Ch. 1
    C. "Managing Funds against a Bond Market Index," Ch. 3

Purpose:
To test the candidate's ability to apply knowledge of fixed income securities analysis to the management of portfolios.

LOS: The candidate should be able to:
1. A. "Introduction to Bond Portfolio Management" (Study Session 6)
    a) discuss the activities in the investment management process (i.e., setting the investment objective, developing and implementing the portfolio strategy, monitoring the portfolio, and adjusting the portfolio) as those activities apply to fixed-income investors;
    h) discuss the relationship between monitoring the portfolio and adjusting the portfolio.

The candidate should be able to:
1. C. "Managing Funds against a Bond Market Index" (Study Session 6)
    a) distinguish among the following approaches to domestic bond management: 1) pure bond indexing, 2) enhanced indexing by matching primary risk factors, 3) enhanced indexing by minor risk factor mismatching, 4) active management by larger risk factor mismatches, and 5) unrestricted active management.

LEVEL III

Question: 3
Topic: Asset Valuation – Fixed Income Valuation
Minutes: 6

Guideline Answer:

Template for Question 3

Statement	Determine whether you agree or disagree with *each* of Kennedy's statements (circle one)	Justify your response with *one* reason for *each* statement Note: Each justification can only be used once.
1. "The Trinity Index Fund is being managed well."	Agree (Disagree)	The fund is not managed properly because a pure bond indexing strategy should not deviate significantly from its benchmark.
2. "I expected that, as an active manager, Montego would outperform the index; therefore, the fund should be sold."	Agree (Disagree)	Six months is too short a time frame to evaluate an active bond fund manager.

LEVEL III

Question: 4
Topic: Portfolio Management – Institutional Investor
Minutes: 24

Reading References:
1.   "Managing Institutional Investor Portfolios," Ch. 4, pp. 3-17 and 67-80, Charles R. Tschampion, Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute, forthcoming)

Purpose:
To test the candidate's ability to prepare an appropriate investment policy statement for a defined benefit pension plan, given a particular set of facts and circumstances.

LOS: The candidate should be able to:
1.   "Managing Institutional Investor Portfolios" (Study Session 10)
   b)   discuss investment objectives and constraints for defined-benefit plans;
   d)   formulate an investment policy statement for a defined-benefit plan;
   l)   evaluate the factors that affect the investment policies of pension funds, foundations, endowments, life and non-life insurance companies and banks;
   m)   distinguish among the return objectives, risk tolerances, liquidity requirements, time horizons, tax considerations, legal and regulatory environment, and unique circumstances of pension funds, foundations, endowments, insurance companies, and commercial banks.

LEVEL III

Question: 4
Topic: Portfolio Management – Institutional Investor
Minutes: 24

Guideline Answer:

Part A
The ACLP's Investment Committee has adopted an investment objective to build a plan surplus by setting a return objective that is 200 basis points (2.0%) above the minimum required rate of return. Therefore, the ACLP's return objective is equal to the minimum required return of 5%* plus the 2% needed to build its surplus, for a total of 7%.

_____

*Since ACLP is 100% funded (i.e., the market value of its assets is equal to the present value of its liabilities), the minimum return requirement for the plan is the 5% discount rate used to calculate ACLP's Projected Benefit Obligation. If ACLP returns 5%, then its assets should be exactly sufficient to make its required pension payments to retired workers.

Note: The minimum 10% return mentioned by ACL's President Johnson is not an appropriate return objective for the ACLP. It is a return expectation, not a return objective, and there is no reason to believe 10% is attainable with an appropriate level of risk. The investment objectives for ACLP are set by its investment committee, not by ACL's President.

LEVEL III

Question: 4
Topic: Portfolio Management – Institutional Investor
Minutes: 24

Part B

Template for Question 4-B

Risk factor	Indicate whether ACLP has a below-average, average, or above-average ability to take risk compared with the average for the cruise industry with respect to *each* of the following risk factors (circle one)	Justify *each* response with *one* reason
i. Sponsor financial status and profitability	Below-average Average (Above-average)	ACL is financially sound, with a lower debt/equity ratio and a higher return on equity than the averages for its industry. ACL is therefore currently in a good position to make any needed contributions to ACLP (should the portfolio not perform as well as expected, for example). This gives ACLP an above-average ability to take risk compared with the average for ACL's industry.
ii. Workforce age	Below-average Average (Above-average)	With an average age of 33, ACL's workforce is younger than the industry average of 40 years old. Although 14% of the workforce is more than 50 years old, this is less than the 17% industry average. Overall, the relatively younger age of the employees increases the relative duration of ACLP's liabilities and gives ACLP an above-average ability to take risk compared to the average for ACL's industry.
iii. Retired employees	(Below-average) Average Above-average	ACL has a lower percentage of current employees (85%) and a higher percent of retired employees (15%) than the average for its industry (90% and 10%, respectively). This reduces the relative duration of the ACLP's liabilities and gives ACLP a below-average ability to take risk compared to the average for ACL's industry.

LEVEL III

Question: 4
Topic: Portfolio Management – Institutional Investor
Minutes: 24

Part C

Template for Question 4-C

Factor	Indicate whether *each* of the following factors increases, leaves unchanged, or decreases ACLP's ability to take risk (circle one)	Justify *each* response with *one* reason
i. Sponsor (ACL) and pension fund (ACLP) common risk exposures	Increases Leaves unchanged (Decreases)	Currently, 10% of ACLP's assets are invested in leisure companies (especially leisure companies with whom ACLP has a business relationship) that are likely to be highly correlated with ACL's own business. Unless Wilson can convince the Investment Committee to reduce ACLP's 10% exposure to these stocks, this factor reduces ACLP's ability to assume risk.
ii. Retirement plan features	Increases Leaves unchanged (Decreases)	The ACLP has an early retirement plan with an annuity or lump-sum payout option. Fourteen percent of ACL's workforce is old enough to qualify for the early retirement feature. Although few employees are currently planning to exercise the early retirement option, this could change. Cash requirements associated with the potential increase in annuity payments and lump-sum payouts reduce ACLP's ability to assume risk.

LEVEL III

Question: 4
Topic: Portfolio Management – Institutional Investor
Minutes: 24

Part D

Template for Question 4-D

Constraint	Formulate *each* of the following constraints in ACLP's investment policy statement. Justify *each* response with *one* reason. Note: Your answer should specifically address ACLP's circumstances.
i. Liquidity requirement	• In the absence of any information to the contrary, the ACLP is likely to have low liquidity needs. • The ACLP is fully funded. • ACL has a relatively young and stable workforce. The plan is unlikely to need to make sizable payouts in the near future given the fifteen-year average duration of ACLP's liabilities. • Few employees are currently planning to exercise the ACLP's early retirement feature. However, ACLP may want to set aside a reserve to deal with the possibility that changing conditions might cause the 14% of employees who are over age 50 to take advantage of ACLP's early retirement annuity and lump-sum payout features at some point in the future.
ii. Time horizon	• ACLP, as a going concern, has a long, single-stage time horizon. • Although 14% of ACL's employees are more than 50 years old, the average age of its employees is 33. • The workforce is stable. • ACLP's liabilities have a duration of 15 years.

LEVEL III

Question: 5
Topic: Portfolio Management – Institutional Asset Allocation
Minutes: 10

Reading References:
1.   *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute, forthcoming)
     A.   "Asset Allocation," Ch. 5, William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey

Purpose:
To test candidates' understanding of asset allocation and their ability to revise an asset allocation due to changing circumstances.

LOS: The candidate should be able to:
1.   A.   "<u>Asset Allocation</u>" (Study Session 11)
     n)   determine and justify a strategic asset allocation, given an investment policy statement and capital market expectations;
     p)   critique and revise a strategic asset allocation, given an investment policy statement and capital market expectations.

LEVEL III

Question: 5
Topic: Portfolio Management – Institutional Asset Allocation
Minutes: 10

Guideline Answer:

Part A
The most appropriate portfolio for ACLP is portfolio D.

Justification:
- Portfolio D has the minimum required cash equivalents to fund the expected lump sum payments ($200,000 per employee × 100 employees = $20 million or 10% cash requirement).
- Portfolio D meets the shortfall risk objective (9.04 – (2 × 8.19) = –7.34%)
- Portfolio D has reduced exposure to the stocks of other companies in the cruise industry. Because the plan sponsor (ACL) and cruise industry equities are highly correlated, minimizing exposure to other companies in the cruise industry is desirable to meet the policy objective.

Part B

Portfolio A is not most appropriate because
- Portfolio A does not match assets and liabilities, particularly in the short-term where there is insufficient cash.
- Portfolio A contains additional exposure to cruise industry equities.

Portfolio B is not most appropriate because
- Portfolio B does not meet the shortfall risk objective.

Portfolio C is not most appropriate because
- Portfolio C does not match assets and liabilities, particularly in the short-term where there is insufficient cash.

Portfolio E is not most appropriate because
- Portfolio E does not match assets and liabilities, particularly in the short-term where there is insufficient cash.
- Portfolio E does not meet the shortfall risk objective.

LEVEL III

Question: 6
Topic: Portfolio Management – Institutional IPS
Minutes: 12

Reading References:
1. "Managing Institutional Investor Portfolios," Ch. 4, Charles R. Tschampion, Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute, forthcoming)

Purpose:
To test the candidate's understanding of IPS differences between foundations and pension funds.

LOS: The candidate should be able to:
1. "Managing Institutional Investor Portfolios" (Study Session 10)
   b) discuss investment objectives and constraints for defined-benefit plans;
   c) evaluate pension fund risk tolerance when risk is considered from the perspective of the (1) plan surplus, (2) sponsor financial status and profitability, (3) sponsor and pension fund common risk exposures, (4) plan features, and (5) workforce characteristics;
   i) discuss investment objectives and constraints for foundations, endowments, insurance companies, and banks;
   m) distinguish among the return objectives, risk tolerances, liquidity requirements, time horizons, tax considerations, legal and regulatory environment, and unique circumstances of pension funds, foundations, endowments, insurance companies, and commercial banks.

LEVEL III

Question: 6
Topic: Portfolio Management – Institutional IPS
Minutes: 12

Guideline Answer:

Template for Question 6

Statement	Determine whether you agree or disagree with *each* of the four statements made by Arnold (circle one)	If you disagree, support your opinion with *one* reason related to portfolio management Note: Supporting your opinion by simply reversing an incorrect statement will receive no credit.
"The sole return objective of both Vrieland and a defined benefit pension plan is to maintain purchasing power."	Agree (Disagree)	Neither foundations nor defined benefit pension plans have return objectives to exclusively maintain purchasing power. • Both have spending requirements, foundations to fund operations (annual disbursements and/or required distributions), and pension plans to fund required benefits. Therefore, both may require returns in excess of inflation. • Some pension plans do not need inflation protection depending on the nature of their liabilities.
"Vrieland, unlike a defined benefit pension plan, does not need to consider the correlation between plan sponsor financial performance and the performance of the portfolio."	(Agree) Disagree	
"Like a defined benefit pension plan, the liquidity needs of Vrieland fluctuate over time."	(Agree) Disagree	

LEVEL III

Question: 6
Topic: Portfolio Management – Institutional IPS
Minutes: 12

"The primary objective of both Vrieland and a defined benefit pension plan is to exist in perpetuity, resulting in an infinite investment time horizon."	Agree ***Disagree***	There are two portions of the statement for which the candidate may disagree. **Primary Objective:** The primary objective of Vrieland is not to exist, but rather to achieve its mission. The primary objective of a defined benefit pension plan is not to exist in perpetuity, but rather to provide funding to meet pension liabilities. **Infinite Time Horizon** Some foundations can be established with limited time horizons, with the intent of being "spent down" over a predetermined period of time. Pension funds however have a primary objective of meeting benefit obligations, therefore the time horizon will be based on the expected life of the plan. The expected life of the plan depends on: 1. whether the plan sponsor is a going concern or plan termination is expected, and 2. the age of the workforce and the proportion of active lives. The plan's horizon will be longer if the workforce is young and the plan is open to new entrants.

LEVEL III

Question: 7
Topic: Portfolio Management – Institutional Asset Allocation
Minutes: 9

Reading References:
1.   *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute, forthcoming)
     A.   "Asset Allocation," Ch. 5, William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey

Purpose:
To test the candidates understanding of asset allocation for banks and foundations.

LOS: The candidate should be able to:
1.   A.   "Asset Allocation" (Study Session 11)
     m)   discuss the structure of the minimum-variance frontier with a constraint against short sales;
     n)   determine and justify a strategic asset allocation, given an investment policy statement and capital market expectations.

LEVEL III

Question: 7
Topic: Portfolio Management – Institutional Asset Allocation
Minutes: 9

Guideline Answer:

Part A
Corner portfolios 3 and 4 are the portfolios that will be used to interpolate the most appropriate strategic asset allocation.

Part B
Using the corner portfolio theorem and the expected returns for corner portfolio 3 of 10.3% and corner portfolio 4 of 9.1%.

9.5 = 10.3w + 9.1(1-w)
w = .33

The most appropriate strategic asset allocation will consist of 33% of corner portfolio 3 and 67% of corner portfolio 4.

Part C
The amount of U.S. equities that would be owned is calculated by multiplying the percentage of this asset held by each corner portfolio by the percentage of each portfolio and then summed.

U.S. equities weight = (.33) (74.1%) + (.67) (33.70%)
U.S. equities weight = 24.45% + 22.58%
U.S. equities weight = 47.03%

LEVEL III

Question: 8
Topic: Portfolio Management – GIPS
Minutes: 15

Reading References:
1. "Global Investment Performance Standards," Ch. 13, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition, Philip Lawton and W. Bruce Remington (CFA Institute, forthcoming)

Purpose:
To test the candidate's knowledge of GIPS.

LOS: The candidate should be able to:
1. "Global Investment Performance Standards" (Study Session 17)
    d) formulate the requirements and recommendations of the GIPS standards with respect to input data, including accounting policies related to asset valuation and performance measurement;
    e) summarize and justify the requirements of the GIPS standards with respect to return calculations including the treatment of large external cash flows, and calculate a time-weighted total return consistent with those standards;
    f) formulate the requirements and recommendations of the GIPS standards with respect to composite return calculations, including methods for asset-weighting portfolio returns;
    i) formulate the requirements and recommendations of the GIPS standards with respect to composite construction, including switching portfolios among composites and the timing of the inclusion of new portfolios in composites and of the exclusion of terminated portfolios from composites;
    j) formulate the requirements and recommendations of the GIPS standards for: asset class segments carved out of multi-asset class portfolios; fees; the use of leverage and derivatives; conformity with local laws and regulations that conflict with the GIPS standards; and non-compliant performance records;
    k) formulate the requirements of the GIPS standards with respect to presentation and reporting, including the required timeframe of compliant performance records, annual returns, composite market values, and benchmarks;
    s) formulate the requirements for compliance with the GIPS Advertising Guidelines.

LEVEL III

Question: 8
Topic: Portfolio Management – GIPS
Minutes: 15

Guideline Answer:

Template for Question 8

Policy	Determine whether *each* of the five policies, considered independently, meets the requirements of GIPS (circle one)	Recommend, for *each* policy not in compliance with GIPS, the appropriate change that must be made to bring First Trust Company into compliance with GIPS
1. Returns are calculated monthly and cash flows are weighted as of mid-month.	Yes ~~No~~	A time-weighted total return calculation that adjusts for *daily*-weighted cash flows is required for periods after 1 January 2005.
2. The Firmwide Composite includes all equity, fixed income, and balanced accounts managed by the firm.	Yes ~~No~~	Under the GIPS standards, composites must be defined according to similar investment objectives and/or strategies.
3. Returns on asset classes held in balanced portfolios, excluding cash, have been carved out and included in the equity and fixed income composites.	Yes ~~No~~	When a single asset class is carved out of a multiple asset class portfolio and the returns are presented as part of a single asset composite, cash must be allocated to the carve-out returns in a timely and consistent manner. Note: Current GIPS stipulate that carve-outs cannot be used after 1 January 2005, but 2006 GIPS have moved this date to 1 January 2010.
4. Composite returns are calculated by asset-weighting the individual portfolio returns using beginning-of-period values and time-weighted external cash flows.	~~Yes~~ No	

LEVEL III

Question: 8
Topic: Portfolio Management – GIPS
Minutes: 15

5. The Balanced Growth Composite includes large-capitalization equity and taxable fixed income securities. The Balanced Growth Composite is measured against a benchmark composed of 60 percent S&P 500® Equity Index and 40 percent Lehman Brothers® Government/Credit Index. Information about rebalancing of the benchmark is available upon request.	Yes (No)	Disclosures must describe the benchmark rebalancing process.

LEVEL III

Question: 9
Topic: Asset Valuation – Fixed Income Valuation
Minutes: 14

Reading References:
1. *Fixed Income Readings for the Chartered Financial Analyst® Program*, 2nd edition, Frank J. Fabozzi, editor
    A. "Introduction to Bond Portfolio Management," Ch. 1

Purpose:
To test the candidate's understanding of managing an investment portfolio against a liability structure.

LOS: The candidate should be able to:
1. A. "Introduction to Bond Portfolio Management" (Study Session 6)
    e) explain performance risk and discuss the risks associated with managing a portfolio against a liability structure (i.e., cap risk, call risk, and interest rate risk);
    f) explain the importance of duration and convexity in economic surplus management, and compute the change in the surplus of an institution, given a change in interest rates;

LEVEL III

Question: 9
Topic: Asset Valuation – Fixed Income Valuation
Minutes: 14

Guideline Answer:

Part A
Template for Question 9-A

Proposed funding solutions	Determine whether you agree or disagree with *each* of the proposed funding solutions (circle one)	If you disagree, justify your answer with *one* reason related to asset-liability management Note: Justifying your answer by simply reversing an incorrect proposed funding solution will receive no credit.
1. Issue 6-year fixed rate CDs to eliminate interest rate risk	Agree (Disagree)	Interest rate risk remains because the durations of the asset and liability do not match. In order to eliminate interest rate risk, the duration of the CD must match the duration of the loan. For example, the bank could issue CDs with a 6 month reset to match the cash flow needs.
2. Issue floating rate CDs that cannot be withdrawn prior to maturity to eliminate cap risk	Agree (Disagree)	The loan has a 3% cap while the CD has none. If interest rates were to rise by more than the 3% cap on the loan, Corinthian would not receive any more income, but its cost of funds on the floating rate CD could continue to increase. A fixed rate CD would eliminate cap risk.

Part B
Economic surplus = Market value of assets – Present value of liabilities
$4 million = $60 million – Present value of liabilities
Present value of liabilities = $56 million

LEVEL III

Question: 9
Topic: Asset Valuation – Fixed Income Valuation
Minutes: 14

Part C
The economic surplus would increase.
The change in the economic surplus would be $0.97 million or $970,000.
The new economic surplus would be $4.97 million.

Calculations:
The specific impact to the market value of the assets would be a decline in value from $60 million to $59.85 million:

Change in value = Assets × duration × Δrates
Change in value = $60 million × 0.50 × 0.005 = $0.15 million

Market value = $60 million – $0.15 million = $59.85 million

The specific impact to the PV of the liabilities would be a decline in value from $56 million to $54.88 million:

Change in value = Liabilities × duration × Δrates
Change in value = $56 million × 4.00 × 0.005 = $1.12 million

Present value = $56 million – $1.12 million = $54.88 million

Economic surplus = MV of assets – PV of liabilities = $59.85 – $54.88 = $4.97 million

Change in economic surplus = new economic surplus of $4.97 million – previous economic surplus of $4.00 million
Change in economic surplus = $0.97 million

LEVEL III

Reading References:
6. *Modern Investment Management: An Equilibrium Approach*, Bob Litterman and the Quantitative Resources Group, Goldman Sachs Asset Management (Wiley, 2003)
    A. "Strategic Asset Allocation and Hedge Funds," Ch. 26, Kurt Winkelmann, Kent Clark, Jacob Rosengarten, and Tarun Tyagi

8. *Handbook of Alternative Assets*, Mark J. P. Anson (Wiley, 2002)
    A. "Investing in Commodity Futures," Ch. 11
    B. "Commodity Futures in a Portfolio Context," Ch. 12, pp. 233–240

Purpose:
To test the candidate's understanding of using hedge funds, commodity futures and indices as benchmarks.

LOS: The candidate should be able to:
6. A. "Strategic Asset Allocation and Hedge Funds" (Study Session 8)
    b) explain the issues of hedge fund data as inputs to the analytical framework;
    d) demonstrate the concept of "implied hurdle rate" and its significance in evaluating a hedge fund allocation.

8. A. "Investing in Commodity Futures" (Study Session 8)
    a) explain the relationships among inflation (levels and changes) and commodities, stocks, and bonds.

The candidate should be able to:
8. B. "Commodity Futures in a Portfolio Context" (Study Session 8)
    a) evaluate the effect on the portfolio returns distribution of the addition of commodity futures to a traditional stock and bond portfolio.

LEVEL III

Question: 10
Topic: Asset Valuation – Alternatives
Minutes: 17

Guideline Answer:

Part A
Template for Question 10-A

Global Long/Short Hedge Fund Index Selected Features	Determine whether *each* of the features is appropriate or inappropriate for an index used as a benchmark (circle one)	If inappropriate, explain, with *one* reason, why the feature limits the usefulness of the index as a benchmark
1. When a new manager is added to the index, the index administrator adds the manager's entire return history to the index.	Appropriate (Inappropriate)	Backfill bias: Hedge funds may be added after they have had a few successful years, at which point their entire return history is added to the database. This biases the data towards firms that survive the first few years.
2. Managers are free to stop reporting at any time. All data associated with their funds are removed after they stop reporting.	Appropriate (Inappropriate)	Survivorship bias: Since managers are free to stop reporting when they wish, they may do so when they have had periods of weak performance. Also, strong performers may close to new money and stop reporting, which introduces a countervailing survivorship bias. Further, since the data are removed from the index, the volatility of the index may be understated because removed funds often have above-average volatility.
3. Managers who close their funds to new investment remain in the index as long as they report their return information on a timely basis.	Appropriate (Inappropriate)	Investability: Since the index may contain funds that are not accepting new investors, the index is not investable. Therefore it is not a valid benchmark that reflects actual investment opportunities.

LEVEL III

Part B
Template for Question 10-B

Questions from committee members	Prepare an appropriate response for *each* of the four questions from the committee members
"What is an implied hedge fund hurdle rate?"	The implied hedge fund hurdle rate is the minimum expected return investors should require for a particular hedge fund allocation.
"In your presentation you state that an appropriate implied hedge fund hurdle rate, for hedge funds as a group, is 125 basis points above cash returns. Why is the hurdle rate so low?"	The addition of hedge funds to a portfolio may reduce the total portfolio volatility because there is typically a weak correlation between hedge funds and other assets in the portfolio. Therefore hedge funds need only to produce relatively small excess returns over cash to enhance portfolio risk-adjusted returns.
"Commodity futures have higher volatility than equities, so how can adding commodity futures to the portfolio decrease overall portfolio risk?"	While it is true that commodities futures are at least as volatile as equities, commodity prices are generally not highly correlated with equity prices. Therefore the addition of commodities to the portfolio should lower the overall portfolio volatility.
"Why may rising inflation correlate with strong performance for commodity futures?"	Inflation is expected to have a positive correlation with commodity futures prices for two reasons: 1. Physical commodity prices are an underlying source of inflation. As raw material prices increase, so do producer price inflation and consumer price inflation. 2. Higher inflation usually means higher short-term interest rates. This also has a beneficial impact on commodity futures investments because it will increase the collateral yield.

LEVEL III

Question: 11
Topic: Portfolio Management – Portfolio Execution
Minutes: 15

Reading References:
4.   "Implementing Investment Strategies: The Art and Science of Investing," Ch. 17, Wayne H. Wagner and Mark Edwards, *Handbook of Portfolio Management*, Frank J. Fabozzi, ed. (Frank J. Fabozzi Associates, 1998)

5.   "Best Execution," Robert A. Schwartz and Robert A. Wood, *The Journal of Portfolio Management* (Institutional Investor, Summer 2003)

Purpose:
To test the candidate's knowledge of trading implementation, trading costs and best execution.

LOS: The candidate should be able to:
4.   "Implementing Investment Strategies: The Art and Science of Investing" (Study Session 14)
        [Note: This reading considers the topic of trading, specifically within the U.S. stock market. Because this reading was written prior to the adoption of decimal trading in the U.S. market, the conclusions concerning measurement of transactions costs as they relate to price spreads may not reflect the current environment. However, the general concepts presented in the reading remain valid.]
        b)   identify, calculate, and contrast the various cost components of trading;
        c)   recommend appropriate trading strategies to reduce trading costs, given the portfolio manager's trade motivation.

5.   "Best Execution" (Study Session 14)
        b)   discuss the problems in defining best execution;
        c)   evaluate the usefulness of the two benchmarks widely used by traders to measure best execution.

LEVEL III

Question: 11
Topic: Portfolio Management – Portfolio Execution
Minutes: 15

Guideline Answer:

Part A
Template for Question 11-A

Trading cost component	Describe how *each* of the following four components of trading costs is measured	Calculate *each* component cost and total trading cost for this OTS investment on a per share basis
i. Commission	Explicit fee charged by brokers to execute listed trades	**$0.05**
ii. Price impact	The cost of immediate execution being the difference between the average execution price and the price at the time the order is placed with the broker	**$0.25** $15.75 – $15.50
iii. Trader timing	The cost associated with seeking liquidity as measured by the price change between the time the order goes to the trade desk and when it is placed with the broker	**$0.50** $15.50 – $15.00
iv. Opportunity	The cost of failing to complete the trade or of failing to find liquidity as measured by the fifteen-day return for unexecuted shares (cancelled trades)	**$1.20** Calc for $1.20: ($18–$15)×40,000/100,000
Total trading cost		**$2.00**

Part B
There are two widely used methods of benchmarking:

1. Volume Weighted Average Price (VWAP)
2. The average of Low, High, Open and Close prices (LHOC)

Both of these methods exhibit four significant weaknesses: (List 2 of 4)

1. These are full day benchmarks that may not be appropriate depending upon the timing of order entry during the day.
2. These benchmarks can be distorted by large trades in the market.

Question: 11
Topic: Portfolio Management – Portfolio Execution
Minutes: 15

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3. Using benchmarks can create incentives for traders to time their orders with respect to the benchmark, a practice that can lead to higher trading costs.
4. There is no reason to believe that an average realized transaction price in a continuous market, however that average is measured, reflects a consensus value.

LEVEL III

Question: 12
Topic: Economics
Minutes: 12

Reading References:
5. *The Secrets of Economic Indicators*, Bernard Baumohl (Wharton School Publishing, 2005)
    A. "The Most Influential U.S. Economic Indicators," Ch. 3, pp. 25–41, 62–66, 86–90, 100–122, 147–153, 161–168, 245–262

Purpose:
To test the candidate's knowledge of evaluating economic trends and economic forecasts.

LOS:
The candidate should be able to:
5. A. "The Most Influential U.S. Economic Indicators" (Study Session 4)
    a) discuss the importance of individual economic indicators to the financial markets;
    b) evaluate the impact of a change in each of the economic indicators on an investment in bonds, an investment in stocks, and on the exchange rates;
    c) compare and contrast the value of different economic indicators in identifying economic turning points.

LEVEL III

Question: 12
Topic: Economics
Minutes: 12

Guideline Answer:

Template for Question 12

Unemployment Rate

Investment	State, viewing *each* economic indicator in isolation, the *most likely* impact the release of the current month data would have on the value of *each* of the following investments (circle one)	Justify *each* of your responses with *one* reason related to economics
i. 5-Year U.S. Government bond	(Rise) Remain unchanged Fall	Continually rising unemployment reflects a weakening economy and diminishing inflationary pressures. This potentially leads to lower interest rates and therefore higher bond prices.
ii. S&P 500® Equity Index fund	Rise Remain unchanged (Fall)	Continually rising unemployment leads to a decline in overall demand and a weakening economy, likely leading to lower corporate earnings. Lower earnings will depress equity prices.

Question: 12
Topic: Economics
Minutes: 12

Template for Question 12 (continued)

Retail Sales Change	
Investment	**State, viewing *each* economic indicator in isolation, the *most likely* impact the release of the current month data would have on the value of *each* of the following investments (circle one)**	**Justify *each* of your responses with *one* reason related to economics**
i. 5-Year U.S. Government bond	Rise *(circled)* Remain unchanged Fall	Declining retail sales may lead to a weakening economy and diminishing inflationary pressures, resulting in lower interest rates and higher bond prices.
ii. S&P 500® Equity Index fund	Rise Remain unchanged Fall *(circled)*	Declining retail sales may lead equity investors to question consumers' ability to spend, suggesting weakening corporate profits and providing downward pressure on stock prices.

LEVEL III

Question: 1
Topic: Portfolio Management - Individual
Minutes: 33

Reading References:
19.   "Managing Individual Investor Portfolios," Ch. 2, James W. Bronson, Matthew H. Scanlan, and Jan R. Squires, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute)

Purpose:
To test the candidate's ability to create an investment policy statement for an individual investor.

LOS: 2007-III-5-19-g, j, k, l, m, n
19.   "Managing Individual Investor Portfolios"
       The candidate should be able to:
       g) formulate the relationship of risk attitudes and decision-making styles with individual investor personality types;
       j) discuss each of the major objectives that an individual investor's investment policy statement includes;
       k) distinguish between an individual investor's ability to take risk and willingness to take risk;
       l) discuss how to set risk and return objectives for individual investor portfolios;
       m) discuss each of the major constraints that an individual investor's investment policy statement includes;
       n) formulate and justify an investment policy statement for an individual investor;

Guideline Answer:

Part A

Jack and Ruth Ingram Investment Policy Statement
Return Objective:

The return requirement reflects two main factors: first, the need to cover annual inflation-adjusted living expenses of C$ 200,000; and second, the desire to make testamentary inflation-adjusted gifts of C$ 3,000,000.

Living expenses and taxes in one year (inflation adjusted) = C$ 205,000
(C$ 200,000 × 1.025)

Asset base
Inheritance	C$ 2,400,000
Bonds and cash	800,000
Stock in Pitt Manufacturing	1,000,000
Less: immediate 1st year cash withdrawal	(200,000)
Total asset base	C$ 4,000,000

The value of the real estate has been removed from the return calculation as it will be donated.

Present value of asset base	C$ 4,000,000
Required terminal value of asset base (real dollars)	C$ 3,000,000

Planning Horizon   35 years

Calculation of nominal pre-tax return requirement:

N=35, pv = 4 million, pmt = –205,000, fv = –3 million, compute i/y = 4.84%
or
N=35, pv = –4 million, pmt = 205,000, fv = 3 million, compute i/y = 4.84%

Real required return =	4.84%	or	1.0484
Inflation adjustment	2.50%		×1.0250
Nominal, pre-tax return requirement	7.34%		1.0746 – 1 = 7.46%

Therefore, the Ingrams have a nominal pre-tax return objective of 7.34% or 7.46% for their portfolio.

Part B
Template for Question 1-B

Characterize the Ingrams as below-average, average, or above-average in their ability to take risk. (circle one)	Justify your response with *three* reasons based on the Ingrams' specific circumstances.
Below-average Average ⟨Above-average⟩	1. Given their life expectancies, the Ingrams are using a long term (35 year) planning horizon.
	2. The Ingrams have a substantial asset base relative to their spending needs.
	3. In the event that their performance is not satisfactory, the Ingrams may reduce or eliminate the planned testamentary gifts. This larger margin for error allows them to accommodate volatility in the portfolio.
	4. The Ingrams could change their plans to donate the house/land.
	5. Opportunities for additional income exist (reemployment, etc.).

Part C
Template for Question 1-C

Select the investor personality type for i. Jack and ii. Ruth. (circle one for each)		Justify *each* selection with *one* fact from the information about the Ingrams presented in Exhibit 1.
i. Jack	Cautious (Methodical) Spontaneous Individualist	• Jack's desire for facts rather than generalities • Jack's interest in reading articles and other information about investments
ii. Ruth	(Cautious) Methodical Spontaneous Individualist	• Ruth's prior experience of living through economic hardship caused by poor investment performance • Ruth's unease with volatility

Part D
Template for Question 1-D

Prepare the constraints section of an IPS for the Ingrams.

Time horizon
The Ingrams have a long, single-stage time horizon.

Liquidity
The Ingrams require pre-tax annual distributions of $200,000 starting immediately and adjusted for inflation in future years. There will be no major outflows from the portfolio until death.

Taxes
A large portion of the Ingrams' portfolio is invested in the stock of a single company. This stock has been purchased over time and has a low average cost basis. Rebalancing the portfolio would create a tax liability which would need to be paid from the portfolio's assets.

Legal and regulatory
Post retirement, Jack will become a member of the board of the company he worked for during his career. Jack has significant amounts of company stock which should be re-balanced to create a diversified portfolio. However, Jack will continue to be an insider, thus the timing and disclosure requirements must be considered.

Unique circumstances
The Ingrams have a valuable piece of real estate that they have decided to bequeath to the provincial park rather than selling it. They have asked that this property not be considered in their financial planning; as such it is not included in the asset base.

LEVEL III

Question: 2
Topic: Portfolio Management – Individual
Minutes: 20

Reading References:

23.   "Low-Basis Stock," Ch.10, *Integrated Wealth Management: The New Direction for Portfolio Managers*, Jean L.P. Brunel (Euromoney Institutional Investor Plc, 2002)

31.   "Asset Allocation," Ch. 5, William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey, *Managing Investment Portfolios: A Dynamic Process,* 3rd edition (CFA Institute)

Purpose:
To test the candidate's understanding of asset allocation for a individual investor.

LOS: 2007-III-5-23-c
23.   "Low-Basis Stock"
        The candidate should be able to:
    c)   judge the effectiveness of outright sales, exchange funds, completion portfolios, and hedging as financial strategies to reduce concentrated equity risk.

LOS: 2007-III-8-31-n, o, p
31.   "Asset Allocation"
        The candidate should be able to:
    n)   determine and justify a strategic asset allocation, given an investment policy statement and capital market expectations;
    o)   summarize the characteristic issues relating to asset allocation for individual investors and for institutional investors (i.e., defined-benefit plans, foundations, endowments, insurance companies, banks) and critique a proposed asset allocation in light of those issues;
    p)   critique and revise a strategic asset allocation, given an investment policy statement and capital market expectations;

Part A
Template for Question 2-A

Candidate may choose one of two strategies as most appropriate. Although Equity Collar is the most appropriate choice, the guideline answer and grading key allow a private exchange fund (versus a public exchange fund) to earn points.

If **Equity collar** is chosen, the template is as follows:

Determine which of the four strategies is the *most* appropriate given the Ingrams' instructions. (circle one)	Justify your response with *two* reasons.
Outright sale	An equity collar **would not** require the sale of Pitt and therefore avoids the realization of capital gains and associated taxes.
(Equity collar)	An equity collar provides protection at or close to the current market price of Pitt and therefore limits downside risk associated with the position in the concentrated holding.
Exchange fund	
Completion portfolio	An equity collar would allow some exposure to potential upside price movements of Pitt.

If **Exchange fund** is chosen, the template is as follows:

Determine which of the four strategies is the *most* appropriate given the Ingrams' instructions. (circle one)	Justify your response with *two* reasons.
Outright sale Equity collar	A private exchange fund creates an opportunity to borrow against the stock without creating the additional risks associated with leverage.
⟨Exchange fund⟩ Completion portfolio	A private exchange fund will retain some exposure to potential upside price movements.

Part B
Template for Question 2-B

If candidate chose **Equity collar** as the most appropriate strategy in Part A, the template is as follows:

Strategies not selected in Part A	**State, for *each* of the strategies not selected in Part A, *one* reason why it is *not* the most appropriate for the Ingrams.** **Note: Justifying your answer by simply reversing your response to Part A will receive no credit.**
1. Outright sale	An outright sale of the low basis Pitt stock will result in a realized gain and a tax liability for the Ingrams. An outright sale would also eliminate any upside price potential of the position in Pitt.
2. Exchange funds	This strategy would eliminate any significant upside price potential associated with the position in Pitt.
3. Completion portfolio	Constructing a completion portfolio requires significant liquidity. Constructing a completion portfolio can require significant time. Even though the Ingrams have 13% of their assets in cash equivalents, this is likely insufficient liquidity to structure a completion portfolio for such a large position in Pitt. Also, they cannot raise cash by leveraging their portfolio.

If candidate chose **Exchange fund** as the most appropriate strategy in Part A, the template is as follows:

Strategies not selected in Part A	**State, for *each* of the strategies not selected in Part A, *one* reason why it is *not* the most appropriate for the Ingrams.** **Note: Justifying your answer by simply reversing your response to Part A will receive no credit.**
1. Outright sale	An outright sale of the low basis Pitt stock will result in a realized gain and a tax liability for the Ingrams. An outright sale would also eliminate any upside price potential of the position in Pitt.
2. Completion portfolio	Constructing a completion portfolio requires significant liquidity. Constructing a completion portfolio can require significant time. Even though the Ingrams have 13% of their assets in cash equivalents, this is likely insufficient liquidity to structure a completion portfolio for such a large position in Pitt. Also, they cannot raise cash by leveraging their portfolio.

The above is an acceptable answer if exchange fund is chosen as the most appropriate strategy. However, Equity Collar is not an inappropriate choice.

Part C
Template for Question 2-C

Identify, based on the Ingrams' IPS, *three* other problems in the current asset allocation.	Support *each* of your responses with *one* reason.
1. Liquidity (in the form of cash equivalents) is too high at 13% of the portfolio.	The 13% cash position is not consistent with the Ingrams' low liquidity constraint.
2. Shortfall risk of the portfolio exceeds the stated limit of –12% return in any one year.	Swann has concluded that the Ingrams' shortfall risk threshold is –12% in any given year. The current portfolio exceeds this limit. Expected return = 7.1% Less: Two standard deviations = 12.1 × 2 = (24.2%) Shortfall risk = –17.1%
3. Excess concentration in small cap stocks (even excluding the 25% Pitt) *or* Portfolio is not adequately diversified.	The portfolio is too risky (volatile) for the Ingrams' risk tolerance. *or* Additional asset classes should be included (e.g. international equities) *or* When including the Pitt stock, a Canadian stock that also has small cap characteristics, the portfolio is even more highly concentrated at 66% (41% + 25%).
4. Expected return is too low.	The expected return of the portfolio of 7.1% is less than the return objective specified in the Ingrams' IPS.

LEVEL III

Question: 3
Topic: Portfolio Management – Institutional/Behavioral
Minutes: 12

Reading References:
18. "Alpha Hunters and Beta Grazers," Martin L. Leibowitz, *Financial Analysts Journal* (CFA Institute, September/October 2005)

26. "Capital Market Expectations," Ch. 4, John P. Calverley, Alan M. Meder, Brian D. Singer, and Renato Staub, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute)

Purpose:
To test the candidate's knowledge of behavioral finance concepts.

LOS: 2007-III-4-18-b
18. "Alpha Hunters and Beta Grazers"
    The candidate should be able to:
    b) discuss the behavior of different market actors, specifically "holders," "rebalancers," "valuators," and "shifters," and the impacts of these investor types on market movements;

LOS: 2007-III-7-26-b
26. "Capital Market Expectations"
    The candidate should be able to:
    b) discuss, in relation to capital markets expectations: the limitations of economic data; data measurement errors and biases; the limitations of historical estimates; *ex post* risk as a biased measure of *ex ante* risk; biases in analysts' methods; the failure to account for conditioning information; the misinterpretation of correlations; psychological traps; and model uncertainty;

Template for Question 3

<table>
<tr>
<td colspan="2" align="center">For <i>each</i> Nultione and Hyatt:</td>
</tr>
<tr>
<td align="center">i. Identify <i>two</i> psychological traps they have fallen into.

Note: Four different psychological traps must be identified.</td>
<td align="center">ii. Justify your position by stating evidence from the information provided.</td>
</tr>
<tr>
<td rowspan="3">Nultione</td>
<td>1. Overconfidence trap - the tendency of individuals to overestimate the accuracy of their forecasts.</td>
<td>Nultione is convinced that his models are more accurate than could reasonably be expected from financial forecasts. This is evidenced by the overly precise nature of his prediction both as to expected returns and associated timings. He would not consider the possibility of failure in his predictions.</td>
</tr>
<tr>
<td>2. Confirming evidence trap - the bias that leads individuals to give greater weight to information that supports an existing or preferred point of view than evidence that contradicts it.</td>
<td>Nultione has fallen into the confirming evidence trap in that he gives more weight to information that supports his preferred point of view rather than evidence that contradicts it. When asked by Hyatt to reassess his optimistic market forecast, he seeks out information that supports his existing point of view and dismisses information that does not. He rejects 17 analysts with contrary views and chooses to focus on 3 reports that agree with his conclusion.</td>
</tr>
<tr>
<td>3. Recallability trap - the tendency of forecasts to be overly influenced by events that have left a strong impression on a person's memory, particularly in the case of catastrophic or dramatic past events.</td>
<td>Nultione was disturbed when he missed the market low and the associated buying opportunity several years earlier. Now his forecasts are influenced by this memory in the direction of not missing another market low.</td>
</tr>
</table>

Template for Question 3 (continued)

Hyatt	1. Anchoring trap - the tendency to give disproportionate weight to the first (or early) information received on a topic. Initial impressions, estimates, or data "anchor" subsequent judgments.	Hyatt has fallen into the anchoring trap in that he is unable to take an objective view of Nultione's work. This is because he has familiarity with Singh's work from hearing him at a conference. Although Nultione points out that some of the key variables used in Singh's analysis have changed since the conference, Hyatt's views do not change. Also, Nultione has only recently been hired by EA.
	2. Status quo trap - the tendency for forecasts to perpetuate recent observations. To predict no change from recent past.	Hyatt has fallen into the status quo trap in that he is convinced that the current weak performance of the U.S. market will continue. A trend itself is not sufficient evidence to predict that it will continue. Acting to change the status quo may lead to regret if the decision is wrong, as is evidenced by Hyatt's concern about the performance impact if Nultione is wrong.
	3. Prudence trap - the tendency to temper forecasts so that they do not appear extreme, or the tendency to be overly cautious in forecasting.	This trap is evidenced by Hyatt's concern that implementing forecasts as extreme as Nultione's can produce large negative relative performance impacts, perhaps even jeopardizing his career with EA.

LEVEL III

Question: 4
Topic: Portfolio Management – Individual
Minutes: 14

Reading References:
31. "Asset Allocation," Ch. 5, William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey, *Managing Investment Portfolios: A Dynamic Process,* 3rd edition (CFA Institute)

Purpose:
To test the candidate's ability to determine an appropriate asset allocation for an individual investor.

LOS: 2007-III-8-31-i, j, l
31. "Asset Allocation"
The candidate should be able to:
i) select and justify an appropriate set of asset classes for an investor;
j) evaluate the theoretical and practical effects of including an additional asset class such as inflation-protected securities, large cap developed markets or emerging market securities, or alternative assets in an asset allocation;
l) compare and contrast the following approaches to asset allocation: mean–variance, resampled efficient frontier, Black–Litterman, Monte Carlo simulation, ALM, and experience based;

Part A

Inflation-protected bonds should be considered as a separate asset class because:

- The inflation-protected bonds have a low correlation with the nominal fixed rate corporate and government bonds, meeting the criterion that an asset class be diversifying.

- The economics of inflation-protected bonds are significantly different from nominal bonds. The volatility of inflation-protected bonds depends on the volatility of the relevant real interest rates, while the nominal bond volatility depends on the volatility of nominal interest rates. Thus, inflation-protected bonds have attributes that are distinct from those of nominal bonds; an asset class including both types of bonds would fail to meet the criterion that assets within an asset class be relatively homogenous.

- Inflation-protected bonds, as represented by TIPs, are empirically strongly correlated with each other across maturities; i.e., they are relatively homogenous.

- Inflation-protected bonds provide inflation and deflation protections that complement those of nominal bonds (floating or fixed coupon). Each type of bond considered separately (but not together) is relatively homogenous.

Part B

Asset classes as a group should make up the preponderance of world investable wealth. A number of asset classes are omitted, including non-U.S. securities.

Asset classes should be homogeneous. Assets within an asset class should have similar attributes and react in the same way to market forces. The U.S. balanced fund is not a homogeneous asset class, as it contains equity and fixed income securities which react differently to market movements.

Asset classes should be mutually exclusive. Overlapping asset classes will reduce the effectiveness of strategic asset allocation in controlling risk and also cause problems in developing asset class return expectations. The U.S. balanced fund overlaps nominal U.S. corporate bonds and the S&P 500 Index Fund.

Asset classes should be diversifying. For risk control purposes, an included asset class should not have extremely high expected correlations with other asset classes or with a linear combination of the other asset classes. Nominal U.S. corporate bonds and nominal U.S. government bonds have an expected correlation of 0.85.

Part C

How integrating the Black–Litterman methodology into the asset allocation process would affect:

i.   Specification of expected return inputs – Using historical data assumes that future expected returns will equal historic means. Black–Litterman reverse engineers the expected returns implicit in a diversified market portfolio and combines them with the investor's own views (if any) on expected returns in a systematic way that takes into account the investor's confidence in his or her views. Historical mean returns do not reflect either current market equilibrium returns or the investor's views.

ii.   Level of market diversification of the resulting portfolio – The use of historical mean returns as expected return inputs often results in highly concentrated (undiversified) portfolios. The Black–Litterman approach is anchored to a well diversified portfolio, and ensures the strategic asset allocation is well diversified. Combining the investor's views with equilibrium returns helps dampen the effect of any extreme views that could otherwise dominate the optimization.

LEVEL III

Question: 5
Topic: Portfolio Management – Institutional
Minutes: 23

Reading References:
25. "Managing Institutional Investor Portfolios," Ch. 3, R. Charles Tschampion, Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute)

45. "Alternative Investments Portfolio Management," Ch. 8, Jot K. Yau, Thomas Schneeweis, Thomas R. Robinson, and Lisa R. Weiss, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute)

Purpose:
To test the candidate's ability to create an appropriate investment policy statement for an institutional investor.

LOS: 2007-III-6-25-i, j, l
25. "Managing Institutional Investor Portfolios"
    The candidate should be able to:
    i) discuss investment objectives and constraints for foundations, endowments, insurance companies, and banks;
    j) formulate an investment policy statement for a foundation, an endowment, an insurance company, and a bank;
    l) evaluate the factors that affect the investment policies of pension funds, foundations, endowments, life and non-life insurance companies, and banks;

LOS: 2007-III-12-45-f, g
45. "Alternative Investments Portfolio Management"
    The candidate should be able to:
    f) review the investment characteristics of the major types of investment within alternative investment groups, including risks and liquidity;
    g) identify and evaluate any return enhancement and/or risk diversification effects of an alternative investment relative to a comparison portfolio (e.g., one invested in common equity and bonds) given relevant data, and justify any identified benefits in terms of characteristics and/or market opportunity exploited by the alternative investment;

Guideline Answer:

Part A

The Endowment's return objective is to maintain the real value (purchasing power) of the portfolio and to grow the portfolio in order to provide on-going support equal to 5% of the university budget. The required rate of return for the endowment is 8.08%. This level of return is needed to cover the cost of the 4.00% spending rule, the university's inflation rate of 3.25%, and the annual investment management expense of 0.65%.

This is calculated by a multiplicative formulation:
$$(1.040)(1.0325)(1.0065) - 1.0 = 0.0808 \text{ or } 8.08\%$$

Part B

i.   With respect to the endowment's ability to take risk:

       The endowment has an increased ability to tolerate short-term risk with respect to its role in the university's operating budget. The endowment contributes a relatively low percentage (5%) of CU's budget. A drop in the endowment value should not have a major impact on CU's ability to carry out its operations; therefore the endowment is able to pursue investments with greater risk.

ii.   The CU endowment's past performance as reflected in the year-end market values of the endowment:

       CU endowment's current market value ($500 million) reflects an approximate 0.5% compound growth rate over 2002–2006. The endowment is just meeting the support expectation of CU. Thus, the endowment's recent weak investment performance is a factor tending to decrease its ability to take risk.

Part C

Liquidity
In order to meet the spending needs of the endowment, the liquidity need is 4.0% of the previous fiscal year end market value, or 4.65%, including investment management expense.

Time Horizon
The endowment has a single-stage, long-term time horizon, as it is expected to support the CU's budget in perpetuity.

Part D

The rolling three-year average spending rule will dampen the volatility of the amount available to spend each year, which would allow the portfolio to accept more volatility, increasing the endowment's ability to take on risk while striving for higher long-term returns. The higher returns should translate into a larger spending allowance, which could be used for scholarships.

Part E

Palmer's proposed asset allocation would likely affect the portfolio as follows:

i.   *Return*
      The long-term returns of the NAREIT and Hedge Fund investments have been higher than both stocks and bonds. Commodity future returns have been slightly lower than the bond investment returns. The proposed portfolio's expected return would be higher than the existing portfolio.

ii.   *Risk*
      The correlations of all three alternative investments with global equity and global fixed income are all much less than 1.00, indicating these alternative investments have sources of return that are different from stocks and bonds and offer good potential for portfolio risk reduction.

iii. *Liquidity*
      Indirect real estate investments and commodity futures investments are exchange traded, offering relatively high levels of liquidity. Hedge funds are often subject to lock-up periods, so they are not a liquid investment. Adding these three asset classes in equal proportion to constitute in total 15% of the portfolio should not affect, or only slightly reduce, the overall liquidity of the portfolio.

LEVEL III

Question: 6
Topic: Portfolio Management – Institutional
Minutes: 23

Reading References:
25.   "Managing Institutional Investor Portfolios," Ch. 3, R. Charles Tschampion,
        Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn, *Managing
        Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute)

Purpose:
To test the candidate's ability to create an appropriate investment policy statement for the
institutional investor.

LOS: 2007-III-6-25-i, j, l, o
25.   "Managing Institutional Investor Portfolios"
        The candidate should be able to:
        i)   discuss investment objectives and constraints for foundations, endowments,
             insurance companies, and banks;
        j)   formulate an investment policy statement for a foundation, an endowment, an
             insurance company, and a bank;
        l)   evaluate the factors that affect the investment policies of pension funds,
             foundations, endowments, life and non-life insurance companies, and banks;
        o)   compare and contrast the investment objectives and constraints of institutional
             investors given relevant data such as descriptions of their financial
             circumstances and attitudes toward risk.

Guideline Answer:

Part A
Template for Question 6-A

Identify *two* constraints in the investment policy statement that are affected *solely* by the change in business mix using the information given in Exhibit 1.	Justify your response with *one* reason for *each* constraint.
1. Liquidity	In a rising rate environment, fixed rate annuities are more likely to be subject to disintermediation. Without sufficient liquidity, Pawtucket would be forced to sell securities at a loss to meet surrenders of policies and annuity contract disbursements. *or* The fixed rate annuities will require a higher level of liquidity in order to meet the *current* periodic payouts to annuity holders.
2. Time Horizon	Pawtucket's time horizon is shorter due to the changing product mix. Since Pawtucket's life insurance contracts have significantly higher duration than the fixed rate annuities, the change in business mix toward annuities has decreased the duration of Pawtucket's liabilities from 12.6 to 11.1.

Part B
Template for Question 6-B

Determine whether Pawtucket Mutual's ability to take risk has increased or decreased based *solely* on the change in business mix. (circle one)	**Justify your response with *two* reasons.**
Increased (Decreased)	The following reasons justify a decrease in Pawtucket's ability to take risk: 1. Time Horizon: Since the duration of the liabilities is decreasing, the time horizon of the investment portfolio should be reduced accordingly, thus lowering Pawtucket's ability to take risk. 2. Reinvestment risk: As the fixed rate annuity product grows as a percentage of Pawtucket Mutual's business, reinvestment risk increases since contract rates are guaranteed using estimates of the rate at which interest payments will be reinvested. The fixed rate nature of the annuities reduces Pawtucket's ability to take risk. 3. Pawtucket's surplus has dropped from $500 million to $475 million, thus reducing its ability to take risk. 4. Liquidity needs – As fixed rate annuities make up a larger share of the business mix, a higher level of liquidity is required in order to meet the *current* periodic payouts to annuity holders. The need for greater liquidity reduces Pawtucket's ability to take risk. 5. Liquidity needs – In a rising rate environment, fixed rate annuities are more likely to be subject to disintermediation. Without sufficient liquidity, Pawtucket would be forced to sell securities at a loss to meet surrenders of policies and annuity contract disbursements. The need for greater liquidity reduces Pawtucket's ability to take risk.

Part C
Template for Question 6-C

Risk	Discuss the source of *each* risk contained in Pawtucket Mutual's investment portfolio based on Exhibits 2 and 3.	Indicate the likely effect (positive, negative, or no effect) of *each* risk on Pawtucket Mutual's surplus if Leander's forecast is correct. (circle one)
1. Valuation risk	The mismatch of assets and liabilities will have a negative effect on Pawtucket Mutual's financial health. Since the average duration of the assets exceeds the average duration of the liabilities, a rising rate environment will have a negative effect on surplus. *or* In a rising rate environment, the large holdings of mortgage backed securities may extend the duration of the assets, increasing the negative effect on surplus.	Positive (Negative) No effect
2. Cash flow volatility risk	The large holding in mortgage securities adds uncertainty to cash flows. When interest rates rise, slower prepayment rates reduce cash inflows and associated interest on interest yield. These cash flows are an integral part of the reserve funding formula and a source of surplus growth.	Positive (Negative) No effect
3. Credit risk	Credit risk in investment grade and high-yield fixed income holdings will affect surplus. The risk is that credit spreads can widen, leading to lower asset valuations and potential defaults. Either of these situations could lead to depleting the asset valuation reserve, thereby reducing surplus.	Positive (Negative) No effect
4. Reinvestment risk	The reinvestment risk/return of coupon and principal payments from corporate bonds and mortgage securities is influenced by interest rate volatility. Higher interest rates will lead to higher reinvestment rates, which would have a positive impact on surplus.	(Positive) Negative No effect

LEVEL III

Question: 7
Topic: Portfolio Management – Institutional
Minutes: 13

Reading References:
54.   "Monitoring and Rebalancing," Ch. 11, Robert D. Arnott, Terence E. Burns, Lisa
       Plaxco, and Philip Moore, *Managing Investment Portfolios: A Dynamic Process*,
       3rd edition (CFA Institute)

Purpose:
To test the candidate's knowledge of monitoring and rebalancing portfolios.

LOS: 2007-III-15-54-g, h
54.   "Monitoring and Rebalancing"
       The candidate should be able to:
       g) evaluate the effects of the following factors on an asset class's optimal
           corridor width, assuming a percentage-of-portfolio rebalancing approach:
           transaction costs, risk tolerance, correlation, the asset class's volatility, and the
           volatility of the remainder of the portfolio;
       h) distinguish among the payoffs in up, down, and nontrending markets of (1)
           rebalancing to a constant mix of equities and bills, (2) buying and holding
           equities, and (3) constant-proportion portfolio insurance (CPPI);

Guideline Answer:

Template for Question 7-A
Note: No calculations are required.

Asset class and revised market expectation	Determine, for *each* revised market expectation, whether the stated asset class corridor widths in Exhibit 1 should be wider, unchanged, or narrower. (circle one)	Justify *each* of your responses with *one* reason.
Domestic fixed income: Long-term positive correlations of domestic fixed income with the other asset classes are expected to fall.	Wider Unchanged (Narrower)	Expectations for lower correlations between domestic fixed income and other asset classes should result in a narrower corridor width for domestic fixed income. Domestic fixed income is less likely to move in synch with the other asset classes, thus resulting in higher likelihood of divergence from the optimal target asset allocation.
International fixed income: International fixed income volatility is already relatively high and is expected to rise further due to increased foreign currency fluctuation. Pingshi's policy is not to hedge foreign currency risk.	Wider Unchanged (Narrower)	The expected higher volatility in international fixed income results in a greater chance of the asset class weight moving away from the target asset allocation. Hence, the corridor width should be narrower to remain close to the optimal target asset allocation.
Domestic real estate: Liquidity in the domestic real estate market is expected to decline, and transaction costs are expected to rise.	(Wider) Unchanged Narrower	Higher relative transaction costs associated with real estate investments make it difficult for the benefits of rebalancing to overcome the associated transaction costs. Consequently, the corridor width should be wider so that rebalancing costs do not outweigh the benefits of being at or close to optimal target asset allocation.

Part B

The CPPI strategy is expected to under perform the Constant-Mix strategy in equity markets that experience flat returns in the long term with periods of significant volatility. This is because under CPPI the target equity allocation ("cushion") is positively related to the level of the market. CPPI requires a manager to sell shares after weaknesses and buy after strength; those transactions are unprofitable if market declines are followed by rebounds and increases are retraced.

The Constant-Mix strategy is expected to outperform CPPI in equity markets that experience flat returns in the long term with periods of significant volatility. This is because under Constant-Mix the target equity allocation is unrelated to the level of the equity market. Constant-Mix requires a manager to buy shares as the stock falls and to sell shares as stock values rise; those transactions are profitable if market declines are followed by rebounds and increases are retraced.

LEVEL III

Question: 8
Topic: Portfolio Management – Institutional/Equity
Minutes: 14

Reading References:

42. "Equity Portfolio Management," Ch. 7, Gary Gastineau, Andrew R. Olma, and Robert G. Zielinski, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute)

43. "The Losers Game," Charles D. Ellis, *Financial Analysts Journal* (AIMR, January–February 1995)

56. "Evaluating Portfolio Performance," Ch. 12, Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute)

59. "Global Performance Evaluation," Ch. 12, *International Investments*, 5th edition, Bruno Solnik and Dennis McLeavey (Addison Wesley, 2003)

Purpose:
To test the candidate's knowledge of monitoring and rebalancing portfolios.

LOS: 2007-III-11-42-h, j, o, p, r
42. "Equity Portfolio Management"
The candidate should be able to:
h) discuss, compare, and contrast techniques for identifying investment styles and characterize the style of an investor given either a description of the investor's security selection method, details on security holdings, or results of a returns-based style analysis;
j) explain and interpret the equity style box and evaluate the effects of style drift;
o) contrast derivatives-based and stock-based enhanced indexing strategies, and demonstrate the fundamental law of active management including its use to justify enhanced indexing;
p) explain and interpret a systematic approach to optimizing allocations to a group of managers;
r) distinguish among the components of total active return ("true" active return and "misfit" active return), their associated risk measures ("true" active risk and "misfit" risk), and explain their relevance for evaluating a portfolio of managers;

LOS: 2007-III-11-43
43.   "The Losers Game"
       The candidate should be able to: contrast a Winner's Game to a Loser's Game and
       explain the impediments for successfully investing in a market that is perceived to
       be a Loser's Game.

LOS: 2007-III-16-56-v
56.   "Evaluating Portfolio Performance"
       The candidate should be able to:
       v) distinguish between the information ratio and the Sharpe ratio;

LOS: 2007-III-16-59-c, d
59.   "Global Performance Evaluation"
       The candidate should be able to:
       c) explain the purpose of global performance attribution, and calculate the
           contribution of market allocation, currency allocation, and security selection;
       d) discuss the various risk measures used to appraise an investment manager's
           performance;

Part A

AVA was actively managed between 2002 and 2006, as shown by AVA's selection, which accounts for 12 percent of the return variation that is unexplained by its style fit of 88 percent, suggesting that AVA is not replicating passive benchmark returns.

Part B

AVA did not experience significant style drift between 2002 and 2006, since its Sharpe style weight was consistently at or above 96% on the Russell 1000 Value Index. Variations in the Sharpe style weights across the other style indices were consistently low over the period.

Part C

The information ratio can be calculated on either a gross or net basis; that is, based on returns either before or after fees.

Gross-of-fees information ratio = Expected Active Return / Expected Active Risk

$$= \frac{0.016}{0.016} = 1.0$$

Net-of-fees information ratio = (Active Return – Fees) / Active Risk

$$= \frac{0.016 - 0.003}{0.016} = \frac{0.013}{0.016} = 0.8125 \approx 0.81$$

Part D

Taylor's recommendation of a core-satellite portfolio is appropriate for Xenius. There are three reasons supporting Taylor's recommendation:

- The expected after-fee active return of the core-satellite portfolio is 1.3%, which exceeds the policy target for active return of 1% (and the active return of the enhanced index manager, 1%).

- The expected active risk of the core-satellite portfolio is 1.6%, which is within the policy guideline for tracking error of 2%.

- The information ratio of the core-satellite portfolio is expected to be greater than that of the enhanced index manager on both a pre-fee basis (1.00 vs. 0.92) and an after-fee basis (0.81 vs. 0.77).

LEVEL III

Question: 9
Topic: Portfolio Management – Performance Evaluation
Minutes: 9

Reading References:
59.   "Global Performance Evaluation," Ch. 12, *International Investments*, 5th edition,
        Bruno Solnik and Dennis McLeavey (Addison Wesley, 2003)

Purpose:
To test the candidate's knowledge of performance evaluation and attribution.

LOS: 2007-III-16-59-c
59.   "Global Performance Evaluation"
        The candidate should be able to:
        c) explain the purpose of global performance attribution, and calculate the
             contribution of market allocation, currency allocation, and security selection;

Guideline Answer:

i. Market return measures the performance that would have been achieved had the manager invested in a local market index instead of individual securities.

Market return = $\Sigma \, w_i \times$ Local index return$_i$

Market return$_{PPM}$ = 0.30 × 1.0% = 0.30%

Market return$_{SCM}$ = 0.45 × 10.7% = 4.82%

Market return$_{CTM}$ = 0.25 × 3.4% = 0.85%

Market return = 0.30% + 4.82% + 0.85% = <u>5.97%</u>

ii. Currency measures the effect of currency movements on the performance of security selection in the base currency.

Currency = $\Sigma \, w_i \times$ Currency contribution$_i$, where Currency contribution$_i$ is [Security total return (base currency)$_i$ – Security total return (local currency)$_i$]

Currency$_{PPM}$ = 0.30 × (6.2% – 8.5%) = –0.69%

Currency$_{SCM}$ = 0.45 × (3.4% – 15.4%) = –5.40%

Currency$_{CTM}$ = 0.25 × (13.5% – 13.5%) = 0.00%

Hence, Currency = –0.69% + (–5.40%) + 0.00% = <u>–6.09%</u>

iii. Security selection is the contribution made by the manager's individual security selection in the local currency.

Security selection return = $\Sigma \, w_i \times$ Security selection contribution$_i$, where Security selection contribution$_i$ is [Security total return (local currency)$_i$ – Local index return$_i$]

Security selection return$_{PPM}$ = 0.30 × (8.5% – 1.0%) = 2.25%

Security selection return$_{SCM}$ = 0.45 × (15.4% – 10.7%) = 2.12%

Security selection return$_{CTM}$ = 0.25 × (13.5% – 3.4%) = 2.53%

Hence, Security selection return = 2.25% + 2.12% + 2.53% = <u>6.90%</u>

Note: Other methods of calculation could also be used to obtain the same result.

LEVEL III

Question: 10
Topic: Portfolio Management – Economic Analysis
Minutes: 19

Reading References:

26. "Capital Market Expectations," Ch. 4, John P. Calverley, Alan M. Meder, Brian D. Singer, and Renato Staub, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition (CFA Institute)

28. "Macroanalysis and Microvaluation of the Stock Market," Ch. 12, *Investment Analysis and Portfolio Management*, 8th edition, Frank K. Reilly and Keith C. Brown (South-Western, 2006)

Purpose:
To test the candidate's knowledge of economic concepts, particularly inflation.

LOS: 2007-III-7-26-c
26. "Capital Market Expectations"
The candidate should be able to:
c) demonstrate the application of formal tools for setting capital market expectations including statistical tools, discounted cash flow models, the risk premium approach, and financial equilibrium models;

LOS: 2007-III-7-28-d
28. "Macroanalysis and Microvaluation"
The candidate should be able to:
d) compare and contrast the different approaches to estimation of earnings per share, and how to estimate the different components.

Guideline Answer:

Template for Question 10-A

i. Identify *three* variables from Exhibit 1 that are used to estimate the S&P 500 aggregate operating profit margin.	ii. Determine, for *each* identified variable, the expected effect of the 2007 forecast on the S&P 500 aggregate operating profit margin. Note: Consider each variable independently and assume all other variables remain constant. (circle one)	iii. Justify your answer to Part ii with *one* reason for *each* identified variable.
1. Inflation rate	Increase (Decrease) No Change	Without the ability to fully pass on price increases, an increase in inflation will decrease operating profit margin as costs increase without an offsetting increase in sales price.
2. Capacity utilization rate	(Increase) Decrease No Change	Given the level of capacity utilization in Exhibit 1, an increase in capacity utilization will increase operating profit margin. As production levels increase, fixed costs are spread over a larger revenue base; i.e., per unit fixed costs decrease.
3. Unit labor costs (% change)	(Increase) Decrease No Change	A decrease in unit labor costs will increase operating profit margin because it will cost less to produce the same amount of sales volume.
4. Depreciation expense	Increase (Decrease) No Change	Assuming EBIT is used as the measure of operating profit, an increase in depreciation expense will decrease operating profit if there is no change in revenues or other costs.

Part B

The Grinold–Kroner (GK) model is an extension of the Gordon growth model that takes explicit account of share repurchases. The model also provides a means for analysts to incorporate expectations of valuation levels through the P/E ratio. Based on the information provided in Exhibit 2, Steiner's decision to use the GK model is based on:

1.   The U.S. Data includes a share repurchase yield of 1%. The GK model takes explicit account of share repurchases and is therefore an appropriate model for Steiner's analysis.

2.   Exhibit 2 shows a per period change in P/E of 0.25%. The GK model allows changing P/E ratios to be incorporated and is therefore appropriate for Steiner's analysis.

Part C

The return to U.S. equities using the Grinold–Kroner model is calculated as follows:

$$E(R_e) = D/P - \Delta S + i + g + \Delta P/E$$

Where
    $E(R_e)$ is the expected return on equity
    D/P is the expected dividend yield $= 2\%$
    ΔS is the expected percent change in shares outstanding (the negative of the repurchase yield) $= -1\%$
    i is the expected inflation rate $= 4\%$
    g is the expected real total earnings growth rate $= 4\%$
    $\Delta P/E$ is the per-period percent change in the P/E multiple $= 0.25\%$

Therefore $E(R_e) = 2\% - (-1\%) + 4\% + 4\% + 0.25\% = 11.25\%$

Level III

Question: 1
Topic: Portfolio Management – Individual
Minutes: 36

Reading References:
15. "Managing Individual Investor Portfolios," Ch. 2 *Managing Investment Portfolios: A Dynamic Process,* 3rd edition, James W. Bronson, Matthew H. Scanlan, and Jan R. Squires (CFA Institute, 2007)
20. "Goals-Based Investing: Integrating Traditional and Behavioral Finance," Daniel Nevins, *Journal of Wealth Management* (Institutional Investors, 2004)

Purpose:
Test individual portfolio management concepts.

LOS: 2008-III-4-15-j, k, l, n
15. "Managing Individual Investor Portfolios"
    The candidate should be able to:
    j)   explain how to set risk and return objectives for individual investor portfolios and discuss the impact that ability and willingness to take risk have on risk tolerance;
    k)   identify and explain each of the major constraint categories included in an individual investor's investment policy statement;
    l)   formulate and justify an investment policy statement for an individual investor;
    n)   compare and contrast traditional deterministic versus Monte Carlo approaches to retirement planning and explain the advantages of a Monte Carlo approach.

LOS: 2008-III-4-20-c, d
20. "Goals-Based Investing: Integrating Traditional and Behavioral Finance"
    c)   justify the use of absolute performance and cash flow matching objectives to meet the goal of lifestyle protection;
    d)   compare lifestyle protection strategies with fixed horizon strategies and explain when the use of each approach is appropriate.

Level III

Question: 1
Topic: Portfolio Management – Individual
Minutes: 36

Guideline Answer:

PART A
i.
The return objective for the Carvalhos' portfolio is to:
- provide for the mortgage payments for a home
- support their living expenses in retirement
- maintain the inflation-adjusted value of the portfolio

ii.
CASH FLOWS

	Current	Year 1
Inflows		
Salary	120,000	124,800
Trust Distributions	750,000	0
Total Inflows	870,000	124,800
Outflows		
Living Expenses	120,000	124,800
Down payment on home	255,000	0
Mortgage on home	0	55,000
Total Outflows	375,000	179,800
Net Inflows/(Outflows)	495,000	(55,000)

INVESTABLE ASSETS

Investable Assets	
Current savings portfolio	500,000
Current year net inflow	495,000
Total Investable Assets	995,000

CALCULATION OF REQUIRED RETURN

Outflows required next year	55,000		
Divided by investable assets	995,000	=	**5.53%**
Plus expected inflation			4.00%
Required After-Tax Nominal Return - arithmetic			**9.53%**
Or			
Required After Tax Nominal Return – geometric	1.0553 x 1.0400 =		**9.75%**

2008 Level III Guideline Answers

Level III

Question: 1
Topic: Portfolio Management – Individual
Minutes: 36

PART B
Template for Question 1-B

i. Identify *two* factors in the Carvalhos' situation that increase their ability to take risk.
- They have a long time horizon - They are young and have more human capital - They will receive another trust payout in 10 years - They will potentially inherit a large sum of money from Mariana's parents - They have stable income
ii. Identify *two* factors in the Carvalhos' situation that decrease their ability to take risk.
- They have a moderate asset base relative to required cash flows from the portfolio - There is no assurance the children's education will be covered by a scholarship and the cost could be substantial
iii. Determine whether the Carvalhos have below-average, average, or above-average ability to take risk. **(circle one)**
Below-average   Average   ⬭Above-average⬭

Level III

Question: 1
Topic: Portfolio Management – Individual
Minutes: 36

PART C
Template for Question 1-C

Constraint	Prepare the following constraints of the Carvalhos' IPS.
i. Liquidity	The Carvalhos need their investment portfolio to provide BRL55,000 for next year's mortgage payment.
ii. Time horizon	The Carvalhos have a long-term multi-stage time horizon. In the short term, they must pay living expenses and provide a home for their family. They may also have to pay tuition for their children. Their second stage is retirement, thirty years from now.

PART D
i.
The revised return objective for the Carvalhos' portfolio is to:
    - provide for the mortgage on their home
    - support their living expenses in retirement
    - support charitable endeavors in retirement
    - provide a bequest for their children.

ii.
The after-tax nominal rate of return is 8.48%. The return is calculated using the following inputs:

Mortgage payments remaining   5
Annual mortgage amount $35,000
Investment portfolio value (current) $10,200,000
Investment portfolio value (target) $15,000,000

Using the HP12-C calculator, the following figures are used in the calculation when solving for *i*:

N = 5, PV = 10,200,000, PMT = -55,000, FV = -15,000,000, compute i = 8.48%
or
N = 5, PV = -10,200,000, PMT = 55,000, FV = 15,000,000, compute i = 8.48%

Note: Salaries/expenses are a wash.

Level III

Question: 2
Topic: Portfolio Management – Individual/Behavioral
Minutes: 9

Reading References:

7. "Heuristic-Driven Bias: The First Theme," Ch. 2, *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing,* Hersh Shefrin (Oxford University School Press, 2002)
8. "Frame Dependence: The Second Theme," Ch. 3, *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing,* Hersh Shefrin (Oxford University School Press, 2002)
11. "Investment Decision Making in Defined Contribution Pension Plans," *Pensions,* Alistair Byrne, (Palgrave McMillan 2004)
13. "A Survey of Behavioral Finance," Ch. 18, *Handbook of the Economics of Finance* Nicholas Barberis and Richard Thaler (Elsevier Science B.V., 2003)

Purpose:
Test behavioral finance concepts for individual

LOS: 2008-III-3-7-a
7.   "Heuristic-Driven Bias: The First Theme"
     The candidate should be able to:
   a)   evaluate the impact of heuristic-driven biases on investment decision-making including representativeness, overconfidence, anchoring-and-adjustment, and aversion to ambiguity.

LOS: 2008-III-3-8-a, b
8.   **"**Frame Dependence: The Second Theme"
     The candidate should be able to:
   a)   explain how loss aversion can result in investors' willingness to hold on to deteriorating investment positions;
   b)   evaluate the impacts that the emotional frames of self-control, regret minimization, and money illusion have on investor behavior;

LOS: 2008-III-3-11-b
11.   "Investment Decision Making in Defined Contribution Pension Plans"
     The candidate should be able to:
   b)   evaluate the impacts of status quo bias, myopic loss aversion, 1/n diversification, and the endorsement effect on DC plan participants' investment decisions and the risk profile of their investment plans.

Level III

Question: 2
Topic: Portfolio Management – Individual/Behavioral
Minutes: 9

Guideline Answer:

Template for Question 2

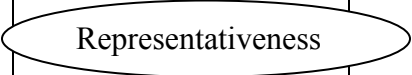| Donaldson's statement	Select the behavioral finance concept *best* exhibited in *each* of Donaldson's three statements. Note: No behavioral finance concept can be used more than once. (circle one)	Explain how the behavioral finance concept you selected affects Donaldson's investment decision making.
"My father was a buy-and-hold investor but I am an active trader. To keep trading costs low, I use an online brokerage firm. I have done well investing in technology companies because I know the industry."	Naïve diversification (Overconfidence) Representativeness Regret avoidance Self-control	Donaldson knows the technology industry and he considers himself an expert investor. Overconfidence frequently leads to excessive trading and underperformance.
"I am holding a large position in Omega Corporation with a large unrealized loss. Omega's stock price declined last year when reported sales and earnings failed to meet analyst expectations. I took advantage of the decline to increase my position. Omega sales growth has continued to slow over the last year, but I believe the stock is still a good investment."	Naïve diversification Overconfidence Representativeness (Regret avoidance) Self-control	Donaldson's reluctance to sell his losing position reflects both regret avoidance and belief perseverance. To avoid the stress associated with admitting a mistake, he hopes the stock will recover. Despite new information (slowing sales and lower than expected sales and earnings), Donaldson has held onto his beliefs. He has increased his position rather than admit a mistake by taking the loss.

Level III

Question: 2
Topic: Portfolio Management – Individual/Behavioral
Minutes: 9

Template for Question 2 (continued)

Donaldson's statement	Select the behavioral finance concept *best* exhibited in *each* of Donaldson's three statements. Note: No behavioral finance concept can be used more than once. (circle one)	Explain how the behavioral finance concept you selected affects Donaldson's investment decision making.
"I read a newspaper article reporting that commercial property values in the city have increased 14 percent annually since 2000. According to the article, the average commercial property in the city sold for $1.5 million last year. This makes me very happy because I just purchased a piece of commercial property last month. There is no doubt that it will be a good investment."	Naïve diversification Overconfidence ⟨Representativeness⟩ Regret avoidance Self-control	Donaldson may have bought late in the cycle, but believes that commercial property values will continue to increase. Donaldson, by relying on the representativeness heuristic, has become overly optimistic about a past winner.

Level III

Question: 3
Topic: Portfolio Management – Institutional
Minutes: 36

Reading Reference:
21. "Managing Institutional Investor Portfolios," Ch. 3, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition, R. Charles Tschampion, Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn (CFA Institute, 2007)

Purpose:
Test institutional portfolio management concepts

LOS: 2008-III-21-b, c, d, e, f
21.   "Managing Institutional Investor Portfolios"
        The candidate should be able to:
        b)   discuss investment objectives and constraints for defined-benefit plans;
        c)   evaluate pension fund risk tolerance when risk is considered from the perspective of the (1) plan surplus, (2) sponsor financial status and profitability, (3) sponsor and pension fund common risk exposures, (4) plan features, and (5) workforce characteristics;
        d)   formulate an investment policy statement for a defined-benefit plan;
        e)   evaluate the risk management considerations in investing pension plan assets;
        f)   formulate an investment policy statement for a defined-contribution plan;

Level III

Question: 3
Topic: Portfolio Management – Institutional
Minutes: 36

Guideline Answer:

PART A
The most likely effect of a decrease in the discount rate to 6.5% from 7.0% would be to increase the calculated present value of TEPP's liabilities (i.e., projected benefit obligation or PBO).

PART B
The excess return target in 2008 will increase to 3.0 percent from 2.5 percent. This is because the total return target, 9.5%, in 2008 will remain the same as in 2007, but the discount rate is reduced to 6.5 percent from 7.0 percent. The excess return target for 2008 is calculated as follows.

	Arithmetic Approach	Geometric Approach
2007 Discount Rate	7.0%	1.0700
Plus: 2007 Excess Return Target	+ 2.5%	× 1.0250
2007 Total Return Objective	9.5%	1.0968 – 1 = 9.68%
2008 Total Return Objective	9.5%	1.0968
Less: 2008 Discount Rate	−6.5%	÷ 1.0650
2008 Excess Return Target	3.0%	1.0298 – 1 = 2.98%

PART C
TEPP's risk objective is to invest so as to minimize the probability that the market value of plan assets will fall below 65% of PBO.

Level III

Question: 3
Topic: Portfolio Management – Institutional
Minutes: 36

PART D
Template for Question 3-D

Attribute	Determine whether *each* of the four attributes indicates TEPP's ability to take risk is above or below the airline industry average. (circle one)	Justify *each* determination based on *one* comparison between TEPP and the airline industry related to the attribute. Note: Consider each attribute independently.
i. sponsor financial condition	Above **(Below)**	• Titan's debt/asset ratio of .48 is higher than the industry average of .39. • Titan's operating loss margin of (7.63%) is below the industry average loss margin of (4.01%);
ii. plan funding status	Above **(Below)**	• TEPP's funding level of 70% of PBO is less than the airline industry average. • TEPP anticipates sponsor contributions of only 90% of the payments to beneficiaries, which is less than average for the airline industry.
iii. plan provisions	Above **(Below)**	• Titan employees over age 50 are allowed to retire early, while most airline industry employees are not allowed to retire early. The early retirement feature increases the present value of TEPP's benefit payments compared to the airline industry. • Titan's retiring participants have the option to receive up to 50% of their benefit in a lump sum, while most airline industry employees do not have this option. The lump-sum option increases the present value of TEPP's benefit payments compared to the airline industry.

Question: 3
Topic: Portfolio Management – Institutional
Minutes: 36

iv. participant characteristics	Above ~~Below~~ (circled)	• At 47, the average age of TEPP participants is older than the airline industry average, resulting in a shorter duration for TEPP's liabilities than that of the airline industry. • At 30%, the proportion of retired lives in TEPP is above the airline industry average, resulting in a shorter duration for TEPP's liabilities than that of the airline industry.

PART E
Liquidity requirements for TEPP are determined by the expected net cash outflow of the plan defined as the difference between payments to beneficiaries and contributions received from Titan. Titan's planned contribution in 2008 of $927 million falls short of anticipated benefits payments of $1,030 million. As a result, TEPP expects a net cash outflow in 2008. Assuming that expected contributions and benefits are realized, TEPP will have a liquidity requirement in 2008 of $103 million, ($1,030 - $927).

PART F
i. Benefit payment obligations in the retired-lives pool are exposed to *less* inflation risk because, unlike the active-lives pool, payments are fixed in nominal terms and do not adjust for inflation. Benefit payment obligations in the active-lives pool are exposed to *more* inflation risk than in the retired-lives pool because, unlike the retired-lives pool, active Titan employees accrue pension benefits based on salary increases, which include inflation as a component.

ii. Liabilities in the active-lives pool will have a relatively *longer* average duration than liabilities in the retired lives pool, reflecting the time remaining before active employees retire. Active employees tend to be younger than retired employees. The age difference is indicated by the fact that the minimum retirement age is 50 and that 30% of all TEPP participants are retired.

PART G
Barrows is incorrect. Titan's risk management committee indicated that an asset-liability management (ALM) objective to maintain the market value of pension assets at or above 65% of PBO. From an ALM perspective, pension investments should be managed relative to pension liabilities and not to external index benchmarks. The ALM goal is to limit the volatility of the shortfall, but large holdings in stocks will increase the volatility of the shortfall because changes in equity values will not correlate closely to changes in the value of plan liabilities. The shortfall stands presently at 30% of liabilities. A downward move in stock prices occurring while Titan remains unable to fully fund the plan would worsen the shortfall.

Tate is incorrect. The mismatch between short-term, risk-free securities and the 14-year duration of Titan's pension benefit obligation implies that changes in asset values will not correlate

closely to changes in the value of plan liabilities, adding to the volatility of the funding shortfall. Moreover, short-term, risk free assets would not be expected to earn a rate of return equal to the actuarial discount rate during a period in which a normal, upward-sloping yield curve prevails, causing the shortfall to worsen.

Level III

Question: 4
Topic: Portfolio Management – Asset Allocation
Minutes: 17

Reading References:
25. "Asset Allocation," Ch. 5, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition, William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey (CFA Institute, 2007)
26. "Linking Pension Liabilities to Assets," Aaron Meder and Renato Staub (UBS Global Asset Management, 2006)

Purpose:
To test knowledge and use of asset allocation

LOS: 2008-III-07-25-d, e, f, m
25. "Asset Allocation"
    The candidate should be able to:
    d) contrast the asset-only and asset/liability management (ALM) approaches to asset allocation;
    e) explain the advantage of dynamic over static asset allocation and evaluate the trade-offs of complexity and cost;
    f) evaluate return and risk objectives in relation to strategic asset allocation;
    m) formulate and justify a strategic asset allocation, given an investment policy statement and capital market expectations;

LOS: 2008-III-07-26-a, b, c
26. "Linking Pension Liabilities to Assets"
    The candidate should be able to:
    a) contrast the assumptions concerning pension liability risk in asset-only and liability-relative approaches to asset allocation;
    b) discuss the fundamental and economic exposures of pension liabilities and identify asset types that mimic these liability exposures;
    c) compare pension portfolios built from a traditional asset-only perspective to portfolios designed relative to liabilities and discuss why corporations may choose not to fully implement the liability mimicking portfolio.

Level III

Question: 4
Topic: Portfolio Management – Asset Allocation
Minutes: 17

Guideline Answer:

PART A

i. Given Thurlow's return requirement of 9.4%, corner portfolios #3 and #4 are the two most appropriate portfolios to combine.

In addition to achieving the return requirement, the combination of portfolios #3 and #4:
1. is consistent with Thurlow's risk tolerance of a maximum portfolio standard deviation of 10%,
2. lies on the efficient frontier, and
3. will result in the highest Sharpe ratio among the all portfolio combinations that meet Thurlow's return requirement. [Sharpe ratio = (.25 x .46) + (.75 x .51) = .4975]

ii. Based on the return requirement of 9.4%, the optimal weights of Portfolio 3 and Portfolio 4 is given by:

Required Return = (Return on Portfolio 3) x (percentage of overall portfolio invested in Portfolio 3) + (Return on Portfolio 4) x (1 - percentage of overall portfolio invested in Portfolio 3)

9.4% = 10.3% x w + 9.1% (1-w)
Solving for w = .25
Where: w = percentage of overall portfolio invested in Portfolio 3

Therefore, the optimal weighting of Portfolio 3 equals 25% and the optimal weighting for Portfolio 4 equals 75%.

The weight of total equities in the portfolio = weight of US equities + weight of non-US equities.

The weight of US equities = (the weight of portfolio 3) x (the allocation to US equities in portfolio 3) + (the weight of portfolio 4) x (the allocation to US equities in portfolio 4)

The weight of US equities = .25(74.1%) + .75(33.7%) = 43.8%

The weight of non-US equities = (the weight of portfolio 3) x (the allocation to non-US equities in portfolio 3) + (the weight of portfolio 4) x (the allocation to non-US equities in portfolio 4)

The weight of non-US equities = .25(4.0%) + .75(12.0%) = 10.0%

Therefore, the weight of total equities = 43.8% + 10.0% = 53.8%.

Level III

Question:	4
Topic:	Portfolio Management – Asset Allocation
Minutes:	17

PART B

i. The most appropriate asset allocation is 106.5% of investable funds to Corner portfolio 4 while borrowing 6.5% of investable funds at the risk-free rate.

Thurlow's return requirement is 9.4%. Therefore the optimal allocation to Portfolio 4 is determined as:

Required Return = (Return on Portfolio 4) x (percentage of overall portfolio invested in Portfolio 4) + (Risk-free rate) x (1 - percentage of overall portfolio invested in Portfolio 4)

9.4% = 9.1% (w) + 4.5% (1-w)
Solving for w = 1.065 = weight of portfolio 4

Where:
   Expected return on Portfolio 4 = 9.1%
   Expected risk-free rate = 4.5%
   w = optimal allocation to Portfolio 4

The optimal asset allocation for the overall portfolio is:

Asset Class		Weight
US Equities	1.065 x 33.7	35.9%
Non-US Equities	1.065 x 12.0	12.8%
Long-term bonds	1.065 x 36.7	39.1%
Real Estate	1.065 x 17.6	18.7%
Risk free asset	1.0 – 1.065	-6.5%

ii. By combining the tangency portfolio with the risk-free security, the expected risk-adjusted return (Sharpe ratio) will improve from .49 to .51. This Sharpe Ratio for this combination is higher than any other portfolio solution that meets the 9.4% return requirement. The standard deviation of this portfolio is (approximately) 9.69%. This standard deviation is lower than the 10% standard deviation of the optimal portfolio (the optimal combination of portfolio 3 and portfolio 4 with no leverage).

iii. The weight of total equities in the portfolio equals 48.7% = weight of US equities + weight of Non- US equities = 35.9% + 12.8% = 48.7%

PART C

i. The advantages of the resampled efficient frontier approach relative to the mean-variance efficient frontier approach are:

Question: 4
Topic: Portfolio Management – Asset Allocation
Minutes: 17

1. the optimal portfolios resulting from the re-sampling process are more diversified;
2. the optimal portfolio weights from the re-sampled portfolios are more stable through time.

ii. Asset Liability Management (ALM) is preferred because:

1. ALM reduces risk by explicitly considering the liability exposures of the pension plan.
2. The Asset Only approach can result in inefficient investment policies that may expose the plan to excessive and unrewarded risk relative to liabilities.
3. ALM approaches typically result in an optimal portfolio with a higher fixed income allocation.

Level III

Question: 5
Topic: Portfolio Management – Fixed Income Investments
Minutes: 13

Reading References:

27. "Fixed-Income Portfolio Management-Part I," Ch. 6, sections 1-4 (pages 1-40) *Managing Investment Portfolios: A Dynamic Process,* 3rd edition, H. Gifford Fong and Larry D. Guin (CFA Institute, 2007)
28. "Relative-Value Methodologies for Global Credit Bond Portfolio Management," Ch. 5, Jack Malvey, *Fixed Income Readings for the Chartered Financial Analyst® Program,* 2nd edition, Frank J. Fabozzi, editor (CFA Institute, 2005)
30. "Hedging Mortgage Securities to Capture Relative Value," Ch. 8, Kenneth B. Dunn, Roberto M. Sella, and Frank J. Fabozzi, *Fixed Income Readings for the Chartered Financial Analyst® Program,* 2nd edition, Frank J. Fabozzi, editor (CFA Institute, 2005)

Purpose:
To test fixed income portfolio management strategies.

LOS: 2008-III-8-27-h
27. **"Fixed Income Portfolio Management-Part I"**
    The candidate should be able to:
    a.   explain the importance of spread duration;

LOS: 2008-III-28-d, e

28. "Relative-Value Methodologies for Global Credit Bond Portfolio Management"
    The candidate should be able to:
    d)   discuss the primary reasons for secondary market trading, including yield/spread pickup trades, credit-upside trades, credit-defense trades, new issue swaps, sector-rotation trades, yield curve-adjustment trades, structure trades, and cash flow reinvestment;
    e)   discuss and evaluate corporate bond portfolio strategies that are based on relative value, including total return analysis, primary market analysis, liquidity and trading analysis, secondary trading rationales and trading constraints, spread analysis, structure analysis, credit curve analysis, credit analysis, and asset allocation/sector analysis.

Level III

Question: 5
Topic: Portfolio Management – Fixed Income Investments
Minutes: 13

LOS: 2008-III-9-30-a, b, d
30. "Hedging Mortgage Securities to Capture Relative Value"
    The candidate should be able to:
    a)   demonstrate how a mortgage security's negative convexity will affect the performance of a hedge;
    b)   explain the risks associated with investing in mortgage securities and discuss whether these risks can be effectively hedged;
    d)   compare and contrast duration-based approaches versus interest rate sensitivity approaches to hedging mortgage securities;

Level III

Question: 5
Topic: Portfolio Management – Fixed Income Investments
Minutes: 13

Guideline Answer:

PART A
Template for Question 5-A
Note: Ignore transaction costs.

Trade	Determine the expected effect on the portfolio's value over the next two weeks for *each* potential trade, given the strategist's market expectations. (circle one)	Justify *each* expectation with *one* reason.
1. Buy 7-year Ba2/BB industrial corporate bonds; Sell 7-year Baa3/BBB industrial corporate bonds.	Positive (Negative)	Lower quality corporate bond spreads widen more than higher quality bond spreads in a weak economic environment due to a higher risk of default.
2. Buy 5-year callable corporate bonds; Sell 5-year non-callable corporate bonds of the same issuer.	Positive (Negative)	The negative convexity of callable bonds limits the price appreciation relative to non-callable bonds in a falling rate environment.
3. Buy 7-year high coupon mortgage pass-through bonds; Sell 7-year low coupon mortgage pass-through bonds.	Positive (Negative)	Higher coupon, mortgage pass-through bonds will experience higher level of prepayments and will have to be reinvested into lower interest bearing securities when interest rates decline.

Level III

Question: 5
Topic: Portfolio Management – Fixed Income Investments
Minutes: 13

PART B
Sector rotation occurs when an investment manager shifts the portfolio from a sector that is expected to underperform to one that is expected to outperform. Sector rotation trading strategies do not perform well in the corporate bond market, as compared to the equity market, because the corporate bond market generally has less liquidity than the equity market and higher trading costs than the equity market.

Level III

Question: 6
Topic: Portfolio Management – Alternative Investments
Minutes: 11

Reading References:

34. "Alternative Investments Portfolio Management," Ch. 9, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition, Jot K. Yau, Thomas Schneeweis, Thomas R. Robinson, and Lisa R. Weiss (CFA Institute, 2007)
36. "Commodity Forwards and Futures," Ch. 6, *Derivatives Markets*, 2nd edition, Robert L. McDonald (Addison Wesley, 2006)

Purpose:
To test knowledge and use of alternative assets

LOS: 2008-III-11-34-n
34. "Alternative Investments Portfolio Management"
    The candidate should be able to:
    n) explain the three components of return for a commodity futures contract and the effect that an upward- or downward-sloping term structure of futures prices will have on roll yield;

LOS: 2008-III-11-36-1-a, b, c
36. "Commodity Forwards and Futures"
    The candidate should be able to:
    a) discuss the unique pricing factors for commodity forwards and futures, including storability, storage costs, production, and demand, and their influence on lease rates and the forward curve;
    b) identify and explain the arbitrage situations which arise as a result of the convenience yield of a commodity and commodity spreads;
    c) compare and contrast the basis risk of commodity futures with that of financial futures.

Level III

Question: 6
Topic: Portfolio Management – Alternative Investments
Minutes: 11

Guideline Answer:

PART A
To implement the reverse cash-and-carry arbitrage, Dalk will need to short copper in the spot market and establish a long synthetic position in the copper forward market. The long synthetic commodity position consists of:
- a long position in the forward contract that expires in three months, and
- Zero-coupon bonds with a maturity date identical to the forward expiration date, and a face value equal to the forward price at maturity.

PART B
The reverse cash-and-carry arbitrage involves the following transactions:
1. Go long the forward contract. There is no cost associated with the purchase of the contract, but a payment of 313 cents/lb in three months is required.
2. Short the spot copper contract. This generates 316 cents/lb now. The short position must be covered in three months, at the maturity of the forward contract. Given a lease rate of 6% and a contract maturity of 3 months, a lease payment of 4.78 cents/lb ($316e^{(.06)(3/12)}$ - 316) is due at maturity.
3. Lend the proceeds of short sale. The proceeds of the short sale (316 cents/lb) can be invested (loaned) for three months at a yield of 5%. At maturity, the proceeds of loan is will be 319.97 cents/lb ($316e^{(.05)(3/12)}$).

The profit associated with the reverse cash-and-carry arbitrage is 2.19 cents/lb.

Reverse cash-and-carry arbitrage

	Cash Flows	
Transaction	**Time 0**	**Time T = 3/12**
Long forward	0	-313 cents/lb
Short sell copper @ lease rate = 6%	316 cents/lb	
Pay lease rate		-4.78 cents/lb
Lend short-sale proceeds @ 5%	-316 cents/lb	319.97 cents/lb
Total	0	2.19 cents/lb

PART C
The no-arbitrage price range for the forward price is:

$$S_0\, e^{(r+\lambda-c)T} \leq F_{0,T} \leq S_0\, e^{(r+\lambda)T}.$$

Level III

Question: 6
Topic: Portfolio Management – Alternative Investments
Minutes: 11

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Where:

S_0 - spot price of the asset

r – the continuously compounded interest rate

T – time until expiration of the forward contract

$F_{0,T}$ – today's price of forward contract that matures at T

λ – storage cost

c – convenience yield

The convenience yield is the benefit from physical ownership. The convenience yield affects the no-arbitrage range for the forward price through the cost of short selling. An arbitrageur who wants to short spot copper would need to compensate the lender of copper for the loss of the convenience yield. Thus, a higher convenience yield will increase the cost of shorting spot copper and decrease the lower bound of the no-arbitrage range for the forward contract. The upper bound is unaffected, resulting in a wider no-arbitrage price range.

Level III

Question: 7
Topic: Portfolio Management – Risk Management
Minutes: 17

Reading Reference:
37.   "Risk Management" Ch. 9, *Managing Investment Portfolios: A Dynamic Process*,
       3rd edition, Don M. Chance, Kenneth Grant, and John Marsland, (CFA Institute,
       2007)

Purpose:
To test principles of risk management

LOS: 2008-III-SS#-37-b, h, i
37.   "Risk Management"
       The candidate should be able to:
b)   recommend and justify the risk exposures an analyst should report as part of an
       enterprise risk management system;
h)   compare and contrast alternative types of stress testing and discuss the advantages
       and disadvantages of each;
i)   evaluate the credit risk of an investment position, including forward contract,
       swap, and option positions;

Level III

Question: 7
Topic: Portfolio Management – Risk Management
Minutes: 17

Guideline Answer:

PART A
Template for Question 7-A

Risk	Describe *one* source of *each* of the following risks facing RR. Note: A single source may not be used for both liquidity and settlement risk.
i. Liquidity risk	RR has recently made an acquisition through a relatively large short-term syndicated loan. If RR faces difficulty in raising funds to pay back the short-term syndicated loan at maturity, RR may be forced to sell securities from its investment portfolio on short notice, and at unfavorable prices. RR invests in OTC derivatives. RR could be required to liquidate positions prior to expiration at unfavorable prices.
ii. Settlement risk	RR invests in OTC derivatives that involve settlement through the execution of bilateral agreements. The risk is that one party could be in the process of paying the counterparty while the counterparty is declaring bankruptcy. In the case of currency swaps, settlement risk is increased because the contracts often require the exchange of principal in addition to interest payments.

Level III

PART B
Template for Question 7-B

Recommend *one* other stress testing method, in addition to stylized scenarios, to effectively supplement VAR.	Explain *one* advantage of this method.
Actual extreme events	Focuses on the portfolio effects of events that have occurred in the past but may have a higher probability than given by the probability model or specific historic time period used in developing the VAR estimate.
Hypothetical events	Focuses on the portfolio effects of events that have not occurred and are assigned a low probability.
Stressing models, including factor push	Emphasizes a range of possibilities and may give insight into the probability of different scenarios, and portfolio sensitivities to various combinations of events.
Stressing models, including maximum loss optimization or worst case scenario analysis	Identifies the risks that are most likely to occur in the worst case and are most important to control.

PART C
Template for Question 7-C

Contract	Identify whether RR or its counterparty bears the credit risk for *each* position. (circle one)	Justify *each* response with *one* reason.
Forward	~~Red River~~ (circled) Counterparty	Based on the comparison between the forward rate 15.00 JPY/ZAR and the spot rate 17.50 JPY/ZAR, the short-yen counterparty (RR) receives the payment, so RR bears the credit risk.

Level III

Question: 7
Topic: Portfolio Management – Risk Management
Minutes: 17

Swap	Red River Counterparty	For Red River, the present value of the liability side of this swap (fixed-leg) is greater than the present value of the asset side of the swap (floating-leg). Therefore, the market value of the swap for RR is negative. The counterparty's market value of the swap is positive, thus subjecting the counterparty to credit risk. The present values of the fixed-leg and floating-leg are: The PV of floating-leg equals 1 (the notional principal) plus the next floating payment discounted by the 2-month factor. PV(floating-leg) =(1+(0.054*(180/360))*0.9911)=**1.0179** The PV(fixed-leg) = ((1+(0.055*(180/360)*0.9911)+ ((1+(0.055*(180/360)))*0.9649)=**1.0187** Therefore the market value of swap to RR equals = 1.0179-1.0187 = (0.0008) Where the PV factors for 2 and 8 months are, respectively: 1/(1+0.0535*(60/360))=0.9911 1/(1+0.0545*(240/360))=0.9649
Call option	Red River Counterparty	Red River is short the call option and is not subject to credit risk. The option is in the money and can be exercised at any time, so the counterparty is subject to credit risk.

Level III

Question: 8
Topic: Portfolio Management – Execution of Portfolio Decisions
Minutes: 14

Reading Reference:
41.   "Execution of Portfolio Decisions," Ch. 10, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition, Ananth Madhavan, Jack L. Treynor, and Wayne H. Wagner (CFA Institute, 2007)

Purpose:
To test principles of execution of portfolio decisions.

LOS: 2008-III-SS #-34-k, l, m
41.   "Execution of Portfolio Decisions"
       The candidate should be able to:
       k)   describe the suitable uses of major trading tactics, evaluate their relative costs, advantages, and weaknesses, and recommend a trading tactic when given a description of the investor's motivation to trade, the size of the trade, and key market characteristics;
       l)   explain the motivation for algorithmic trading and discuss the basic classes of algorithmic trading strategies;
       m)   discuss and justify the factors that typically determine the selection of a specific algorithmic trading strategy, including order size, average daily trading volume, bid-ask spread, and the urgency of the order;

Level III

Question: 8
Topic: Portfolio Management – Execution of Portfolio Decisions
Minutes: 14

Guideline Answer:

PART A
Template for Question 8-A

i. Recommend the *best* trading strategy for Brock. (circle one)	Justify the recommended strategy with *two* reasons. Note: A correct justification will cite specific information provided in the case.
Limit order ⟨Market order⟩	1. Brock is anticipating that the press conference scheduled for the next day will diminish the value of information he currently possesses. As such, he must buy the shares quickly. A market order is appropriate because it emphasizes the immediacy of execution.
Principal trade order Crossing networks order	2. The market for Nano stock is liquid and can absorb a large order without a significant price impact. The depth of the market for Nano makes a market order appropriate as there will be little, if any, price concession upon execution.
ii. Recommend the *best* trading strategy for Jordan. (circle one)	Justify the recommended strategy with *two* reasons. Note: A correct justification will cite specific information provided in the case.
Limit order	1. The trade is not urgent. Jordan has six months to liquidate the Jesco position.
Market order	2. Jesco shares are held by institutions which frequently provide liquidity for (electronic) crossing network orders.
Principal trade order ⟨Crossing networks order⟩	3. Anonymity is important since the shares to be liquidated represent 150% of Jesco's average daily volume.

Level III

Question: 8
Topic: Portfolio Management – Execution of Portfolio Decisions
Minutes: 14

PART B
Template for Question 8-B

Recommend the security *best* suited to be purchased using a VWAP strategy. (circle one)	Identify, for *each* of the securities not chosen, *one* trading characteristic that makes it unsuitable to be purchased using a VWAP strategy. Note: A trading characteristic cannot be used more than once.
BDC	Urgency to complete trade: The urgency is high making VWAP unsuitable for BDC.
(CHA)	
DPF	Urgency to complete trade: The urgency is high making VWAP unsuitable for DPF. Size of trade relative to average daily volume: The size of the order represents a very high percentage of average daily volume and the VWAP algorithm would not have high likelihood of success. Bid/ask spread: A large volume trade will have a major impact on DPF's price and will not have high likelihood of success with the VWAP algorithm.
ROD	Size of trade relative to average daily volume: The size of the order represents a high percentage of average daily volume and the VWAP algorithm would not have high likelihood of success.

Level III

Question: 8
Topic: Portfolio Management – Execution of Portfolio Decisions
Minutes: 14

PART C
Template for Question 8-C

Recommend the security *best* suited to be purchased using an implementation shortfall strategy. (circle one)	Identify, for *each* of the securities not chosen, *one* trading characteristic that makes it unsuitable to be purchased using an implementation shortfall strategy. Note: A trading characteristic cannot be used more than once.
⬭ BDC ⬭	
CHA	Trading volume pattern: Higher volumes toward the end of the day would make a front-loaded implementation shortfall strategy (ISS) less suitable. Urgency to complete trade: The urgency is low making ISS less suitable.
DPF	Trading volume pattern: Higher volumes toward end of day would make front-loaded ISS less suitable. Size of trade relative to average daily volume: The size of the order represents a very high percentage of average daily volume and algorithm would not have high likelihood of success. Bid/ask spread: Large volume trade will have a major impact on price and not have high likelihood of success with algorithm.
ROD	Size of trade relative to average daily volume: The size of the order represents a high percentage of average daily volume and algorithm would not have high likelihood of success. Urgency to complete trade: The urgency is low making ISS less suitable.

Level III

Question: 9
Topic: Portfolio Management – Monitoring and Rebalancing
Minutes: 9

Reading Reference:
42. "Monitoring and Rebalancing" Ch. 11, *Managing Investment Portfolios: A Dynamic Process*, 3rd edition, Robert D. Arnott, Terence E. Burns, Lisa Plaxco, and Philip Moore (CFA Institute, 2007) V5 pp 369-370 and A29

Purpose:
To test knowledge of monitoring and rebalancing concepts

LOS: 2007-III-15-42-d, e, h, i, j
42. "Monitoring and Rebalancing"
    The candidate should be able to:
    d) discuss the benefits and costs of rebalancing a portfolio to the investor's strategic asset allocation;
    e) contrast calendar rebalancing to percentage-of-portfolio rebalancing;
    h) explain the performance consequences, in up, down, and nontrending markets, or (1) rebalancing to a constant mix of equities and bills, (2) buying and holding equities, and (3) constant-proportion portfolio insurance (CPPI);
    i) distinguish among linear, concave, and convex rebalancing strategies;
    j) judge the appropriateness of constant mix, buy-and-hold, and CPPI rebalancing strategies when given an investor's risk tolerance and asset return expectations;

Level III

Question: 9
Topic: Portfolio Management – Monitoring and Rebalancing
Minutes: 9

Guideline Answer:

PART A
Template for Question 9-A

	Calculate the portfolio value at the end of the quarter.	Determine any appropriate rebalancing trades (buy, sell, or no trade of the S&P 500 Index fund). (circle one)	Determine the dollar size of the trade, if any.
i. Grace	End of quarter value: Cash $ 800,000 Equities $1,200,000 * 1.08 = $1,296,000 Total Portfolio = $2,096,000	Buy **Sell** No trade	Constant mix rebalances to original allocation of 60% equities and 40% cash as follows: New portfolio value = $2,096,000 Equity allocation $2,096,000 * 60% = $1,257,600 Current equity allocation $1,296,000 Size of trade $1,257,600 - $1,296,000 = ($38,400) The absolute dollar size of the sale is $38,400.

Level III

	Initial portfolio value $2,000,000		Current portfolio value $2,104,000
	Initial portfolio allocation Total Value $2,000,000 Less floor $1,000,000 Cushion $1,000,000	Buy	Current portfolio reallocation: Total Value $2,104,000 Less floor $1,000,000 Cushion $1,104,000
	Equity Allocation Cushion $1,000,000 multiplier 130% Equity allocation $1,300,000	Sell	Equity Allocation: Cushion $1,104,000 x 130% Equity $1,435,200
ii. Matlin	Cash Allocation $700,000	No trade	Current equity allocation $1,404,000
	End of quarter End of quarter value: Cash $ 700,000 Equities $1,300,000 * 1.08 = $1,404,000 Total Portfolio = $2,104,000		Size of trade $1,435,200 - $1,404,000 = $31,200 The absolute size of the purchase is $31,200.

Level III

Question: 9
Topic: Portfolio Management – Monitoring and Rebalancing
Minutes: 9

PART B
Template for Question 9-B

Determine whether Matlin's actual return resulting from the rebalancing strategy over the past two years was *most likely* higher, the same, or lower, compared to a buy-and-hold strategy. (circle one)	Justify your response with *one* reason.
Higher The same (Lower)	CPPI is a dynamic strategy in which the investor sets a floor value below which he does not wish the portfolio's value to fall. The investor maintains an exposure to equities that is a constant multiple greater than 1 times the cushion (portfolio value minus floor value). The portfolio value minus the equity allocation is invested in cash. As equity values rise (fall), the CPPI strategy requires the investor to buy (sell) additional equities. This strategy performs best in trending (up or down) markets, but does poorly in flat, oscillating markets, especially those characterized by sharp market reversals. Therefore, Matlin's actual return is most likely lower since he sold equities at lower prices and purchased equities at higher prices.

Level III

Question: 10
Topic: Portfolio Management – Performance Evaluation
Minutes: 9

Reading Reference:
43. "Evaluating Portfolio Performance," Ch. 12 *Managing Investment Portfolios: A Dynamic Process*, 3rd edition, Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney (CFA Institute, 2007)

Purpose
To test performance evaluation and attribution concepts

LOS: 2008-III-16-43-n, o
43. "Evaluating Portfolio Performance"
   The candidate should be able to:
   n)   differentiate between the effect of the interest rate environment and the effect of active management on fixed-income portfolio returns;
   o)   explain the management factors that contribute to a fixed-income portfolio's total return and interpret the results of a fixed-income performance attribution analysis;

Level III

Question: 10
Topic: Portfolio Management – Performance Evaluation
Minutes: 9

Guideline Answer:

PART A

i. Sullivan's outperformance is not consistent with its strategy. Other Management Effects consist of three components – sector/quality effects, security selection and transaction costs. These components generated a negative return as indicated by the -0.12% return in Other Management Effects. Sullivan's outperformance resulted from Interest Rate Management (0.05%) and Trading Activity (0.15%).

ii. Paolello's outperformance is consistent with its strategy. The Interest Rate Management Effect (returns due to duration, convexity, and yield-curve shape change) generated an excess return of 0.58% vs. the Bond Portfolio Index. Other Management Effects and Trading Activities Return contributed to Paolello's outperformance but were not as significant.

PART B

i. The expected interest rate effect of 5.76% is the expected return of the portfolio based on the implied forward rates in the term structure of Treasury securities calculated at the beginning of the period.

ii. The unexpected interest rate effect of 2.53% is the difference between the actual realized return of the portfolio and the expected interest rate effect. A positive unexpected interest rate effect is consistent with unexpected falling yields or a favorable twist in the yield curve resulting in rising prices over the time period.

Level III

Question: 11
Topic: Portfolio Management – Global Context
Minutes: 9

Reading Reference:
"Currency Risk Management," Ch. 11, *International Investments,* 5th edition, Bruno Solnik and Dennis McLeavey (Addison Wesley, 2003)

Purpose:
To test global aspects of currency risk management.

LOS: 2008-III-17-46-a
46.   "Currency Risk Management"
        The candidate should be able to:
        a) demonstrate and explain the use of foreign exchange futures to hedge the currency exposure associated with the principal value of a foreign investment;

Level III

Question: 11
Topic: Portfolio Management – Global Context
Minutes: 9

Guideline Answer:

PART A

- The Tanaka fund value decreases when the Yen strengthens. In order to fully hedge the currency exchange rate moves, the manager must *sell* dollar futures contracts and *sell* euro futures contracts.

- The appropriate number of contracts required to fully hedge exchange rate risk is a function of the principal value being hedged and the futures contract size. A full hedge would require $900,000,000/$100,000 = **9,000** dollar contracts and €700,000,000/€100,000 = **7,000** euro contracts.

PART B
The international return
$945/$900 -1 = 5% Dollar Return
€735/€700 -1 = 5% Euro Return

The unhedged return in Yen

Return on the unhedged portfolio in Yen (¥ millions)

Date	Dollar Investments	Euro Investments	Total Portfolio
1 July 2008	¥104,310 ($900 x 115.90)	¥109,025 (€700 x 155.75)	¥213,333
1 September 2008	¥104,800.50 ($945 x 110.90)	¥106,391.25 (€735 x 144.75)	¥211,191.75
Profit / (Loss)	¥490.50	(¥2,633.75)	(¥2,141.25)
	0.47%	-2.42%	-1.00%

(¥2,141.25) / ¥213,333 = -1.00% or a 1% loss

Level III

Question: 11
Topic: Portfolio Management – Global Context
Minutes: 9

The hedged return

Futures returns in Yen (¥ millions):
Yen Gain/(Loss) on $ futures = (115.70 - 110.77) x 900 =   4.93 x 900 = **¥ 4,437**
Yen Gain/(Loss) on € futures = (156.70 - 144.80) x 700 = 11.90 x 700 = **¥ 8,330**

Hedged Yen return = Unhedged Yen return + Futures returns in Yen (¥ millions)

Return on the hedged portfolio in Yen (¥ millions)

	Dollar Investments	Euro Investments	Total Portfolio
Unhedged Return	¥490.50	(¥2,633.75)	(¥2,141.25)
Futures Return	¥4,437.00	¥8,330.00	¥12,767.00
Profit / (Loss)	¥4,927.50	¥5,696.25	¥10,625.75
	4.72%	5.22%	4.98%

Since Saturn's objective was to fully hedge the fund's currency risk, the hedge was very effective. The hedged return of 4.98% is close to the 5.00% from the US and European portfolios before accounting for currency effects.