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 3 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	

Template for Question 4-E continued on page 32.

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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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 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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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	