The Morning Session of the 2013 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	20
2	Portfolio Management – Individual	15
3	Portfolio Management – Individual/Behavioral	16
4	Portfolio Management – Equity	17
5	Portfolio Management – Economics	20
6	Portfolio Management – Institutional	18
7	Portfolio Management – Institutional	14
8	Portfolio Management – Fixed Income	17
9	Portfolio Management – Fixed Income	9
10	Portfolio Management – Risk Management	18
11	Portfolio Management – Performance Evaluation	16
	Total:	**180**

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QUESTION 1 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 20 MINUTES.

Thomas and Elizabeth Voort, both age 45, are meeting with their financial advisor, Marc Lenard. Lenard is creating an investment policy statement for the Voorts. Thomas sold his consulting business at year-end and retired. The Voorts will rely on their investment portfolio to meet future expenses in excess of Thomas' retirement income. Elizabeth is not employed. Financial details include:

Income
Thomas will receive retirement payments of USD 125,000 per year for his lifetime from the business he sold. The retirement payments are not indexed for future inflation and are fully taxable as ordinary income.

Expenses
The Voorts' total living expenses last year were USD 300,000, and they are expected to grow each year at the inflation rate. Taxes are due immediately on the gain from the sale of the business at a rate of 15%. The Voorts do not expect any other significant cash outflows in the future.

The tax rate on ordinary income and all investment returns is 30%. The inflation rate is expected to be 2.5% per year.

Assets
The Voorts own their home, valued at USD 1,250,000, mortgage-free. They have a taxable investment portfolio with a current market value of USD 2,500,000. This portfolio has no previous tax liability due in the coming year. Thomas received a lump-sum USD 10,000,000 payment from the sale of his business; his cost basis is zero. The net proceeds of the sale will be added to the Voorts' investment portfolio. Their goals are to grow the asset base of the portfolio over time to maintain its after-tax purchasing power and to establish and maintain a cash reserve of USD 250,000.

A.   **Determine** the Voorts' nominal after-tax required rate of return for the coming year. **Show** your calculations.

(8 minutes)

B.   **State** *two* reasons why the Voorts' ability to assume risk in their investment portfolio is above average.

(4 minutes)

C.   **Determine** the Voorts' liquidity requirement (in USD) for the coming year. **Show** your calculations.

(3 minutes)

Two years later, the Voorts ask Lenard to construct a new long-term strategic asset allocation with a more aggressive goal of achieving at least 3.5% annualized growth in the after-tax

purchasing power of the portfolio. They indicate that the portfolio should have only a small probability of declining more than 10% in nominal pre-tax terms in any one year. Lenard explains to the Voorts that a normal distribution can be used to model the portfolio returns. The Voorts agree to use a two-standard-deviation approach to monitor the shortfall risk of the portfolio.

Expected inflation remains 2.5% per year and the tax rate remains 30%. Based on his current market outlook, Lenard considers three potential portfolio allocations for the Voorts as shown in Exhibit 1.

Exhibit 1
Potential Long-Term Strategic Portfolios

Asset Class	Expected Annual Return	Portfolio X	Portfolio Y	Portfolio Z
Stocks	11.0%	70%	55%	60%
Bonds	6.0%	25%	35%	35%
Cash	2.5%	5%	10%	5%
Pre-tax expected return (nominal)		9.3%	8.4%	8.8%
Expected standard deviation (nominal)		11.0%	8.7%	9.3%

D.   **Determine** the *most* appropriate portfolio from Exhibit 1 for the Voorts, given their objectives and constraints. **Justify** your response with *two* reasons.

(5 minutes)

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QUESTION 2 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 15 MINUTES.

Gerardo Puente, age 70, is a retired entrepreneur with a desire for privacy in his financial affairs. His wife is 45 years old and they have three young sons. Puente has one daughter from a previous marriage.

The Puentes live in a country that is a community property regime with the U.S. dollar as its currency. The community property regime entitles a surviving spouse to receive a one-half interest in assets accumulated during the marriage. Puente's total estate has grown from USD 12 million to USD 26 million during his current marriage. The forced heirship rules in Puente's country entitle his current wife to receive a minimum of 25% of the total estate and all children to equally share a minimum of 25% of the total estate.

Puente would like to secure a sound financial future for his family. He worries about potential legal claims from outside the family and disputes among his children. As a result, Puente consults his investment advisor, who recommends that Puente establish a trust.

A. **Determine** the minimum amount that Puente's current wife would be entitled to receive, before estate taxes are considered, if he were to die today. **Show** your calculations.

(4 minutes)

B. **Discuss** *two* benefits, specific to Puente's circumstances, of establishing a trust.

(4 minutes)

Puente's daughter from his previous marriage is 30 years old. Her income tax rate is lower than Puente's. Puente asks his investment advisor about the tax benefit of making a current gift to his daughter rather than transferring wealth to her through a bequest upon his death. The country's gift tax rate is flat, with no annual or lifetime exemptions. The estate tax rate is also flat and equal to the gift tax rate. The laws of the country require the donor to pay any gift taxes. The investment advisor makes the following assumptions:

- Puente's estate will be subject to estate tax.
- His daughter's estate will not be taxed because its value will be below the minimum taxable threshold.
- His daughter's pre-tax investment returns on any gifted assets will be equal to Puente's.

C. **Justify** with *two* reasons why tax considerations favor Puente making a current gift to his daughter rather than transferring wealth to her upon his death.

Note: No calculations are required.

(4 minutes)

Five years have passed and Puente's daughter now has a three-year-old son who is Puente's only grandchild. Puente believes he has USD 1 million of excess capital that could be transferred to his grandson. Due to a change in financial circumstances, the investment advisor now assumes that Puente's daughter's estate will be subject to estate tax.

D.   **Explain** the tax benefit of a direct transfer of assets from Puente to his grandson.

         Note: No calculations are required.

(3 minutes)

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QUESTION 3 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 16 MINUTES.

Joyce Siosan is a 42-year-old lawyer at a prestigious law firm. She is meeting with Joel Murray, a financial advisor, to organize her finances. During the interview process, Siosan tells Murray that she has been purchasing short-term, out-of-the-money call and put options. Siosan acknowledges these options have a low probability of paying off and that the expected return from her options trading is negative. However, she states that she is attracted by the possibility of high returns when she can exercise in-the-money options. At the same time, Murray notes that Siosan has been purchasing low-payoff earthquake insurance on her home, which is located in a low-probability earthquake zone.

A.   **Describe** Siosan's utility function. **Contrast** her utility function with that assumed in traditional finance theory.

(5 minutes)

Siosan purchases a new luxury vehicle every two years and takes expensive annual vacations. She has a reputation for paying the entire bill at the upscale restaurants where she dines regularly with her friends. Siosan's annual consumption, options trading, and housing expenditures are paid for entirely out of her salary income and half of her modest annual bonus. She deposits the other half of her annual bonus and any other non-salary sources of income into her relatively small retirement account, which excludes her options trading. Siosan is reluctant to incur debt and has only a small mortgage on her home, despite the fact that she will soon be made a partner in her firm and will have much higher earnings. Murray believes that Siosan exhibits behavioral biases that interfere with an optimal savings and consumption allocation. In particular, he thinks that she is not saving enough for retirement.

ANSWER QUESTION 3-B IN THE TEMPLATE PROVIDED ON PAGES 22 AND 23.

B.   **Discuss** how Siosan's behavior reflects the bias of:

     i.   self-control.
     ii.   mental accounting.

     Explain how a rational economic individual in traditional finance would behave differently with respect to *each* bias.

(6 minutes)

Siosan's retirement portfolio is allocated 50% to money-market securities and 50% to a few speculative stocks that she read about in an investment newsletter. Murray observes that Siosan's retirement portfolio allocation is consistent with Behavioral Portfolio Theory and not consistent with a mean–variance framework.

C.   **Determine** whether Murray's observation about Siosan's retirement portfolio allocation is correct. **Justify** your response with *two* reasons.

(5 minutes)

Answer Question 3 on This Page

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Template for Question 3-B

Behavioral bias	Discuss how Siosan's behavior reflects *each* bias.	Explain how a rational economic individual in traditional finance would behave differently with respect to *each* bias.
i. self-control		

Answer Question 3 on This Page

Template for Question 3-B (continued)

Behavioral bias	Discuss how Siosan's behavior reflects *each* bias.	Explain how a rational economic individual in traditional finance would behave differently with respect to *each* bias.
ii. mental accounting		

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

Kimi Capital Group is a provider of index services. A key growth strategy for Kimi is to develop market indices for use as benchmarks for exchange-traded index funds. Kimi's management realizes that the criteria it uses to construct its indices will influence the resulting transaction costs incurred by funds attempting to track the indices. The lower the potential transaction costs of an index, the more attractive it will be to an index fund and to investors.

Kimi regularly compares its index construction criteria to those of other index service providers to evaluate the competitiveness of its products. Exhibit 1 summarizes Kimi's current criteria and the criteria currently used by its main competitor.

Exhibit 1
Comparison of Index Construction Criteria

Index Construction Criterion	Current Criterion for Kimi Capital	Criterion Used by Main Competitor
Index breadth as percent of total market capitalization	minimum 95%	minimum 80%
Float adjustment	float bands	single point
Selection of index constituents	objective, clearly stated rules	subjective, flexible rules

ANSWER QUESTION 4-A IN THE TEMPLATE PROVIDED ON PAGE 29.

A.   **Determine** if *each* of Kimi Capital's index construction criteria in Exhibit 1 will *most likely* result in lower, no difference in, or higher transaction costs relative to *each* of the criteria of its main competitor. **Justify** *each* response with *one* reason.

(9 minutes)

Kimi Capital is evaluating the country of Badaar for inclusion in either its Developed Market Index or its Emerging Market Index, which are both capitalization-weighted. Badaar's equity market has characteristics that make it a possible fit for either index. Relevant characteristics of Badaar's equity market and of Kimi's two indices are provided in Exhibit 2.

Exhibit 2
Equity Market and Index Characteristics
(amounts in USD billions)

Characteristic	Badaar Equity Market	Developed Market Index	Emerging Market Index
Average market capitalization	1.5	22.1	1.3
Total market capitalization	300	10,000	550
Stability of currency	Stable	Stable	Mostly stable
Liquidity	Moderate	Very high	Moderate

B.   **Discuss** *one* reason that supports *each* of the following statements:

    i.   Badaar's equity market will be positively impacted by Badaar's inclusion in the Developed Market Index.

    ii.   Index funds that track the Emerging Market Index will be negatively impacted by Badaar's inclusion in that index.

(4 minutes)

Kimi Capital is planning to introduce style indices based on its Developed Market Index. The companies that make up the Developed Market Index will be placed into either a Growth Index or a Value Index, but not both. The placement of firms into either index will be based on an assessment of multiple growth and valuation characteristics. Kimi will rebalance the indices with no buffering. Holding companies will be excluded from both style indices.

C.   **Discuss** *two* aspects of Kimi Capital's style index construction that will *most likely* produce higher turnover between the style indices.

(4 minutes)

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Answer Question 4 on This Page

Template for Question 4-A

Index construction criterion	Determine if *each* of Kimi Capital's index construction criteria in Exhibit 1 will *most likely* result in lower, no difference in, or higher transaction costs relative to *each* of the criteria of its main competitor. (circle one)	Justify *each* response with *one* reason.
Index breadth as percent of total market capitalization	lower no difference higher	
Float adjustment	lower no difference higher	
Selection of index constituents	lower no difference higher	

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QUESTION 5 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 20 MINUTES.

Andrew Reed is a market strategist with a U.S.-based asset management firm. He is currently evaluating several emerging market economies in order to identify undervalued markets.

Reed uses the Cobb-Douglas production function (under the assumption of constant returns to scale) to estimate the long-term growth in real GDP for the country of Westria. Exhibit 1 summarizes the projections that Reed has gathered for Westria.

Exhibit 1
Annualized Economic Projections for Westria
(2013–2043)

Growth in total factor productivity	1.3%
Output elasticity of capital	0.7
Growth in total population	1.8%
Growth in capital stock	5.5%
Growth in labor input	2.5%
Unemployment rate	8.2%

A.   **Calculate** the projected annual growth in real GDP for Westria using the Cobb-Douglas production function and the information in Exhibit 1. **Show** your calculations.

(4 minutes)

Reed knows that economic growth forecasts are sensitive to the inputs to the Cobb-Douglas production function. He wants to assess the effect of two potential new economic policies on Westria's future growth path. The newly elected government in Westria has proposed the following policies:

        Policy 1:   Offer incentives to limit the average number of children per family.

        Policy 2:   Increase the maximum allowable annual contribution to tax-free retirement accounts.

ANSWER QUESTION 5-B IN THE TEMPLATE PROVIDED ON PAGE 36.

B.   **Determine** whether *each* proposed policy will *most likely* decrease, have no effect on, or increase the long-run Cobb-Douglas growth projection for Westria. **Justify** *each* response with *one* reason.

(6 minutes)

Reed is discussing the valuation of Westria's stock market with the firm's equity strategist, Jill Shepherd. He produces the data for Westria shown in Exhibit 2. Reed tells Shepherd that he believes the Fed model is appropriate for valuing Westria's stock market. Shepherd disagrees, stating that the Yardeni model is more suitable because the Fed model has several limitations.

Exhibit 2
Capital Markets Data for Westria

10-year government bond yield	5.1%
Yardeni weighting factor	0.2
Average 10-year A-rated corporate bond yield	5.9%
Broad equity index level (current)	800
Broad equity index earnings (last four quarters)	35
Projected long-term earnings growth rate	7.0%

ANSWER QUESTION 5-C IN THE TEMPLATE PROVIDED ON PAGE 37.

C.   **Determine** whether Westria's stock market (using the broad equity index as a proxy) is undervalued, fairly valued, or overvalued using the:

   i.   Fed model.
   ii.   Yardeni model.

   Justify *each* response with *one* reason.

(6 minutes)

Reed asks Shepherd about the extent to which the Fed and Yardeni models incorporate risk. Shepherd proposes using the average 10-year BB-rated corporate bond yield instead of the average 10-year A-rated corporate bond yield to assess the valuation of Westria's stock market.

D.   **Explain** the effect of substituting the BB-rated corporate bond yield for the A-rated corporate bond yield on the fair value of Westria's stock market as determined by the:

   i.   Fed model.
   ii.   Yardeni model.

(4 minutes)

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Template for Question 5-B

Policy	Determine whether *each* proposed policy will *most likely* decrease, have no effect on, or increase the long-run Cobb-Douglas growth projection for Westria. (circle one)	Justify *each* response with *one* reason.
Policy 1: Offer incentives to limit the average number of children per family.	decrease no effect increase	
Policy 2: Increase the maximum allowable annual contribution to tax-free retirement accounts.	decrease no effect increase	

Answer Question 5 on This Page

Template for Question 5-C

Model	Determine whether Westria's stock market (using the broad equity index as a proxy) is undervalued, fairly valued, or overvalued using *each* model. (circle one)	Justify *each* response with *one* reason.
i. Fed model	undervalued fairly valued overvalued	
ii. Yardeni model	undervalued fairly valued overvalued	

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QUESTION 6 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 18 MINUTES.

Jason Pearce founded a social media company. When the company went public, Pearce became wealthy. He now wishes to start the Pearce Foundation to support the university he attended. Pearce wants the Foundation to make contributions to the university in perpetuity.

The Foundation will be a tax-exempt entity. Pearce makes an initial gift to the Foundation of USD 100 million on 1 January of Year 1. In addition, Pearce intends to make ongoing annual contributions to the Foundation of USD 2 million on 1 January of each subsequent year. The Foundation will make a one-time distribution of USD 3 million at the beginning of Year 1 to fund a new computer lab at the university.

Beginning in Year 2, the Foundation will have an annual spending requirement of 6% of the market value of its portfolio at the end of the preceding year. The annual contributions from the Foundation to the university will be used to cover a portion of the university's operating expenses. The university's expected inflation rate is 3.5% per year.

The Foundation's goal is to preserve the real value of its investment portfolio and any future contributions while also meeting its spending requirement. Pearce hires Maxine Smith as the investment advisor to the Foundation. Smith's management fees will be 0.40% per year. These fees will be calculated based on the year-end value of the portfolio and paid in arrears on the first day of the following year.

Pearce instructs Smith to prepare an investment policy statement (IPS) for the Foundation. Smith concludes that the Foundation has an above-average risk tolerance.

A.   **Identify** *two* factors that support Smith's conclusion regarding the Foundation's risk tolerance.

(4 minutes)

B.   **Determine** the nominal required rate of return for the Foundation in Year 2.

(3 minutes)

In the first year of the Foundation's operation, the return on the benchmark was 9.8% and the return on the Foundation's portfolio was 9.0%. The Foundation received the planned USD 2 million contribution on 1 January of Year 2.

C.   **Determine** the liquidity requirement (in USD) of the Foundation in Year 2. **Show** your calculations.

(5 minutes)

Three years have passed. During that time, the Foundation operated as planned. However, the social media company Pearce founded went bankrupt. Because Pearce had retained virtually all

his personal assets in shares of the company, he lost all of his wealth. He will not be able to make additional contributions to the Foundation. Smith is preparing a revised IPS to reflect the Foundation's changed circumstances.

ANSWER QUESTION 6-D IN THE TEMPLATE PROVIDED ON PAGE 46.

D.   **Determine** the effect (decrease, no change, increase) of these changed circumstances on the Foundation's return objective and liquidity requirement. **Justify** *each* response with *one* reason.

(6 minutes)

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Template for Question 6-D

IPS component	Determine the effect (decrease, no change, increase) of these changed circumstances on the Foundation's return objective and liquidity requirement. (circle one)	Justify *each* response with *one* reason.
Return objective	decrease no change increase	
Liquidity requirement	decrease no change increase	

Answer Question 6 on This Page

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QUESTION 7 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 14 MINUTES.

Shire Manufacturing and Vermillion Enterprises are specialty steel fabricators based in Europe. Both companies provide defined benefit pension plans for their employees. Beth Hagar, Chief Financial Officer of Shire, is reviewing a consultant's report that compares Shire's and Vermillion's pension plans. Both plans are large relative to each company's total market capitalization, have a high percentage of inactive participants, match the duration of fixed-income investments to the duration of pension liabilities, and are closed to new participants. Exhibit 1 presents selected attributes of the two pension plans.

Exhibit 1
Pension Plan Attributes as of 31 December 2012

Pension Plan Attribute	Shire Manufacturing	Vermillion Enterprises
Average age of workforce	44	39
Average age of plan participants	56	56
Mandatory retirement age	65	65
Plan surplus	EUR 30,000,000	EUR 50,000,000
Market value of plan assets	EUR 200,000,000	EUR 500,000,000
Plan asset allocation	60% equity, 40% fixed income	30% equity, 70% fixed income
Prior year service cost	EUR 14,375,000	EUR 35,000,000

A.   **Describe** *one* attribute of Vermillion's pension plan that contributes to:

i.   *lower* shortfall risk relative to Shire's pension plan.
ii.   *higher* shortfall risk relative to Shire's pension plan.

(4 minutes)

Shire's pension management process has historically followed an asset-only approach. However, the company is considering adopting a liability-relative approach. One of the firm's investment advisors recently presented three structured products to Hagar as potential pension fund investments. Exhibit 2 presents selected data for the three structured products.

Exhibit 2
Structured Products Available to Shire Manufacturing Pension Plan

Structured Product	Expected Annualized Return	Expected Standard Deviation of Returns	Expected Correlation of Returns with Pension Liabilities	Expected Correlation of Returns with Pension Assets
X	7.42%	2.80%	0.92	0.35
Y	8.44%	2.36%	0.22	0.75
Z	8.12%	3.02%	0.51	0.12

B.   **Determine** which structured product Shire should add to its pension plan assets to achieve the *lowest* shortfall risk if it adopts the liability-relative approach. **Justify** your response with *one* reason.

(3 minutes)

One year has passed and Shire's pension plan assets now equal its liabilities. Hagar wants to determine the effect on her capital budgeting decisions of incorporating Shire's pension plan assets and liabilities into a full economic balance sheet of the firm.

Shire's updated standard balance sheet is presented in Exhibit 3 and its full economic balance sheet is presented in Exhibit 4.

Exhibit 3
Shire Manufacturing (excluding pension plan)
Standard Balance Sheet
(EUR values in millions)

	Value (EUR)	Risk (Beta)		Value (EUR)	Risk (Beta)
Operating assets	400	0.71	Debt	196	0.00
			Equity	204	1.40
Total assets	400	0.71	Total liabilities & equity	400	0.71

Exhibit 4
Shire Manufacturing (including pension plan)
Full Economic Balance Sheet
(EUR values in millions)

	Value (EUR)	Risk (Beta)		Value (EUR)	Risk (Beta)
Operating assets	400	0.42	Debt	196	0.00
Pension assets	200	0.60	Pension liabilities	200	0.00
			Equity	204	1.40
Total assets	600	0.48	Total liabilities & equity	600	0.48

C.   **Determine** the *most likely* effect on Shire's future firm value (lower, no effect, higher) of using the full economic balance sheet, rather than the standard balance sheet, when making capital budgeting decisions. **Justify** your response with *one* reason.

(4 minutes)

Hagar decides to decrease the equity allocation in the pension plan from 60% of plan assets to 40%, by shifting 20% of the portfolio from equity into fixed income.

D. **Explain** the *most likely* effect on Shire's cost of equity capital of making the change in the plan's asset allocation while using the full economic balance sheet.

Note: No calculations are required.

(3 minutes)

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QUESTION 8 HAS FOUR PARTS (A, B, C, D) FOR A TOTAL OF 17 MINUTES.

Klaus Bergen manages a portfolio of government bonds for a reinsurance company. The portfolio funds long-term liabilities that originated from the company's book of reinsurance. The required return for the portfolio and the discount rate for the liabilities are each 2.75%. The duration of the liabilities is currently 9.7, although this figure is revised frequently because of significant and unexpected variations in the amount and timing of claims. Bergen manages the portfolio using a classical immunization strategy, allocating to government bonds across a broad range of maturities. The market value of the portfolio is EUR 400 million, which is equal to the present value of the liabilities. The portfolio's immunized rate of return is 3.80%.

A.   **Determine** whether a cash flow matching strategy would be more effective than Bergen's current strategy. **Justify** your response with *two* reasons.

(5 minutes)

B.   **Determine** the initial safety margin (in EUR) assuming a three-year investment horizon. **Show** your calculations.

Note: Assume semi-annual compounding.

(6 minutes)

Bergen realizes that the spread between the portfolio's immunized rate of return and its required rate of return provides a cushion. He proposes a contingent immunization strategy that utilizes a 20% allocation to corporate bonds. Bergen knows that if he implements this strategy and credit spreads widen while government bond yields remain constant, he may be required to classically immunize the portfolio again.

C.   **Explain** why this widening of credit spreads after the implementation of Bergen's proposed strategy may require him to classically immunize the portfolio again.

(3 minutes)

After further consideration, Bergen decides to maintain the classical immunization strategy. He also decides to perform a scenario analysis that includes one scenario in which the yield curve shifts upward in a parallel move by 75 basis points. During the analysis, Bergen notes that the durations of the assets and liabilities remain matched but the convexity of the assets remains greater than the convexity of the liabilities.

D.   **Explain** the effect of the yield curve shift on the economic surplus.

(3 minutes)

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

Catena Advisors manages a broadly diversified portfolio of global investment-grade and high-yield corporate bonds for its clients. Catena's fixed-income research team consists of a portfolio manager and three credit analysts who review and manage the portfolio. The portfolio manager uses a top-down approach while the credit analysts use a bottom-up methodology.

A.   **Contrast** the approach used by the portfolio manager and the approach used by the credit analysts.

(3 minutes)

Catena's research team is currently considering the following trades:

Trade 1:   Sell a 3-year maturity AAA corporate bond and buy a 30-year maturity AAA bond of the same issuer based on the expectation that credit spreads will tighten uniformly by 10 basis points across the credit curve.

Trade 2:   Sell a new-issue 5-year maturity bond and buy a 5-year maturity bond (originally a 10-year maturity issue) with a slightly higher yield. Both bonds are from the same issuer and have the same issue size and terms.

B.   **Discuss** the *most* significant risk of Trade 1 assuming that the expectation about credit spreads is correct.

(3 minutes)

C.   **Explain** the *primary* disadvantage of Trade 2.

(3 minutes)

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QUESTION 10 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 18 MINUTES.

Lyle Watson is Chief Executive Officer of Capital Cubed, a U.K.-based investment bank that was recently formed by the merger of three investment banks. Each of the original trading teams, now known as Capital 10, Capital 20, and Capital 30, continues to operate independently. All three teams report trading profits and losses in British pounds (GBP). Their trading strategies are as follows:

- Capital 10's strategy is to trade long-only large-capitalization U.S. equities with currency exposures unhedged.
- Capital 20's strategy is to trade long-only European investment-grade bonds with currency exposures hedged.
- Capital 30's strategy is to trade options on U.K. equities.

Each team has its own director of business development. These directors all report to Capital Cubed's head of business development. The head trader on each team is in charge of monitoring the team's risk. Each head trader provides a calculation of value at risk (VAR) and Watson adds them together to calculate Capital Cubed's VAR. Because the teams trade different instruments, the back offices have not been combined and the manager of each back office reports to both his head trader and to Watson. Lastly, to save costs, all three data warehouses have been integrated into a central data warehouse.

ANSWER QUESTION 10-A IN THE TEMPLATE PROVIDED ON PAGE 69.

A.   **Identify** *three* weaknesses in Capital Cubed's enterprise risk management (ERM). **Describe**, for *each* weakness, *one* method to improve Capital Cubed's ERM.

(9 minutes)

The following are excerpts from a recent internal Capital Cubed risk report:

1.   The weekly 1% VAR calculation for Capital 10 is GBP 1.2 million, so there is a 1% probability that it will lose at most GBP 1.2 million in a single week.
2.   Capital 20 calculates VAR at a probability of 1% rather than 5% to get a more conservative measure of the magnitude of its potential losses.
3.   The variance–covariance method of calculating VAR is unreliable for capturing the risk exposure of Capital 30.
4.   Capital 30 sends its largest client a weekly VAR estimate using a probability of 5%. Currently this estimate is GBP 0.8 million, so Capital 30 has advised the client to be prepared for losses greater than this amount up to five weeks every three years.

B.   **Identify** *two* excerpts that contain errors. **Justify** *each* response with *one* reason.

(6 minutes)

One year later, market conditions have resulted in greater and more frequent losses than predicted by each team's VAR estimates. Watson instructs each team to add stress testing to its risk management process. He specifies three scenarios for Capital 10:

Scenario 1: U.S. equity market moves by ± 10%.
Scenario 2: Implied volatility of U.S. equities declines by 15%.
Scenario 3: GBP moves relative to USD by ± 15%.

C. **Determine** which *one* of the scenarios would lead to the largest loss in Capital 10's stress test. **Justify** your response with *one* reason.

(3 minutes)

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Answer Question 10 on This Page

Template for Question 10-A

Identify *three* weaknesses in Capital Cubed's enterprise risk management (ERM).	Describe, for *each* weakness, *one* method to improve Capital Cubed's ERM.
1.	
2.	
3.	

Answer Question 10 on This Page

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QUESTION 11 HAS THREE PARTS (A, B, C) FOR A TOTAL OF 16 MINUTES.

Gunnar Dahl is an analyst at the Scandinavian asset management firm Ibsen Capital. He is asked to evaluate the performance of the firm's flagship fund, Lux, by analyzing its return components. From the fund's prospectus, Dahl reads:

- Lux seeks long-term growth of capital by investing in a diversified portfolio of equities across the Scandinavian region.
- Lux uses a broad Scandinavian equity market index as its benchmark.

Lux's total return was –5.7% during its most recent full year of performance, while the benchmark's total return was –6.5%. The risk-free rate was 2.1% over the same period.

A.   **Calculate** the value of *each* of the following components of Lux's total return:

i.   Style return
ii.   Active return

(4 minutes)

Ibsen manages three global energy sector funds that all use the same sector index as their benchmark. Despite using the same benchmark, the managers of the three funds have distinct investment styles that are expected to persist. The following prospective clients have expressed interest in investing in these funds to increase their exposure to the energy sector:

Client 1:   He has a positive view of this sector and wants to invest all of his assets in an energy sector fund.
Client 2:   She holds a well-diversified portfolio and wants to only slightly increase her exposure to the energy sector.

Dahl is asked to identify, based on risk-adjusted performance, which fund would be most appropriate for each of the two clients. Dahl notes that the global energy sector index achieved a 6.7% annualized total return with a 16.0% standard deviation of returns over the six-year measurement period. The average risk-free rate over the measurement period was 1.7%. The performance data for Ibsen's funds are shown in Exhibit 1.

Exhibit 1
Ibsen Capital Global Energy Sector Funds
Performance Data for Six Years (Annualized)

Fund	Active Return	Fund Beta	Standard Deviation of Fund Returns	Sharpe Ratio	Treynor Measure
Orion	3.9%	0.93	17.0%	0.52	9.57
Procyon	4.4%	0.95	19.2%	0.49	9.89
Rigel	5.1%	1.12	18.1%	0.56	9.02

B.   **Determine** which fund in Exhibit 1 is *most* appropriate, on a risk-adjusted basis, for:

   i.   Client 1.
   ii.   Client 2.

   Explain, for *each* client, why the choice is *most* appropriate.

(6 minutes)

Ibsen also distributes externally managed funds with different regional focuses. Five years ago, the firm adopted a manager continuation policy (MCP) to evaluate its external managers. The MCP consists of a number of criteria against which Ibsen evaluates its external managers. Several external managers have recently underperformed but have still been retained. Dahl proposes new MCP guidelines for two of the criteria with the objective of reducing the risk of misclassifying zero- or negative-value-added managers as skilled (Type I error). He outlines the existing and proposed guidelines in Exhibit 2.

Exhibit 2
Selected MCP Criteria

Criterion	Existing MCP Guideline	Proposed MCP Guideline
Statistical significance for zero-value-added return outcomes	15%	5%
Exceptions allowed for MCP guideline violations	No	Yes

ANSWER QUESTION 11-C IN THE TEMPLATE PROVIDED ON PAGE 79.

C.   **Determine** the *most likely* effect on the risk of committing a Type I error (decrease, no effect, increase) for *each* criterion if the proposed guideline is implemented. **Justify** *each* response with *one* reason.

   Note: Consider *each* criterion independently.

(6 minutes)

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NOT BE GRADED

Answer Question 11 on This Page

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Answer Question 11 on This Page

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Answer Question ⬚11⬚ on This Page

Template for Question 11-C
Note: Consider *each* criterion independently.

Criterion	Determine the *most likely* effect on the risk of committing a Type I error (decrease, no effect, increase) for *each* criterion if the proposed guideline is implemented. (circle one)	Justify *each* response with *one* reason.
Statistical significance for zero-value-added return outcomes	decrease no effect increase	
Exceptions allowed for MCP guideline violations	decrease no effect increase	

Answer Question 11 on This Page

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