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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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.

(12 minutes)

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.

(10 minutes)

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.

(6 minutes)

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.

(8 minutes)

Answer Question 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	

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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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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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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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 Principal trade order Crossing networks order	1.
	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 Principal trade order Crossing networks order	1.
	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 $\boxed{9}$ 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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**ANY MARKS MADE ON THIS PAGE WILL
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)