CFA Program LII Mock Exam 1 Session 1

Vignette

Janet Kuspa is an Australia-based manager of globally diversified portfolios.
One year ago, Kuspa hedged the currency risk of a Australian dollar (AUD) 50,000,000 long position by selling AUD one year forward at an all-in forward price of 0.7530 USD/AUD (0.7530 USD per 1 AUD). Now, nine months before the forward's settlement date, Kuspa marks the forward position to market based on the data in Exhibit 1 (MRR is the market reference rate).

Exhibit 1

	Exchange Rate Data (USD/AUD)	
Maturity	**Bid**	**Offer**
Spot	0.7233	0.7234
9 months (forward points)	7	8
	Other Data	
Interest Rate	**US**	**Australia**
MRR (annual rate)	0.28%	0.10%

A few days later, Kuspa evaluates a carry trade strategy that involves borrowing AUD for one year and converting it to USD to earn the US MRR. She calculates the expected 1-year all-in percentage return of this strategy, based on the following:

- The 1-year MRR is 0.31% for the USD
- The 1-year MRR is 0.09% for the AUD
- The current mid-market USD/AUD spot rate is 0.7235
- Kuspa's prediction is that the USD/AUD spot rate will be 0.7243 at the end of one year.

Kuspa next evaluates three countries with floating exchange rates, as summarized in Exhibit 2. She uses the Mundell-Fleming model to forecast the short-term monetary and fiscal policy impacts on each of their domestic currencies.

Exhibit 2

Economic Characteristic	Country A	Country B	Country C
Capital mobility	High	Low	Low
Monetary policy	Expansionary	Expansionary	Restrictive
Fiscal policy	Restrictive	Restrictive	Restrictive

Finally, Kuspa analyzes the risks related to the currencies of three emerging market countries, summarized in Exhibit 3. These countries have recently experienced increased global investor interest and significant foreign capital inflows. Kuspa uses the information in Exhibit 3 to evaluate the potential negative effects of these inflows.

Exhibit 3

Risk Characteristic	Country D	Country E	Country F

Equity market returns (5-year compound annual growth rate)	20%	7%	19%
External debt (% of GDP)	120%	60%	300%
Foreign exchange reserves (% average daily foreign exchange turnover in domestic currency)	27%	30%	30%

1. The mark-to-market value (in USD) of the USD/AUD forward position is *closest* to:
   A. 1,436,982.
   B. 1,440,000.
   C. 1,446,961.

2. Based on the Mundell-Fleming model, which country is *most likely* to experience appreciation of its domestic currency in the short term?
   A. Country A
   B. Country B
   C. Country C

3. The expected all-in return of Kuspa's carry trade strategy (in AUD terms) is *closest* to:
   A. 0.10%.
   B. 0.19%.
   C. 0.22%.

4. Based on Kuspa's risk analysis, which emerging market country is *least* exposed to the potential negative effects of the foreign capital inflows?
   A. Country D
   B. Country E
   C. Country F

Vignette

Margaret Smith is a consultant specializing in private company valuations. She evaluates Lytham Corporation, a small, family-owned company whose CEO is a member of the controlling family. Smith wants to normalize Lytham's reported operating income to compare it with public companies in the same industry. She notes the following items:

- The current annual salary of Lytham's CEO is $600,000. The annual salary of a similarly qualified CEO of a comparable public company is $1,000,000.
- Lytham owns a luxury apartment in Singapore that is used by the CEO for both business and personal travel. The apartment would be sold if Lytham were a public company. The annual operating costs for the property are $200,000 per year and the annual depreciation expense is $200,000.
- Lytham pays 15% of its net income in dividends to its owners. Smith believes the payout ratio would be closer to 50% if Lytham were a public company.

Smith calculates the required return on equity for Lytham using the expanded CAPM and the information in Exhibit 1. Smith determines that the appropriate industry risk premium is zero.

Exhibit 1

Beta	1.3
Risk-free rate	6%
Equity risk premium	4%
Small-cap risk premium	3%
Company-specific risk premium	1%

Calcyte is a publicly traded company with an equity value of $9,043 million. Smith conducts a valuation of Calcyte for a private buyout client who is interested in purchasing a controlling stake. She determines the relevant discount for lack of control to be 23% and the relevant discount for lack of marketability to be 20%.
Smith also values Ramabo Corporation, a privately held company with annual revenues of $10 million. Smith identifies comparable public companies and calculates an average EV/Sales multiple for each of Ramabo's three business segments. She uses these multiples and the revenue generated by each segment in Exhibit 2 to calculate Ramabo's EV based on the guideline public company method.

Exhibit 2

	Revenue (in $ Millions)	**EV/Sales**
Segment A	6	3.3
Segment B	3	1.2
Segment C	1	4.9

5. The required adjustments to normalize Lytham's earnings will result in:
   A. a reduction in reported operating income.
   B. no change in reported operating income.
   C. an increase in reported operating income.

6. The required return on equity for Lytham using the expanded CAPM is *closest* to:
   A. 14.0%.
   B. 15.2%.
   C. 16.4%.

7. After applying the appropriate discounts or premiums, the value of Calcyte's equity (in $ millions) to the private buyout client should be *closest* to:
   A. 8,898.
   B. 9,395.
   C. 11,744.

8. Using the guideline public company method, Ramabo's EV (in $ millions) is *closest* to:
   A. 28.3.

B. 31.3.
C. 33.0.

Vignette

Fazly Ahmad is an equity analyst researching Rose Mass Rapid Limited (RMRL), a Canadian transport operator. RMRL reports under IFRS and has a 31 December year end. Ahmad compares RMRL to one of its competitors, Orchid Mass Transit Inc., which reports under US GAAP and also has a 31 December year end.

On 1 January of the current year, RMRL purchased a 30% interest in Begonia Bus Inc.'s outstanding common equity for $12,000,000. The excess purchase price was $2,150,000. Half of the excess was attributable to Begonia's plant and equipment, and the other half was attributable to land. Begonia depreciates its plant and equipment using the straight-line method with a remaining useful life of 10 years and zero residual value. RMRL has the ability to exercise significant influence over Begonia. Ahmad expects Begonia to report net income of $1,500,000 for the current year and not pay any dividends. Ahmad assumes Begonia does not have any intercompany transactions with RMRL. He then estimates the carrying value of RMRL's investment in Begonia at the end of the current year.

During the current year, RMRL acquired 80% of the outstanding shares of Petunia Transit Co. in exchange for common shares of RMRL. At the time of the acquisition, RMRL accounted for the acquisition using the partial goodwill method (Method 1). Also during the current year, Orchid acquired a controlling interest in another company and accounted for the acquisition using the full goodwill method (Method 2). Ahmad considers whether differences in the accounting treatment of these acquisitions could affect certain financial metrics.

Ahmad reviews the trend in RMRL's balance-sheet-based and cash-flow-based accruals ratios, as well as the trend in the Beneish M-scores and Altman Z-scores over the past two years, using the data in Exhibit 1.

Exhibit 1

	Most Recent Year	Two Years Ago
Balance-sheet-based accruals ratio	4.30%	0.60%
Cash-flow-based accruals ratio	1.70%	–2.5%
Beneish M-score	–1.94	–1.43
Altman Z-score	1.54	1.85

9. The estimated carrying value for RMRL's investment in Begonia at the end of the current year should be:
   A. $12,342,500.
   B. $12,450,000.
   C. $13,392,500.

10. Compared to Method 2, RMRL's consolidated book value per share under Method 1 would be:
    A. lower.
    B. the same.
    C. higher.

11. With respect to RMRL's accruals ratios, Ahmad should conclude that
    A. both the balance-sheet-based accruals ratio and the cash-flow-based accruals ratio have improved.
    B. the balance-sheet-based accruals ratio has deteriorated, but the cash-flow-based accruals ratio has improved.
    C. the balance-sheet-based accruals ratio has improved, but the cash-flow-based accruals ratio has deteriorated.

12. Based on the trends in the Beneish M-scores and Altman Z-scores, Ahmad should conclude that:
    A. both the probability of earnings manipulation and the probability of bankruptcy have decreased.
    B. the probability of earnings manipulation has decreased and the probability of bankruptcy has increased.
    C. the probability of earnings manipulation has increased and the probability of bankruptcy has decreased.

Vignette

John Smith, an advisor at Godel Securities, is meeting with one of his clients, Client A, to provide advice on fixed income investments. Client A currently has investments in Country 1 and Country 2. Smith first analyzes the fixed income market in Country 1. In Exhibit 1, he gathers spot rates (with annual compounding) for government zero-coupon bonds, as well as swap spreads, for maturities of one, two, and three years. He uses that information to construct a forward curve.

Exhibit 1

Maturity (years)	**1**	**2**	**3**
Government spot rate	3%	5%	8%
Swap spread	0.20%	0.25%	0.40%

Smith tells Client A that there are a number of theories that attempt to explain the shape of the yield curve. While the computation of forward rates is straightforward, Smith states that he believes forward rates are upwardly biased predictors of future spot rates.

In Country 2, there is uncertainty about how the government will manage inflation. Smith evaluates the effect on Client A's portfolio from changes in the yields on 1-year, 3-year and 10-year securities. Selected key rate durations for the portfolio as well as Smith's expected change in interest rates at each key rate are shown in Exhibit 2.

Exhibit 2

Security	Key Rate Duration	Expected Key Rate Change
1-year	0.5	1.00%
3-year	0.75	0.75%
10-year	2.5	–0.25%

Smith computes the percentage change in the value of the portfolio. He observes that the average change in the three rates is 0.50%.

Smith also advises Client A on an actively managed corporate bond portfolio in Country 2 using the swap spread as a measure of risk. Smith discusses the implied credit and liquidity risk with Client A using the 5-year swap rate as an example. The 5-year government and corresponding fixed swap rate at selected times over the last 12 months is presented in Exhibit 3.

Exhibit 3

Period	Government Bond Yield (%)	Fixed Swap Rate (%)
1 month ago	7.48	8.28
6 months ago	8.51	8.86
12 months ago	8.55	8.84

13. For Country 1, the forward rate for a 2-year zero-coupon bond issued in one year is *closest* to:
    A. 6.5%.
    B. 10.6%.
    C. 14.3%.

14. Which of the following term structure theories of interest rates is *most* consistent with Smith's beliefs?
    A. Preferred habitat
    B. Liquidity preference
    C. Unbiased expectations

15. Based on Smith's expected change in Country 2's interest rates, the percentage change in the value of Client A's portfolio is *closest* to:
    A. –1.88%.
    B. –1.69%.
    C. –0.44%.

16. Country 2's government bond yields and swap rates *best* support a conclusion that the economy is experiencing:
    A. a recession.
    B. no change.
    C. an expansion.

Vignette

James Ryan is a portfolio manager who is reviewing the risk exposure of his stock and bond portfolios, and evaluating new trading strategies.

When analyzing his current stock portfolio, Ryan determines that the monthly 5% VaR is $10.6 million.

Ryan's current bond portfolio has a value of $260 million. He uses the parametric method to estimate the daily 5% VaR based on a daily expected return of 0.0218% and a daily standard deviation of returns of 0.8246%. He assumes that portfolio returns follow a normal distribution and that a 5% VaR is 1.65 standard deviations below the expected value.

Ryan considers the implications of adding bonds with embedded options to his current bond portfolio. He is concerned that adding these bonds will cause portfolio performance to deviate significantly from the benchmark. Given this concern, he wants to use an extension of VaR that will measure the extent of this deviation.

Ryan is in the process of backtesting a new multifactor portfolio strategy. For his investment universe of liquid securities, he assesses the performance of a large number of different strategies that use a wide range of factors and rebalancing periods.

After completing his backtesting, Ryan identifies three factor strategies that are all expected to generate a similar mean return and standard deviation. He uses the metrics in Exhibit 1 to evaluate which strategy would provide the most attractive statistical properties for his risk-averse clients.

Exhibit 1

	Strategy X	**Strategy Y**	**Strategy Z**
Skewness	–0.9	2.4	2.4
Kurtosis	12.7	20.3	12.7
Maximum drawdown	35.30%	31.40%	30.20%

17. Which of the following statements is correct regarding Ryan's current stock portfolio?
    A. There is a 5% chance of losing $10.6 million over one month
    B. The maximum monthly loss will be $10.6 million with 5% probability
    C. Monthly losses of at least $10.6 million are expected 5% of the time

18. Using the parametric method, the daily 5% VaR (in $ millions) for Ryan's current bond portfolio is *closest* to:
    A. 2.09.
    B. 3.48.
    C. 3.54.

19. Given his concern about the impact of adding bonds with embedded options to his current bond portfolio, which of the following extensions of VaR should Ryan use?
    A. Relative VaR
    B. Conditional VaR

C. Incremental VaR

20. Which of the following strategies would provide the *most* attractive statistical properties for Ryan's risk-averse clients?
    A. Strategy X
    B. Strategy Y
    C. Strategy Z

Vignette

Anita Daani, a research analyst, is evaluating the financial institutions in her coverage universe. She begins with an analysis of KTR Insurance, a property and casualty (P&C) insurance company. KTR reports under IFRS with a fiscal year end of 31 December. The company has two employee compensation plans:

Plan A - a defined benefit pension plan
Plan B - a share-based compensation plan which grants restricted stock units (RSUs)

For the most recent year, Daani calculates the amount recognized by KTR as an operating expense in its income statement related to Plan A. She observes that Plan A had a current service cost of $10 million and a past service cost of $2 million for the most recent year. Daani next assesses the dilutive effect of the share-based compensation plan on KTR's financial statements. She uses the treasury stock method and the data for the most recent year for Plan B in Exhibit 1. Daani assumes that KTR has no other potentially dilutive securities outstanding besides the RSUs granted under Plan B.

Exhibit 1

Basic shares outstanding at end of year	2,700 million
Number of unvested RSUs at end of year	150 million
Average unrecognized share-based compensation expense	$840 million
Average share price during the most recent year	$7

On 1 January of the current year, KTR grants 2 million new RSUs to employees under Plan B. The share price on the grant date was $8 and the vesting period is 4 years. Daani calculates the effect of the new RSU grants under Plan B on KTR's financial statements for the current year.
Daani next analyzes KTR's competitive position in the P&C insurance industry. She uses data in Exhibit 2 to compare KTR and its peers in their efficiency of obtaining new premiums.

Exhibit 2

	KTR	Peer Company 1	Peer Company 2
Loss and loss adjustment expense ratio	59.50%	65.40%	61.90%

Underwriting expense ratio	38.10%	30.70%	33.20%
Combined ratio	97.60%	96.10%	95.10%

21. For the most recent year, KTR's operating expense (in $ millions) related to Plan A was:
    A. 8.
    B. 10.
    C. 12.

22. Using the treasury stock method, KTR's number of diluted shares outstanding at the end of the most recent year (in millions) is *closest* to:
    A. 2,730.
    B. 2,850.
    C. 2,970.

23. In KTR's current year financial statements, which of the following would result from its new RSU grants under Plan B?
    A. $4 million increase in compensation expense
    B. $4 million increase in cash flow from financing activities
    C. $16 million increase in share-based compensation reserve

24. Which P&C insurance company is the *most* efficient at obtaining new premiums?
    A. KTR
    B. Peer Company 1
    C. Peer Company 2

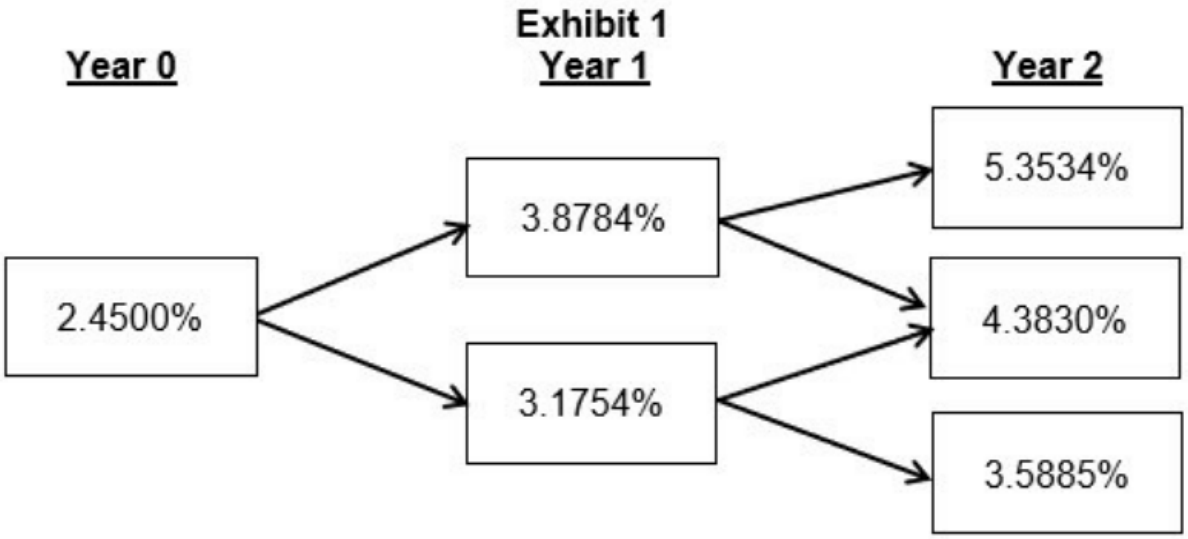
Vignette

Susanne Blythe is a fixed income analyst with an institutional fixed-income manager. She evaluates bonds for potential inclusion in the firm's portfolio.

Blythe is calibrating the binomial tree shown in Exhibit 1 to be consistent with observable prices of default-free bonds. In the tree, interest rate volatility is assumed to be 10% and branching from each node to a high state or a low state occurs with equal probability. She uses the tree to calculate the value of a default-free 3-year bond with a 3.5% annual coupon that is priced at par ($100).

Blythe has determined that the 1-year forward rates at Year 0 and Year 1 are correct. In the next iteration of the calibration process, she needs to determine if the 1-year forward rates at Year 2 must be adjusted for the bond's calculated value to equal its market price.

Exhibit 1



Blythe evaluates three bonds just issued by Y Corporation. All three bonds have identical characteristics except for optionality, as shown in Exhibit 2.

Exhibit 2

Bond	Maturity	Annual Coupon	Type of Bond
Bond 1	3 years	4.50%	Option-free
Bond 2	3 years	4.50%	Putable at 100 one year and two years from now
Bond 3	3 years	4.50%	Callable at 102 one year and two years from now

Blythe also evaluates a convertible bond issued by Z Corporation with the characteristics provided in Exhibit 3.

Exhibit 3

Maturity	5 years
Issue price of convertible bond	$1,000 (at par)
Current convertible bond price	$1,091
Initial conversion price	$25.00 per share
Share price at issuance	$17.40
Current share price	$18.50

Blythe computes the market conversion premium ratio to compare the Z Corporation bond to other convertible bonds.

25. When completing the next iteration of the calibration process for the binomial tree, Blythe should:
    A. decrease the 1-year forward rates at Year 2.
    B. leave the 1-year forward rates at Year 2 unchanged.
    C. increase the 1-year forward rates at Year 2.