

## LEVEL III SESSION 1--GUIDELINE ANSWERS

### QUESTION SET 1: PORTFOLIO MANAGEMENT – ASSET ALLOCATION

1. **A**

**LOS:** Volume 1, Learning Module 5, *Discuss tax considerations in asset allocation and rebalancing.*

For asset owners subject to taxation, assets qualifying for reduced tax rates and deferred capital gains taxation should be designated to their taxable accounts. In Schwartz's jurisdiction, assets producing interest income are typically less tax-efficient and are subjected to incrementally higher tax rates. The post-tax return volatility is diminished when equities are maintained in a taxable account. Consequently, for optimal tax efficiency, Schwartz's taxable account should prioritize domestic equities centered on dividends and long-term capital gains over high-yield bonds that generate interest income.

**Reference:** 2024, Asset Allocation, L3, Volume 1, Learning Module 5, Section 7, Taxes and Portfolio Rebalancing, pp. 327-332, Example 5.

2. **C**

**LOS:** Volume 1, Learning Module 5, *Discuss the use of short-term shifts in asset allocation.*

Systematic tactical asset allocation (TAA) attempts to capture asset-class-level return anomalies that have been shown to have some predictability and persistence using rules-based, quantitative signals. Trend and value signals are widely used in systematic TAA.

Discretionary TAA is typically used to make qualitative forecasts that can include economic data points like credit spreads and inflation expectations. Discretionary TAA is typically used by investment managers to mitigate or hedge risk in distressed markets while enhancing return in positive return markets using qualitative interpretation of market conditions.

**Reference:** 2024, Asset Allocation, L3, Volume 1, Learning Module 5, Section 9, Short-Term Shifts in Asset Allocation, pp. 340-342.

3. **A**

**LOS:** Volume 1, Learning Module 5, *Identify behavioral biases that arise in asset allocation and recommend methods to overcome them.*

Home bias is a preference for securities listed on the exchanges of one's home country over that for international securities. However, concentrating portfolio exposure in home country securities may result in a less diversified, less efficient portfolio.

**Reference:** 2024, Asset Allocation, L3, Volume 1, Learning Module 5, Section 10, Dealing with Behavioral Biases in Asset Allocation, pp. 345-350.

4.

**B**

**LOS:** Volume 1, Learning Module 5, *Discuss tax considerations in asset allocation and rebalancing.*

After-tax portfolio optimization requires adjusting each asset class's expected return and standard deviation of return for expected taxes. The correlation of returns is not affected by taxes and does not require an adjustment when performing after-tax portfolio optimization.

**Reference:** 2024, Asset Allocation, L3, Volume 1, Learning Module 5, Section 6, Asset Allocation for the Taxable Investor and After-Tax Portfolio Optimization, pp. 323-326.

## QUESTION SET 2: FIXED INCOME

### Part A

**LOS:** Volume 2, Learning Module 4, Section 4, *Describe fixed-income portfolio measures of risk and return as well as correlation characteristics.*

A bond has greater convexity when its cash flows (coupons) are more widely dispersed around the duration point. A zero-coupon bond will have only one cash flow (i.e., at the time of maturity); therefore its dispersion around the duration point is the smallest.

**Reference:** 2024, Fixed Income, Volume 2, Learning Module 4, Section 4, Fixed-Income Portfolio Measures, p. 250.

### Part B

**LOS:** Volume 2, Learning Module 4, Section 4, *Describe fixed-income portfolio measures of risk and return as well as correlation characteristics.*

In times of increased interest rate volatility, the relationship between bond prices and yields becomes more non-linear relative to a low volatility environment. With positive convexity, the expected return of a bond will be higher than the return of an identical-duration, lower-convexity bond for the same interest rate change.

**Reference:** 2024, Fixed Income, Volume 2, Learning Module 4, Section 4, Fixed-Income Portfolio Measures, p. 250.

### Part C

**LOS:** Volume 2, Learning Module 4, Section 6, *Describe and interpret a model for fixed-income returns.*

Coupon income	$3.5 / 102.3 = 3.42\%$	Annual coupon payment/current bond price
+ Roll-down return	$(103.7 - 102.3) / 102.3 = 1.37\%$	(Ending bond price – Beginning bond price) / Beginning bond price
= Rolling yield of	4.79%	

**Reference:** 2024, Fixed Income, Volume 2, Learning Module 4, Section 6, A Model for Fixed-Income Returns, pp. 261-262.

### Part D

**LOS:** Volume 2, Learning Module 4, Section 6, *Describe and interpret a model for fixed-income returns.*

Rolling Yield (from the previous answer)	4.79%
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$$\begin{aligned} \text{+/- E}(\Delta\text{Price based on benchmark yield view}) & - 1.56\% = (-\text{ModDur} \times \Delta\text{yield}) + \left[\frac{1}{2} \times \right. \\ & \left. \text{Convexity} \times (\Delta\text{yield})^2\right] = (-4.5 \times \\ & 0.0035) + (1/2 \times 25 \times 0.0035^2) \end{aligned}$$

$$\begin{aligned} \text{+/- E}(\Delta\text{Price due to yield spread view}) & - 0.90\% = (-\text{ModDur} \times \Delta\text{spread}) + \left[\frac{1}{2} \times \right. \\ & \left. \text{Convexity} \times (\Delta\text{spread})^2\right] = (-4.5 \\ & \times 0.002) + (1/2 \times 25 \times 0.002^2) \end{aligned}$$

$$\text{+/- E}(\text{Currency G/L}) \quad -1.00\% \quad \text{Given}$$

$$= \text{Total expected return} \quad 1.34\%$$

**Reference:** 2024, Fixed Income, Volume 2, Learning Module 4, Section 6, Overview of Fixed-Income Portfolio Management, pp. 261-262.

### QUESTION SET 3: FIXED INCOME

1. **A**

**LOS:** Volume 3, Learning Module 2, Section 2, *Describe risk considerations for spread-based fixed-income portfolios.*

Volume 3, Learning Module 2, Section 2, *Discuss the advantages and disadvantages of credit spread measures for spread-based fixed-income portfolios, and explain why option-adjusted spread is considered the most appropriate measure.*

Statement 1 is correct: discounted cash flow, risk premium approach, and the inclusion of fixed income asset classes are three ways to analyze fixed income returns.

**Reference:** 2024, Fixed Income, L3, Volume 3, Learning Module 2, Section 2, Key Credit and Spread Concepts for Active Management, p. 70.

2. **A**

**LOS:** Volume 3, Learning Module 2, Section 2, *Describe risk considerations for spread-based fixed-income portfolios.*

Volume 3, Learning Module 2, Section 2, *Discuss the advantages and disadvantages of credit spread measures for spread-based fixed-income portfolios, and explain why option-adjusted spread is considered the most appropriate measure.*

The four main building blocks of the required return for fixed income asset classes are default-free risk rate, the term premium, the credit premium, and the liquidity premium. B is incorrect as it is a short-term risk-free rate that is readily observable, not a liquidity premium.

**Reference:** 2024, Fixed Income, L3, Volume 3, Learning Module 2, Section 2, Key Credit and Spread Concepts for Active Management, p. 72.

3. **B**

**LOS:** Volume 3, Learning Module 2, Section 2, *Describe risk considerations for spread-based fixed-income portfolios.*

Volume 3, Learning Module 2, Section 2, *Discuss the advantages and disadvantages of credit spread measures for spread-based fixed-income portfolios, and explain why option-adjusted spread is considered the most appropriate measure.*

Emerging economies often exhibit weaker monetary discipline than developed economies.

**Reference:** 2024, Fixed Income, L3, Volume 3, Learning Module 2, Section 2, Key Credit and Spread Concepts for Active Management, p. 78.

4.

**B**

**LOS:** Volume 3, Learning Module 2, Section 2, *Describe risk considerations for spread-based fixed-income portfolios.*

Volume 3, Learning Module 2, Section 2, *Discuss the advantages and disadvantages of credit spread measures for spread-based fixed-income portfolios, and explain why option-adjusted spread is considered the most appropriate measure.*

A foreign debt-to-GDP ratio above 50% is generally considered a reason for concern in developing economies and not in emerging markets.

**Reference:** 2024, Fixed Income, L3, Volume 3, Learning Module 2, Section 2, Key Credit and Spread Concepts for Active Management, p. 79.

## QUESTION SET 4: EQUITY INVESTMENTS

1. **C**  
**LOS:** Volume 3, Learning Module 4, *Compare factor-based strategies to market-capitalization-weighted indexing.*

Risk-oriented strategies focus on reducing downside volatility and overall portfolio risk. As such, Index 3 best addresses this issue with its volatility weighting and focus on quality, large-cap, and yield.

**Reference:** 2024, Equity Investments, L3, Volume 3, Learning Module 4, Section 3, Factor-Based Strategies, pp. 190-193.

2. **A**  
**LOS:** Volume 3, Learning Module 4, *Compare factor-based strategies to market-capitalization-weighted indexing.*

Diversification-oriented strategies include equally weighted indices. With its equal weighting across index constituents, single-stock risk is greatly reduced in Index 1 over the other approaches.

**Reference:** 2024, Equity Investments, L3, Volume 3, Learning Module 4, Section 3, Factor-Based Strategies, pp. 190-193.

3. **A**  
**LOS:** Volume 3, Learning Module 4, *Compare factor-based strategies to market-capitalization-weighted indexing.*

Jones appears to be a small-cap value investor. Index 1 is consistent with his focus on small size, value orientation, and income.

Index 2 and Index 3 are both large-cap growth oriented.

**Reference:** 2024, Equity Investments, L3, Volume 3, Learning Module 4, Section 3, Factor-Based Strategies, pp. 190-193.

4. **C**  
**LOS:** Volume 3, Learning Module 4, *Compare factor-based strategies to market-capitalization-weighted indexing.*

Smith is sensitive to downside risk and wishes to avoid small-caps. Index 3 is most appropriate with its large-cap focus and relatively high exposure to quality.

Index 1 has a small-cap focus, while Index 2 has lower quality, size, and yield exposures than Index 3.