Mock Exam 1 Session 1 - Answers

Question 1

An analyst gathers the following economic and banking data:

Short-term real riskless rate = 0.9%

Real growth rate = 1.8%

Expected inflation = 2.1%

Target inflation = 2.4%

Risk premium for banking = 4.4%

Which of the following amounts is closest to the expected return on banking?

A) 5.3%.

B) **7.4%.** ✓

C) 8.3%.

D) 9.2%.

Explanation

Expected return on banking = short-term real riskless rate (0.9%) + expected inflation (2.1%) + risk premium for banking (4.4%) = 7.4%.

(LO 2.1.2)

Question 2

In discussing the investment policy statement of different institutional investors, an analyst notes that a common investment objective of a defined contribution (DC) pension plan is to achieve a target return above the liability discount rate. The analyst further notes that endowments typically aim to achieve a return that exceeds inflation. The analyst is most accurate with respect to:

A) DC pension plans only.

B) **endowments only.** ✓

C) both DC pension plans and endowments.

D) neither DC pension plans nor endowments.

Explanation

The analyst is only correct with respect to endowments, which typically target a return above inflation. It is defined benefit (DB) pension plans that aim to target a return above the liability discount rate. DC pension plans do not have a defined liability and, therefore, there is no discount rate used to present value the liabilities of the plan.

(LO 2.1.5)

Question 3

An investment manager for an endowment fund has concerns about liquidity risk and the potential losses, should there be a future financial crisis. She is considering increasing the allocation of cash and fixed-income investments to attempt to eliminate liquidity risk. What is the closest percentage of the endowment fund holdings that would have to consist of cash and fixed-income investments to reasonably avoid liquidity risk?

A) **10%.** ✓

B) 25%.

C) 35%.

D) It is not possible to reasonably avoid liquidity risk.

Explanation

A complete elimination of liquidity risk would occur at an allocation of cash and fixed income of 35%. The allocation would have to be about 6%−14% to avoid liquidity crises in 95% of market conditions.

(LO 2.2.5)

Question 4

A risk analyst makes the following statements regarding tail risk in an endowment:

Statement 1:	Tail risk is the risk of severe left-tail or right-tail events, which can cause significant portfolio volatility.
Statement 2:	One common way of reducing an endowment's tail risk is to reduce the allocation to risky alternative investments in favor of lower-risk investments.

The analyst is correct with respect to:

A) Statement 1 only.

B) Statement 2 only.

C) **neither statement.** ✓

D) both statements.

Explanation

Neither of the analyst's statements is accurate. Tail risk is left-tail risk and reflects the risk of losses due to extreme events. Reducing the allocation to risky assets is less common because it would result in low returns, which is not consistent with an endowment's mandate.

(LO 2.2.7)

Question 5

An endowment fund manager is looking to use equity options to hedge the risk of a significant concentration in one of the endowment's assets. The asset has a market price of $80 per share. The manager is considering these options on the asset: (1) a put option with a strike price of $70, or (2) a collar using a $75 strike price put and a $80 strike price call. Which of the following statements about the use of options is most accurate?

A) The put option provides downside protection but does not offer upside potential.

B) The manager should use the put option if the key goal is to minimize costs.

C) The collar provides some downside protection but allows uncapped upside potential.

D) **The manager should use the collar if the key goal is to minimize losses.** ✓

Explanation

Both the put option and the collar protect against downside risk (the collar involves buying the put and selling the call). If the key goal is to minimize losses, the manager should select the strategy that has the put option with the higher strike price, which is the $75 strike put of the collar. This strategy will provide downside protection faster.

Using the put option only leaves the upside potential uncapped. Using the collar will cap the upside at the call strike price because the manager would be short the call.

(LO 2.2.7)

Question 6

At the very beginning of the year, a defined benefit plan has plan assets of $4.8 billion and a projected benefit obligation (PBO) of $4.4 billion. The plan liabilities have a modified duration of 18. Several months later, the value of plan assets falls by 5%, and the discount rate used for the PBO calculation rises by 1.5%. The funded status of the pension plan after the two changes is closest to:

A) underfunded by $1.03 billion.

B) overfunded by $1.03 billion.

C) underfunded by $1.35 billion.

D) **overfunded by $1.35 billion.** ✓

Explanation

After the changes:

Plan assets = $4.8 billion × 0.95 = $4.56 billion

PBO = $4.4 billion + ($4.4 billion × 0.015 × -18) = $3.212 billion

Funded status = $4.56 billion – $3.212 billion = $1.348 billion (positive means overfunded)

(LO 2.3.3)

Question 7

AlphaCorp and BetaCorp are U.S. pharmaceutical companies with large defined benefit (DB) pension plans. AlphaCorp's pension plan is underfunded, while BetaCorp's pension plan is overfunded. The assets of both funds are invested in fixed-income securities only, and the asset durations exceed the liability durations. What is the most likely outcome of an anticipated decline in interest rates?

A) **The funded status of both funds will improve.** ✓

B) Only AlphaCorp's funded status will improve.

C) Only BetaCorp's funded status will improve.

D) Neither fund's funded status will improve.

Explanation

A decline in interest rates will increase the present value of both the liabilities and assets. Given that the asset durations in both plans exceed the liability durations, the increase in assets in both plans will be greater than the increase in liabilities. As a result, the funded status of both plans will improve (that is, BetaCorp's plan will become more overfunded, and AlphaCorp's plan will become less underfunded or may even become fully funded or overfunded).

(LO 2.3.3)

Question 8

Carole James is recently retired and estimates her remaining life expectancy at 25 years. Her pension plan offers her a choice between (1) a fixed $50,000 annuity and (2) a $40,000 initial annuity payment that will grow at 2% annually. The market interest rate is 4%. The valuation of annuities formulas are as follows:

$$PV_{fixed} = \frac{payment}{r} \times \left[1 - \frac{1}{(1+r)^n}\right]$$

$$PV_{growth} = \frac{initial\ payment}{r-g} \times \left[1 - \left(\frac{1+g}{1+r}\right)^n\right]$$

Based on this information, James should select:

A) the fixed annuity, because its present value exceeds the growth annuity by approximately $38,000.

B) **the fixed annuity, because its present value exceeds the growth annuity by approximately $12,000.** ✓

C) the growth annuity, because its present value exceeds the growth annuity by approximately $38,000.

D) the growth annuity, because its present value exceeds the growth annuity by approximately $12,000.

Explanation

James should select the fixed annuity, because its present value exceeds the present value of the growth annuity:

$$PV_{fixed} = (50{,}000 / 0.04) \times [1 - (1 / 1.04^{25})] = \$781{,}104$$

$$PV_{growth} = (40{,}000 / (0.04 - 0.02)) \times [1 - (1.02 / 1.04)^{25}] = \$769{,}162$$

$$PV_{fixed} - PV_{growth} = \$11{,}942$$

(LO 2.3.6)

Question 9

A country's imports last year were $103 billion while its exports were $98 billion. The change in the reserve account last year was +$4 billion. Which of the following statements about the country's balance of payment components is most accurate?

A) The capital account deficit was $1 billion.

B) The current account surplus was $5 billion.

C) **The capital account surplus was $9 billion.** ✓

D) The current account deficit was $1 billion.

Explanation

The country's balance of payments equation is as follows:

> Change in reserve account = change in current account + change in capital account
>
> +$4 billion = –$5 billion + change in capital account
>
> Change in capital account = +9 billion (surplus)

The current account balance represents exports minus imports, and because imports ($103 billion) exceeded exports ($98 billion), the country has a current account deficit of $5 billion. Given that the change in reserve balance was positive (+$4 billion), the country must have had a capital account surplus of +$9 billion last year.

(LO 2.4.1)

Question 10

In a report to investors on sovereign wealth funds (SWFs), a government analyst notes that sovereign wealth stabilization funds are typically intended to be cyclical, because cyclical changes allow a country to put aside a portion of commodity revenues in prosperous times and use this revenue for future generations in adverse times. The analyst also notes that sovereign wealth reserve investment funds typically have a total return objective. Is the analyst correct with respect to these statements?

	Stabilization funds	Reserve investment funds
A)	Yes	No
B)	No	No
C)	**No** ✓	**Yes**
D)	Yes	Yes

Explanation

The analyst is incorrect with respect to stabilization funds but is correct with respect to reserve investment funds. Stabilization funds are funds set up by countries from commodity revenues during periods of high commodity prices, and are expected to be drawn down in the future during periods of low commodity prices. This makes stabilization funds countercyclical investments. Sovereign wealth reserve investment funds typically have a total return objective, because returns are generated both from income and from capital gains.

(LO 2.4.2)

Question 11

A wealthy individual investor is considering moving his assets to a family office. During a discussion with a friend, his friend notes four attributes of family offices that are key advantages and disadvantages:

- Family offices often have a high allocation to aggressive alternative investments.
- The speed of investment decisions is typically faster than other institutional investors including pension funds and foundations.
- However, family offices need to maintain high levels of liquidity to satisfy lifestyle needs, and therefore cannot capture liquidity premiums from illiquid investments.
- Further, family offices can create conflicts of interest between the investor and the fund managers.

The investor's friend is correct with respect to:

A) none of the statements.

B) one statement.

C) **two statements.** ✓

D) three statements.

Explanation

Only the first two statements are accurate. Family offices have long-term time horizons, which allow them to make significant allocations to alternative investments. They can also make decisions quickly because discussions with the investor(s) can be done expeditiously. Family offices typically do not have significant liquidity needs, which allows them to capture the liquidity premium from illiquid alternative investments. In addition, family offices do not give rise to the conflicts of interest that could arise in other institutional relationships between the investor and external fund managers.

(LO 2.5.1)

Question 12

A family office is considering donating a significant portion of its portfolio to reduce homelessness in its city. The remaining portfolio will be invested in a range of companies that are perceived to have prudent corporate government practices and ethical trade practices. Which of the following terms best reflect these actions?

	Donating to reduce homelessness	Selecting prudent and ethical companies
A)	Charity	Negative screening
B)	Philanthropy	Negative screening
C)	**Philanthropy** ✓	**Positive screening**

Explanation

The goal of philanthropy is to donate money to make a long-lasting change (e.g., reduce homelessness, reduce unemployment), while the goal of charity is typically to satisfy an immediate need without considering long-term implications. Positive screening invests in companies that do social good with strong and ethical corporate practices, while negative screening excludes companies whose practices are considered to be socially harmful or undesirable.

(LO 2.5.8)

Question 13

James Mortimer is a U.S.-based high-net-worth investor. Mortimer has $75 million in cash and cash-equivalent investments reserved for opportunistic investments, and $450 million in concentrated real estate investments. The most appropriate risk categorization, respectively, of the two investments is:

A) aspirational risk and market risk.

B) personal risk and aspirational risk.

C) personal risk and market risk.

D) **market risk and aspirational risk.** ✓

Explanation

Client risks can be categorized as aspirational (idiosyncratic) risk, market risk, and personal risk. Cash and cash equivalent investments address market risk, which is the risk of the investment's price/value changes due to changes in financial markets. Real estate investments—especially concentrated positions—address aspirational risk, which is the risk unique to individual assets or small groups of assets. Also, note that cash can be categorized in the personal risk category if it is used for an emergency fund.

(LO 2.5.9)

Question 14

An investor is looking to add an asset to his existing diversified portfolio. The asset has the same standard deviation of returns as the portfolio, and it has a correlation with the portfolio's return that is less than 1 but greater than 0. By adding this asset to the portfolio, portfolio risk will most likely:

A) **decline because the correlation is less than 1.** ✓

B) stay the same because the standard deviation is the same.

C) increase because the correlation is positive.

D) either decline or increase depending on the weight of the asset.

Explanation

Based on modern portfolio theory, adding an asset that is less than perfectly correlated with an existing asset (in this case, the diversified portfolio) will improve portfolio diversification. The combined portfolio's risk will decline, regardless of the new asset's weight, because the asset's risk is the same but its correlation with the portfolio is less than 1.

(LO 3.1.1)

Question 15

A portfolio analyst is attempting to perform mean-variance optimization with a risk-free asset and a risky asset. Assume the risk-free rate and expected rate of return on the risky asset are 2% and 8%, respectively. If the annualized variance of the risky asset is 0.0121 and the investor has a risk-aversion degree of 9, which of the following amounts is closest to the optimal investment allocation to the risk-free asset?

A) 8%.

B) **45%.** ✓

C) 55%.

D) 94%.

Explanation

Risky asset allocation = 1/9 × (0.08 – 0.02) / 0.0121 = 55.1%.

Therefore, the risk-free allocation = 100% – 55.1% = 44.9%.

(LO 3.1.2)

Question 16

An investor is considering adding an asset to a given asset portfolio which has an optimal return of 15% and a standard deviation of 12%. The new asset's beta in relation to the optimal portfolio is 0.6. With a prevailing risk free rate of 3%, the hurdle rate is closest to:

A) 7.2%.

B) **10.2%.** ✓

C) 12.0%.

D) 13.8%.

Explanation

Hurdle rate (new asset's expected return) > [(0.15 – 0.03) × 0.6 + 0.03] = 0.102 = 10.2%.

(LO 3.1.3)

Question 17

A portfolio manager has determined that the real estate asset class should have a liquidity level of 0.08. The expected annual mean return for real estate is 15%. The investor has a medium preference for liquidity (ϕ = 0.40). Based on the information provided, the adjusted mean return of real estate is closest to:

A) 2.8%.

B) 5.5%.

C) 10.2%.

D) **11.8%.** ✓

Explanation

Adjusted mean return = 0.15 – (0.08 × 0.40) = 0.118 = 11.8%

The 2.8% answer choice is incorrect because it is calculated as (0.15 – 0.08) × 0.40 = 0.028 = 2.8%.

The 5.5% answer choice is incorrect because it is calculated as 0.15 × 0.92 × 0.40 = 0.055 = 5.5%.

The 10.2% answer choice is incorrect because it is calculated as 0.15 – (0.08 × 0.60) = 0.102 = 10.2%.

(LO 3.1.5)

Question 18

When comparing a traditional asset allocation approach to a total portfolio approach (TPA), it would be correct to say that the TPA:

A) uses relative valuation metrics.

B) **shifts to a risk factor diversification focus.** ✓

C) organizes into siloed teams to manage investments.

D) measures performance with asset class benchmarks.

Explanation

When comparing the traditional asset allocation approach to the total portfolio approach (TPA), we see a shift from asset class benchmarks to portfolio-level goals, from relative value metrics to total return metrics, from an asset class factor lens to risk and return drivers, from board-centric allocation decisions to board-empowered team decisions, and from siloed teams to one large collaborative team competing for capital.

(LO 3.2.2)

Question 19

An institutional asset manager is switching from a traditional (i.e., strategic asset allocation) approach to a total portfolio approach (TPA). Which of the following actions is least likely a challenge that should be considered?

A) Some of the portfolio holdings may have lagging effects.

B) **Tracking the reference portfolio limits risk factor exposures.** ✓

C) Conducting scenario analysis is necessary to test for model errors.

D) The models used need to be robust for risk factors that spread across multiple asset classes.

Explanation

There are six key challenges seen with TPA relative to a traditional SAA system. First, model development is very complex given that the models need to work across different asset classes due to common risk factor exposures. Second, scenario analysis and stress testing may be needed to test the models for robustness over time. Third, private assets are illiquid, have limited historical data, and may require smoothing and lagging effects. Fourth, risk relationships can change materially between ex ante and ex post. Fifth, benchmarking can limit risk factor pursuits that may interfere with performance optimization. The reference portfolio (i.e., the benchmark) limits strategy options, not risk factor exposures. It was specifically chosen to address the desired risk factor exposures. Sixth, factor-based attribution may be less robust than asset class-based attribution.

(LO 3.2.4)

Question 20

Which of the following statements regarding the core-satellite approach to portfolio management is most accurate?

A) It is primarily a passive investment approach.

B) It usually involves equal investment focus on the core and the satellite.

C) **It can be used to satisfy investors who have both risk-aversion and risk-seeking needs.** ✓

D) It usually adds value to investors but comes with the disadvantage of additional costs.

Explanation

A well-diversified core could allow for downside protection (risk aversion), while the less diversified satellite could allow for upside gains (risk seeking).

The core-satellite approach combines both passive investing (core) and active investing (satellite); it is not necessarily the case that the core dominates.

In some instances, the core-satellite approach allows greater focus on the satellite portfolio (e.g., more complex and intended to invest in higher risk and return assets) and less focus on the core portfolio (e.g., less complex and intended to invest in lower risk and return assets).

The core-satellite approach does not necessarily need to be more costly. For example, having a diversified core and less diversified satellite could achieve the dual benefit of adding value (e.g., diversification in the core) and lowering costs (e.g., higher returns in the satellite to offset costs).

(LO 3.3.1)

Question 21

A portfolio manager is focused on strategic asset allocation and in the process, analyzes the political and currency risks of investing in certain countries. Based solely on the information provided, the portfolio manager is using which approach to portfolio management?

A) Bottom-up approach only.

B) **Top-down approach only.** ✓

C) Bottom-up or top-down approach.

D) Mixed approach only.

Explanation

The top-down approach to portfolio management looks at the macroeconomic conditions in certain markets or countries and tries to come up with an appropriate strategic asset allocation. The information provided suggests the portfolio manager is only using the top-down approach.

(LO 3.3.2)