Level I of the CFA® Exam

Mock Questions with Answers - Mock Exam 2025 #5 - Second Session (Corporate Finance, Equity, Fixed Income, Derivatives, Alternative Investments & Portfolio Management)

Offered by AnalystPrep

Last Updated: Mar 3, 2025

Q.1 Mark Richards is Tilk Enterprises' project manager. He is evaluating two pairs of construction projects (coded A, B, C,,and D). Out of the four projects, Richards will be selecting only one; he intends to evaluate each pair independently using the NPV and IRR rule. Details concerning the projects are summarized in the table below:

	Pair 1(A & B)	Pair 2(C & D)
Cash flow timing	A: End of period	C: End of period
	B: End of period	D: Mid-period
Initial investment	A : $150,000	C : $200,000
	B : $95,000	D : $200,000

Based on the information presented in the exhibit, there could be a conflict in ranking generated by NPV and IRR for:

     A. Pair 1 only.

     B. Pair 2 only.

     C. Both pairs.

The conflict in ranking generated by NPV and IRR for both pairs of projects arises due to the differences in the timing of cash flows and the scale of investment for the projects in each pair.

A is incorrect. While it is true that a conflict could arise for Pair 1 due to the difference in the scale of investment, this is not the only pair that could experience such a conflict. Project A requires an initial investment of $150,000, while Project B requires a smaller investment of $95,000. The NPV method, which calculates the present value of cash flows minus the initial investment, might favor the project with the smaller investment if the difference in cash flows does not proportionately compensate for the larger initial outlay. Conversely, the IRR method, which finds the rate that makes the NPV equal to zero, might favor the project with the larger initial investment if it promises higher returns. This discrepancy in how the two methods account for the scale of investment can lead to a conflict in ranking between Projects A and B.

B is incorrect. While it is true that a conflict could arise for Pair 2 due to the difference in the timing of cash flows, this is not the only pair that could experience such a conflict. Project C has cash flows at the end of the period, while Project D has cash flows in the mid-period. The timing of cash flows significantly affects the NPV calculation, as cash flows received earlier are more valuable due to the time value of money. However, the IRR method, which does not directly account for the timing of cash flows, might not reflect this difference in value as clearly. This can lead to a situation where one project is preferred by the NPV method due to its earlier cash flows, while the other might be preferred by the IRR method based on the rate of return, resulting in a conflict in ranking.

CFA Level I, Topic 4 - Corporate Issuers, Learning Module 5: Capital Investments and Capital Allocation. LOS (c): Describe principles of capital allocation and common capital allocation pitfalls.

Q.2 A manufacturer buys its raw materials from an international supplier whose credit terms are "3/10 net 90". If the invoice is paid on the 50th day, then the cost of trade credit is *closest to*:

    A. 25%

    B. 32%

    C. 13%

T The credit terms "3/10 net 90" mean that the buyer gets a 3% discount if they pay within 10 days, but the full amount is due within 90 days. If the invoice is paid on the 50th day, we need to calculate the cost of not taking the discount and paying later.

The formula used to calculate the Effective Annual Rate (EAR) of supplier financing is:

$$\text{EAR of Supplier Financing} = [1 + \frac{\text{Discount\%}}{1 - \text{Discount\%}}]^{\frac{\text{Days in Year}}{\text{Payment Period-Discount Period}}} - 1$$

By substituting the given values into the formula, we get:

$$\text{EAR of Supplier Financing} = [1 + (\frac{0.03}{0.97})]^{\frac{365}{50-10}} - 1 = 32.04\%$$

This means that the cost of trade credit, or the cost of not taking the discount and paying on the 50th day, is approximately 32%. Therefore, the answer closest to this value is option B, 32%.

A is incorrect. A cost of trade credit of 25% would imply a lower cost of not taking the discount and paying later. However, using the given credit terms and the formula for the EAR of supplier financing, we calculated a higher cost of approximately 32%. Therefore, option A underestimates the cost of trade credit in this scenario.

C is incorrect. A cost of trade credit of 13% would significantly underestimate the cost of not taking the discount and paying later. Using the given credit terms and the formula for the EAR of supplier financing, we calculated a much higher cost of approximately 32%. Therefore, option C significantly underestimates the cost of trade credit in this scenario.

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 4, Working Capital & Liquidity, LOS 4b: Explain liquidity and compare issuers' liquidity levels.

Q.3 Mehmet Khali is a project analyst at Excel Investments. He is analyzing two independent projects - A and Z. Both projects have positive net cash flows, but Project's A cash flow is greater than project Z. Which project should Khali *most likely* accept?

    A. Project Z.

    B. Project A.

    C. Project A and Z.

Both projects are independent and have positive net cash flows. In the context of project analysis, independent projects are those whose cash flows are not affected by the acceptance or rejection of other projects. Therefore, as long as a project has a positive net present value (NPV), it is considered profitable and can be accepted. In this case, both Project A and Z have positive NPVs, indicating that they are expected to generate more cash inflows than outflows, thus adding value to Excel Investments. Therefore, Mehmet Khali, as a project analyst, should most likely accept both projects to maximize the firm's value.

A is incorrect. Choosing only Project Z would not be the most beneficial decision for Excel Investments. Although Project Z has a positive NPV, which means it is expected to be profitable, it does not maximize the potential profits for the firm. Since Project A also has a positive NPV and its cash flow is even greater than that of Project Z, rejecting Project A would mean missing out on additional potential profits. Therefore, accepting only Project Z while ignoring Project A would not be the optimal decision for the firm.

B is incorrect. Similarly, choosing only Project A would not be the most beneficial decision for Excel Investments. While Project A does have a greater cash flow than Project Z, this does not mean that Project Z should be ignored. As mentioned earlier, both projects are independent and have positive NPVs, indicating that they are both expected to be profitable. Therefore, rejecting Project Z would mean missing out on its potential profits. Hence, accepting only Project A while ignoring Project Z would not be the optimal decision for the firm.

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 5, Capital Investments & Capital Allocation, LOS 5b: Describe the capital allocation process, calculate net present value (NPV), internal rate of return (IRR), and return on invested capital (ROIC), and contrast their use in capital allocation.

Q.4 Which of the following is *least likely* an assumption of Modigliani–Miller?

      A. Investors have homogeneous expectations.

      B. Investors lend and borrow money at a fixed rate.

      C. Financing and investment decisions are independent of each other.

The theorem, proposed by Franco Modigliani and Merton Miller, is a cornerstone of modern corporate finance. Its main postulates are based on the concept of market efficiency where all investors have the same information and can borrow and lend at the same risk-free rate. However, it does not assume that this rate is fixed. In reality, interest rates can fluctuate due to various factors such as inflation, economic growth, and monetary policy. Therefore, the assumption of a fixed borrowing and lending rate is not consistent with the Modigliani-Miller theorem.

A is incorrect. The statement that investors have homogeneous expectations is indeed an assumption of the Modigliani-Miller theorem. This assumption implies that all investors have the same expectations for future returns, risks, and cash flows. This is a simplifying assumption that allows the theorem to focus on the effects of financial leverage on a firm's cost of capital and value. In reality, investors may have different expectations, but this assumption is necessary for the theorem's theoretical framework.

C is incorrect. The statement that financing and investment decisions are independent of each other is also an assumption of the Modigliani-Miller theorem. According to this assumption, a firm's investment decisions should be based on the project's potential return and risk, not on how the project is financed. This is known as the "separation principle" of investment and financing decisions. It suggests that the value of a firm is determined by its investment decisions, not its financing decisions. This assumption is fundamental to the Modigliani-Miller theorem's conclusion that a firm's value is independent of its capital structure.

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 6, Capital Structure, LOS 6c: explain the Modigliani–Miller propositions regarding capital structure.

Q.5 An analyst working in the corporate finance department of AlfaZone Corporation is trying to estimate the optimal capital structure for his firm. Exhibit 1 outlines the firm's most important financial information critical parameters, and exhibit 2 shows the firm's debt schedule.

Exhibit 1 : Financial Information - AlphaZone

Asset beta	0.85
Risk-free rate	2%
Market risk premium	4%
Tax rate	30%

Exhibit 2 : Debt Schedule - AlphaZone

Debt-to-equity ratio	Cost of debt
0.20	2%
0.40	2.5%
0.60	4.5%
0.80	6%

If the company plans to maintain a debt-to-equity ratio of 0.80, then the firm's weighted average cost of capital (WACC) would be *closest* to:

    A. 5.13%

    B. 5.45%

    C. 5.93%

The cost of equity is determined using the Capital Asset Pricing Model (CAPM):

$$r_E = r_f + \beta_E \times \text{Market Risk Premium}$$

Where:

- r_E = Cost of equity

- r_f = Risk-free rate

- β_E = Equity beta

- Market Risk Premium = Expected excess return of the market over the risk-free rate

The equity beta is adjusted for leverage using as follows:

$$\beta_E = \beta_A \times (1 + (1 - t) \times \frac{D}{E})$$

where:

- β_A = Asset beta

- t = Tax rate

- D/E = Debt-to-equity ratio

As such,

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$$\beta_E = 0.85 \times (1 + (1 - 0.30) \times 0.80)$$
$$= 0.85 \times (1 + 0.56) = 0.85 \times 1.56 = 1.326$$

Now, calculating the cost of equity:

$$r_E = 0.02 + (1.326 \times 0.04)$$
$$= 0.02 + 0.05304 = 0.07304 \text{ or } 7.304\%$$

The cost of debt is given as:

$$r_D = 6\% = 0.06$$

Since the firm benefits from tax shields on debt, the after-tax cost of debt is:

$$r_D \times (1 - t) = 0.06 \times (1 - 0.30) = 0.06 \times 0.70 = 0.042 \text{ or } 4.2\%$$

The Weighted Average Cost of Capital (WACC) formula is:

$$WACC = (\frac{E}{V} \times r_E) + (\frac{D}{V} \times r_D \times (1 - t))$$

where:

$$\frac{E}{V} = \frac{1}{1.80} = 0.5556, \quad \frac{D}{V} = \frac{0.80}{1.80} = 0.4444$$

Therefore,

$$WACC = (0.5556 \times 0.07304) + (0.4444 \times 0.042)$$
$$= 0.0406 + 0.0187 = 0.05930 \text{ or } 5.93\%$$

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 6, The Cost of Capital, LOS 6a: Calculate and interpret the weighted-average cost of capital for a company.

Q.6 Consider the following information:

Company	Market Value of Debt	Market of Value of Equity
A	$120	$150
B	$80	$90
C	$150	$180

A fourth company, Company X, operates in the same industry. Using the competitor's capital structure, what would be Company's X proportions of debt and equity?

    A. 45.65% debt; 54.34% equity.

    B. 54.34% debt; 45.65% equity.

    C. 44.65% debt; 55.35% equity.

The weighted average of the market value of debt is calculated by adding the market value of debt of each company, divided by the total market value (debt + equity) of that company. For each company, the formula is:

$$\text{Proportion of Debt for Company} = \frac{\text{Debt}}{\text{Debt} + \text{Equity}}$$

For Company A:

$$\frac{120}{120 + 150} = \frac{120}{270} \approx 0.4444$$

For Company B:

$$\frac{80}{80 + 90} = \frac{80}{170} \approx 0.4706$$

For Company C:

$$\frac{150}{150 + 180} = \frac{150}{330} \approx 0.4545$$

Now, sum these values and calculate the average:

$$\text{Sum of Debt Proportions} = 0.4444 + 0.4706 + 0.4545 = 1.3695$$

$$\text{Average Debt Proportion} = \frac{1.3695}{3} \approx 0.4565 \, \text{or} \, 45.65\%$$

Similarly, the weighted average of the market value of equity is calculated by adding the market value of equity of each company divided by the total market value (debt + equity) of that company. The formula is:

$$\text{Proportion of Equity for Company} = \frac{\text{Equity}}{\text{Debt} + \text{Equity}}$$

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For Company A:

$$\frac{150}{150 + 120} = \frac{150}{270} \approx 0.5556$$

For Company B:

$$\frac{90}{90 + 80} = \frac{90}{170} \approx 0.5294$$

For Company C:

$$\frac{180}{180 + 150} = \frac{180}{330} \approx 0.5455$$

Now, sum these values and calculate the average:

$$\text{Sum of Equity Proportions} = 0.5556 + 0.5294 + 0.5455 = 1.6305$$

$$\text{Average Equity Proportion} = \frac{1.6305}{3} \approx 0.5434 \, \text{or} \, 54.34\%$$

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 6, Capital Structure, LOS 6d: Describe optimal and target capital structures.

Q.7 The contribution margin per unit for product A is $25, and the firm's fixed costs of production up to 500,000 units is $400,000. The degree of operating leverage (DOL) at 300,000 units is *closest to*:

    A. 0.62

    B. 1.03

    C. 1.06

The Degree of Operating Leverage (DOL) is a measure of how a percentage change in sales volume will affect operating profit. It is calculated as the ratio of the contribution margin to the difference between the contribution margin and fixed costs. In this case, the contribution margin per unit for product A is $25, and the firm's fixed costs of production up to 500,000 units is $400,000. The DOL at 300,000 units is calculated as follows:

$$\text{DOL} = \frac{\text{Contributions margins}}{\text{Contribution margin-Fixed cost}}$$
$$= 25 \times \frac{300,000}{25 \times 300,000 - 400,000}$$
$$= 1.056$$

A is incorrect. The DOL of 0.62 has been incorrectly obtained by using the wrong number of units in the denominator. The calculation is as follows:

$$\text{DOL} = \frac{\text{Contribution Margin}}{\text{Contribution Margins-Fixed cost}} = \frac{\$25 \times 300,000}{(\$25 \times 500,000) - \$400,000} = 0.62$$

This calculation incorrectly uses 500,000 units instead of 300,000 units in the denominator, leading to a lower DOL. This is a common mistake when calculating the DOL, as it is crucial to use the correct number of units in the calculation.

B is incorrect. The DOL of 1.03 is the firm's operating leverage for 500,000 units, not 300,000 units. The calculation is as follows:

$$\text{DOL} = \frac{\text{Contribution Margin}}{\text{Contribution Margins-Fixed cost}} = \frac{\$25 \times 500,000}{(\$25 \times 500,000) - \$400,000} = 1.03$$

This calculation correctly uses 500,000 units in the denominator, but this is not the number of units we are interested in. We are interested in the DOL at 300,000 units, not 500,000 units. Therefore, this calculation does not provide the correct answer.

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 6, Factors Affecting Capital Structure, LOS 6b: Explain factors affecting capital structure and the weighted-average cost of capital

Q.8 Assuming the initial cash outlay of a commercial real estate project is $7 million, and the project generates identical cash flows of $5 million for 3 years, then estimate the required rate of return if the NPV of the project is $5.816 million.

    A. 6.70%

    B. 8.30%

    C. 9.50%

The TVM function is a financial concept that involves the idea that money available today is worth more than the same amount in the future due to its potential earning capacity. This core principle of finance holds that, provided money can earn interest, any amount of money is worth more the sooner it is received.

In this case, the Net Present Value (NPV) of the project is given as $5.816 million. The NPV is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. It is used in capital budgeting to analyze the profitability of an investment or project. The formula for NPV is:

$$NPV = PV \text{ of cash inflows-PV of cash outflows}$$

From this, we can calculate the Present Value (PV) of the project by adding the NPV to the PV of cash outflows. This gives us:

$$PV \text{ of the project} = NPV + PV \text{ of cash outflows} = \$5.816 + \$7 = \$12.816$$

Using the BAII Plus Financial Calculator with the following inputs: N=3 (number of periods), PV=12.816 (present value), PMT=5 (payment per period), FV=0 (future value), and then computing for I (interest rate), we get a required rate of return of 8.3%.

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 5, Capital Investments & Capital Allocation, LOS 5b: Describe the capital allocation process, calculate net present value (NPV), internal rate of return (IRR), and return on invested capital (ROIC), and contrast their use in capital allocation.

Q.9 Best corporate management practices *most appropriately* suggest that:

      A. all Board of Directors members should be independent.

      B. at least 50% of all members on the Board of Directors should be independent.

      C. at least 75% of all members on the Board of Directors should be independent.

Option C aligns with the best corporate management practices as suggested by the CFA curriculum. The CFA curriculum emphasizes the importance of independence in the Board of Directors. It suggests that at least 75% of the board members should be independent. This is because a higher percentage of independent directors can lead to better decision-making. Independent directors are not part of the company's day-to-day operations and thus, they can provide an unbiased perspective. They can critically evaluate the management's performance and decisions, which can lead to the enhancement of the company's performance and shareholder value. Therefore, having at least 75% of all members on the Board of Directors being independent is considered a best practice in corporate management.

A is incorrect. While it is important for the Board of Directors to have independent members, stating that all members should be independent is not practical or necessarily beneficial. Having some directors who are part of the company's management can provide valuable insights into the company's operations and strategies. These directors can provide a perspective that is grounded in the company's day-to-day operations, which can complement the independent directors' external perspective. Therefore, having all Board of Directors members being independent is not considered a best practice in corporate management.

B is incorrect. Although having at least 50% of all members on the Board of Directors being independent is better than having a lower percentage, it is not considered the best practice according to the CFA curriculum. The CFA curriculum suggests that at least 75% of the board members should be independent. This is because a higher percentage of independent directors can lead to better decision-making and enhance the company's performance and shareholder value. Therefore, having at least 50% of all members on the Board of Directors being independent is not considered the best practice in corporate management.

CFA Level 1, Topic 4 - Corporate Issuers, Learning Moludule 2, Corporate Stakeholders and Governance, LOS 2b: describe a company's stakeholder groups and compare their interests.

Q.10 A firm had total sales of $600,000 last year, and 90% of these sales are on credit. If the receivables turnover is 5, the average collection period (based on a 365-day year) and the year-end receivables are *closest to*:

    A. 73 days and $100,000.

    B. 73 days and $108,000

    C. 81 days and $108,000.

The firm had total sales of $600,000 last year, and 90% of these sales are on credit. The receivables turnover is 5. The average collection period is calculated using the formula: Accounts Receivable Days = 365 / Receivable turnover ratio. Substituting the given values into the formula, we get Accounts Receivable Days = 365 / 5 = 73 days. This means that on average, it takes the firm 73 days to collect its receivables. This is a measure of the firm's efficiency in managing its receivables. A lower number would indicate that the firm is able to collect its receivables more quickly, which is generally a positive sign for the firm's liquidity and cash flow.

The year-end receivables are calculated using the formula: Accounts Receivable balance = 90% x (Total sales / Receivable turnover ratio). Substituting the given values into the formula, we get Accounts Receivable balance = 90% x ($600,000 / 5) = $108,000. This means that at the end of the year, the firm has $108,000 in receivables that it has not yet collected. This is a measure of the firm's liquidity and its ability to convert its receivables into cash. A lower number would indicate that the firm is able to collect its receivables more quickly, which is generally a positive sign for the firm's liquidity and cash flow.

A is incorrect. This option states that the average collection period is 73 days and the year-end receivables are $100,000. While the calculation for the average collection period is correct, the calculation for the year-end receivables is incorrect. As explained above, the correct calculation for the year-end receivables is $108,000, not $100,000.

C is incorrect. This option states that the average collection period is 81 days and the year-end receivables are $108,000. While the calculation for the year-end receivables is correct, the calculation for the average collection period is incorrect. As explained above, the correct calculation for the average collection period is 73 days, not 81 days.

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 4, Working Capital & Liquidity, LOS 4b: Explain liquidity and compare issuers' liquidity levels.

Q.11 What will *most likely* happen to EBIT if a firm's sales (with a degree of operating leverage (DOL) of 2.25) increase by 10%?

     A. A 2.25% increase.

     B. A 22.5% increase.

     C. A 22.5% decrease.

The degree of operating leverage (DOL) is a measure that quantifies the sensitivity of a firm's operating income to a change in the firm's number of units sold. In this case, the firm has a DOL of 2.25. This means that for every 1% change in sales, the operating income (EBIT) will change by 2.25%. Therefore, if the firm's sales increase by 10%, the EBIT will increase by 2.25 times the percentage change in sales. Mathematically, this can be represented as:

$$\text{Degree of leverage} = \frac{\text{Percentage change in operating income (EBIT)}}{\text{Percentage change in sales}}$$

$$2.25 = \frac{\text{Percentage change in operating income (EBIT)}}{10\%}$$

$$\Rightarrow \text{Percentage change in operating income} = 2.25 \times 10\% = 22.5\%$$

A is incorrect. The percentage change in operating income is not directly equal to the degree of operating leverage. Instead, the degree of operating leverage is a multiplier that amplifies the percentage change in sales to calculate the percentage change in operating income. Therefore, a DOL of 2.25 does not mean a 2.25% increase in EBIT, but rather a 2.25 times the percentage change in sales increase in EBIT. In this case, a 10% increase in sales would result in a 22.5% increase in EBIT, not a 2.25% increase.

C is incorrect. An increase in sales, given a positive degree of operating leverage, will result in an increase in operating income, not a decrease. The degree of operating leverage amplifies the effect of changes in sales on operating income. Therefore, if sales increase, operating income will also increase, and if sales decrease, operating income will also decrease. In this case, a 10% increase in sales would result in a 22.5% increase in EBIT, not a 22.5% decrease.

CFA Level 1, Topic 4-Corporate Issuers Learning Module 6, Capital Structure, LOS 6b: Explain factors affecting capital structure and the weighted-average cost of capital.

Q.12 A public company is *least likely* described as a:

    A. company affiliated with the government.

    B. company whose shares are listed on an exchange.

    C. company registered with a regulatory body and, as such, is subject to greater compliance and reporting requirements.

The affiliation of a company with the government does not necessarily make it a public company. A company can be considered public or private based on several factors, which are not necessarily related to government affiliation.

The shares of a public company are listed and traded on an exchange. This allows the ownership of such a company to easily be transferred since buyers and sellers transact directly with each other in the secondary market. On the other hand, private companies' shares are not listed on an exchange. For this reason, there is no noticeable valuation or price transparency, making it difficult to buy and sell shares. This is a key distinguishing factor between public and private companies, and it is not related to whether the company is affiliated with the government or not.

Public companies are obligated to register with a regulatory authority. The implication of this is that they are subject to greater compliance and reporting requirements. Private companies, on the other hand, are not subject to the same level of regulatory authority as public companies. However, some pertinent rules, such as filing of tax returns and prohibitions against fraud are still applicable. This is another key distinguishing factor between public and private companies, and it is not related to whether the company is affiliated with the government or not.

The affiliation of a company with the government does not necessarily make it a public company. A company can be considered public or private based on several factors, which are not necessarily related to government affiliation. For instance, a company could be affiliated with the government but still be a private company if its shares are not listed on an exchange and it does not have to comply with the same level of regulatory requirements as a public company.

B is incorrect. The statement that a public company is a company whose shares are listed on an exchange is correct. However, this is not the least likely description of a public company.

C is incorrect. The statement that a public company is a company registered with a regulatory body and, as such, is subject to greater compliance and reporting requirements is correct. However, this is not the least likely description of a public company. In fact, this is another key characteristic of a public company.

Level 1, Topic 4 - Corporate Issuers, Learning Module 1, Organizational Forms, Corporate Issuer Features, and Ownership, LOS 1c: Compare publicly and privately owned corporate issuers.

Q.13 Which of the following *most accurately* describes a situation where shareholders sell their interests directly to a group seeking company control?

      A. A tender offer.

      B. A proxy fight.

      C. A hostile takeover.

A tender offer is the most accurate description of a situation where shareholders sell their interests directly to a group seeking company control. This is because a tender offer is a formal, public offer to buy a specific number of shares of the target company at a specified price. The shareholders of the target company have the option to accept or reject the offer. The group seeking control, also known as the bidder, directly approaches the shareholders of the target company and offers to buy their shares. This is a direct transaction between the shareholders and the bidder, bypassing the management of the target company. The bidder can gain control of the company if enough shareholders accept the offer and sell their shares.

B is incorrect. A proxy fight does not involve shareholders selling their interests directly to a group seeking control. Instead, a proxy fight is a strategy used by a group seeking control to influence the decisions of a company's board of directors. The group does this by persuading shareholders to vote in their favor at a company's annual meeting. The group seeking control does not buy shares directly from the shareholders. Instead, they seek to influence the shareholders to vote in a way that will give the group control of the board of directors.

C is incorrect. A hostile takeover is a type of acquisition where one company acquires another company without the consent of the target company's management. While a hostile takeover can result in a group gaining control of a company, it does not involve shareholders selling their interests directly to the group seeking control. Instead, the acquiring company buys shares from the open market or uses other strategies to gain control. The shareholders do not sell their shares directly to the acquiring company.

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 3, Corporate Governance: Conflicts, Mechanisms, Risks, and Benefits, LOS 3b: Describe corporate governance and mechanisms to manage stakeholder relationships and mitigate associated risks

Q.14 Cinnamon Company recently issued 5-year zero-coupon bonds for a total face value of $100 million at the price of $74.72 million to raise 50% of its capital. The company's cost of equity is 13%, and the firm earned before tax income of $16 million last year. Assuming that the company distributed all of its earnings in dividends of $1.28 to its 10 million common shareholders, then Cinnamon's weighted average cost of capital is *closest to*:

    A. 8.90%.

    B. 9.50%.

    C. 12.50%.

$$\text{WACC} = (\text{After-tax cost of debt} \times \text{Weight of debt}) + (\text{Cost of equity} \times \text{Weight of equity})$$

Given that Cinnamon issued $100 million in debt to raise 50% of its capital, the capital structure of the firm consists of 50% debt and 50% equity. The cost of debt is not directly provided in the question, but it can be derived from the price of zero-coupon bonds. Using the financial calculator's TVM function, we find that Cinnamon's cost of debt is 6% (N=5; PV=-74.72; PMT=0; FV=100; CPT => I/Y = 6%).

For the WACC calculation, we need the after-tax cost of debt. The question mentions that the firm earned pre-tax income (or EBT) of $16 million, and distributed all its earnings as a dividend of $1.28 to its 10 million shareholders. This implies that the total dividend (or total after-tax earnings) is $12.8 million. From this, we can calculate the firm's tax rate as:

$$\frac{(\text{EBT} - \text{EAT})}{\text{EBT}} = \frac{(16 - 12.8)}{16} = 0.2$$

Finally, using the WACC formula, we calculate the cost of capital as:

$$(6\% \times (1 - 0.2)0.5) + (13\% \times 0.5) = 8.9\%$$

B is incorrect. A WACC of 9.50% would imply a different cost of debt or equity, or a different capital structure, none of which is supported by the information provided in the question.

C is incorrect. A WACC of 12.50% would suggest a significantly higher cost of debt or equity, or a heavily skewed capital structure towards equity, which is not the case as per the details provided in the question.

CFA Level 1, Topic 4- Corporate Issuers, Learning Module 6, Capital Structure, LOS 6a: Calculate and interpret the weighted-average cost of capital for a company;

Q.15 If Degree of Financial Leverage (DFL) is 1.0, what is the relationship between the operating breakeven point and the breakeven point? The operating breakeven point is:

      A. equal to the breakeven point.

      B. lower than the breakeven point.

      C. higher than the breakeven point.

The Degree of Financial Leverage (DFL) is a measure that indicates the sensitivity of a company's earnings per share (EPS) to fluctuations in its operating income, as a result of changes in its capital structure. The DFL is calculated using the formula:

$$DFL = \frac{EBIT}{EBIT\text{-}Interest}$$

When the DFL is 1.0, it implies that the company has no interest expense. This is because the denominator of the DFL formula (EBIT - Interest) becomes equal to the numerator (EBIT), resulting in a DFL of 1.0. This situation typically arises when a company has no debt, and therefore, no interest expense.

The breakeven point and the operating breakeven point are two different concepts. The breakeven point is the point at which total revenue equals total costs, including both fixed and variable costs. It is calculated using the formula:

$$Breakeven\ point = \frac{Fixed\ cost + Interest}{Contribution\ margin}$$

On the other hand, the operating breakeven point is the point at which a company covers all its operating costs, excluding interest and taxes. It is calculated using the formula:

$$Operating\ Breakeven\ point = \frac{Fixed\ costs}{Contribution\ margin}$$

Given that the DFL is 1.0, and therefore the interest expense is zero, the breakeven point and the operating breakeven point become equal. This is because the only difference between the two formulas is the interest expense, which is zero in this case.

Option B is incorrect. The operating breakeven point cannot be lower than the breakeven point when the DFL is 1.0. This is because the only difference between the two formulas is the interest expense, which is zero in this case, making the two points equal.

Option C is incorrect. The operating breakeven point cannot be higher than the breakeven point when the DFL is 1.0. This is because the only difference between the two formulas is the interest expense, which is zero in this case, making the two points equal.

CFA Level 1, Topic 4-Corporate Issuers Learning Module 6, Capital Structure, LOS 6b: Explain factors affecting capital structure and the weighted-average cost of capital.

Q.16 An analyst calculated the following ratios for companies A and B:

	Company A	Company B
Current Ratio	2.5	3.0
Quick Ratio	2.0	1.5

Given the above information, the statement that is *most likely* to explain the difference in the liquidity position of companies A and B is:

A. Company B has a smaller proportion of inventories in its current assets compared to Company A.

B. Company B has a larger proportion of cash and marketable securities in its current assets compared to Company A.

C. Company B has a smaller proportion of cash and marketable securities in its current assets compared to Company A.

The quick ratio, also known as the acid-test ratio, is a liquidity ratio that measures a company's ability to pay off its current liabilities without relying on the sale of inventory. It is calculated by subtracting inventories from current assets and then dividing by current liabilities. In this case, Company B has a lower quick ratio (1.5) compared to Company A (2.0). This indicates that Company B has a smaller proportion of cash and marketable securities in its current assets compared to Company A. Cash and marketable securities are considered to be the most liquid assets, as they can be quickly converted into cash to meet short-term obligations. Therefore, a lower quick ratio for Company B suggests that it may have a lower liquidity position compared to Company A.

A is incorrect. The current ratio, which is calculated by dividing current assets by current liabilities, does not provide specific information about the composition of a company's current assets. While it is true that a higher current ratio indicates a better liquidity position, it does not necessarily mean that a company has a smaller proportion of inventories in its current assets. Other factors, such as an increase in other items of current assets, could also contribute to a higher current ratio.

B is incorrect. This statement suggests that Company B has a larger proportion of cash and marketable securities in its current assets compared to Company A. However, this contradicts the information provided by the quick ratio. As mentioned earlier, the quick ratio indicates that Company B has a smaller proportion of cash and marketable securities in its current assets compared to Company A.

CFA Level 1, Topic 4 - Corporate Issuers, Learning Module 4, Working Capital & Liquidity, LOS 4b: Explain liquidity and compare issuers' liquidity levels.

Q.17 You have been provided the following information regarding a market capitalization index for the years 2017 and 2018:

Security	Total shares	Price on 01-01-2017	Market cap 2017 (in $)	Weight	Price on 01-01-2018	Mark
A	500	40	20,000	12.80%	44	
B	2,000	10	20,000	12.80%	14	
C	4,000	4	16,000	10.25%	5	
D	2,000	12.5	25,000	16.02%	7	
E	3,000	25	75,000	48.08%	20	

Given that the index value was 889 on January 1st, 2017, what is the index value on January 1st, 2018?

    A. 820.62

    B. 923.08

    C. 963.08

The question is asking for the index value on January 1st, 2018. To find this, we first need to calculate the market capitalization for both 2017 and 2018. Market capitalization is the total dollar market value of a company's outstanding shares of stock. It is calculated by multiplying a company's shares outstanding by the current market price of one share.

In 2017, the market capitalization is the sum of the market caps of all the securities, which is $20,000 (for security A) + $20,000 (for security B) + $16,000 (for security C) + $25,000 (for security D) + $75,000 (for security E) = $156,000.

Similarly, in 2018, the market capitalization is $22,000 (for security A) + $28,000 (for security B) + $20,000 (for security C) + $14,000 (for security D) + $60,000 (for security E) = $144,000.

Now, to find the index value for 2018, we use the formula for calculating the ending index value, which is (Ending Market Capitalization / Beginning Market Capitalization) * Beginning Index Value. Substituting the values, we get (144,000 / 156,000) * 889 = 820.62.

B is incorrect. The calculation for this option seems to have been done incorrectly. If we substitute the values into the formula for calculating the ending index value, we do not get 923.08. The correct calculation should be (144,000 / 156,000) * 889 = 820.62.

C is incorrect. The calculation for this option also seems to have been done incorrectly. If we substitute the values into the formula for calculating the ending index value, we do not get 963.08. The correct calculation should be (144,000 / 156,000) * 889 = 820.62.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 2, Security Market Indices, LOS 2d: compare the different weighting methods used in index construction.

Q.18 You have been provided the following figures regarding HighTech Industries:

Fiscal Year-End Dec. 31, 2018	
Total shareholders' equity	$20,223
Net income available to common shareholders	$4,518
Stock price	$18.40
Shares outstanding	4,000

The price-to-book ratio at the end of 2018 for HighTech Industries is *closest* to:

    A. 1.13

    B. 3.64

    C. 16.28

The formula for the price-to-book ratio is:

$$\text{Price-to-Book Ratio} = \frac{\text{Market Price per Share}}{\text{Book Value per Share}}$$

The book value per share is calculated by dividing the total shareholders' equity by the number of shares outstanding. The formula for book value per share is:

$$\text{Book Value per Share} = \frac{\text{Total Shareholders' Equity}}{\text{Number of Shares Outstanding}}$$

In this case:

- Total shareholders' equity = \$20,223

- Number of shares outstanding = 4,000

Substituting these values into the formula:

$$\text{Book Value per Share} = \frac{20,223}{4,000} = 5.06 \text{ per share}$$

The market price per share is given as \$18.40. Now, calculate the price-to-book ratio:

$$\text{Price-to-Book Ratio} = \frac{18.40}{5.06} \approx 3.64$$

A is incorrect. This option suggests a price-to-book ratio of 1.13. However, this figure is actually the earnings per share (EPS) for HighTech Industries. The EPS is calculated by dividing the net income available to common shareholders by the number of shares outstanding. In this case, the net income available to common shareholders is $4,518 and the number of shares outstanding is

4,000. Therefore, the EPS is \$4,518/4,000 = 1.13. This is not the price-to-book ratio, which is why option A is incorrect.

C is incorrect. This option suggests a price-to-book ratio of 16.28. However, this figure is actually the price-to-earnings ratio for HighTech Industries. The price-to-earnings ratio is calculated by dividing the market price per share by the earnings per share. In this case, the market price per share is \$18.40 and the earnings per share is 1.13. Therefore, the price-to-earnings ratio is \$18.40/1.13 = 16.28. This is not the price-to-book ratio, which is why option C is incorrect.

CFA Level I, Topic 5 - Equity Investment, Learning Module 8, Equity valuation: Concepts and basic tools, LOS 8j: Calculate and interpret the following multiples: price to earnings, price to an estimate of operating cash flows, price to sales, and price to book value.

Q.19 Assume that a total and price return index for the same group of stocks start with the same value. While comparing the two indices, the year-end total return index will *most likely* be:

    I. Greater than the price index if the price index falls and lower than the price index if the price index rises.

    II. The same as the price index if the constituent stocks do not pay dividends.

    III. Greater than the price index if the constituent stock pay dividends.

    A. I and II.

    B. II and III.

    C. I, II and III.

There are fundamental differences between a price index and a total return index. A price index only considers the prices of the constituent securities when calculating the index value. This means that it only reflects the capital gains or losses of the securities within the index. On the other hand, a total return index takes into account both the prices of the securities and any dividends paid. This means it reflects both capital gains or losses and income from the securities within the index.

Statement II is correct because if none of the constituent stocks pay dividends, then the total return index will indeed be the same as the price index, as there are no dividends to add to the total return. Statement III is correct because if the constituent stocks do pay dividends, then the total return index will be greater than the price index, as the dividends add to the total return.

A is incorrect. This option includes statement I, which suggests that the total return index will be greater than the price index if the price index falls, and lower than the price index if the price index rises. This is not necessarily true. The total return index could still be higher than the price index even if the price index falls, as long as the dividends paid out are significant enough. Similarly, the total return index could still be lower than the price index even if the price index rises, if the dividends paid out are not significant. Therefore, statement I is not always correct, making option A incorrect.

C is incorrect. As explained above, statement I is not always correct, which makes option C incorrect. Even though option C includes the correct statements II and III, the inclusion of the incorrect statement I makes this option incorrect.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 2, Security Market Indices, LOS 2b: calculate and interpret the value, price return, and total return of an index.

Q.20 The type of equity wherein the company needs to pay a scheduled dividend that has been missed before paying any dividend to common equity holders is *most likely*;

  A. Convertible preference shares.

  B. Cumulative preference shares.

  C. Participating preference shares.

Cumulative preference shares are a type of equity where the company is obligated to pay any missed scheduled dividends before any dividends can be distributed to common equity holders. This is due to the cumulative feature of these shares, which allows for the accumulation of unpaid dividends. These dividends are then paid out to the shareholders before any dividends can be paid to common equity holders. This ensures that the shareholders of cumulative preference shares have a higher claim on the company's earnings and assets compared to common equity holders. This feature makes cumulative preference shares a more secure investment compared to common equity.

A is incorrect. Convertible preference shares, unlike cumulative preference shares, do not have the feature of accumulating unpaid dividends. Instead, these shares provide the shareholders with the option to convert their preference shares into a predetermined number of common shares at a specific date or after a certain period. This conversion is usually done when the market price of the common shares exceeds the conversion price, allowing the shareholders to earn an immediate profit. However, once the conversion is done, the shareholders lose their preference status and become common shareholders. Therefore, convertible preference shares do not provide the same level of security in terms of dividend payments as cumulative preference shares.

C is incorrect. Participating preference shares are a type of preferred stock that not only provides the shareholders with a fixed dividend but also an additional dividend based on certain predetermined conditions. These conditions could be the company achieving a certain level of profits or any other financial metric. While this feature allows the shareholders to participate in the company's success, it does not guarantee a fixed dividend payment in case of missed dividends. Therefore, participating preference shares do not meet the criteria mentioned in the question.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 1, Market Organization & Structure, LOS 1c: Describe the major types of securities, currencies, contracts, commodities, and real assets that trade in organized markets, including their distinguishing characteristics and major subtypes.

Q.21 Calculate the present value of a stock if the stock is expected to pay dividends of $1.50 and $2 at the end of the 1st and 2nd year, respectively. At the end of the second year, the stock is expected to sell for $25. Assuming that the required rate of return of 12%, the stock's intrinsic value is :

  A. $22.86

B. $24.50

C. $26.36

The dividend discount model is a method used to estimate the intrinsic value of a dividend-paying company. The formula used in this model is:

$$V_0 = \Sigma_{(t=1)}^{n} \frac{D_t}{(1+r)} + \frac{P_n}{(1+r)^n}$$

Where:

V_0 - the present value of a stock today,

D_t -- expected dividend in year t,

r -- required rate of return, and

P_n -- selling price of the stock at the end of the investment horizon.

In this case, the stock pays a dividend of $1.50 at the end of the first year. This is accounted for in the calculation, as shown in the first part of the equation. The second part of the equation represents the accumulation of year 2's dividend and stock price discounted at the required rate of return. The calculation is as follows:

$$(\frac{1.5}{1.12^1}) + (\frac{(2+25)}{1.12^2}) = \$22.86$$

B is incorrect. The value of $24.50 does not align with the calculations made using the dividend discount model. This model takes into account the present value of future dividends and the selling price of the stock at the end of the investment horizon, discounted at the required rate of return. In this case, the dividends are $1.50 and $2 for the first and second years respectively, and the selling price of the stock at the end of the second year is $25. When these values are plugged into the formula and calculated, the result is $22.86, not $24.50.

C is incorrect. The value of $26.36 is also not in line with the calculations made using the dividend discount model. As explained above, the model takes into account the present value of future dividends and the selling price of the stock at the end of the investment horizon, discounted at the required rate of return. When the given values are used in the formula, the result is $22.86, not $26.36. Therefore, option C is not the correct answer.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 8, Equity Valuation: Concepts and Basic, Tools, LOS 8g: Calculate and interpret the intrinsic value of an equity security based on the Gordon (constant) growth dividend discount model or a two-stage dividend discount model, as appropriate.

Q.22 According to the efficient market hypothesis, consistent abnormal returns using technical analysis *most likely* works in:

    A. Weak form efficiency.

    B. Weak and semi-strong form efficiency.

    C. Neither the weak, semi-strong, or strong form.

The consistent abnormal returns using technical analysis are most likely not possible in any form of market efficiency, be it weak, semi-strong, or strong. This is because the efficient market hypothesis (EMH) posits that all available information is already incorporated into a security's price, making it impossible to consistently achieve abnormal returns using any form of analysis.

A is incorrect. This option suggests that consistent abnormal returns using technical analysis are possible in a weak form of market efficiency. However, this is not the case. In a weak form of market efficiency, all past market prices and data are reflected in current prices. Therefore, using technical analysis, which primarily relies on past price movements and trends, would not yield consistent abnormal returns. This is because the information used in technical analysis is already incorporated into the current prices, making it impossible to gain an edge over other market participants using this information.

B is incorrect. This option suggests that consistent abnormal returns using technical analysis are possible in both weak and semi-strong forms of market efficiency. However, this is also not the case. As explained above, in a weak form of market efficiency, technical analysis would not yield consistent abnormal returns. Similarly, in a semi-strong form of market efficiency, all publicly available information is reflected in current prices. This includes not only past market data but also all public information about a company's fundamentals. Therefore, even if a trader uses technical analysis in conjunction with fundamental analysis, they would not be able to consistently achieve abnormal returns because all the information they are using is already reflected in the current prices.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 3, Market Efficiency, LOS 3e: Explain the implications of each form of market efficiency for fundamental analysis, technical analysis, and the choice between active and passive portfolio management.

Q.23 Amentha Tech has total assets of $2.2 million and liabilities of $1.2 million. If its shares currently trade on the market for $32, and 82,000 shares are outstanding in the open market, then Amentha's book value is *closest* to:

    A. $2,624,000.00

    B. $1,000,000.00

    C. $1,424,000.00

The book value of a company is calculated by subtracting its total liabilities from its total assets. In the case of Amentha Tech, the total assets are $2.2 million and the total liabilities are $1.2 million. Therefore, the book value is calculated as follows: $2.2 million (total assets) - $1.2 million (total liabilities) = $1,000,000. This calculation shows that the book value of Amentha Tech is closest to $1,000,000, which corresponds to option B.

A is incorrect. The figure of $2,624,000 seems to be derived from a different calculation, specifically the market value of the company. The market value is calculated by multiplying the current share price by the number of outstanding shares. In this case, the share price is $32 and there are 82,000 shares outstanding. Therefore, the market value would be $32 * 82,000 = $2,624,000. This is a different concept from the book value, which is based on the company's assets and liabilities rather than its market capitalization.

C is incorrect. The figure of $1,424,000 appears to be derived from an incorrect calculation. It seems to be the result of adding the total liabilities to the total assets, which is not the correct way to calculate the book value. The book value is calculated by subtracting the total liabilities from the total assets, not adding them together. Therefore, this option is incorrect.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 4, Overview of Equity Securities, LOS 4g: contrast the market value and book value of equity securities.

Q.24 Given the following information:

	Stock A	Stock B	Stock C
Opening price	$10	$10	$10
Ending price	$14	$13	$12
Dividend	$1	$1	$1
Average daily traded volume	$500,000	$100,150	$110,000

The total return of this equally weighted index is *closest to*:

    A. 30%

    B. 40%

    C. 50%

A total return index is an index that takes into account both the dividend payments and any cash distributions such as dividends and interests paid by the stock. The formula for calculating the total return is as follows:

$$\text{Total return} = \frac{\text{VPR}_1 + \text{VPR}_0 + \text{Interest}_1}{\text{VPR}_0}$$

Where,

VPR_1 is the price return index value at the end of the period.

VPR_0 is the price return index value at the beginning of the period.

Interest_1 is the total income from all securities in the index over the period.

Applying this formula to each of the stocks, we get:

$$\text{Stock A}: \frac{14 + 1 - 10}{10} = 50\%$$
$$\text{Stock B}: \frac{13 + 1 - 10}{10} = 40\%$$
$$\text{Stock C}: \frac{12 + 1 - 10}{10} = 30\%$$

In an equally weighted index, each stock in the index is given the same weight. This is achieved by using the formula $\frac{1}{N}$ where N is the number of securities in the index. In this case, there are three stocks in the index. Therefore, to calculate the total return of the index, we add the total returns of the three stocks and divide by three. This gives us:

$$\text{Total Return} = \frac{30 + 40 + 50}{3} = 40$$

A is incorrect. The 30% would have been the correct answer if we were asked to calculate the price return and not the total return of the index. The price return excludes any cash distributions like dividends and interests paid by the stock. Therefore, option A does not provide the correct total return of the index.

C is incorrect. The 50% represents the total return for Stock A only, not the total return of the equally weighted index. The total return of the index is calculated by averaging the total returns of all the stocks in the index, not by taking the total return of a single stock. Therefore, option C does not provide the correct total return of the index.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 2, Security Market Indices, LOS 2e: Calculate and analyze the value and return of an index given its weighting method

Q.25 Which of the following is *most likely* a similarity between common and preferred shares?

A. Both have voting rights.

B. Both make fixed periodic payments.

C. Both can have put-and-call features.

Both common shares and preferred shares can indeed have put-and-call features. Put-and-call features are financial mechanisms that allow the holder of the shares to sell (put) or buy (call) the shares at a predetermined price. This feature is not exclusive to either common or preferred shares, but can be included in the terms of either type of share depending on the issuing company's policies and the specific agreement with the shareholder. This flexibility in structuring the terms of the shares is a key similarity between common and preferred shares.

A is incorrect. While common shareholders typically have voting rights, preferred shareholders usually do not. Voting rights allow shareholders to have a say in the company's decisions, such as electing the board of directors or approving a merger or acquisition. This is a key difference between common and preferred shares.

B is incorrect. Preferred shares usually make fixed periodic payments, known as dividends, which are agreed upon when the shares are issued. On the other hand, common shares may or may not pay dividends, and if they do, the amount is not fixed and can vary based on the company's profits and the decisions of its board of directors.

CFA Level 1, Topic 5- Equity Investments, Learning Module 4, Overview of Equity Securities, LOS 4b: Describe differences in voting rights and other ownership characteristics among different equity classes.

Q.26 A trader purchases 1000 shares of HYA at the price of $30 per share using a leverage ratio of 2.0. If the maintenance margin is 25%, then the stock price at which the trader will receive a margin call is *closest to*:

    A. $3.75

    B. $7.50

    C. $20

The equity investment is found by dividing the total purchase price by the leverage ratio. In this case, the total purchase price is $30 per share and the leverage ratio is 2.0, so the equity investment is $\frac{\$30}{2} = \$15$. This means that the trade involves $15 of equity and $15 of debt.

Next, we need to find at what price a margin call would take place. A margin call occurs when the value of an investor's margin account falls below the broker's required amount. This is calculated by dividing the debt by the difference between 1 and the maintenance margin. In this case, the debt is $15 and the maintenance margin is 25%, so the price at which a margin call would occur is $\frac{\$15}{1-0.25} = \frac{\$15}{0.75} = \$20$.

A is incorrect. The value of $3.75 seems to have been incorrectly obtained by multiplying the equity investment by the maintenance margin. However, this is not the correct way to calculate the price at which a margin call would occur. The maintenance margin is the minimum amount of equity that must be maintained in a margin account, and it is not directly related to the equity investment in this way.

B is incorrect. The value of $7.50 appears to have been incorrectly obtained by multiplying the share price by the maintenance margin. This is also not the correct way to calculate the price at which a margin call would occur. The maintenance margin is not directly related to the share price in this way. Instead, it is a percentage of the total value of the securities in a margin account, and it is used to determine when a margin call would occur.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 1, Market Organization and Structure, LOS 1f: Calculate and interpret the leverage ratio, the rate of return on margin transaction, and the security price at which the investor would receive a margin call.

Q.27 Using the Gordon growth dividend discount model and assuming that r > g > 1%, what would be the effect of a 1% decrease in both the required rate of return and the constant growth rate on the stock's current valuation? Assume that there is no change to the current dividend payment (D0).

    A. The current valuation would increase.

    B. The current valuation would decrease.

    C. The current valuation would remain unchanged.

The Gordon growth dividend discount model is a method used to calculate the intrinsic value of a stock. The formula for this model is $V_0 = \frac{D_1}{r-g}$, where V_0 is the intrinsic value of the stock, D_1 is the expected dividend in the next year, r is the required rate of return, and g is the growth rate. In this scenario, both the required rate of return and the growth rate decrease by 1%, while the current dividend payment remains unchanged.

When the required rate of return and the growth rate decrease by the same amount, the denominator of the formula should theoretically remain unchanged. However, the expected dividend in the next year, D_1, is calculated by multiplying the current dividend by $1 + g$. Therefore, when the growth rate decreases by 1%, D_1 will also decrease. This decrease in D_1 will result in a lower intrinsic value of the stock, according to the Gordon growth dividend discount model. Hence, the current valuation of the stock will decrease.

Option A is incorrect. The current valuation of the stock will not increase. This is because the decrease in the growth rate will result in a decrease in the expected dividend in the next year, D_1, which will in turn result in a lower intrinsic value of the stock. Therefore, the current valuation of the stock will decrease, not increase.

Option C is incorrect. The current valuation of the stock will not remain unchanged. This is because the decrease in the growth rate will result in a decrease in the expected dividend in the next year, D_1, which will in turn result in a lower intrinsic value of the stock. Therefore, the current valuation of the stock will decrease, not remain unchanged.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 8, Equity Valuation: Concepts and Basic Tools, LOS 8g: calculate and interpret the intrinsic value of equity security based on the Gordon (constant) growth dividend discount model or a two-stage dividend discount model, as appropriate.

Q.28 Which of the following is a correct statement regarding the advantages of the asset-based valuation models? They

A. take into account current or expected cash flows, earnings, or growth rates.

B. are usually the best stand-alone option for valuing firms as going concerns.

C. are particularly useful in valuing firms that are heavy in current assets and light in intangibles.

Asset-based valuation models are particularly useful in valuing firms that are heavy in current assets and light in intangibles. This is due to the fact that these models focus on the company's assets, which are tangible and can be easily valued. In contrast, intangible assets such as brand value, patents, and goodwill are difficult to quantify and value accurately. Therefore, for firms with a high proportion of tangible assets, asset-based valuation models provide a more accurate and reliable valuation. Furthermore, these models are simple to calculate and do not require any projections, making them a practical tool for valuing such firms.

A is incorrect. This statement suggests that asset-based valuation models take into account current or expected cash flows, earnings, or growth rates. However, this is not the case. Asset-based valuation models primarily focus on the company's assets and do not consider the company's earnings, cash flows, or growth rates. These models are based on the premise that a company's value is equal to the sum of its parts, i.e., its assets. Therefore, they do not take into account the company's future earning potential or growth prospects, which are reflected in its cash flows, earnings, and growth rates.

B is incorrect. This statement suggests that asset-based valuation models are usually the best stand-alone option for valuing firms as going concerns. However, this is not accurate. While asset-based valuation models can provide a useful estimate of a company's value, they are not typically the best stand-alone option for valuing firms as going concerns. This is because these models do not take into account the company's future earning potential or growth prospects, which are crucial for valuing a firm as a going concern. Therefore, while asset-based valuation models can supplement other valuation methods, they are not usually the best stand-alone option.

CFA Level I, Topic 5 - Equity Investment, Learning Module 3, Market Efficiency, LOS 3b: contrast market value and intrinsic value.

Q.29 During the year 2010, an index portfolio benchmarked to a newly formed equity index generated a total capital gain of $125, while cumulative dividend generated by index securities amounted to $50. The total price of the constituent securities at the end of the period was $1,250. The total return of the index portfolio is *closest* to:

    A. 12.73%

    B. 14.00%

    C. 15.56%

The total return of an index portfolio is calculated by adding the capital appreciation and the dividend income, and then dividing this sum by the price of the index at the beginning of the period. In this case, the capital appreciation is $125 and the dividend income is $50. The price of the index at the beginning of the period is calculated by subtracting the capital appreciation from the price at the end of the period, which is $1,250. Therefore, the total return is calculated as follows: ($125 + $50) / ($1,250 - $125) = 15.56%.

A is incorrect. This option incorrectly calculates the total return by adding the capital appreciation to the price at the end of the period to determine the price at the beginning of the period. The correct way to calculate the price at the beginning of the period is to subtract the capital appreciation from the price at the end of the period. Therefore, the calculation in option A, which is ($125 + $50) / ($1,250 + $125) = 12.73%, is incorrect because it overestimates the price at the beginning of the period, which leads to an underestimation of the total return.

B is incorrect. This option incorrectly calculates the total return by using the price at the end of the period as the denominator. The correct denominator is the price at the beginning of the period, which is calculated by subtracting the capital appreciation from the price at the end of the period. Therefore, the calculation in option B, which is ($125 + $50) / $1,250 = 14.00%, is incorrect because it underestimates the total return by overestimating the denominator.

CFA Level I, Topic 5 - Equity Investments, Learning Module 8, Equity Valuation: Concepts and Basic Tools, LOS 3l: Describe asset-based valuation models and their use in estimating equity value.

Q.30 The exhibit below illustrates the limit orders outstanding on a market's book following a large order's arrival.

Buyer	Bid Size	Limit Price (€)	Offer Size	Seller
Jones	9	49.9		
Victor	8	50.0		
Stevens	6	50.1		
		50.2	7	Allens
		50.3	8	Cunningham
		50.4	12	Whittaker

Kim Toyama submits a day order to buy 18 contracts, limit €50.3. Toyama's average trade price is *closest* to:

      A. €50.20

      B. €50.25

      C. €50.28

Toyama's buy order will be filled starting with the most aggressively priced sell order. The first sell order that Toyama encounters is Allen's order, which is priced at €50.2. Toyama's order is for 18 contracts, so after filling Allen's order of 7 contracts, Toyama still has 11 contracts left to fill. The next sell order that Toyama encounters is Cunningham's order, which is priced at €50.3. This order is for 8 contracts, which Toyama can fill completely, leaving him with 3 contracts still to fill. However, the next sell order, Whittaker's order, is priced at €50.4, which is above Toyama's limit buy price. Therefore, Toyama cannot fill his remaining 3 contracts with Whittaker's order.

To calculate Toyama's average trade price, we need to take the total cost of the contracts he bought and divide it by the total number of contracts. The total cost is (7 contracts * €50.2) + (8 contracts * €50.3), and the total number of contracts is 7 + 8. Therefore, Toyama's average trade price is €50.25.

A is incorrect. The reasoning behind this option is flawed because €50.20 is the price of the first seven contracts that Toyama bought, not the average trade price of all 18 contracts. The average trade price takes into account the price of all contracts bought, not just the first few. Therefore, this option is incorrect.

C is incorrect. The reasoning behind this option is flawed because it assumes that Toyama will buy the remaining 3 contracts from Whittaker at a price of €50.4. However, this is not possible because Whittaker's sell price is above Toyama's limit buy price. Therefore, Toyama cannot buy these contracts, and the calculation of the average trade price in this option is incorrect. The correct calculation should only include the contracts that Toyama was actually able to buy, which were Allen's and Cunningham's contracts.

CFA Level 1, Topic 5 - Equity Investment, Leaning Module 1, Market organization and structure, LOS 1h: compare market orders with limit orders.

Q.31 The table below summarizes information concerning a market-capitalization-weighted index:

Stock	Beginning of period price per shares($)	Dividends per share ($)	End of period price per share ($)	Shares outstanding
A	120	50	140	45,570
B	200	25	250	59,650
C	180	30	160	112,740
Total				217,960

The price return on the market-capitalization-weighted index is *closest* to:

    A. 4.08%

    B. 4.35%

    C. 6.49%

We calculate the beginning of period value by multiplying the beginning of period price per share by the number of shares outstanding for each stock. For stock A, this is $120 x 45,570. For stock B, it's $200 x 59,650. And for stock C, it's $180 x 112,740. Adding these values together gives us a total beginning of period value of $37,691,600.

Next, we calculate the end of period value in a similar manner. For stock A, this is $140 x 45,570. For stock B, it's $250 x 59,650. And for stock C, it's $160 x 112,740. Adding these values together gives us a total end of period value of $39,330,700.

Finally, we calculate the price return by subtracting the beginning of period value from the end of period value, and then dividing the result by the beginning of period value. This gives us a price return of 4.35%.

A is incorrect. This option suggests that the price return on the market-capitalization-weighted index is closest to 4.08%. However, using the formula for price return and the given data, we find that the price return is actually 4.35%. Therefore, this option is incorrect.

C is incorrect. This option suggests that the price return on the market-capitalization-weighted index is closest to 6.49%. However, using the formula for price return and the given data, we find that the price return is actually 4.35%. Therefore, this option is incorrect.

CFA Level 1, Topic 5 - Equity Investment, Learning Module 3, Market Efficiency, LOS 3b: contrast market value and intrinsic value.

Q.32 Which of the following *most accurately* describes the overconfidence bias

 A. Market participants tend to dislike losses more than they like comparable gains.

 B. Market participants tend to trade with other investors while potentially ignoring their own private information or analysis.

 C. Market participants tend to overestimate their ability to determine intrinsic values accurately, and may not process information appropriately as a result.

Overconfidence bias is a cognitive bias that causes an individual to overestimate their knowledge or ability in a given area. This bias is particularly prevalent in the financial markets, where investors and traders often believe they have superior knowledge or insight that allows them to predict market movements more accurately than they actually can. This overconfidence can lead to excessive trading, poor decision making, and ultimately, financial loss. This is precisely what option C describes: market participants overestimating their ability to determine intrinsic values accurately, and potentially not processing information appropriately as a result. This overestimation can lead to mispriced securities, as investors may not fully consider or understand all relevant information when making investment decisions.

A is incorrect. This option describes loss aversion bias, not overconfidence bias. Loss aversion bias is a cognitive bias that causes individuals to prefer avoiding losses to acquiring equivalent gains. In other words, people feel the pain of losing money more intensely than they feel the pleasure of gaining the same amount of money. This can lead to irrational decision making, as investors may hold onto losing investments for too long in the hope that they will rebound, or sell winning investments too quickly to lock in gains and avoid potential losses.

B is incorrect. This option describes herding bias, not overconfidence bias. Herding bias is a cognitive bias that causes individuals to follow the crowd, often ignoring their own analysis or information. This can lead to market bubbles and crashes, as investors pile into popular investments without fully considering the risks, or sell out of unpopular investments without fully considering the potential upside. This bias can be particularly dangerous in the financial markets, where independent thinking and analysis are often rewarded.

CFA Level 1, Topic 5 - Equity Investment, Learning Module 3, Market efficiency, LOS 3g: describe behavioural finance and its potential relevance to understanding market anomalies.

Q.33 In an NPV profile, the point at which the profile crosses the x-axis is *most accurately* described as the:

    A. project's IRR.

    B. point at which the NPV is at its highest.

    C. point at which the discount rate equals 0% and the NPV is the sum of the undiscounted cash flows for the project.

The NPV profile is a graphical representation that shows the relationship between a project's Net Present Value (NPV) and various discount rates. The NPV is plotted on the vertical axis (y-axis), while the discount rates are plotted on the horizontal axis (x-axis). The point at which the NPV profile crosses the x-axis is the project's Internal Rate of Return (IRR). This is because, by definition, the IRR is the discount rate that makes the NPV of a project equal to zero. In other words, it is the rate at which the present value of the project's cash inflows equals the present value of its cash outflows. Therefore, when the NPV profile intersects the x-axis, it signifies that the NPV of the project is zero, which happens when the discount rate equals the IRR.

B is incorrect. The point at which the NPV is at its highest is not where the NPV profile crosses the x-axis. The NPV is at its highest when the discount rate is at its lowest. This is because the lower the discount rate, the less the future cash flows are discounted, resulting in a higher NPV. However, the point at which the NPV profile crosses the x-axis is where the NPV is zero, not at its highest.

C is incorrect. The point at which the discount rate equals 0% and the NPV is the sum of the undiscounted cash flows for the project is not where the NPV profile crosses the x-axis. When the discount rate is 0%, the NPV is indeed the sum of the undiscounted cash flows, but this point is not where the NPV is zero. The NPV is zero when the discount rate equals the IRR, not when it is 0%.

CFA Level 1, Topic 5 - Corporate Issuers, Learning Module 5, Capital Investments & Capital Allocation, LOS 5b: Describe the capital allocation process, calculate net present value (NPV), internal rate of return (IRR), and return on invested capital (ROIC), and contrast their use in capital allocation.

Q.34 In which of the following types of preference shares are shareholders most likely entitled to receive the standard preference dividend plus a premium dividend if profits exceed a specified level?

      A. Cumulative Preference shares.

      B. Participating preference shares.

      C. Non-cumulative preference shares.

Participating preference shares are a type of preference shares that not only provide a fixed dividend payment but also an additional dividend if the company's profits exceed a certain level. This additional dividend is often linked to the dividends received by the ordinary shareholders. This type of shares is most beneficial to the shareholders when the company is making substantial profits, as they are entitled to receive an extra dividend over and above their standard dividend. This feature of participating in the surplus profits distinguishes them from other types of preference shares.

A is incorrect. Cumulative preference shares are a type of preference shares where the dividend is accumulative. If the company is unable to pay the dividend in a particular year due to insufficient profits, the unpaid dividends are accumulated and paid out in the years when the company makes enough profits. However, these shares do not provide any additional dividend if the company's profits exceed a certain level. Therefore, the shareholders of cumulative preference shares are not entitled to receive a premium dividend if profits exceed a specified level.

C is incorrect. Non-cumulative preference shares are those where the dividend is not accumulative. If the company is unable to pay the dividend in a particular year due to insufficient profits, the shareholders of non-cumulative preference shares lose their right to receive the dividend for that year. They do not have the right to claim any unpaid dividends in the future. Similar to cumulative preference shares, non-cumulative preference shares also do not provide any additional dividend if the company's profits exceed a certain level. Hence, the shareholders of non-cumulative preference shares are not entitled to receive a premium dividend if profits exceed a specified level.

CFA Level 1, Topic 5 - Equity Investment, Learning Module 4, Overview of Equity Securities, LOS 4b: Describe differences in voting rights and other ownership characteristics among different equity classes.

Q.35 Exhibit 1 shows the dividends paid by two Asian companies for the past five years:
    Exhibit 1
    Dividends paid to investors

Company	2014	2015	2016	2017	2018
Yukmen	$2.60	$3.12	$3.74	$4.49	$5.39
ChenTao	$1.85	$2.12	$2.86	$3.23	$3.88

Which company (or companies) would *most likely* be valued using the Gordon growth dividend discount model?

      A. Yukmen.

      B. ChenTao.

      C. Both Yukmen and ChenTao.

The Gordon growth dividend discount model is a method used to calculate the intrinsic value of a stock, excluding the impact of market conditions. This model assumes that dividends grow at a constant rate indefinitely. Therefore, it is most suitable for companies that have a stable and predictable dividend growth rate.

A is correct. The company Yukmen shows a consistent growth in dividends over the years. The calculations are as follows:

$$\frac{3.12}{2.60} = 1.2; \frac{3.74}{3.12} = 1.2; \frac{4.49}{3.74} = 1.2; \frac{5.39}{4.49} = 1.2$$

This indicates that the dividend is growing by 20% each year. This consistent growth rate aligns with the assumptions of the Gordon growth model, making it an appropriate valuation method for Yukmen.

B is incorrect. The company ChenTao does not exhibit a consistent dividend growth rate. The calculations are as follows:

$$\frac{2.12}{1.85} = 1.15; \frac{2.86}{2.12} = 1.35; \frac{3.23}{2.86} = 1.13; \frac{3.88}{3.23} = 1.20$$

These calculations show that the dividend growth rate varies from year to year, which contradicts the assumptions of the Gordon growth model. Therefore, this model would not be an appropriate method to value ChenTao.

As explained above, while Yukmen's dividends are growing at a constant rate, ChenTao's dividends are not. Therefore, the Gordon growth dividend discount model cannot be used to value both companies.

CFA Level 1, Topic 5 - Equity Investments, Learning Module 8, Equity Valuation: Concepts and Basic tools, LOS 8g: calculate and interpret the intrinsic value of equity security based on the Gordon (constant) growth dividend discount model or a two-stage dividend discount model, as appropriate.

Q.36 A market index only contains these three securities:

Security	Price per share	Market cap ($ millions)
A	$2.50	2,000
B	$26.34	234
C	$10.20	1,234

Which approach will *most likely* give Security A the highest weight?

     A. Price-weighted.

     B. Equal-weighted.

     C. Market capitalization-weighted.

The three approaches given are price-weighted, equal-weighted, and market capitalization-weighted. To answer this question, we need to understand how each approach works and then apply it to Security A.

In a price-weighted index, the weight of each security is determined by its price per share. The higher the price per share, the higher the weight of the security in the index. In this case, Security A has a price per share of $2.50. When we calculate the weight of Security A in a price-weighted index, we get 6.4%. This is calculated by dividing the price per share of Security A by the sum of the prices per share of all securities, i.e., $2.50/($2.50+$26.34+$10.20).

In an equal-weighted index, each security is given an equal weight. In this case, since there are three securities, each would be given a weight of 33.33%. This is calculated by dividing 1 by the number of securities, i.e., 1/3.

In a market capitalization-weighted index, the weight of each security is determined by its market capitalization. The higher the market capitalization, the higher the weight of the security in the index. In this case, Security A has a market capitalization of $2,000 million. When we calculate the weight of Security A in a market capitalization-weighted index, we get 57.67%. This is calculated by dividing the market capitalization of Security A by the sum of the market capitalizations of all securities, i.e., $2,000/($1,234+$234+$2,000).

The market capitalization-weighted approach would give Security A the highest weight. This is because Security A has the highest market capitalization among the three securities. Therefore, it would have the highest weight in a market capitalization-weighted index. The calculation shows that Security A would have a weight of 57.67% in a market capitalization-weighted index, which is the highest among the three approaches.

A is incorrect. The price-weighted approach would not give Security A the highest weight. This is because the weight of a security in a price-weighted index is determined by its price per share. In this case, Security A has the lowest price per share among the three securities. Therefore, it would have the lowest weight in a price-weighted index. The calculation shows that Security A would only have a weight of 6.4% in a price-weighted index, which is the lowest among the three approaches.

B is incorrect. The equal-weighted approach would not give Security A the highest weight either. This is because in an equal-weighted index, each security is given the same weight, regardless of its price per share or market capitalization. In this case, Security A would have a

weight of 33.33% in an equal-weighted index, which is higher than in a price-weighted index but still not the highest among the three approaches.

CFA Level 1, Topic 5- Equity Investments, Learning Module 2, Security Market Indices, LOS 2e: Calculate and analyze the value and return of an index given its weighting method.

Q.37 An investor buys 300 shares of XYZ at the market price of $200 on full margin. The initial margin requirement is 30%, and the maintenance margin requirement is 20%. If the shares of stocks are later sold for $250 per share, what is the margin transaction return?

    A. 25%

    B. 83%

    C. 125%

The margin transaction return is calculated by determining the profit or loss realized from the transaction and dividing it by the initial equity investment. The initial equity investment is the amount paid by the investor to secure the margin transaction, which is the initial margin requirement. In this case, the initial margin paid is calculated as 30% of the total cost of the shares bought, which is 300 shares at $200 each. This gives us an initial margin paid of $18,000.

The profit or loss realized from the transaction is calculated by multiplying the number of shares sold by the difference in the buying and selling price per share. Here, the investor sold 300 shares at $250 each, having bought them at $200 each. This gives us a profit of $15,000.

A is incorrect. The calculation of 25% is incorrect because it assumes that the transaction was not a margin transaction. The calculation is done by dividing the profit realized ($15,000) by the total cost of the shares bought ($60,000) and multiplying by 100%. This is incorrect because it does not take into account the initial margin paid by the investor, which is the actual investment made by the investor. The total cost of the shares bought is not the actual investment made by the investor in a margin transaction.

C is incorrect. The calculation of 125% is incorrect because it uses the wrong initial margin. The calculation assumes that the initial margin used was calculated using the maintenance margin requirement percentage instead of the initial margin percentage. The maintenance margin requirement is the minimum amount of equity that must be maintained in a margin account and is not used to calculate the initial margin paid. The initial margin is calculated using the initial margin requirement percentage, which is 30% in this case.

CFA Level 1, Topic 5 - Equity Investment, Learning Module 3, Market Organization and Structure, LOS 1f: calculate and interpret the leverage ratio, the rate of return on a margin transaction, and the security price at which the investor would receive a margin call.

Q.38 Seniority ranking indicates the priority of payments in case of a winding-up. Among the following, which one is the lowest-ranked corporate debt?

    A. Subordinated.

    B. Second lien loan.

    C. Senior unsecured.

The seniority ranking of corporate debt indicates the priority of payments in case of a winding-up. The ranking is determined by the level of security and the legal claim on the company's assets. The higher the rank, the more secure the debt is considered, and the more likely it is to be repaid in the event of a company's liquidation.

Subordinated debt, as indicated in option A, is the lowest-ranked corporate debt. This means that in the event of a company's liquidation, holders of subordinated debt are among the last to be repaid, after other creditors and bondholders. This is because subordinated debt is a type of unsecured loan that is not backed by the company's assets. Therefore, it carries a higher risk and typically offers a higher yield to compensate for this risk.

B is incorrect. The second lien loan, as indicated in option B, is not the lowest-ranked corporate debt. A second lien loan is a type of secured debt, which means it is backed by the company's assets. In the event of a company's liquidation, holders of second lien loans are repaid after the holders of first lien loans, but before the holders of unsecured debt. Therefore, while second lien loans carry more risk than first lien loans, they are less risky than subordinated debt.

C is incorrect. Senior unsecured debt, as indicated in option C, is also not the lowest-ranked corporate debt. While it is unsecured, meaning it is not backed by the company's assets, it is ranked higher than subordinated debt. This is because in the event of a company's liquidation, holders of senior unsecured debt are repaid before holders of subordinated debt. Therefore, while senior unsecured debt carries more risk than secured debt, it is less risky than subordinated debt.

CFA Level I, Topic 6 - Fixed Income, Learning Module 16, Credit Analysis for Corporate Issuers, LOS 16c: Describe the seniority rankings of debt, secured versus unsecured debt, and the priority of claims in bankruptcy, and their impact on credit ratings.

Q.39 Richard Grove invests in a 2-year, 4% semi-annual coupon paying bond with a par value of 1,000. The sequence of spot rates is as follows:

Time-to-maturity	Spot Rate
0.5 year	1.0%
1.0 year	1.8%
1.5 years	2.9%
2.0 years	4.2%
2.5 years	5.6%

The price of the bond is *closest* to:

      A. $997.33

      B. $904.10

      C. $921.06

The cash flows of a bond consist of the semi-annual coupon payments and the par value at maturity. In this case, the bond pays a 4% semi-annual coupon on a par value of $1,000, which means it pays $20 every six months for two years, and then pays the par value of $1,000 at the end of two years.

The present value of each cash flow is calculated by dividing it by one plus the spot rate for the time of the cash flow, raised to the power of the time. The spot rates are given in the question. The present value of the first coupon payment is $20 divided by 1.005, which is the one plus the spot rate of 1.0% for 0.5 years. The present value of the second coupon payment is $20 divided by $(1+0.009)^2$, which is one plus the spot rate of 1.8% for 1.0 year, raised to the power of 2. The present value of the third coupon payment is $20 divided by $(1+0.0145)^3$, which is one plus the spot rate of 2.9% for 1.5 years, raised to the power of 3. The present value of the fourth coupon payment and the par value is $20 and $1000 respectively, divided by $(1+0.021)^4$, which is one plus the spot rate of 4.2% for 2.0 years, raised to the power of 4. The sum of these present values is $997.33.

B is incorrect. The value of $904.10 does not match the calculated price of the bond. This could be a result of incorrect calculations, such as using incorrect spot rates, not accounting for all cash flows, or not correctly discounting the cash flows to their present value.

C is incorrect. The value of $921.06 also does not match the calculated price of the bond. This could also be a result of incorrect calculations, such as using incorrect spot rates, not accounting for all cash flows, or not correctly discounting the cash flows to their present value.

CFA Level I, Topic 6 - Fixed Income, Learning Module 9, The Term Structure of Interest Rates: Spot, Par and Forward Curves, LOS 9a: Define spot rates and spot curve, and calculate the price of a bond using spot rate.

Q.40 A positive duration gap *most likely* exposes the investor to:

    A. reinvestment risk and market price risk.

    B. market price risk from increasing interest rates.

    C. reinvestment risk from decreasing interest rates.

A positive duration gap refers to a situation where the Macaulay duration, which is the weighted average time until a bond's cash flows are received, is greater than the investment horizon. This situation exposes investors to market price risk from increasing interest rates. This is because when interest rates rise, the prices of existing bonds fall. This is due to the inverse relationship between bond prices and interest rates. Therefore, if an investor is holding a bond with a positive duration gap and interest rates increase, the market price of the bond will decrease, leading to a potential loss if the bond is sold before maturity.

A is incorrect. While it is true that a positive duration gap can expose an investor to reinvestment risk, it does not necessarily expose them to market price risk. Reinvestment risk refers to the risk that future cash flows – either interest or principal – will have to be reinvested at a lower interest rate. However, this risk is more associated with a negative duration gap, where the Macaulay duration is less than the investment horizon.

C is incorrect. As explained above, reinvestment risk is more associated with a negative duration gap. In the case of a positive duration gap, the primary risk is market price risk from increasing interest rates, not reinvestment risk from decreasing interest rates.

CFA Level 1, Topic 6 - Fixed Income, Leaning Module 10, Interest Rate Risk and Return, LOS 10c: define, calculate, and interpret Macaulay duration.

Q.41 The most frequently used benchmark for floating-rate notes is the:

  A. Libor.

  B. I-spread.

  C. G-spread.

The London Interbank Offered Rate (Libor) is the most frequently used benchmark for floating-rate notes. This is due to its nature as a composite interbank rate, which is the average of interest rates estimated by each of the leading banks in London that they would be charged were they to borrow from other banks. This makes it a reliable and widely accepted benchmark. Furthermore, it is important to note that Libor is not a risk-free rate, which means it takes into account the credit risk associated with interbank lending. This makes it a more realistic benchmark for floating-rate notes, which are typically issued by entities with varying degrees of credit risk.

A is incorrect. The I-spread, or Interpolated Spread, is not the most frequently used benchmark for floating-rate notes. The I-spread refers to the difference between a yield on a bond and the swap rate. The swap rate is the interest rate applicable to the fixed leg in the floating-for-fixed interest rate swap, typically the Libor. The I-spread allows for the comparison of bonds with differing credit and liquidity risks against an interbank lending benchmark. However, it is not a benchmark in itself, but rather a measure of the additional yield required by investors to compensate for the additional risks associated with a particular bond relative to the benchmark rate.

C is incorrect. The G-spread, or Government Spread, is also not the most frequently used benchmark for floating-rate notes. The G-spread refers to the yield spread in basis points over an actual or interpolated government bond. This spread represents the return for greater credit, liquidity, and other risks relative to the sovereign bond. While the G-spread is a useful measure of the additional yield required by investors to compensate for the additional risks associated with a particular bond relative to a risk-free government bond, it is not a benchmark rate in itself.

CFA Level 1, Topic 6 - Fixed Income, Learning Module 4, Fixed-Income Markets for Corporate Issuers, LOS 4a: compare short-term funding alternatives available to corporations and financial institutions.

Q.42 A 3.125% government bond is priced for settlement on 12th July. The bond makes quarterly coupon payments on June 30th and September 30th. of each year. The accrued interests per 100 of par value are *closest to*:

      A. 0.10%

      B. 0.41%

      C. 0.68%

The formula for accrued interest (AI) is given by:

AI = (t/T) x PMT

Here, 't' represents the number of days from the last coupon payment to the settlement date, 'T' is the number of days in the coupon period, 't/T' is the fraction of the coupon period that has gone by since the last payment, and 'PMT' is the coupon payment per period.

In this particular case, 't' is 12 days (the number of days from June 30th to July 12th), and 'T' is 92 days (the number of days in a quarter, considering a 365-day year). The coupon payment per period 'PMT' is 0.03125/4 (as the bond has a 3.125% coupon rate and makes quarterly payments). Therefore, the accrued interest 'AI' is calculated as (12/92) x (0.03125/4), which equals 0.10190.

B is incorrect. This option suggests that the accrued interest per 100 of par value is closest to 0.41%. However, using the formula for accrued interest and the given values in the question, the calculated accrued interest is 0.10190, which is closest to 0.10%, not 0.41%. Therefore, this option is not correct.

C is incorrect. This option suggests that the accrued interest per 100 of par value is closest to 0.68%. However, using the formula for accrued interest and the given values in the question, the calculated accrued interest is 0.10190, which is closest to 0.10%, not 0.68%. Therefore, this option is not correct.

CFA Level 1, Topic 6 - Fixed Income, Learning Module 6, Fixed-Income Bond Valuation: Prices and Yields, LOS 6a: calculate a bond's price given a yield-to-maturity on or between coupon dates.

Q.43 ABC Corp's debt ranking is low because it doesn't have enough fixed assets to cover a respectable portion of the debt. Which one of the four Cs of credit analysis would you *most likely* associate with this statement?

      A. Capacity.

      B. Collateral.

      C. Character.

The correct answer is option B, Collateral. Collateral in the context of credit analysis refers to the quality and value of assets that a company pledges as a guarantee for repayment of a debt. The quality and value of these assets are crucial as they provide a safety net for the lender. In the event that the borrower defaults on the loan, the lender can seize these assets to recover the loan amount. In the case of ABC Corp, the statement suggests that the company does not have enough fixed assets to cover a significant portion of the debt. This implies that the company's collateral is insufficient, which in turn lowers its debt ranking. A low debt ranking can make it more difficult for the company to secure loans in the future, as it indicates a higher risk to lenders.

A, Capacity, is incorrect. Capacity refers to a company's ability to repay its debts, including both the principal and interest payments, in a timely manner. This is typically assessed by examining the company's cash flows, profitability, and overall financial health. While ABC Corp's low debt ranking could potentially indicate issues with its capacity to repay debts, the statement specifically points to a lack of fixed assets as the reason for the low ranking.

C, Character, is incorrect. Character refers to the quality of a company's management, including its strategic planning, earnings quality, and past treatment of bondholders. It is a subjective measure that assesses the likelihood that the company will repay its debts based on its past behavior and the integrity of its management. The statement about ABC Corp does not provide any information about the company's management or its past behavior, so it does not relate to the Character aspect of credit analysis.

It's worth noting that the fourth C of credit analysis, Covenants, is not included in the answer choices. Covenants are provisions in a loan agreement that are designed to protect the lender by requiring the borrower to fulfill certain obligations or by prohibiting certain actions. They do not directly relate to the statement about ABC Corp.

CFA Level 1, Topic 6 - Fixed Income, Learning Module 14, Credit Risk, LOS14a: Explain the 4 C's (Capacity, Collateral, Covenants and Character) of traditional credit analysis.

Q.44 A company has issued a 15-year bond with a notional principal of $350 million. The sinking fund provision calls for 8% of the outstanding principal amount to be retired in years 8-14, with the outstanding balance paid off at maturity in 15 years. The outstanding principal balance at the end of Year 9 is *closest* to:

    A. $294.00

    B. $296.24

    C. $322.00

The sinking fund provision is a means of repaying funds borrowed through a bond issue. The issuer makes periodic payments to a trustee who retires part of the issue by purchasing the bonds in the open market.

Below is the sinking fund provision schedule for the first 9 years of the bond issue:

Year	Outstanding principal at the beginning of the Year ($ millions)	Sinking Fund payment ($ millions)	Outstanding principal at the End of the year ($ millions)
0			350.00
1 to 7	350.00	0.00	350.00
8	350.00	28.00	322.00
9	322.00	25.67	296.24

A is incorrect. This option suggests that the outstanding principal balance at the end of Year 9 is $294.00 million. This would be the case if the company started to retire the principal amount immediately. However, the sinking fund provision calls for 8% of the outstanding principal amount to be retired in years 8-14, not immediately.

C is incorrect. This option suggests that the outstanding principal balance at the end of Year 9 is $322.00 million. However, this is the outstanding principal balance at the end of Year 8, not Year 9. In Year 9, the company retires another 8% of the outstanding principal, resulting in a balance of $296.24 million.

CFA Level 1, Topic 6 - Fixed Income, Learning Module 12, Yield-Based Bond Convexity and Portfolio Properties, LOS 12b: Calculate the percentage price change of a bond for a specified change in yield, given the bond's duration and convexity.

Q.45 An analyst is comparing two corporate bond issues, X and Y. He has compiled statistics for the two bonds. The analyst would like to determine which bond offers a higher yield-to-maturity when the yields are stated on a monthly bond basis.

	X	Y
Annual coupon rate	5.00%	8.00%
Coupon payment frequency	Quarterly	Monthly
Yield-to-maturity	5.67%	6.15%

Believing that Bond Y is riskier than X, the analyst will most likely conclude that the additional compensation offered by the former is *closest* to:

    A. 47.0 bps.

    B. 50.7 bps.

    C. 51.2 bps.

We need to annualize the yield-to-maturity of Bond X for monthly compounding. This is done using the formula:

$$(1 + \frac{0.0567}{4})^4 = (1 + \frac{\text{APR}_{12}}{12})^{12}$$

By solving this equation, we get

$$\text{APR}_{12} = (1.0579^{\frac{1}{12}} - 1) \times 12 = 0.05643$$

Now, we can compare the annualized yield-to-maturity of Bond X (5.643%) with the yield-to-maturity of Bond Y (6.15%). The difference between these two yields is the additional compensation for the greater risk in Bond Y. This difference is calculated as 0.0615 – 0.05643 = 0.00507, or 50.7 basis points.

A is incorrect. This option suggests that the additional compensation offered by Bond Y is 47.0 basis points. However, as calculated above, the correct difference in yield-to-maturity between the two bonds, when annualized for monthly compounding, is 50.7 basis points. Therefore, this option is not correct.

C is incorrect. This option suggests that the additional compensation offered by Bond Y is 51.2 basis points. However, as calculated above, the correct difference in yield-to-maturity between the two bonds, when annualized for monthly compounding, is 50.7 basis points. Therefore, this option is not correct.

CFA Level I, Topic 6 - Fixed Income, Learning Module 19, Mortgage-Backed Security (MBS) Instrument and Market Features, LOS 19a: Define prepayment risk and describe time tranching structures in securitizations and their purpose.

Q.46 Contingent convertible bonds are *most appropriately* referred to as debt instruments that:

   A. convert from debt to common equity automatically if a specific event occurs.

   B. give their holders the right to buy the firm's common shares at a given price over a given period.

   C. give their holders the option to exchange the bond for a specific number of shares of the issuing corporation's common stock.

Contingent convertible bonds, also known as "CoCos", are unique financial instruments that have a built-in mechanism to convert from debt to common equity if a specific event occurs. This event is typically related to the financial health of the issuing company, such as a significant drop in the company's capital ratio. The conversion is automatic and does not require any action from the bondholder. This feature is designed to provide a safety net for the issuing company, allowing it to boost its equity base in times of financial stress.

B is incorrect. This option describes a rights offering, not a contingent convertible bond. In a rights offering, existing shareholders are given the opportunity to purchase additional shares at a discounted price. The purpose of a rights offering is to raise additional capital for the company. While rights offerings and contingent convertible bonds are both methods of raising capital, they operate in fundamentally different ways.

C is incorrect. This option describes a convertible bond, not a contingent convertible bond. Convertible bonds give the bondholder the option to exchange the bond for a specific number of shares of the issuing corporation's common stock. The key difference between convertible bonds and contingent convertible bonds is that the conversion in the latter is triggered by a specific event and is automatic, whereas in the former, the conversion is at the discretion of the bondholder.

CFA Level 1, Topic 6 - Fixed Income, Learning Module 2, Fixed-Income Cash Flows and Types, LOS 2a: describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.

Q.47 An analyst needs to value a 4-year, 5% annual coupon payment bond, Bond-K, which is not actively traded. The analyst could find some other bonds, however, with comparable credit quality.   • Bond-L: 3-year, 5.5% annual coupon payment bond at 108.   • Bond-M: 5-year, 4.5% annual coupon payment bond at 105. Which of the following is *closest to* the yield to maturity of Bond-K?

    A. 3.05%

    B. 3.24%

    C. 5.00%

The yield to maturity (YTM) of Bond-K can be estimated by taking the average of the YTM of Bond-L and Bond-M. This is because Bond-K is not actively traded, and we are assuming that Bond-L and Bond-M have comparable credit quality to Bond-K. Therefore, the YTM of Bond-K should be somewhere in between the YTM of Bond-L and Bond-M.

First, we calculate the YTM of Bond-L using a financial calculator. The inputs are N=3 (number of periods), PV=-108 (present value), PMT=5.5 (payment per period), and FV=100 (future value). The output is I/Y = 2.69% (interest rate per period). This means that the YTM of Bond-L is 2.69%.

Next, we calculate the YTM of Bond-M using a financial calculator. The inputs are N=5, PV=-105, PMT=4.5, and FV=100. The output is I/Y = 3.40%. This means that the YTM of Bond-M is 3.40%.

Finally, we take the average of the YTM of Bond-L and Bond-M to estimate the YTM of Bond-K. The calculation is (2.69% + 3.40%) / 2 = 3.045%. This is closest to 3.05%, which is option A.

B is incorrect. The YTM of Bond-K cannot be 3.24% because this value is not the average of the YTM of Bond-L and Bond-M. The average of 2.69% and 3.40% is 3.045%, which is closest to 3.05%, not 3.24%. Therefore, option B is not the correct answer.

C is incorrect. The YTM of Bond-K cannot be 5.00% because this value is much higher than the YTM of both Bond-L and Bond-M. Since we are assuming that Bond-K has comparable credit quality to Bond-L and Bond-M, its YTM should be somewhere in between the YTM of Bond-L and Bond-M, not significantly higher. Therefore, option C is not the correct answer.

CFA Level 1, Topic 6 & 4, Learning Module 6, Fixed-Income Bond Valuation: Prices and Yields, LOS 6b: Identify the relationships among a bond's price, coupon rate, maturity, and (yield-to-maturity) & LOS 6c: Describe matrix pricing.

Q.48 A Euro commercial paper is *most likely*?

    I. An unsecured, short-term loan.

    II. Issued in the international market.

    III. Issued in the corporation's domestic currency.

    A. I and II.

    B. II and III.

    C. I, II, and III.

Euro commercial papers are typically issued by large corporations or financial institutions that have high credit ratings. They are unsecured because they are not backed by collateral, which means that the issuer does not pledge any assets to the investor in case of default. Instead, the investor relies on the creditworthiness of the issuer. These papers are short-term because they usually have maturities that range from a few days to a year, with most maturities being under six months.

Furthermore, Euro commercial papers are issued in the international market, which means they are not limited to the issuer's domestic market. This allows issuers to reach a broader range of investors and potentially obtain more favorable terms. The international nature of these papers also means they can be denominated in any currency, not just the Euro, despite the name. This flexibility allows issuers and investors to choose the currency that best suits their needs and risk profiles.

B is incorrect. While it is true that Euro commercial papers are issued in the international market, they are not necessarily issued in the corporation's domestic currency. As mentioned earlier, these papers can be denominated in any currency, which allows issuers and investors to manage their currency risk.

C is incorrect. While it is true that Euro commercial papers are unsecured, short-term loans issued in the international market, they are not necessarily issued in the corporation's domestic currency.

CFA Level 1, Topic 6 - Equity Investment, Learning Module 4, Fixed Income Markets – Fixed-Income Markets for Corporate Issuers, LOS 4a: Compare short-term funding alternatives available to corporations and financial institutions.

Q.49 Given the following sequence of spot rates:

- $S_1 = 5.5\%$

- $S_2 = 6.85\%$

The forward rate for one period, one period from now, 1y1y, is *closest to*:

A. 1.28%

B. 1.35%

C. 8.22%

The calculating forward rates is given by:

$$(1 + S_1)(1 + 1y1y) = (1 + S_2)^2$$

By substituting the given spot rates into the formula, we can solve for 1y1y:

$$1y1y = \frac{(1 + S_2)^2}{(1 + S_1)} - 1 = \frac{1.0685^2}{1.055} - 1 = 0.0822 = 8.22$$

This calculation shows that the forward rate for one period, one period from now, is 8.22%, which corresponds to option C.

A is incorrect. The value of 1.28% seems to have been obtained by incorrectly failing to square S2 in the formula. The correct calculation should be as follows:

$$1y1y = [\frac{1.0685^2}{1.055}] - 1$$

However, if we do not square S2, the calculation would be:

$$1y1y = [\frac{1.0685}{1.055}] - 1 = 1.28$$

This incorrect calculation results in a forward rate of 1.28%, which is not the correct answer.

B is incorrect. The value of 1.35% seems to have been obtained by incorrectly subtracting S1 from S2. The correct calculation should be as shown in the explanation for option C. However, if we simply subtract S1 from S2, the calculation would be:

$$1y1y = 6.85\% - 5.5\% = 1.35\%$$

CFA Level 1, Topic 6 - Fixed Income, Learning Module Reading 9, The Term Structure of Interest Rates: Spot, Par, and Forward Curves, LOS 9b: define par and forward rates, and calculate par rates, forward rates from spot rates, spot rates from forward rates, and the price of a bond using forward rates.

Q.50 The government of Ilaka, a developing country, has issued 30-year capital indexed bonds linked to the domestic consumer price index (CPI) in local currency IA. The bonds have a par value of IA 1,000. The bonds make semiannual coupon payments at a rate of 6%. Over the most recent six months, the CPI has increased by 4%. If the bonds were interest-indexed, as opposed to capital-indexed bonds, the semiannual coupon would have been:

    A. The same.

    B. Lower by $1.20.

    C. Higher by $2.40.

The semiannual coupon would be the same for both capital-indexed and interest-indexed bonds. This is because the method of indexing, whether it is capital or interest, does not affect the semiannual coupon payment. In the case of capital-indexed bonds, the principal amount is adjusted to reflect inflation, while the coupon rate remains constant. Therefore, following a 4% increase in inflation, the new principal amount becomes IA 1,040 (IA 1,000 × 1.04). The semi-annual coupon payment, calculated as 3% of the new principal amount, is IA 31.20 (IA 1,040 × 0.03).

On the other hand, if the bonds were interest-indexed, the principal amount would remain constant, but the coupon payments would be adjusted to reflect inflation. Therefore, the new semi-annual coupon payment would be IA 31.20 (IA 1,000 × 1.04 × 0.03). This means that regardless of the method of indexing, the semiannual coupon payment remains the same, hence validating option A.

B is incorrect. This option suggests that the semiannual coupon would be lower by $1.20 if the bonds were interest-indexed. However, as explained above, the semiannual coupon payment remains the same regardless of the method of indexing. The inflation adjustment is applied either to the principal amount (in the case of capital-indexed bonds) or to the coupon payments (in the case of interest-indexed bonds), but the resulting semiannual coupon payment is the same in both cases. Therefore, option B is incorrect because it incorrectly assumes that the method of indexing would result in a lower semiannual coupon payment.

C is incorrect. This option suggests that the semiannual coupon would be higher by $2.40 if the bonds were interest-indexed. However, as explained above, the semiannual coupon payment remains the same regardless of the method of indexing. The inflation adjustment is applied either to the principal amount (in the case of capital-indexed bonds) or to the coupon payments (in the case of interest-indexed bonds), but the resulting semiannual coupon payment is the same in both cases. Therefore, option C is incorrect because it incorrectly assumes that the method of indexing would result in a higher semiannual coupon payment.

CFA Level I, Topic 6 - Fixed Income, Learning Module 8, Yield and Yield Spread Measures for Floating-Rate Instruments, LOS 8b: Calculate and interpret yield measures for money market instruments.

Q.51 Synthetic collateralized debt obligations (Synthetic CDOs) are backed up by which of the following?

     A. Credit default swaps.

     B. Leveraged bank loans.

     C. Corporate market bonds.

Synthetic collateralized debt obligations (Synthetic CDOs) are a type of collateralized debt obligation that is backed by credit default swaps. Credit default swaps are financial derivative contracts that allow an investor to "swap" or offset their credit risk with that of another investor. In the case of Synthetic CDOs, these credit default swaps are pooled together to form a diversified portfolio, which is then divided into different tranches of risk and return. This structure allows investors to choose a level of risk and return that suits their investment objectives and risk tolerance.

B is incorrect. Leveraged bank loans are not used to back up Synthetic CDOs. Instead, they are used to back up a different type of collateralized debt obligation known as collateralized loan obligations (CLOs). CLOs are similar to Synthetic CDOs in that they involve pooling together a portfolio of assets and dividing it into different tranches of risk and return. However, the key difference is that CLOs are backed by leveraged bank loans, not credit default swaps. Therefore, while leveraged bank loans are a type of asset that can be used to back up a collateralized debt obligation, they are not used to back up Synthetic CDOs.

C is incorrect. Corporate market bonds are not used to back up Synthetic CDOs. Instead, they are used to back up a different type of collateralized debt obligation known as collateralized bond obligations (CBOs). CBOs are similar to Synthetic CDOs in that they involve pooling together a portfolio of assets and dividing it into different tranches of risk and return. However, the key difference is that CBOs are backed by corporate and emerging market bonds, not credit default swaps. Therefore, while corporate market bonds are a type of asset that can be used to back up a collateralized debt obligation, they are not used to back up Synthetic CDOs.

CFA Level 1, Topic 6 - Fixed Income, Learning Module 18, Asset-Backed Security (ABS) Instrument and Market Features, LOS 18d: Describe collateralized debt obligations, including their cash flows and risks.

Q.52 When the government par curve is raised and lowered by 30 bps, the new full prices for a callable bond are $99 and $103, respectively. If this bond currently sells for $101 on the secondary market, its effective duration is *closest* to:

    A. 6.6

    B. 13.2

    C. 9.89

The effective duration of a bond is a measure of the bond's price sensitivity to changes in a benchmark yield curve. It is calculated using the formula:

$$\text{EffDur} = \frac{PV_- - PV_+}{2 \times \Delta\text{Curve} \times PV_0}$$

In this formula, PV_- represents the price of the bond if the yield was to decrease by the basis points, PV_+ represents the price of the bond if the yield was to increase by the basis points, and PV_0 represents the original price of the bond.

In the given question, the present value of the bond is 101, so PV0 = 101.000. The price of the bond if the yield was to increase by the basis points is 99, so PV+ = 99.000. The price of the bond if the yield was to decrease by the basis points is 103, so PV- = 103.000. The change in the curve is 0.0030 (30 basis points), so Δcurve = 0.0030.

Substituting these values into the formula, we get:

$$\text{EffDur} = \frac{PV_- - PV_+}{2 \times \Delta\text{Curve} \times PV_0} = \frac{103 - 99}{2 \times 0.0030 \times 101} = 6.6$$

B is incorrect. A calculation using the given values and the formula for effective duration does not yield a result of 13.2. This option may have resulted from a miscalculation or misunderstanding of the formula for effective duration.

C is incorrect. A calculation using the given values and the formula for effective duration does not yield a result of 9.89. This option may have resulted from a miscalculation or misunderstanding of the formula for effective duration.

CFA Level I, Topic 6 - Fixed-Income, Learning Module 13, Curve-Based and Empirical Fixed-Income Risk Measures, LOS 13c: Explain why effective duration and effective convexity are the most appropriate measures of interest rate risk for bonds with embedded options.

Q.53 A bond was issued on January 6th, 2017, at 97 (percentage of par). The par value was $1,500. The bond is callable in whole on September 7th, 2025, at $103.40. The bond can most likely be classified under which category?

      A. American callable bond.

      B. European callable bond.

      C. Bermuda style callable bond.

The bond in question can be classified as a European callable bond. This is because European callable bonds are characterized by having only one specific call date. In this case, the bond is callable in whole on September 7th, 2025, at $103.40. This single call date aligns with the characteristics of a European callable bond. European callable bonds provide the issuer with the right to call back the bond on a specific date, rather than at any time. This is a key distinguishing feature of European callable bonds, and it is this feature that makes the bond in question most likely to be classified under this category.

A is incorrect. An American callable bond, also referred to as continuously callable, provides the issuer with the right to call a bond at any time starting on the first call date. This means that the issuer can decide to call back the bond at any point after the first call date, providing them with a greater degree of flexibility compared to a European callable bond. However, in the case of the bond in question, there is only one specific call date, which does not align with the characteristics of an American callable bond.

C is incorrect. The issuer of a Bermuda-style callable bond has the right to call bonds on specified dates following the call protection period. These dates frequently correspond to coupon payment dates. This means that the issuer can call back the bond on multiple specified dates, rather than just one specific date. However, in the case of the bond in question, there is only one specific call date, which does not align with the characteristics of a Bermuda-style callable bond.

CFA Level 1, Topic 6 - Fixed Income, Learning Module 1, Fixed-Income Instrument Features, Fixed-Income Cash Flows and Types, LOS 3a: Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.

Q.54 Regarding fixed income, which of these statements is *least likely* a negative covenant?

    A. Negative pledges.

    B. Insure and maintain assets.

    C. Restrictions on prior claims.

The requirement to 'insure and maintain assets' is a positive covenant, not a negative one. Positive covenants refer to the obligations that the issuer must fulfill. These obligations can include a variety of actions such as making interest payments, returning principal at maturity, maintaining the underlying collateral, insuring assets, and providing the lender with financial statements on a regular basis (annually or quarterly). These actions are all proactive measures that the issuer is required to take in order to comply with the terms of the agreement.

A is incorrect. Negative pledges are a type of negative covenant, which is the opposite of a positive covenant. Negative covenants are restrictions placed on the issuer, limiting what they can do. They are designed to protect the lender by preventing the issuer from taking actions that could potentially harm the lender's interests. Negative pledges, in particular, are a promise by the issuer not to use the same assets as collateral for another loan. This protects the lender by ensuring that the issuer's assets are not over-leveraged, which could jeopardize the lender's ability to recover their investment in the event of a default.

C is incorrect. Restrictions on prior claims are also a type of negative covenant. These restrictions prevent the issuer from prioritizing other debts over the debt owed to the lender. This ensures that the lender's claim on the issuer's assets is not subordinated to other claims, protecting the lender's interests and increasing the likelihood that they will be able to recover their investment in the event of a default. This is a restriction on the issuer's actions, making it a negative covenant, not a positive one.

CFA Level I, Topic 7- Fixed Income, Learning Module 1, Fixed-Income Instrument Features, LOS 1b: Describe the contents of a bond indenture and contrast affirmative and negative covenants.

Q.55 A debt instrument whose entire face value is paid in one lump sum on the maturity date is *most likely* called:

    A. a bullet bond.

    B. a fully amortized bond.

    C. a partially amortized bond.

A bullet bond, is a type of debt instrument where the entire face value is paid in one lump sum on the maturity date. This means that the investor who purchases the bond will receive the full principal amount back at the end of the bond's term, without any interim payments. This is a common feature of zero-coupon bonds, where the bond is sold at a discount to its face value and the investor receives the full face value at maturity. The key characteristic of a bullet bond is that the repayment of principal is not spread out over the term of the bond, but is instead paid all at once at the end.

B is incorrect. A fully amortized bond is a type of bond where the principal is gradually paid down over the term of the bond through regular payments. This is different from a bullet bond, where the entire principal is paid back in one lump sum at the end of the bond's term. In a fully amortized bond, each payment consists of both principal and interest, and by the end of the bond's term, the entire principal has been paid off. This means that there is no lump sum payment at the end, which is a key characteristic of a bullet bond.

C is incorrect. A partially amortized bond is a hybrid between a bullet bond and a fully amortized bond. In this type of bond, a portion of the principal is paid down over the term of the bond through regular payments, but there is also a large lump sum payment at the end of the bond's term. This is known as a balloon payment. While this may seem similar to a bullet bond, it is not the same because a portion of the principal is paid down over the term of the bond, rather than the entire principal being paid back in one lump sum at the end. Therefore, a partially amortized bond does not fit the definition given in the question.

CFA Level I, Topic 7 - Fixed Income, Learning Module 2, Fixed-Income Cash Flows and Types, LOS 2a: Describe common cash flow structures of fixed-income instruments and contrast cash flow contingency provisions that benefit issuers and investors.

Q.56 Which of the following statements regarding future contracts is least likely accurate?

    A. Futures contracts are all cash-settled contracts.

    B. Future contracts always trade on regulated markets.

    C. The value of a futures contract is always derived from its underlying asset.

There are two types of settlement methods for futures contracts: cash settlement and physical delivery. In a cash settlement, the difference between the futures price and the market price at the contract's expiration is settled in cash. On the other hand, physical delivery requires the holder of the contract to either deliver the underlying asset or take delivery from the exchange. This means that not all futures contracts are cash-settled, as some require physical delivery of the underlying asset.

B is incorrect. Futures contracts do indeed always trade on regulated markets. These markets, also known as futures exchanges, provide a transparent and standardized environment for trading futures contracts. Examples of such exchanges include the Chicago Board of Trade, the Eurex Exchange, and the New York Board of Trade. These exchanges ensure that all transactions are conducted in a fair and orderly manner, and they enforce strict rules and regulations to protect the interests of all market participants.

C is incorrect. The value of a futures contract is indeed always derived from its underlying asset. This is because a futures contract is a derivative instrument, which means its value depends on the price of another asset, known as the underlying asset. The underlying asset can be a commodity, a financial instrument, or even an index. The price of the futures contract fluctuates in response to changes in the price of the underlying asset, reflecting the market's expectations about the future price of the asset.

CFA Level 1, Topic 7 - Derivatives, Learning Module 2, Forward Commitment and Contingent Claim Features and Instruments, LOS 2a: Define forward contracts, futures contracts, swaps, options (calls and puts), and credit derivatives and compare their basic characteristics.

Q.57 An investor purchased a 3-month call option by paying $1.08. The exercise price of the option is $3.32, while the underlying is priced at $4.35. The price at which the break-even will occur is *closest to:*

    A. $2.24

    B. $4.40

    C. $5.43

In this case, the exercise price is $3.32 and the premium paid is $1.08. Therefore, the break-even price is $3.32 + $1.08 = $4.40. This is the price at which the investor will neither make a profit nor incur a loss. If the price of the underlying asset is above this break-even price, the investor will start making a profit. If it is below this price, the investor will start incurring a loss. This is the fundamental concept of a call option.

A is incorrect. This option suggests that the break-even price is $2.24. This seems to have been calculated by subtracting the premium paid from the exercise price ($3.32 - $1.08). However, this is not the correct way to calculate the break-even price for a call option. The break-even price is calculated by adding the exercise price and the premium paid, not subtracting.

C is incorrect. This option suggests that the break-even price is $5.43. This seems to have been calculated by adding the premium paid to the price of the underlying asset ($4.35 + $1.08). However, this is not the correct way to calculate the break-even price for a call option. The break-even price is calculated by adding the exercise price and the premium paid, not the price of the underlying asset.

CFA Level 1, Topic 7 - Derivatives, Learning Module 2, Forward Commitment and Contingent Claim Features and Instruments, LOS 2b: determine the value at expiration and profit from a long or a short position in a call or put option.

Q.58 A synthetic long position in a risk-less bond is created by combining:

    A. A long position in a put + long position in the underlying + short position in the call.

    B. A long position in a call + long position in the underlying + short position in the put.

    C. A short position in a put + short position in the underlying + long position in the call.

A long position in a put + long position in the underlying + short position in the call. This can be explained by understanding the concept of put-call parity, which is a fundamental principle in options pricing. It states that the price of a call option implies a certain fair price for the corresponding put option, and vice versa.

Put-call parity is based on the no-arbitrage principle, which states that if two portfolios have the same payoff, their acquisition cost must be identical. If this were not the case, an investor could make a risk-free profit by buying the cheaper portfolio and selling the more expensive one. This is the basis for the creation of a synthetic long position in a risk-less bond.

The put-call parity equation is as follows:

$$C_o + \frac{X}{(1 + r)^T} = P_o + S_o$$

Where,

C_o = Call premium.

$\frac{X}{(1+r)^T}$ = Present value of the strike price.

P_o = Put premium.

S_o = Current price of the underlying.

By rearranging the put-call parity equation, we can derive the formula for a synthetic risk-free bond:

$$\text{Synthetic risk-free bond } = p_0 + S_0 - c_0 = \frac{X}{(1 + r)^T}$$

B is incorrect. A long position in a call + long position in the underlying + short position in the put does not create a synthetic long position in a risk-less bond. This combination would create a synthetic long position in the underlying asset, not a risk-less bond. The put-call parity equation does not support this combination for creating a synthetic risk-free bond.

C is incorrect. A short position in a put + short position in the underlying + long position in the call also does not create a synthetic long position in a risk-less bond. This combination would create a synthetic short position in the underlying asset. Again, the put-call parity equation does not support this combination for creating a synthetic risk-free bond.

CFA Level 1, Topic 7 - Derivatives, Learning Module 9, Option Replication Using Put–Call Parity, LOS 9a: explain put-call parity for European options.

Q.59 Blackoil Traders Inc. is an American oil-producing company that regularly sells oil futures to reduce the risk of fluctuating oil prices. This activity can best be described as:

A. Hedging.

B. Clearing.

C. Speculating.

Blackoil Traders Inc. is engaging in a practice known as hedging. Hedging is a risk management strategy employed to offset losses in investments by taking an opposite position in a related asset. In this case, the company is selling oil futures to protect itself against potential future price drops in oil. If the price of oil falls, the company will still be able to sell its oil at the price specified in the futures contract, thereby reducing its risk. This strategy is commonly used by companies dealing with commodities, where price fluctuations can significantly impact their bottom line. Hence, option A is the correct answer.

B is incorrect. Clearing is a process used in the futures markets to ensure that trading is conducted in an orderly manner. It involves the management and settlement of trades between buyers and sellers. Clearing houses act as intermediaries, ensuring that buyers and sellers fulfill their obligations. In the context of the question, Blackoil Traders Inc. is not engaging in clearing. They are not acting as an intermediary between buyers and sellers, but are instead taking a position in the futures market to manage their own risk.

C is incorrect. Speculating is a financial strategy that involves making high-risk investments with the hope of significant returns. Speculators are essentially betting on the future price movements of an asset. They do not seek to reduce risk, but rather to profit from fluctuations in the market. In contrast, Blackoil Traders Inc. is not speculating. They are not seeking to profit from future price movements, but rather to protect themselves from potential losses due to price fluctuations. Therefore, their activity cannot be described as speculating.

CFA Level 1, Topic 7 - Derivatives, Learning Module 2, Forward Commitment and Contingent Claim Features and Instruments, 2a: Define forward contracts, futures contracts, options (calls and puts), swaps, and credit derivatives and compare their basic characteristics.

Q.60 Doug Beckham, an AAPL's derivative manager, purchased a USD 100 call option for the price of USD 11 in February 2019. If Beckham predicts AAPL will be trading at USD 120 in February 2019, the breakeven price for the option is *closest to*:

    A. USD 109.

    B. USD 111.

    C. USD 131.

In the realm of options trading, the breakeven price is a critical concept. It is the price point at which the underlying security's price must reach for the option holder to avoid a loss. The breakeven price is calculated by adding the premium paid for the option to the strike price of the option. In this case, Doug Beckham, an AAPL's derivative manager, purchased a USD 100 call option for the price of USD 11. Therefore, the breakeven price for this call option is the strike price (USD 100) plus the option premium (USD 11), which equals USD 111. This is the price at which the underlying security, AAPL in this case, must be trading at for Beckham to cover the cost of the option and avoid a loss. It's important to note that the predicted price of the underlying security at expiration does not influence the breakeven price. The breakeven price is solely determined by the strike price and the premium paid for the option.

A is incorrect. The option A suggests that the breakeven price is USD 109. This is incorrect because it seems to have been calculated by subtracting the call option premium (USD 11) from the predicted price of the underlying at expiration (USD 120). However, this is not the correct way to calculate the breakeven price for an option. The breakeven price is determined by adding the strike price and the premium paid for the option, not by subtracting the premium from the predicted price at expiration.

B is incorrect. The option B suggests that the breakeven price is USD 131. This is incorrect because it seems to have been calculated by adding the call option premium (USD 11) to the predicted price of the underlying at expiration (USD 120). However, this is not the correct way to calculate the breakeven price for an option. The breakeven price is determined by adding the strike price and the premium paid for the option, not by adding the premium to the predicted price at expiration.

CFA Level 1, Topic 7 - Derivatives, Learning Module 2, Forward Commitment, and Contingent Claim Features and Instruments, LOS 2b: Determine the value at expiration and profit from a long or a short position in a call or put option.

Q.61 A trader takes a short position in 25 future contracts where the initial margin is $1,000 per contract, and the maintenance margin is $800 per contract. If the margin account balance is $19,000 on day 10, the variation margin is *closest to*:

    A. $1,000

    B. $5,000

    C. $6,000

The futures contracts are traded in a clearinghouse and are settled daily through a process known as mark-to-market. The clearinghouse determines an average of the final futures trades of the day and sets that price as the settlement price.

Before trading futures contracts, traders are required to deposit an initial margin. In this case, the initial margin is $1,000 per contract. The trader's position should not fall below the maintenance margin requirement, which is the minimum equity that an investor must maintain in their margin account after a purchase has been made. The maintenance margin in this case is $800 per contract.

If the trader's position falls below the maintenance margin requirement, they receive a call to deposit additional funds. This additional fund or margin required by a party to raise its equity to the initial margin is known as the variation margin.

To calculate the variation margin, we first calculate the margin account balance of one contract by dividing the account balance on day ten ($19,000) by the number of contracts (25). This gives us $760, which is less than the maintenance margin requirement of $800. This means that there is a need for a variation margin.

We then calculate the variation margin of one contract by subtracting the margin account balance from the initial margin requirement ($1,000 - $760). We then multiply the result by the number of contracts (25) to get the total variation margin, which is $6,000.

A is incorrect. The option suggests that the variation margin is $1,000. However, this is incorrect as $1,000 is the initial margin requirement of one contract, not the variation margin. The variation margin is calculated as the difference between the initial margin requirement and the margin account balance, multiplied by the number of contracts.

B is incorrect. The option suggests that the variation margin is $5,000. This is incorrect as $5,000 is the result of incorrectly subtracting the initial margin requirement per contract from the total variation margin. The correct calculation involves subtracting the margin account balance from the initial margin requirement and then multiplying the result by the number of contracts.

CFA Level 1, Topic 7 - Derivatives, Learning Module 2, Forward Commitment and Contingent Claim Features and Instruments, LOS 2a: Define forward contracts, futures contracts, swaps, options (calls and puts), and credit derivatives and compare their basic characteristics.

Q.62 A hedge fund with $120 million of initial investment and a 2-20 fee structure earned a 35% return at year-end. Assuming that management fees are based on assets under management at year-end and incentive fee is calculated net of management fee, the total fees earned by the fund is *closest* to:

      A. $10.15 million.

      B. $10.99 million.

      C. $11.64 million.

The management fees are calculated as 2% of the assets under management at the end of the year. Given that the initial investment was $120 million and the fund earned a 35% return, the assets under management at the end of the year would be $120 million * 1.35 = $162 million. Therefore, the management fees would be $162 million * 2% = $3.24 million.

The incentive fees are calculated as 20% of the profits, net of management fees. The profits are calculated as the difference between the assets under management at the end of the year and the initial investment, minus the management fees. Therefore, the profits would be ($162 million - $120 million - $3.24 million) = $38.76 million. The incentive fees would then be $38.76 million * 20% = $7.75 million.

Adding the management fees and the incentive fees gives the total fees earned by the fund, which is $3.24 million + $7.75 million = $10.99 million.

A is incorrect. This option suggests that the total fees earned by the fund are closest to $10.15 million. This would be the case if the management fees were calculated using the assets under management at the start of the year, which is not the case. The management fees are calculated using the assets under management at the end of the year, which includes the 35% return earned by the fund. Therefore, the total fees calculated using this method would be less than the actual total fees earned by the fund.

C is incorrect. This option suggests that the total fees earned by the fund are closest to $11.64 million. This would be the case if the incentive fees were calculated independent of the management fees. However, the incentive fees are calculated net of management fees, which means that the management fees are subtracted from the profits before calculating the incentive fees. Therefore, the total fees calculated using this method would be more than the actual total fees earned by the fund.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 2, Alternative Investment Performance and Returns, LOS 2b: Calculate and interpret alternative investment returns both before and after fees.

Q.63 Which of the following characteristics will *most likely* be considered as desirable by a private equity company seeking a target for an LBO (leveraged buyout)?

    A. Inefficient management.

    B. An average ability to generate cash flows.

    C. Companies perceived as being "in favor" in the general market.

Private equity firms, when considering a target for a leveraged buyout (LBO), are more likely to choose companies that are inefficiently managed. The reason behind this preference is that these firms see a potential for improvement in such companies. They believe that by implementing better management practices and strategies, they can significantly enhance the performance of these companies, thereby increasing their value. This increase in value is expected to generate attractive returns on equity for the private equity firms. This process of value creation is a fundamental aspect of the private equity investment model, making inefficient management a desirable characteristic in a potential LBO target.

B is incorrect. Private equity firms typically look for companies that can generate strong and sustainable cash flows. The reason for this is that strong cash flows are necessary to cover the significant amount of debt that is often associated with an LBO. A company with only average cash flow generation capabilities may struggle to service this debt, potentially leading to financial distress and even bankruptcy. Therefore, an average ability to generate cash flows is not a desirable characteristic in a potential LBO target.

C is incorrect. Private equity firms often target companies that are "out of favor" in the public markets. These are companies that the market may have undervalued due to temporary issues or short-term market trends. Private equity firms see potential in these companies to improve their performance and thereby increase their market value. Therefore, being "in favor" in the general market is not a characteristic that would make a company a desirable target for an LBO.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 3, Investments in Private Capital: Equity and Debt, LOS 3a: Explain features of private equity and its investment characteristics.

Q.64 In contrast to traditional investments, alternative investments are characterized by:

    A. High absolute returns.

    B. Low degree of leverage.

    C. Potential tax advantage.

Alternative investments, in contrast to traditional investments, are characterized by high absolute returns. This is primarily due to the fact that these types of investments often involve assets that are not typically found in traditional portfolios. These can include commodities, real estate, private equity, and hedge funds. The high absolute returns are often a result of the unique and complex strategies employed by alternative investment managers, which can involve a high degree of risk. However, this risk is often offset by the potential for high returns. The high absolute returns associated with alternative investments make them an attractive option for investors looking for diversification and the potential for significant financial gains.

B is incorrect. Alternative investments are actually characterized by a high degree of leverage, not a low one. Leverage refers to the use of borrowed money to finance an investment. In the case of alternative investments, managers often use leverage to amplify the potential returns of their investments. However, this strategy can also increase the potential for losses, making alternative investments a riskier proposition than traditional investments. Therefore, the assertion that alternative investments are characterized by a low degree of leverage is incorrect.

C is incorrect. Alternative investments are not characterized by potential tax advantages. In fact, they often have potential tax disadvantages. This is because the income generated by alternative investments is often subject to higher tax rates than the income generated by traditional investments. Additionally, the complex nature of alternative investments can make them more difficult to manage from a tax perspective. Therefore, the assertion that alternative investments are characterized by potential tax advantages is incorrect.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module, Alternative Investment Features, Methods, and Structures, LOS 1a: Describe features and categories of alternative investments.

Q.65 Quantum Returns is a hedge fund with $250 million as initial investment capital. A 3% management fee based on assets under management is charged at year-end, and a 20% incentive fee is charged on performance net of management fees. In the first year of operations, the fund earned a return of 16%. The investor's effective return given this fee structure is *closest* to:

    A. 9.32%

    B. 10.02%

    C. 12.52%

The assets under management at the end of the year are $250 million multiplied by 1.16 (the return of 16%), which equals $290 million. Therefore, the management fee is $290 million multiplied by 3%, which equals $8.7 million.

Next, the incentive fee is calculated. This is 20% of the performance net of management fees. The performance is the end of year assets under management ($290 million) minus the initial investment ($250 million) and the management fee ($8.7 million). This equals $31.3 million. Therefore, the incentive fee is $31.3 million multiplied by 20%, which equals $6.26 million.

The total fees to Quantum Returns are the sum of the management fee and the incentive fee, which equals $14.96 million. The investor's return is then calculated by subtracting the initial investment and the total fees from the end of year assets under management, and then dividing by the initial investment. This equals 10.02%.

A is incorrect. If the investor's effective return was 9.32%, this would imply that the total fees were higher or the end of year assets under management were lower. However, given the fee structure and the return of 16%, the total fees are correctly calculated as $14.96 million and the end of year assets under management are correctly calculated as $290 million. Therefore, the investor's effective return is higher than 9.32%.

C is incorrect. If the investor's effective return was 12.52%, this would imply that the total fees were lower or the end of year assets under management were higher. However, given the fee structure and the return of 16%, the total fees are correctly calculated as $14.96 million and the end of year assets under management are correctly calculated as $290 million. Therefore, the investor's effective return is lower than 12.52%.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 2, Alternative Investment Performance and Returns, LOS 2b: Calculate and interpret alternative investment returns both before and after fees.

Q.66 Which of the following is *least likely* a valuation method for private equity portfolio companies?

     A. Cost-based approach.

     B. Asset-based approach.

     C. Discounted cash flow method.

The private equity firms typically do not use the cost-based approach to value their portfolio companies. The cost-based approach is a valuation method that is based on the cost of reproducing or replacing the assets of a company. It does not take into account the future earning potential of the company, which is a critical factor for private equity firms when they are valuing their investments. Private equity firms are interested in the future cash flows that a company can generate, and the cost-based approach does not provide this information.

The cost-based approach is not typically used by private equity firms to value their portfolio companies. This is because the cost-based approach only considers the cost of reproducing or replacing the assets of a company. It does not take into account the future earning potential of the company, which is a critical factor for private equity firms when they are valuing their investments. Private equity firms are interested in the future cash flows that a company can generate, and the cost-based approach does not provide this information. Therefore, it is not a suitable valuation method for private equity portfolio companies.

B is incorrect. The asset-based approach is a valuation method that is used by private equity firms to value their portfolio companies. This approach considers the net asset value of a company, which is calculated by subtracting the company's liabilities from its assets. However, this approach also takes into account the future earning potential of the company, which is a critical factor for private equity firms when they are valifying their investments. Therefore, while the asset-based approach is a valid valuation method for private equity portfolio companies, it is not the least likely method to be used, as stated in the question.

C is incorrect. The discounted cash flow (DCF) method is a valuation method that is commonly used by private equity firms to value their portfolio companies. This approach involves forecasting the future cash flows of a company and then discounting them back to their present value. This method takes into account the future earning potential of the company, which is a critical factor for private equity firms when they are valuing their investments. Therefore, the DCF method is not the least likely method to be used by private equity firms to value their portfolio companies.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 3, Investments in Private Capital: Equity and Debt, LOS 3a: Explain features of private equity and its investment characteristics.

Q.67 European put and call options both have an exercise price of $50 that expires in 120 days. The underlying asset is priced at $52 and makes no cash payments during the option's life, and the risk-free rate is 4.5%. If the put is selling for $3.80, what should be the call option's price given that no arbitrage opportunity exists in this market?

    A. 3.8

    B. 4.21

    C. 6.52

The put-call parity formula is a fundamental concept in options pricing which establishes a relationship between the price of a European call option, the price of a European put option, the stock price, the strike price, and the risk-free rate. The formula is expressed as: $C_0 = P_0 + S_0 - \frac{X}{(1+r)^t}$.

In this formula, C_0 represents the call premium, P_0 is the put premium, S_0 is the current price of the underlying asset, $\frac{X}{(1+r)^t}$ is the present value of the strike price, and t is the time to expiration. The put-call parity formula is used to prevent arbitrage opportunities, which are situations where traders can make risk-free profits due to price discrepancies in the market.

By substituting the given values into the formula, we get: $C_0 = 3.80 + 52 - \frac{50}{(1+4.5\%)^{\frac{120}{365}}} = 6.52$. This calculation shows that the call option's price must be $6.52. If the price were any different, an arbitrage opportunity would exist, which contradicts the assumption that no such opportunities exist in this market.

A is incorrect. This option suggests that the call option's price should be $3.80, which is the same as the put option's price. However, this does not align with the put-call parity formula. If the call option's price were $3.80, an arbitrage opportunity would exist, which contradicts the assumption that no such opportunities exist in this market. Therefore, option A is incorrect.

B is incorrect. This option suggests that the call option's price should be $4.21. However, this does not align with the put-call parity formula. If the call option's price were $4.21, an arbitrage opportunity would exist, which contradicts the assumption that no such opportunities exist in this market. Therefore, option B is incorrect.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 9, Option Replication Using Put–Call Parity, LOS 9a: Explain put-call parity for European options.

Q.68 Which of these statements is least likely correct regarding an option?

A. An option's market price equals its intrinsic value plus its time value.

B. An option's intrinsic value equals its market price plus its time value.

C. An option is a contract that gives the buyer (the owner or holder) the right, but not the obligation, to buy or sell an underlying asset at a later date.

The statement in option B is least likely correct regarding an option because it suggests that an option's intrinsic value equals its market price plus its time value. This is not accurate. The intrinsic value of an option is the difference between the market price of the underlying asset and the strike price of the option. It represents the extent to which the option is in-the-money. It does not include the time value of the option.

A is incorrect. The statement in option A is accurate. An option's market price does indeed equal its intrinsic value plus its time value. The intrinsic value is the amount by which the option is in-the-money, and the time value is the additional premium that buyers are willing to pay for the option above its intrinsic value. The time value represents the benefit of having the choice of exercising or not for a given period of time. The time value decreases as the option gets closer to its expiration date. This is known as time decay. Therefore, the market price of an option is the sum of its intrinsic value and its time value.

C is incorrect. The statement in option C is also accurate. An option is indeed a contract that gives the buyer (the owner or holder) the right, but not the obligation, to buy or sell an underlying asset at a later date. This is the fundamental definition of an option. The buyer of the option pays a premium to the seller for this right. The seller of the option is obligated to fulfill the contract if the buyer chooses to exercise the option. The buyer can choose to exercise the option if it is profitable to do so, or let it expire worthless if it is not.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 8, Pricing and Valuation of Options, LOS 8a: Explain the exercise value, moneyness, and time value of an option.

Q.69 A European put and call options both have an exercise price of $50 that expires in 120 days. The long forward is priced at a forward price of $52 (also expires in 120 days) and makes no cash payments during the options life. The risk-free rate is 4.5%, and the put is selling for $3.80. The price of the synthetic call is *closest to:*

    A. -$5.77

    B. $5.71

    C. $5.77

The put-call forward parity is a principle that defines the relationship between the price of a European call option, the price of a European put option, the price of the underlying asset, and the risk-free rate of interest. The formula for put-call forward parity is as follows:

$$C_o + \frac{X}{(1 + r)^t} = P_o + \frac{F_o(T)}{(1 + r)^t}$$

In this formula, C_o represents the call premium, $\frac{X}{(1+r)^T}$ represents the present value of the underlying's strike price, P_o represents the put premium, and $\frac{F_o(T)}{(1+r)^t}$ represents the value of the forward contract today.

By rearranging this formula to solve for the synthetic call, we get:

$$C_0 = p_0 + \frac{F_o}{(1 + r)^T} - \frac{X}{(1 + r)^T}$$

Substituting the given values into this formula, we find that the price of the synthetic call is $5.77.

A is incorrect. This option incorrectly uses a short put, a short position in the forward contract, and a long position in the bond. The correct formula for the synthetic call requires a long put, a long position in the forward contract, and a short position in the bond. Using these incorrect positions results in a negative value for the synthetic call, which is not possible.

B is incorrect. This option fails to correctly discount the forward price and the bond price to today. The formula for the synthetic call requires that these prices be discounted to their present values. By not doing this, the calculated price for the synthetic call is lower than it should be.

CFA Level 1, Topic 8- Alternative Investments, Learning Module 9, Option Replication Using Put–Call Parity, LOS 9a: Explain put-call-forward parity for European options.

Q.70 Which of the following is *least likely* a category of alternative investments?

    A. Collectables.

    B. Infrastructure.

    C. Supranational bonds.

Supranational bonds are bonds that are issued by entities that are formed by two or more central governments. These entities are created with the purpose of promoting economic development for the member countries. These bonds are classified as fixed income investments, not as alternative investments. Alternative investments are typically investments in assets that are not part of the traditional financial markets, such as stocks, bonds, or cash. They are often used by investors to diversify their portfolios and reduce risk. Supranational bonds, on the other hand, are part of the traditional financial markets and are therefore not considered alternative investments.

A is incorrect. Collectables are indeed a category of alternative investments. Alternative investments are investments in assets that are not part of the traditional financial markets, such as stocks, bonds, or cash. Collectables, such as antiques, fine wine, or art, are examples of these types of investments. They are often used by investors to diversify their portfolios and reduce risk.

B is incorrect. Infrastructure is also a category of alternative investments. Infrastructure investments involve investing in the basic physical systems of a business or nation, such as transportation, communication, sewage, water, and electric systems. These types of investments are not part of the traditional financial markets and are therefore considered alternative investments. They are often used by investors to diversify their portfolios and reduce risk..

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 1 - Alternative Investment Features, Methods, and Structures, LOS 1a: Describe features and categories of alternative investments.

Q.71 The maximum of zero and the underlying price minus the present value of the exercise price *most likely* results in a minimum value for a?

    A. European call.

    B. European put.

    C. Protective put.

The minimum value of a European call is determined by the maximum of zero and the underlying price minus the present value of the exercise price. This is represented by the formula:

$$C_o \geq \text{Max} \left(0, \ S_o - \frac{X}{(1+r)^T}\right)$$

. This formula is derived from the principle that the value of a call option at any given time is at least equal to the difference between the current price of the underlying asset and the present value of the exercise price. If the current price of the underlying asset is less than the present value of the exercise price, the value of the call option would be zero, as it would not be profitable to exercise the option. On the other hand, if the current price of the underlying asset is greater than the present value of the exercise price, the value of the call option would be the difference between the two, as it would be profitable to exercise the option.

A is incorrect. The minimum value of a European put is determined by the maximum of zero and the exercise price minus the underlying price. This is represented by the formula:

$$P_o \geq \text{Max} \left(0, \ \frac{X}{(1+r)^T} - S_o\right)$$

. This formula is derived from the principle that the value of a put option at any given time is at least equal to the difference between the present value of the exercise price and the current price of the underlying asset. If the present value of the exercise price is less than the current price of the underlying asset, the value of the put option would be zero, as it would not be profitable to exercise the option. On the other hand, if the present value of the exercise price is greater than the current price of the underlying asset, the value of the put option would be the difference between the two, as it would be profitable to exercise the option.

C is incorrect. A protective put is an options strategy in which a long position in an asset is combined with a long position in a put. This strategy is used to limit the potential loss from a decline in the price of the underlying asset. The value of a protective put is not determined by the maximum of zero and the underlying price minus the present value of the exercise price, but by the value of the underlying asset and the value of the put option. Therefore, the statement does not apply to a protective put.

CFA Level 1, Topic 8 - Derivatives, Learning Module 8, Pricing and Valuation of Options, LOS 8c: Identify the factors that determine the value of an option and describe how each factor affects the value of an option.

Q.72 Which of the following *best* describes why future and forward prices differ?

    A. Futures contracts settle daily, which means investors in futures contracts must hold a margin account.

    B. Since traded on an exchange, futures contracts have more liquidity, reason why it is cheaper to invest them.

    C. The forward contract has essentially no counterparty risk since it is a private agreement between two parties, so forward contracts are more expensive.

The futures contracts do indeed settle daily, necessitating investors in these contracts to maintain a margin account. This is a fundamental characteristic of futures contracts that differentiates them from forward contracts. The daily settlement, also known as marking to market, involves the automatic adjustment of the margin account to reflect the daily fluctuations in the value of the underlying asset. This process ensures that the value of the contract is effectively reset to zero at the end of each trading day. If the value of the futures contract increases, the excess margin generated can be reinvested, providing a potential source of additional profit for the investor. This unique feature of futures contracts, which is not present in forward contracts, is what makes them more attractive to certain types of investors, despite the requirement for a margin account.

A is incorrect. While it is true that futures contracts, being exchange-traded, generally have higher liquidity than forward contracts, this does not necessarily make them cheaper to invest in. The cost of investing in futures contracts is not solely determined by their liquidity. Other factors, such as the cost of maintaining a margin account, the potential for margin calls, and the risk of price volatility, can also influence the cost of investing in futures contracts.

C is incorrect. The forward contracts can have significant counterparty risk because they are not backed by a clearinghouse, unlike futures contracts. In a forward contract, the parties are directly exposed to each other's credit risk. If one party defaults, the other party bears the loss. This counterparty risk can make forward contracts more risky, and potentially more expensive, than futures contracts.

CFA Level 1, Topic 8 - Derivatives, Leaning Module 6, Pricing and Valuation of Futures Contracts, LOS 6b: Explain why forward and futures prices differ.

Q.73 XYZ Hedge fund charges a management fee of 2% based on assets under management at year-end and a 20% incentive fee. The following are the value of the investment at the end of each year (before fee).

Initial investment	GBP 125 million
End of the year 1	GBP 175 million
End of the year 2	GBP 150 million
End of the year 3	GBP 185 million

What are the fees earned by XYZ Hedge fund in the 3rd year if incentive fees and management fees are computed independently? Assume management fees are calculated using end-of-period valuation, and the fee structure includes the use of a high watermark.

    A. GBP 7.5 million.

    B. GBP 5.7 million.

    C. GBP 8.4 million.

The management fee is calculated as 2% of the assets under management at the end of the year, which is GBP 185 million. Therefore, the management fee is GBP 3.7 million (185 million * 2%).

The incentive fee is calculated as 20% of the increase in the value of the fund above the high watermark. The high watermark is the highest value that the fund has reached in the past, and it is used to ensure that the fund manager is rewarded only for increasing the value of the fund above its highest previous value. In this case, the high watermark is GBP 161.5 million, which was established at the end of year 1. The calculation of the high watermark is as follows: HWM = 175 - (0.02 * 175) - (0.2 * (175 - 125)) = 161.5. Therefore, the incentive fee is GBP 4.7 million ((185 - 161.5) * 20%).

When we add the management fee and the incentive fee, we get the total fees earned by the XYZ hedge fund in the 3rd year, which is GBP 8.4 million (3.7 million + 4.7 million).

A is incorrect. A fee of GBP 7.5 million would imply that the fund either charged a lower management fee or a lower incentive fee than stated, or that the value of the fund at the end of the year was lower than GBP 185 million. None of these conditions are true according to the information given in the question.

B is incorrect. A fee of GBP 5.7 million would imply that the fund either charged a significantly lower management fee or incentive fee than stated, or that the value of the fund at the end of the year was significantly lower than GBP 185 million. None of these conditions are true according to the information given in the question.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 2, Alternative Investment Performance and Returns, LOS 2b: Calculate and interpret alternative investment returns both before and after fees.

Q.74 A real estate index that is based on changes in the price of properties that are sold for multiple times is *most likely* known as a/an:

    A. REITs index.

    B. Appraisal index.

    C. Repeat sales index.

The Repeat Sales Index is specifically designed to track changes in the prices of properties that have been sold multiple times. The Repeat Sales Index is a tool used by real estate professionals and investors to understand and analyze market trends and property value fluctuations. It provides a more accurate reflection of the real estate market by focusing on properties that have been sold more than once, thereby eliminating the influence of unique or one-time property sales that may skew the overall picture of the market. This method of indexing is particularly useful in volatile or rapidly changing markets, where it can provide a more stable and reliable measure of property value changes.

A is incorrect. The REITs index, or Real Estate Investment Trusts index, is not based on changes in the prices of properties that have been sold multiple times. Instead, it is constructed using the prices of publicly traded shares of Real Estate Investment Trusts. REITs are companies that own, operate, or finance income-generating real estate, and their shares are traded on major exchanges just like stocks. The REITs index reflects the overall performance of these companies, not the changes in property prices.

B is incorrect. The Appraisal Index is also not based on changes in the prices of properties that have been sold multiple times. Instead, it is based on estimates of value, or appraisals, as inputs. Appraisal indexes are typically used to track changes in the estimated value of properties over time, based on appraisals conducted by professional appraisers. These appraisals take into account a variety of factors, including the condition of the property, the value of similar properties in the area, and current market conditions. However, because they are based on estimates rather than actual sales data, appraisal indexes may not accurately reflect changes in market prices.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 4, Real Estate and Infrastructure, LOS 4b: Explain the investment characteristics of real estate investments.

Q.75 Adding alternative investments to a diversified portfolio will *most likely* result in:

    A. A higher return and a lower standard deviation.

    B. A higher return and a higher standard deviation.

    C. A lower return and no effect on standard deviation.

Alternative investments, such as real estate, commodities, and hedge funds, can provide a higher return and a lower standard deviation when added to a diversified portfolio. This is because these types of investments often have a low correlation with traditional asset classes, such as stocks and bonds. This low correlation can help to increase the overall return of the portfolio while reducing its risk, as measured by the standard deviation. The standard deviation is a measure of the dispersion of a set of data from its mean. If the data points are close to the mean, the standard deviation is small; if the data points are spread out over a large range of values, the standard deviation is large.

B is incorrect. While it is true that alternative investments can potentially provide higher returns, they do not necessarily lead to a higher standard deviation. As mentioned earlier, the low correlation of alternative investments with traditional asset classes can help to reduce the overall risk of the portfolio, as measured by the standard deviation. Therefore, adding alternative investments to a diversified portfolio does not necessarily result in a higher standard deviation.

C is incorrect. This option suggests that adding alternative investments to a diversified portfolio will result in a lower return and no effect on the standard deviation. However, this is not typically the case. Alternative investments can often provide higher returns than traditional asset classes, and their inclusion in a portfolio can help to reduce the portfolio's overall risk, as measured by the standard deviation.

CFA Level 1, Topic 8- Alternative Investments, Learning Module 1, Alternative Investment Features, Methods, and Structure, LOS 1a: Describe features and categories of alternative investments.

Q.76 The sources of commodities futures return can *best* be described to be from:

    A. Roll yield only.

    B. Roll yield and collateral yield.

    C. Roll yield, collateral yield, and change in spot prices.

The Roll yield, collateral yield, and change in spot prices collectively form the sources of commodities futures returns.

Roll yield refers to the difference between the spot price of a commodity and the price specified by its futures contract. In a normal market condition, the futures price is higher than the spot price. This is known as contango. However, in certain market conditions, the spot price can be higher than the futures price, a situation known as backwardation. The roll yield is positive in backwardation and negative in contango. Therefore, the roll yield plays a significant role in determining the returns from commodity futures.

Collateral yield is the interest earned on the collateral posted as a good-faith deposit for the futures contracts. When an investor buys a futures contract, they are required to deposit a certain amount of money as collateral. This collateral earns interest over the period of the contract, contributing to the total return from the futures contract.

The change in spot prices refers to the fluctuation in the current price of the commodity. The spot price of a commodity can change due to various factors such as changes in supply and demand, geopolitical events, changes in currency value, and other macroeconomic factors. The change in spot prices directly affects the returns from commodity futures.

A is incorrect. This option suggests that roll yield is the only source of commodities futures return. While roll yield is indeed a significant component, it is not the sole contributor. As explained above, collateral yield and change in spot prices also play crucial roles in determining the returns from commodity futures.

B is incorrect. This option suggests that roll yield and collateral yield are the only sources of commodities futures return. Again, while these two components are important, they do not represent the entire picture. The change in spot prices is also a significant factor that influences the returns from commodity futures.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 1, Alternative Investment Features, Methods, and Structures, Natural Resources, and Hedge Funds, LOS 1a: Describe features and categories of alternative investments.

Q.77 Which of the following are *most likely* benefits of a trade sale as a form of exit strategy pursued by private equity portfolio managers?

I. An immediate cash exit for Private Equity investors.

II. Fast and simple execution.

III. A higher number of potential trade buyers.

A. I and II.

B. I and III.

C. I, II, and III.

A trade sale, as an exit strategy, is a method where a company or a portion of it is sold to another company, typically operating within the same business sector. The primary benefits of a trade sale include an immediate cash exit for private equity investors and a fast and simple execution process. The immediate cash exit is beneficial as it allows the investors to quickly recoup their investment and potentially realize a profit. This is particularly advantageous in situations where the investors need to liquidate their holdings quickly. The fast and simple execution process is another significant benefit as it reduces the time and resources required to complete the exit, making it a more efficient option compared to other exit strategies.

Option B is incorrect. This option suggests that a trade sale results in an immediate cash exit for private equity investors and a higher number of potential trade buyers. As explained earlier, the number of potential trade buyers is not necessarily higher in a trade sale.

Option C is incorrect. This option suggests that a trade sale results in an immediate cash exit for private equity investors, a fast and simple execution process, and a higher number of potential trade buyers. As explained earlier, the number of potential trade buyers is not necessarily higher in a trade sale.

CFA Level 1, Topic 8 - Alternative Investments, Learning Module 1, Alternative Investment Features, Methods, and Structures, LOS 1a: Describe features and categories of alternative investments.

Q.78 Which of the following investors *most likely* has a portfolio perspective in his investment strategy?

I. Investor A has been investing in the shares of Max Mart for the last ten years. He always earns above-market returns because he regularly evaluates the risk and return of his single asset portfolio.

II. Investor B holds a PhD in Economics. Due to his sound knowledge of different sectors of the economy, he keeps shares from different firms from different sectors. He evaluates the combined risks and returns of these assets in a portfolio.

III. Investor C is a new investor who recently started investing in large-cap stocks. His

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investment strategy involves evaluating the risks and returns of his portfolio shares in isolation.

A. Investor A.

B. Investor B.

C. Investors B and C.

Investor B embodies the portfolio perspective in his investment strategy. A portfolio perspective in investment strategy refers to the approach where an investor evaluates the combined risks and returns of multiple assets in a portfolio, rather than assessing each asset in isolation. This perspective allows the investor to diversify the risk and optimize the returns. Investor B, with his PhD in Economics, has a sound knowledge of different sectors of the economy. This knowledge enables him to select shares from various firms across different sectors, thereby diversifying his portfolio. He then evaluates the combined risks and returns of these assets, which is a clear indication of a portfolio perspective. His approach is in line with the Modern Portfolio Theory, which emphasizes the importance of portfolio diversification to optimize returns and minimize risk.

A is incorrect. Investor A does not have a portfolio perspective in his investment strategy. He has been investing in the shares of Max Mart for the last ten years and evaluates the risk and return of this single asset portfolio. This approach is contrary to the portfolio perspective, which involves diversification of assets and evaluation of combined risks and returns. While Investor A may have earned above-market returns, his strategy is risky as it is dependent on the performance of a single asset. If the performance of Max Mart declines, his entire investment is at risk. Therefore, his strategy lacks the risk diversification that is inherent in a portfolio perspective.

C is incorrect. Investor C, being a new investor, evaluates the risks and returns of his portfolio shares in isolation. This approach is not in line with the portfolio perspective, which emphasizes the evaluation of combined risks and returns of multiple assets. By evaluating each share in isolation, Investor C is not considering the overall risk and return of his portfolio. This could lead to a skewed perception of the risk and return, and could potentially result in sub-optimal investment decisions. Therefore, despite investing in large-cap stocks, Investor C's strategy lacks the holistic view that is characteristic of a portfolio perspective.

CFA Level 1, Topic 9 - Portfolio Management, Learning Module 1, Portfolio Management: An overview, LOS 1a: Describe the portfolio approach to investing.

Q.79 Which of the following statements concerning risk assembling activities is *most likely* an example of risk budgeting?

    A. The beta of the portfolio must not be above 0.

    B. The portfolio must not include more than 55% of equities and 45% of real estate.

    C. The portfolio must invest 50% of its funds in value stocks and 50% in fixed assets with maturities longer than 3 years.

Risk budgeting is a process that involves allocating or restricting risk by using certain risk measures such as beta or Value at Risk (VaR), rather than limiting the risk by allocating the amount of money spent. This approach is used to manage the risk of a portfolio in a more efficient and effective manner. It allows for a more precise control of the risk level of the portfolio, which can lead to better performance and higher returns. This is why option A, "The beta of the portfolio must not be above 0", is the correct answer. This statement is a clear example of risk budgeting as it sets a limit on the beta of the portfolio, which is a measure of its systematic risk. By setting a maximum limit on the beta, the portfolio manager is effectively controlling the level of risk in the portfolio.

B is incorrect. The statement "The portfolio must not include more than 55% of equities and 45% of real estate" is not an example of risk budgeting. This is because it is not setting a limit on a risk measure, but rather it is setting a limit on the allocation of assets in the portfolio. This is more related to asset allocation, which is a different concept from risk budgeting. Asset allocation involves dividing an investment portfolio among different asset categories, such as equities, bonds, and real estate. This is done to balance risk and reward according to an individual's goals, risk tolerance, and investment horizon.

C is incorrect. The statement "The portfolio must invest 50% of its funds in value stocks and 50% in fixed assets with maturities longer than 3 years" is also not an example of risk budgeting. Similar to option B, this statement is setting a limit on the allocation of assets in the portfolio, not on a risk measure. This is again related to asset allocation, not risk budgeting. The allocation of funds in value stocks and fixed assets with longer maturities is a strategy used to balance risk and reward, but it does not directly control the level of risk in the portfolio as risk budgeting does.

CFA Level 1, Topic 9 - Portfolio Management, Learning Module 4, Introduction to Risk Management, LOS 4e: describe risk budgeting and its role in risk governance.

Q.80 During a meeting with his investment manager, an investor requested the manager not to invest his money in the Republic of Somalia. The investors believe that the taxes that Somalia collects on investments are used for arms manufacturing. Determine the *most appropriate* categorization of the investor's request.

      A. The Investor's request should be categorized under tax constraints.

      B. The investor's request should be categorized under unique constraints.

      C. The investor's request should be categorized under both tax and unique constraints.

The investor's request should be categorized under unique constraints. Unique constraints refer to the specific requirements or restrictions that an investor may have that are not common to all investors. In this case, the investor's request not to invest in the Republic of Somalia due to his belief that the taxes collected on investments are used for arms manufacturing is a unique constraint. This is because it is a specific requirement that is unique to this investor and is not a common concern for all investors. Therefore, the investor's request falls under the category of unique constraints.

A is incorrect. Tax constraints generally refer to the limitations or restrictions that an investor may have due to their tax situation. For example, an investor may have tax constraints if they are trying to minimize their tax liability or if they are trying to take advantage of certain tax benefits. In this case, the investor's concern is not about his own tax situation or about minimizing his tax liability. Rather, his concern is about how the taxes collected on investments in Somalia are used.

C is incorrect. As explained above, the investor's request does not fall under the category of tax constraints. His concern is not about his own tax situation or about minimizing his tax liability. Rather, his concern is about how the taxes collected on investments in Somalia are used.

CFA Level 1, Topic 9 - Portfolio Management, Learning Module 2, Basics of Portfolio Planning and Construction, LOS 2e: describe the investment constraints of liquidity, time horizon, tax concerns, legal and regulatory factors, and unique circumstances and their implications for the choice of portfolio assets.

Q.81 A junior fund manager at Dapper Assets Management is constructing a portfolio consisting of a few large-cap stocks that trade on the London Stock Exchange. In a meeting with the investment committee, the manager was asked to present the risk associated with the stock of ATT. The returns of the stock for the past 7 years are shown in the following table:

Year	ATT Return
2010	17%
2011	21%
2012	−8%
2013	−1%
2014	4%
2015	19%
2016	−7%

Using the given data, the standard deviation of the stock is *closest* to:

    A. 1.33%

    B. 11.53%

    C. 12.46%

The variance is calculated using the formula:

$$\text{Variance} = \frac{\sum_{i=1}^{N} (X_i - \mu)^2}{N}$$

Where:

μ = Mean return

X_i = The value of one observation

N = Number of variables

The mean return is calculated as follows:

$$\text{Mean return} = \frac{(0.17 + 0.21 - 0.08 - 0.01 + 0.04 + 0.19 - 0.07)}{7} = 0.064$$

Substituting the values into the variance formula, we get:

$$\text{Variance} = \frac{[(0.17 - 0.064)^2 + (0.21 - 0.064)^2 + (-0.08 - 0.064)^2 + (-0.01 - 0.064)^2 + (0.04 - 0.06}{7}$$
$$= 0.0133$$

Finally, the standard deviation is the square root of the variance, which is $\sqrt{0.0133} = 0.1153$ or 11.53%.

A is incorrect. This option suggests that the standard deviation of the stock is 1.33%, which is actually the stock's variance. The standard deviation is the square root of the variance, not the variance itself. Therefore, this option is incorrect because it confuses the variance with the standard deviation.

C is incorrect. This option suggests that the standard deviation of the stock is 12.46%. This would have been correct if the data provided was from a sample and not from a population. When calculating the variance of data obtained from a sample, we divide by N-1 and not by N. However, in this case, the data is from a population, so we divide by N. Therefore, this option is incorrect because it applies the wrong formula for the given data set.

CFA Level 1, Topic 9 - Portfolio Management, Learning Module 1, Portfolio Risk and Return: Part I, LOS 1d: Calculate and interpret the mean, variance, and covariance (or correlation) of asset returns based on historical data.

Q.82 The standard deviation of an asset's return is 10%, and the standard deviation of the market's return is 14%. If the correlation of returns with the market index is 0.7, then the beta of the asset is *closest to*:

    A. 0.1

    B. 0.5

    C. 1.8

The beta of an asset is a measure of its systematic risk, or the risk that cannot be eliminated through diversification. It is calculated as the product of the correlation of the asset's returns with the market's returns and the ratio of the standard deviation of the asset's returns to the standard deviation of the market's returns. In this case, the correlation of the asset's returns with the market's returns is given as 0.7. The standard deviation of the asset's returns is 10%, and the standard deviation of the market's returns is 14%. Therefore, the beta of the asset can be calculated as follows:

$$\text{Asset's beta} = \text{Correlation with markets return} \times \frac{\text{Standard deviation of the asset}}{\text{Standard deviation of market returns}}$$
$$= 0.7 \times \frac{10\%}{14\%}$$
$$= 0.5$$

A is incorrect. If the beta of the asset was 0.1, this would imply that the asset's returns are very weakly correlated with the market's returns. This is not the case here, as the correlation of the asset's returns with the market's returns is given as 0.7, which indicates a strong positive correlation. Furthermore, a beta of 0.1 would also imply that the asset's returns are much less volatile than the market's returns, which is also not the case here, as the standard deviation of the asset's returns is 10%, which is not significantly lower than the standard deviation of the market's returns of 14%.

C is incorrect. If the beta of the asset was 1.8, this would imply that the asset's returns are much more volatile than the market's returns and that they are strongly positively correlated with the market's returns. However, the standard deviation of the asset's returns is 10%, which is lower than the standard deviation of the market's returns of 14%, indicating that the asset's returns are less volatile than the market's returns. Furthermore, while the correlation of the asset's returns with the market's returns is given as 0.7, which indicates a strong positive correlation, it is not strong enough to result in a beta of 1.8.

CFA Level 1, Topic 9 - Portfolio Management, Learning Module 2, Portfolio Risk and Return: Part II, LOS 2e: Calculate and interpret beta.

Q.83 An investor is interested in knowing the real return his portfolio has earned over a certain period. Assuming that the nominal return of his portfolio is 18%, the CPI is 6%, and the tax rate is 38.9%, then the real return of the portfolio is *closest* to:

    A. -11.17%

    B. 11.32%

    C. 18.00%

The real rate of return reflects the actual purchasing power of an amount of money over time by adjusting for inflation. It is calculated using the following formula:

$$\text{Real Rate of Return} = \left(\frac{1 + \text{Nominal Rate}}{1 + \text{Inflation Rate}}\right) - 1$$

In this case:

- Nominal Rate = 18% or 0.18

- Inflation Rate = 6% or 0.06

Substituting these values into the formula:

$$\text{Real Rate of Return} = \left(\frac{1 + 0.18}{1 + 0.06}\right) - 1$$

First, calculate the fraction:

$$\frac{1.18}{1.06} \approx 1.1132$$

Now, subtract 1:

$$\text{Real Rate of Return} = 1.1132 - 1 = 0.1132 \, \text{or} \, 11.32\%$$

CFA Level 1, Topic 9 - Portfolio Management, Portfolio Risk and Return: Part I, LOS 1d: calculate and interpret the mean, variance, and covariance (or correlation) of asset returns based on historical data.

Q.84 Distributed ledger technology (DLT) has the potential to accommodate "smart contracts." Those smart contracts are *most likely*:

A. Computer programs that self-execute based on pre-specified terms and conditions agreed to by the parties to a contract.

B. A digital currency created in January 2009 by the mysterious Satoshi Nakamoto.

C. Computer programs that follow trends and patterns of money invested by people with expert knowledge.

Option A accurately describes what smart contracts are in the context of Distributed Ledger Technology (DLT). Smart contracts are essentially computer programs that are designed to self-execute based on pre-specified terms and conditions that have been agreed upon by the parties involved in a contract. This means that once the conditions of the contract are met, the smart contract automatically executes the agreed-upon actions without the need for any manual intervention. This is a key feature of DLT and is one of the reasons why it has the potential to revolutionize various industries. For instance, in the financial sector, smart contracts can be used for the automatic execution of contingent claims for derivatives and the instantaneous transfer of collateral in the event of default. This can significantly streamline processes and reduce the need for intermediaries, thereby increasing efficiency and reducing costs.

B is incorrect. This option describes a digital currency, specifically Bitcoin, which was indeed created in January 2009 by an individual or group using the pseudonym Satoshi Nakamoto. While Bitcoin does utilize DLT in the form of blockchain, it is not a smart contract. Smart contracts and digital currencies like Bitcoin are both applications of DLT, but they serve different purposes. Bitcoin is a form of digital money that can be used for transactions, while smart contracts are self-executing contracts with the terms of the agreement directly written into code.

C is incorrect. This option seems to describe a type of algorithmic trading program, which follows trends and patterns of money invested by people with expert knowledge. While such programs do exist and can be quite sophisticated, they are not what is typically referred to as smart contracts in the context of DLT. Smart contracts are not designed to follow investment trends or patterns, but rather to execute specific actions when certain pre-agreed conditions are met. Therefore, this option does not accurately describe what smart contracts are.

CFA Level 1, Topic 9, Reading 68 – Fintech in Investment Management, LOS 68d: Describe Financial Applications of Distributed Ledger Technology

Q.85 The table below illustrates expected annual risk and beta data concerning three textile manufacturers (A, B, and C).

Textile Manufacturer	Expected Annual Standard Deviation (%)	Beta
A	25.5	1.8
B	31.8	0.6
C	19.4	1.2

Out of the three manufacturers, the highest total risk is *closest to*:

    A. 0.065

    B. 0.101

    C. 0.318

The total risk of an investment is quantified by its total variance. In this context, the total variance is calculated by squaring the standard deviation. For manufacturer B, the standard deviation is 0.318. When we square this value, we get 0.101, which is the total risk for manufacturer B. This is the highest total risk among the three manufacturers, A, B, and C.

A is incorrect. This option suggests that the highest total risk is 0.065. However, this value is actually the total variance of manufacturer A, not the highest total risk among the three manufacturers. The total variance of manufacturer A is calculated by squaring its standard deviation, which is 0.255. The result is 0.065. While this is a valid calculation of total risk for manufacturer A, it is not the highest total risk among the three manufacturers.

C is incorrect. This option suggests that the highest total risk is 0.318. However, this value is actually the standard deviation of manufacturer B, not its total risk. The total risk is calculated by squaring the standard deviation, not by taking the standard deviation itself. Therefore, while 0.318 is a relevant figure in the calculation of total risk for manufacturer B, it is not the correct answer to the question of which manufacturer has the highest total risk.

CFA Level 1, Topic 9 - Basics of Portfolio Planning and Construction, Learning Module 2, LOS 2c: Describe risk and return objectives and how they may be developed for a client.

Q.86 Which of the following return-generating models *most likely* uses macroeconomic indicators such as GDP growth and inflation along with fundamental factors such as earnings and earnings growth to forecast future value?

    A. Market model.

    B. Revenue model.

    C. Multifactor model.

The multifactor model is the most likely to use macroeconomic indicators such as GDP growth and inflation along with fundamental factors such as earnings and earnings growth to forecast future value. This is because the multifactor model is designed to consider multiple factors in determining the return on a security. It is a financial model that employs multiple factors in its computations to explain market phenomena and/or equilibrium asset prices. The multifactor model can be used to construct a portfolio with a desired risk profile, to identify mispriced securities, or to assess performance, among other things. It is a more comprehensive model as it takes into account a wider range of factors that can influence the return on a security.

A is incorrect. The market model is not the most likely to use macroeconomic indicators and fundamental factors to forecast future value. The market model is a linear regression model that relates the return on a security to the return on the market as a whole. It is a simple model that only considers the relationship between a security's return and the return on the market. It does not take into account other factors such as GDP growth, inflation, earnings, and earnings growth.

B is incorrect. The revenue model is also not the most likely to use macroeconomic indicators and fundamental factors to forecast future value. A revenue model is a business model that focuses on the generation of revenue. It identifies which revenue source to pursue, what value to offer, how to price the value, and who pays for the value. It is more concerned with the business strategy and revenue generation of a company rather than forecasting the future value of a security.

CFA Level 1, Topic 9 - Portfolio Management, Learning Module 2, Portfolio Risk and Return: Part II, LOS 2d: Explain return generating models (including the market model) and their uses.

Q.87 Which of the following is *most likely* a method of detecting and overcoming loss aversion bias?

A. A disciplined investment approach.

B. Fearing that profits may diminish, selling investments in a gain position much earlier.

C. Using fundamental analysis to keep investments in a loss position for longer than necessary.

A disciplined investment approach, as indicated in option A, is the most effective method for detecting and overcoming loss aversion bias. Loss aversion bias refers to the tendency of investors to strongly prefer avoiding losses to acquiring equivalent gains. This bias can lead to irrational decision-making, such as holding onto losing investments for too long or selling winning investments too soon. A disciplined investment approach can help to mitigate this bias by encouraging investors to stick to a predetermined investment strategy, regardless of short-term market fluctuations. This approach involves setting clear investment goals, diversifying the investment portfolio, and regularly reviewing and adjusting the portfolio as necessary. By adhering to a disciplined investment approach, investors can make more rational and less emotionally-driven investment decisions, thereby overcoming loss aversion bias.

B is incorrect. The fear that profits may diminish, leading to the premature selling of investments in a gain position, is actually a manifestation of loss aversion bias, not a method for overcoming it. This behavior is driven by the fear of potential losses, causing investors to sell their investments as soon as they start making profits, even if the fundamentals of the investment remain strong. This can result in missed opportunities for further gains and does not help in overcoming loss aversion bias. Instead, it reinforces the bias by prioritizing the avoidance of potential losses over the pursuit of potential gains.

C is incorrect. Using fundamental analysis to keep investments in a loss position for longer than necessary is also a manifestation of loss aversion bias, not a method for overcoming it. This behavior is driven by the hope of recouping losses, causing investors to hold onto losing investments even when the fundamentals of the investment suggest otherwise. This can result in further losses and does not help in overcoming loss aversion bias. Instead, it reinforces the bias by prioritizing the avoidance of realizing losses over the rational evaluation of the investment's fundamentals.

CFA Level 1, Topic 9 - Portfolio Management, Learning Module 3, The behavioral biases of individuals, LOS 3d: Discuss commonly recognized behavioral biases and their implications for financial decision making.

Q.88 Which of the following key factors of the risk management framework *most likely* involves the quantitative assessment of potential sources of risk and the organization's risk exposure?

     A. Risk infrastructure.

     B. Risk Analysis and integration.

     C. Risk identification and integration.

Risk identification and integration, as indicated in option C, is the key component of the risk management framework that involves both quantitative and qualitative assessment of potential sources of risk and the organization's risk exposure. This process is crucial as it allows the organization to understand the potential risks they may face and to what extent. It involves identifying potential risk sources, measuring the potential impact of these risks, and integrating this information into the organization's overall risk management strategy. This process also includes the calculation of risk metrics under various stress scenarios, which provides a more comprehensive understanding of the organization's risk exposure. This detailed analysis and integration of risk information are essential for effective risk management and strategic decision-making within the organization.

A is incorrect. Risk infrastructure, while an important aspect of risk management, does not primarily involve the quantitative assessment of potential sources of risk and the organization's risk exposure. Instead, risk infrastructure refers to the people, systems, and processes in place within an organization to track risk exposures and perform quantitative risk analysis. This infrastructure is crucial for supporting the organization's risk management efforts, but it does not directly involve the identification and measurement of potential risk sources and the organization's risk exposure.

B is incorrect. Risk analysis and integration, as suggested in option B, involves using risk tools to rigorously sort out the factors that are not adding value and incorporate this analysis into the management decision process to improve outcomes. While this process is an important part of risk management, it is more focused on the analysis and integration of risk information into decision-making processes, rather than the identification and measurement of potential risk sources and the organization's risk exposure.

CFA Level 1, Topic 9 - Portfolio Management, Learning Module 4, Introduction to risk management, LOS 4b: Describe features of a risk management framework.

Q.89 Which of the following portfolios is/are *most appropriately* priced?

   I. A portfolio with an estimated return above the securities market line (SML).

  II. A portfolio with an estimated return plotted on the SML.

 III. A portfolio with an estimated return below the SML.

     A. Portfolio II.

     B. Portfolios I and II.

     C. Portfolio II and III.

The Security Market Line (SML), also known as the characteristic line, is a graphical representation of the Capital Asset Pricing Model (CAPM) that is used to model the risk-return relationships of securities. The SML is a crucial tool in finance as it helps investors understand whether a security's return is adequate for its level of risk.

When a portfolio or security is plotted on the SML, it indicates that the security is correctly valued. This is because the expected return of the security is commensurate with its level of risk. In other words, the security is neither overvalued nor undervalued, but is priced appropriately. This is the case with Portfolio II, which is why it is the correct answer.

A is incorrect. This option suggests that Portfolio I, which has an estimated return above the SML, is correctly priced. However, this is not the case. When a security's estimated return is above the SML, it indicates that the security is undervalued. This is because the security's expected return is greater than what would be expected given its level of risk. Therefore, while an undervalued security may present a good investment opportunity, it is not correctly priced in the context of the market.

C is incorrect. This option suggests that Portfolios II and III are correctly priced. As discussed, Portfolio II is correctly priced as its estimated return is on the SML. However, Portfolio III, which has an estimated return below the SML, is not correctly priced. When a security's estimated return is below the SML, it indicates that the security is overvalued. This is because the security's expected return is less than what would be expected given its level of risk. Therefore, while an overvalued security may be priced higher than its intrinsic value, it is not correctly priced in the context of the market.

CFA Level 1, Topic 9 - Portfolio Management, Learning Module 2, Portfolio Risk and Return: Part II, LOS 2f: explain the capital asset pricing model (CAPM), including its assumptions and the security market line (SML).

Q.90 Damascus Trading Corp. is a shoe manufacturer in Syria with a risk-free rate of 5%, a market return of 10%, and a Beta of 1.2. The resulting cost of (equity) capital is *closest to*;

    A. 6%

    B. 11%

    C. 18%

CAPM or cost of capital of stocks of Damascus is calculated as;

$$CAPM = Risk - Free\ rate + Beta \times (Market\ Risk - Risk - Free\ rate)$$
$$E_r = 5\% + 1.2(10\% - 5\%)$$
$$= 11\%$$

A is incorrect. It is the market premium multiplied by beta, not the resulting cost of capital, as shown below.

$$E_r = 1.2\,(10\% - 5\%) = 6\%$$

C is incorrect. 23\% results from incorrectly adding the risk-free rate to the market risk when calculating the market risk premium, as shown below.

$$E_r = 1.2\,(10\% + 5\%) = 18\%$$

CFA Level 1, Topic 1 - Portfolio Management, Learning Module 2, Capital Asset Pricing Model: Assumptions and the Security Market Line, LOS 2f: Explain the capital asset pricing model (CAPM), including its assumptions, and the security market line (SML), LOS 2g: Calculate and interpret the expected return of an asset using the CAPM