Level I of the CFA® Exam

Mock Questions with Answers - Mock Exam 2025 #4 - Second Session (Corporate Finance, Equity, Fixed Income, Derivatives, Alternative Investments & Portfolio Management)

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Q.1 Which of the following is *least likely* a primary source of liquidity for a company?

A. Cash Balances.

B. Sales of equipment.

C. Accounts receivables.

The primary sources of liquidity for a company are those that are readily available and can be accessed at a relatively low cost. These sources are typically cash or cash equivalents that can be quickly converted into cash without significant loss of value. They include cash available in bank accounts, short-term funds like lines of credit, and cash flow management. These sources are considered primary because they are the first ones a company would turn to in order to meet its immediate cash needs.

Sales of equipment are considered a secondary source of liquidity. This is because selling equipment often involves significant time and effort, and may result in the company receiving less than the equipment's book value. Additionally, selling equipment can disrupt a company's operations if the equipment is needed for the company's business activities. Therefore, sales of equipment are the least likely primary source of liquidity for a company.

A is incorrect. Cash balances are indeed a primary source of liquidity for a company. Cash balances refer to the amount of money a company has in its bank accounts. This is the most liquid asset a company has, as it can be used immediately to pay for expenses, invest in opportunities, or cover any other financial needs the company may have. Therefore, cash balances are not the least likely primary source of liquidity for a company.

C is incorrect. Accounts receivables are also a primary source of liquidity. Accounts receivables represent money owed to a company by its customers for goods or services provided on credit. These are considered a primary source of liquidity because they can be converted into cash relatively quickly, usually within 30 to 60 days. Therefore, accounts receivables are not the least likely primary source of liquidity for a company.

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

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Q.2 Angela and James are close friends. They wish to start a cosmetics business, which they expect to grow fast; hence they need external financing. Their main concern is copyright infringement-related lawsuits since they will enter a competitive market. As such, they plan to file articles of incorporation with a regulatory authority. Which of the following best describes Angela and James' business structure?

A. Corporation.

B. General partnership.

C. Sole proprietorship.

Angela and James are planning to start a cosmetics business and they are concerned about copyright infringement-related lawsuits. This indicates that they are looking for a business structure that can provide them with legal protection. A corporation is a separate legal entity from its owners, which means it can own assets, enter into contracts, and sue or be sued in its own name. This is a significant advantage for Angela and James as it limits their personal liability for business debts and lawsuits, including those related to copyright infringement. Furthermore, their plan to file articles of incorporation with a regulatory authority is a clear indication that they are forming a corporation. The articles of incorporation is a document that establishes the existence of a corporation in the United States and Canada, and is a requirement for the formation of a corporation.

B is incorrect. A general partnership is a business arrangement where two or more individuals share the profits, liabilities, and management of a business. Unlike a corporation, a general partnership does not provide its owners with personal liability protection. This means that each partner can be held personally liable for the debts and obligations of the business. This would not be an ideal business structure for Angela and James given their concern about potential lawsuits. Furthermore, a general partnership does not require the filing of articles of incorporation, which is something Angela and James plan to do.

C is incorrect. A sole proprietorship is a business that is owned and operated by a single individual. It is the simplest form of business structure and does not provide any personal liability protection. This means that the owner is personally responsible for all the debts and obligations of the business. Given that Angela and James are planning to start the business together and are concerned about potential lawsuits, a sole proprietorship would not be a suitable business structure for them. Additionally, a sole proprietorship does not require the filing of articles of incorporation.

CFA Level 1, Topic 4 – Corporate Issuers, Learning Module 1 – Organizational Forms, Corporate Issuer Features, and Ownership, LOS 1a: Compare the organizational forms of business.

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Q.3 The standard deviation of a portfolio is 15%. If the portfolio's return is 22%, and the risk-free return is 6%, then the Sharpe ratio of the portfolio is *closest to*:

A. 0.91.

B. 1.07.

C. 1.46.

The Sharpe ratio is a measure used by investors to understand the return of an investment compared to its risk. It is calculated by subtracting the risk-free return from the portfolio's return and then dividing the result by the standard deviation of the portfolio's return. In this case, the portfolio's return is 22%, the risk-free return is 6%, and the standard deviation of the portfolio is 15%. Therefore, the Sharpe ratio is calculated as (22% - 6%) / 15% = 1.07. This means that for every unit of risk taken, the portfolio is expected to return 1.07 units of return above the risk-free rate. This is a relatively high Sharpe ratio, indicating that the portfolio is efficiently managed in terms of risk and return.

A is incorrect. A Sharpe ratio of 0.91 would imply that the portfolio's return is less than what is calculated. This could be the case if either the portfolio's return was lower or the standard deviation was higher. However, given the provided data, the Sharpe ratio is not 0.91.

C is incorrect. A Sharpe ratio of 1.46 would imply that the portfolio's return is higher than what is calculated or the standard deviation is lower. However, given the provided data, the Sharpe ratio is not 1.46. It's important to note that while a higher Sharpe ratio would generally be more desirable for an investor as it indicates a higher return for each unit of risk.

CFA Level 1, Topic 4 – Portfolio Management, Learning Module 2 - Portfolio Risk & Return: Part II, LOS 2i: calculate and interpret the Sharpe ratio, Treynor ratio, M2, and Jensen's alpha.

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Q.4 A trader enters into a one-year forward contract to purchase ABC Company's shares at a forward price of INR 528.01 per share. The current spot price of the shares is INR 502.87 per share. Assuming that the spot price increases instantaneously to INR 504.66 per share at contract inception and assuming a risk-free rate of 5%, the forward contract MTM from the trader's perspective is *most likely*:

A. -INR 1.79

B. INR 0

C. INR 1.79

The value of a forward contract at any time $T = t$ is given by:

$$V_t(T) = S_t - F_0(T)(1 + r)^{-(T-t)}$$

At the inception of the contract (t=0), the term $F_0(T)(1 + r)^{-(T-t)}$ can be rewritten as $F_0(T)(1 + r)^{-T} = S_0$. This simplifies the value of the contract from the trader's perspective to:

$$V_t(T) = S_t - S_0$$

Here, S_t represents the spot price after the instantaneous change, and S_0 represents the original spot price. Substituting the given values into the equation, we get:

$$V_0(T) = \text{INR}(504.66 - 502.87) = \text{INR}\,1.79$$

This shows that the forward contract MTM from the trader's perspective is INR 1.79, which is the increase in the spot price at the inception of the contract.

A is incorrect. This option suggests that the forward contract MTM from the trader's perspective is -INR 1.79. However, this is not the case. The value of -INR 1.79 would be from the seller's (ABC Company's) perspective, not the trader's. The trader, as the buyer of the forward contract, benefits from an increase in the spot price, which results in a positive MTM value.

B is incorrect. This option suggests that the forward contract MTM from the trader's perspective is INR 0. However, this is not the case. The MTM value is not zero because of the instantaneous change in the spot prices at contract inception. The spot price increased from INR 502.87 to INR 504.66, resulting in a positive MTM value for the trader. Therefore, option B is incorrect.

CFA Level 1, Topic 4 – Derivatives, Learning Module 5 - Pricing and Valuation of Forward Contracts and for an Underlying with Varying Maturities, LOS 5a: Explain how the value and price of a forward contract are determined at initiation, during the life of the contract, and at expiration.

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Q.5 Which of the following is *least likely* a corporate takeover mechanism?

A. Poison pill.

B. Tender offer.

C. Proxy contest.

A poison pill, also known as a shareholder rights plan, is a strategy used by corporations to discourage hostile takeovers. With a poison pill, the company attempts to make its stock less attractive to the acquirer. There are two types of poison pills: the "flip-in" allows existing shareholders (except the acquirer) to buy more shares at a discount, while the "flip-over" allows stockholders to buy the acquirer's shares at a discounted rate once the merger is complete. This strategy is designed to dilute the shares held by the acquirer and make the takeover more expensive and less attractive. It is important to note that while a poison pill strategy can deter potential acquirers, it does not prevent a takeover from occurring. Therefore, it is considered less of a takeover mechanism and more of a defensive strategy.

B is incorrect. A tender offer is indeed a corporate takeover mechanism. In a tender offer, the acquiring company makes a public offer to buy the shares of the target company from its existing shareholders. This is typically done at a premium to the current market price to incentivize shareholders to sell their shares. The acquiring company may seek to acquire all of the target company's shares or just a controlling interest. If the tender offer is successful, the acquiring company can take control of the target company without having to deal with its management or board of directors. Therefore, a tender offer is a direct and effective method of corporate takeover.

C is incorrect. A proxy contest, like a tender offer, is a method of corporate takeover. In a proxy contest, an investor or group of investors attempts to gain control of a company's board of directors by persuading other shareholders to vote for them. This is typically done by presenting a competing slate of director nominees and convincing other shareholders that their nominees would be better for the company than the current board. If successful, the investor or group of investors can gain control of the board and, by extension, the company. Therefore, a proxy contest is a legitimate and often-used method of corporate takeover.

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.

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Q.6 Haseeb Ahmed is constructing a portfolio based on the Investment Policy Statement of one of his clients, who has mentioned a unique constraint in his IPS of investing in the equity of only manufacturing companies that use renewable energy. This constraint is most likely related to which of the following ESG factors?

A. Social.

B. Governance.

C. Environmental.

Environmental, Social, and Governance (ESG) factors are a set of standards for a company's operations that socially conscious investors use to screen potential investments. The environmental factor is concerned with how a company performs as a steward of the natural environment. It includes the company's energy use, waste, pollution, natural resource conservation, and treatment of animals. The criteria also take into account how the company manages these issues and how it adheres to environmental laws and regulations. In this case, the client's unique constraint of investing only in manufacturing companies that use renewable energy falls under the environmental factor. This is because the use of renewable energy is a key aspect of environmental stewardship, as it reduces the company's carbon footprint and contributes to the sustainability of natural resources.

A is incorrect. The social factor of ESG refers to how a company manages relationships with its employees, suppliers, customers, and the communities where it operates. It includes aspects such as employee relations and diversity, working conditions, local communities, conflict, health and safety, and other stakeholder relations. In this case, the client's constraint does not relate to any social aspects of the companies in which he wishes to invest. Therefore, the social factor is not the most likely ESG factor related to the client's unique constraint.

B is incorrect. The governance factor of ESG refers to a company's leadership, executive pay, audits and internal controls, and shareholder rights. It includes aspects such as corporate governance and corporate behavior. In this case, the client's constraint does not relate to any governance aspects of the companies in which he wishes to invest. Therefore, the governance factor is not the most likely ESG factor related to the client's unique constraint.

CFA Level 1, Topic 4 – Corporate Issuers, Learning Module 2 – Investors and other stakeholders, LOS 2c: Describe environmental, social, and governance factors of corporate issuers considered by investors.

Q.7 An analyst is given the task to evaluate the liquidity position of three firms that operate in the chemical sector: Jupiter Co., Saturn Corp., and Pluto Inc. The balance sheet accounts of the three firms are given in the following table:

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Balance Sheet Account (Amount in Million $)

	Jupiter Co.	Saturn Corp.	Pluto Inc.
Cash	2.7	8	7
Accounts Receivable	1.2	20	11
Inventory	3.3	12	17
Investment in Associates	3	22	0
Plant	12.5	42	22
Equipment	8.5	13	13
Account Payables	2.6	18	28
Short-term Debt	1.2	25	6
Long-term Debt	10.7	48	30
Common Equity	14	19	4.5
Retained Earnings	3.5	11.5	1.5

Based on the provided balance sheets of all three firms, the *most likely* liquid company is:

A. Pluto Inc.

B. Jupiter Co.

C. Saturn Corp.

A company's liquidity is measured by the extent to which it has current assets that can be readily used to satisfy its short-term obligations.

The two most popular liquidity ratios are the current and quick ratios.

The information given is sufficient to calculate both ratios. We shall, therefore, calculate both ratios then compare the answers.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{Jupiter's current ratio} = \frac{2.7 + 1.2 + 3.3}{2.6 + 1.2} = 1.895$$

$$\text{Saturn's CR} = \frac{8 + 20 + 12}{18 + 25} = 0.93$$

$$\text{Pluto's CR} = \frac{7 + 11 + 17}{28 + 6} = 1.03$$

$$\text{Quick ratio} = \frac{\text{Cash and cash equivalents + short term investments + Accounts receivable}}{\text{Current liabilities}}$$

$$\text{Jupiter's quick ratio} = \frac{2.7 + 1.2}{2.6 + 1.2} = 1.026$$

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$$\text{Saturn's quick ratio} = \frac{8 + 20}{18 + 25} = 0.651$$

$$\text{Pluto's quick ratio} = \frac{7 + 11}{28 + 6} = 0.529$$

$$\text{Working capital management} = \text{Current assets} - \text{Current liabilities}$$

$$\text{Jupiter's working capital management} = (2.7 + 1.2 + 3.3) - (2.6 + 1.2) = 3.4$$

$$\text{Saturn's working capital management} = (8 + 20 + 12) - (18 + 25) = -3$$

$$\text{Pluto's working capital management} = (7 + 11 + 17) - (28 + 6) = 1$$

Based on the Current ratio Jupiter Co.Jupiter Co. is the most liquid firm with a Current Ratio of 1.89, followed by Pluto Inc., with a current ratio of 1.03. Saturn is the least liquid firm with a current ratio of 0.93.

Based on the quick ratio: Jupiter is the most liquid firm with a quick ratio of 1.026, followed by Saturn with a quick ratio of 0.651. Pluto is the least liquid firm with a quick ratio of 0.529.

Based on working capital management: Jupiter is the most liquid firm with a working capital of 3.4, followed by Pluto with 1. Saturn is the least liquid firm with a working capital of -3.

Note: investments in associates, i.e., an entity in which an investor has significant but not full control, are non-current assets.

A is incorrect. Pluto Inc. has a current ratio of 1.03, a quick ratio of 0.529, and a working capital management of 1. Although its current ratio is higher than Saturn Corp., it is lower than Jupiter Co. Its quick ratio is the lowest among the three companies, indicating that it has the least amount of liquid assets to cover its current liabilities. Its working capital management is also lower than Jupiter Co., indicating that it has less net current assets to meet its short-term obligations.

C is incorrect. Saturn Corp. has the lowest current ratio of 0.93 among the three companies, indicating that it has less current assets to cover its current liabilities. Its quick ratio of 0.651 is higher than Pluto Inc. but lower than Jupiter Co., indicating that it has less liquid assets to cover its current liabilities. Its working capital management is negative, indicating that it has more current liabilities than current assets, which is not a good sign of liquidity.

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

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Q.8 Which of the following screening approaches seeks to identify companies that record the highest ESG score in their industry?

A. Negative Screening.

B. Positive/Best-in-Class Screening.

C. ESG Integration.

Positive/Best-in-Class Screening approach is a method of investing that focuses on companies that have demonstrated superior Environmental, Social, and Governance (ESG) performance compared to their peers in the industry. The Positive/Best-in-Class Screening approach is not just about identifying companies that are merely compliant with ESG standards, but rather those that excel in these areas. This method is based on the belief that companies with strong ESG performance are more likely to be financially successful in the long run. They are seen as better managed, more sustainable, and less risky. Therefore, investors using this approach seek to identify and invest in these companies, with the expectation of superior financial returns.

A is incorrect. Negative Screening, also known as exclusionary screening, is an investment approach that excludes certain sectors, companies, or practices from consideration for investment based on specific ESG criteria. This could be due to ethical, moral, or risk-related reasons. For example, an investor using negative screening might exclude companies involved in the tobacco or firearms industries. While this approach does consider ESG factors, it does not specifically seek to identify companies with the highest ESG scores in their industry. Instead, it focuses on avoiding companies with poor ESG performance or those involved in controversial activities.

C is incorrect. ESG Integration is an investment approach that involves the systematic and explicit inclusion of ESG factors into traditional financial analysis. This approach recognizes that ESG factors can have a material impact on the financial performance of companies. Therefore, these factors are integrated into the investment decision-making process to better assess risks and opportunities. However, unlike the Positive/Best-in-Class Screening approach, ESG Integration does not specifically seek to identify companies with the highest ESG scores in their industry. Instead, it focuses on understanding how ESG factors impact the financial performance of companies, regardless of their ESG scores.

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

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Q.9 Gree is the market leader in the sporting goods manufacturing sector of China. However, the company was recently accused of not providing minimum basic working conditions to its employees. Due to these serious accusations, several pension funds reduced their exposures to Gree's equity. Which of the following ESG factors have the pension funds *most likely* considered?

A. Social.

B. Governance.

C. Environmental.

The correct answer is option A, Social. The Environmental, Social, and Governance (ESG) factors are the three central factors in measuring the sustainability and ethical impact of an investment in a company or business. These factors are used to evaluate the behavior of businesses and their impact on society and the environment. In the context of the question, the pension funds most likely considered the Social factor of the ESG.

The Social factor of ESG includes considering human rights issues and welfare concerns in the workplace and the impact of product development on the community. In the case of Gree, the company was accused of not providing minimum basic working conditions to its employees. This is a clear violation of the social factor of ESG, which emphasizes the importance of fair treatment of employees and maintaining good working conditions. This is why the pension funds reduced their exposures to Gree's equity, as they most likely considered the company's violation of the social factor of ESG.

B is incorrect. Governance deals with issues such as ownership structure, board independence and composition, and compensation. While these are important factors to consider in an investment decision, they are not directly related to the issue at hand, which is the company's treatment of its employees. Therefore, it is less likely that the pension funds considered the Governance factor in their decision to reduce their exposures to Gree's equity.

C is incorrect. Environmental factors that are generally considered material in investment analysis include natural resource management, pollution prevention, water conservation, energy efficiency, and reduced emissions, the existence of carbon assets, and adherence to environmental safety and regulatory standards. However, these factors are not relevant to the issue of Gree's treatment of its employees. Therefore, it is less likely that the pension funds considered the Environmental factor in their decision to reduce their exposures to Gree's equity.

CFA Level 1, Topic 4 – Corporate Issuers, Learning Module 2 – Investors and other stakeholders, LOS 2c: Describe environmental, social, and governance factors of corporate issuers considered by investors.

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Q.10 A company charging different prices on different buyers based on volumes of goods purchased *most likely* employs which type of price discrimination?

A. Tiered pricing.

B. Auction models.

C. Dynamic pricing.

Tiered pricing is a pricing strategy that businesses use to charge different prices based on the volume of goods purchased. This strategy is most commonly used in industries where the cost of production decreases with the number of units produced. The company can afford to charge less per unit as the volume of goods purchased increases because the cost of production per unit decreases. This is why option A, tiered pricing, is the correct answer. It allows companies to incentivize customers to buy in larger quantities by offering a lower price per unit for larger volumes. This strategy can help increase sales volume and revenue, and it can also help move excess inventory more quickly.

B is incorrect. Auction models are a type of pricing strategy where the price of a good or service is determined by the highest bid. This strategy is often used for unique items or services that do not have a clear market price. In an auction model, the price is not based on the volume of goods purchased, but rather on the highest amount a buyer is willing to pay. Therefore, auction models do not fit the description of a company charging different prices based on volumes of goods purchased.

C is incorrect. Dynamic pricing is a pricing strategy where the price of a good or service can change over time based on market conditions. This strategy is often used in industries where demand can fluctuate significantly, such as the airline industry. For example, airlines often charge higher prices for flights during peak travel times and lower prices during off-peak times. While dynamic pricing can involve different prices for different buyers, it is not based on the volume of goods purchased, but rather on changes in demand over time. Therefore, dynamic pricing does not fit the description of a company charging different prices based on volumes of goods purchased.

CFA Level 1, Topic 4 – Corporate Issuers, Learning Module 7 – Business Models, LOS 7a: Describe key features of business models.

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Q.11 Which of the following voting mechanisms is *most likely* used to meet the interests of shareholders who own a small number of shares?

A. Proxy.

B. Statutory.

C. Cumulative.

Cumulative voting is the most likely voting mechanism used to meet the interests of shareholders who own a small number of shares. This is because cumulative voting allows shareholders to allocate all their votes to a single candidate. This method of voting is particularly beneficial for minority shareholders as it gives them a chance to influence the board's composition. In a cumulative voting system, a shareholder with a small number of shares can concentrate all their votes on one candidate, thereby increasing the likelihood of their preferred candidate being elected to the board. This system ensures that minority shareholders have a voice and can have their interests represented on the board. It is a way to balance the power between majority and minority shareholders and to ensure fair representation.

A is incorrect. Proxy voting is a mechanism that allows shareholders to vote without being physically present at the meeting. Shareholders delegate their voting power to a representative, who votes on their behalf. While this method provides convenience, it does not necessarily meet the interests of shareholders with a small number of shares. The representative may not vote in the best interest of the minority shareholders, and their influence on the board's composition may still be limited.

B is incorrect. Statutory voting is a system where shareholders get one vote per share for each candidate for the board of directors. This means that a shareholder with 100 shares could cast 100 votes for each of four candidates if there are four openings on the board. However, this system does not allow shareholders to give more than one vote per share to any single nominee. This limits the influence of shareholders with a small number of shares, as they cannot concentrate their votes on a single candidate. Therefore, statutory voting does not necessarily meet the interests of shareholders with limited share ownership.

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

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Q.12 A project requires an initial investment of $800,000 and is supposed to generate cash flows of $154,000 each year for 5 years. The IRR of the project is *closest* to:

A. -1.26%

B. 1.26%

C. 3.36%

The Internal Rate of Return (IRR) is a financial metric that is widely used in capital budgeting and corporate finance. It is the discount rate that makes the net present value (NPV) of all cash flows (both positive and negative) from a particular project equal to zero. In other words, it is the rate at which the present value of the future cash inflows equals the initial investment made. The IRR can be thought of as the rate of growth a project is expected to generate.

Given the project's initial investment of $800,000 and the annual cash inflows of $154,000 for 5 years, we can calculate the IRR using the Time Value of Money (TVM) function of a financial calculator. The TVM function takes into account the number of periods (N), the present value (PV), the payment (PMT), the future value (FV), and computes the interest rate (I). In this case, N = 5 (years), PV = -$800,000 (initial investment), PMT = $154,000 (annual cash inflow), and FV = 0 (as there is no salvage value mentioned). The computed interest rate (I) comes out to be -1.26%.

The IRR of the project is closest to -1.26%. This negative IRR indicates that the project's cash inflows are not sufficient to recover the initial investment, let alone provide a return on it. This suggests that the project is not financially viable and should not be undertaken.

B is incorrect. An IRR of 1.26% would suggest that the project is just about breaking even, with the present value of future cash inflows barely covering the initial investment. However, our calculations show that the IRR is actually negative, indicating that the project is not even recovering its initial investment.

C is incorrect. An IRR of 3.36% would suggest that the project is generating a positive return, with the present value of future cash inflows exceeding the initial investment. However, our calculations show that the IRR is actually negative, indicating that the project is not generating a positive return.

CFA Level 1, Topic 5 – Corporate Issuers, Learning Module 5 – Capital Investments and 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.13 Jesse Mackintosh is constructing a portfolio that will be benchmarked to a market-capitalization-weighted equity index. He is in the process of calculating the index’s total return for the most recent period. Mackintosh has collected the necessary data for the calculation in an exhibit.

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Security	Beginning of period market cap	End of period market cap	Total Dividends	Beginning of Period Weight (%)
A	56,500	53,000	500	49.3
B	37,500	40,000	0	32.8
C	20,500	37,000	100	17.9
Total	114,500	130,000		100.0

The total return on the index is closest to:

A. 6.67%

B. 14.06%

C. 22.93%

The total return on the index is calculated using the formula:

$$\text{Total Return} = \frac{\text{Ending Price} - \text{Beginning Price} + \text{Dividend Income}}{\text{Beginning Price}}$$

This formula is used to calculate the total return for each security in the index. The total return for the index is then calculated by weighting each security's return by its beginning of period weight and summing these weighted returns.

For security A, the total return is calculated as follows:

$$\text{Total return for A} = [\frac{(53.0 - 56.5 + 0.5)}{56.5}][0.493] = -2.63\%$$

For security B, the total return is calculated as follows:

$$\text{Total return for B} = [\frac{(40 - 37.5)}{37.5}][0.328] = 2.18\%$$

For security C, the total return is calculated as follows:

$$\text{Total return for C} = [\frac{(37.0 - 20.5 + 0.1)}{20.5}][0.179] = 14.51\%$$

A is incorrect. This option suggests that the total return on the index is 6.67%. However, this does not match with the calculated total return using the given formula and the data provided in the exhibit. The total return for each security is calculated using the formula and then weighted by the beginning of period weight. The sum of these weighted returns gives the total return on the index, which is 14.06%, not 6.67%.

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C is incorrect. This option suggests that the total return on the index is 22.93%. However, this does not match with the calculated total return using the given formula and the data provided in the exhibit. The total return for each security is calculated using the formula and then weighted by the beginning of period weight. The sum of these weighted returns gives the total return on the index, which is 14.06%, not 22.93%.

CFA Level I, Topic 5 – Equities, Learning Module 4 – Overview of equity securities, LOS 4e: Compare the risk and return characteristics of different types of equity securities.

Q.14 Mark Patel and Eliza Butler are equity investors seeking to purchase a manufacturer's share of stock currently trading at $43. They place the orders with their respective brokers, who issue the following instructions on behalf of the two individuals: Patel - "This order should be executed at the best price available, but by no means can a price higher than $50 be accepted." Butler - "Any shares received should automatically be transferred by us, the brokerage firm, to Butler's security account." The instructions issued on behalf of the clients can be respectively classified as:

A. Patel: Execution; Butler: Validity.

B. Patel: Validity; Butler: Execution.

C. Patel: Execution; Butler: Clearing.

The classification is based on the nature of the instructions given by each investor to their respective brokers.

Patel's instructions are classified as execution because they specify how the order should be filled. Specifically, Patel has issued a limit buy order, which means that the order should be executed at the best price available, but not at a price higher than $50. This is a clear instruction on how to execute the trade, hence the classification as execution. Execution instructions are crucial in trading as they dictate the conditions under which a trade should be made, thereby influencing the potential profit or loss from the trade.

Butler's instructions are classified as clearing because they specify how the final settlement of the trade should be arranged. Specifically, Butler has instructed that any shares received should be automatically transferred by the brokerage firm to Butler's security account. This is a clear instruction on how to handle the final settlement of the trade, hence the classification as clearing. Clearing instructions are crucial in trading as they dictate how the ownership of the traded assets should be transferred, thereby ensuring the successful completion of the trade.

CFA Level I, Topic 5 – Equity, Learning Module 1 – Market Organization and Structure, LOS 1g: Compare execution, validity, and clearing instructions.

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Q.15 Which of the following statements accurately compares market-capitalization (cap)-weighted with price-weighted indexes?

A. Reconstitution similarly affects market-cap and price-weighted indexes.

B. Market-cap-weighted indexes are most sensitive to the effects of reconstitution.

C. The value of price-weighted indexes may depart from a market-cap weighted index due to rebalancing.

Market-capitalization (cap)-weighted indexes are indeed most sensitive to the effects of reconstitution. This is due to the fact that when one security is removed and another is added, the index provider has to adjust the weights of all other securities to maintain the index's market capitalization weighting. This process is known as reconstitution. The sensitivity of market-cap-weighted indexes to reconstitution is due to their structure. In a market-cap-weighted index, each security's weight is determined by its market capitalization, or the total market value of its outstanding shares. Therefore, any changes in the market capitalization of the securities in the index, such as those caused by reconstitution, can significantly affect the index's value.

A is incorrect. Reconstitution, or the process of changing the securities in an index, can create a turnover, particularly in market-cap-weighted indexes. This is because the weights of the securities in a market-cap-weighted index are based on their market capitalizations, and any changes in these market capitalizations can significantly affect the index's value. On the other hand, in a price-weighted index, the weights of the securities are determined by their prices, and changes in these prices do not necessarily result in a turnover. Therefore, the effects of reconstitution are not similar for market-cap and price-weighted indexes.

C is incorrect. Price-weighted indexes are not typically rebalanced because the weight of each constituent security is determined by its price. Therefore, changes in the prices of the securities do not require rebalancing. On the other hand, market-cap-weighted index providers do not have to worry as much about rebalancing because these indexes largely rebalance themselves. This is because the weights of the securities in a market-cap-weighted index are based on their market capitalizations, and any changes in these market capitalizations automatically adjust the weights of the securities in the index. Therefore, rebalancing is less of a concern for market-cap-weighted index providers than for price-weighted index providers.

CFA Level 1, Topic 5 – Equities, Learning Module 2 – Security Market Indexes, LOS 2d: Compare the different weighting methods used in index construction.

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Q.16 British investor is expected to receive $10 million in three months and would like to hedge against an unfavorable movement in the U.S. dollar (USD). He purchases USD denominated put options with a strike price of 1.55, paying a premium of 0.30. The current GBP/USD spot exchange rate is 1.66. The investor will *most likely* exercise the put option if the spot exchange rate:

A. Rises above 1.55.

B. Declines below 1.25.

C. Declines below 1.55.

The British investor is expected to receive USD in the future and is concerned about the potential depreciation of the GBP/USD exchange rate, which would reduce the value of his proceeds when converted back to GBP. To hedge against this risk, he purchases a put option on USD with a strike price of 1.55. A put option gives the holder the right, but not the obligation, to sell a specified amount of an underlying asset at a set price within a specified time. In this case, the underlying asset is USD, and the set price is 1.55. The investor will exercise this option if the spot exchange rate falls below the strike price of 1.55, as he can sell his USD at a higher rate than the market rate, thus protecting his proceeds from the depreciation of the GBP/USD exchange rate. This is why option C is the correct answer.

A is incorrect. If the spot exchange rate rises above 1.55, the investor will not exercise the put option. This is because the put option gives him the right to sell USD at the strike price of 1.55. If the market rate is higher than the strike price, it would be more beneficial for the investor to sell his USD at the higher market rate rather than exercising the option and selling at the lower strike price. Therefore, a rise in the spot exchange rate above 1.55 would not lead the investor to exercise the put option.

B is incorrect. While it is true that a decline in the spot exchange rate below 1.25 would lead the investor to exercise the put option, the threshold for exercising the option is not necessarily as low as 1.25. The strike price of the put option is 1.55, and the investor will exercise the option if the spot exchange rate falls below this level, regardless of how much lower it goes. Therefore, the statement that the investor will exercise the option if the spot exchange rate declines below 1.25 is not entirely accurate, as the investor will exercise the option at any rate below 1.55, not just below 1.25.

CFA Level 1, Topic 5 – Derivatives, Learning Module 8 – Pricing and Valuation of Options, LOS 8a: Explain the exercise value, moneyness, and time value of an option.

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Q.17 A major use of a market index is that it:

A. can be used for modeling unsystematic risk.

B. accurately reflects the overall attitudes of investors in a market.

C. can serve as a market proxy when measuring risk-adjusted performance.

A major use of a market index is that it can serve as a market proxy when measuring risk-adjusted performance. This is because a market index, such as the S&P 500 or the Dow Jones Industrial Average, is a hypothetical portfolio of investment holdings which represents a segment of the financial market. The statistical measurement of these indexes provides a useful benchmark against which financial or economic performance can be measured. In the context of the Capital Asset Pricing Model (CAPM), a market index can be used to represent the market portfolio, thereby allowing for the measurement and modeling of systematic risk and market returns. This is crucial in the evaluation of risk-adjusted performance, as it allows for the comparison of the performance of individual investments or portfolios against that of the market as a whole.

A is incorrect. It suggests that a market index can be used for modeling unsystematic risk. Unsystematic risk, also known as specific risk, is the risk associated with individual assets - as opposed to the market as a whole - and can be mitigated through diversification. A market index, however, represents a broad cross-section of the market and is therefore used to model systematic risk, which is the risk inherent to the entire market or market segment and cannot be eliminated through diversification. Thus, a market index is not suitable for modeling unsystematic risk.

B is incorrect. It posits that a market index accurately reflects the overall attitudes of investors in a market. While it is true that market indexes can be used to gauge investor confidence or market sentiment to some extent, they may not accurately measure overall investor attitude or market sentiment. This is because an index comprises only a sample of stocks traded in the market, and therefore may not fully capture the diversity of investor attitudes and behaviors. Furthermore, market indexes are influenced by a variety of factors beyond investor sentiment, including economic indicators, corporate earnings reports, and geopolitical events, among others. Therefore, while they can provide some insight into investor attitudes, they should not be relied upon as a comprehensive measure of such.

CFA Level 1, Topic 5 -Equity, Learning Module 2 – Security Market Indices, LOS 2a: Describe a security market index.

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Q.18 An analyst is tasked with forecasting for a company that is undergoing a significant shift in its competitive environment. Traditional forecasting methods do not provide sufficient insights. The analyst decides to use a different approach that combines various techniques such as surveys, quantitative models, and analogies to historical precedents. Which forecasting approach is the analyst *most likely* using?

A. Traditional Forecasting Approach.

B. Quantitative Forecasting Approach.

C. Analyst's Discretionary Forecast Approach.

The Analyst's Discretionary Forecast Approach is the most likely method being used by the analyst. This approach is typically employed when traditional forecasting methods fail to provide adequate insights, particularly in scenarios where a company is experiencing a significant change in its competitive environment. The Analyst's Discretionary Forecast Approach is a flexible method that enables the analyst to amalgamate various techniques such as surveys, quantitative models, and analogies to historical precedents.

This approach empowers the analyst to integrate their personal judgment and expertise into the forecasting process, which can be extremely beneficial in complex and rapidly evolving situations. The analyst has the liberty to modify the forecast based on new information or changes in the business environment, making this approach more adaptable than the more rigid, formula-based forecasting methods.

A is incorrect. The Traditional Forecasting Approach generally involves using historical data to predict future outcomes. This approach may not be suitable in situations where a company is undergoing a significant shift in its competitive environment, as the past may not be a reliable indicator of the future in such cases. The traditional approach assumes that past patterns will continue into the future, which may not hold true in a rapidly changing competitive environment. Therefore, relying solely on historical data may lead to inaccurate forecasts.

B is incorrect. The Quantitative Forecasting Approach involves using mathematical models and statistical techniques to predict future outcomes. While this approach can be very effective in certain situations, it may not provide sufficient insights in situations where a company is undergoing a significant shift in its competitive environment. This approach heavily relies on historical data and may not fully capture the impact of changes in the business environment. It assumes that the factors influencing the forecast are constant and can be accurately modeled, which may not be the case in a dynamic business environment. Therefore, despite its mathematical rigor, the quantitative approach may not be the best choice in this scenario.

CFA Level 1, Topic 5 – Equity, Learning Module 7 – Company Analysis: Forecasting, LOS 7a: Explain principles and approaches to forecasting a company's financial results and position.

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Q.19 An investor can *most likely* achieve positive risk-adjusted returns on average by using fundamental analysis in which of the following forms of market efficiency?

A. Weak form efficiency only.

B. Strong form efficiency only.

C. Weak and semi-strong form efficiency only.

Fundamental analysis is a method of evaluating a security in an attempt to measure its intrinsic value, by examining related economic, financial and other qualitative and quantitative factors. Fundamental analysts study anything that can affect the security's value, including macroeconomic factors such as the overall economy and industry conditions, and microeconomic factors like financial conditions and company management. The end goal of fundamental analysis is to produce a quantitative value that an investor can compare with a security's current price, thus indicating whether the security is undervalued or overvalued.

In the context of market efficiency, weak form efficiency is a type of market hypothesis that states all past prices of a stock are reflected in today's stock price. Therefore, it is impossible to achieve superior gains through trading strategies based on historical share prices or data. However, it does not reflect the information available in financial statements and other public information about the company, which is the basis of fundamental analysis. Hence, an investor can most likely achieve positive risk-adjusted returns on average by using fundamental analysis in weak form efficiency.

Weak form efficiency only allows for the possibility of generating positive risk-adjusted returns through fundamental analysis. This is because weak form efficiency suggests that all past market prices are reflected in current prices, but it does not account for other publicly available information. Therefore, an investor can potentially gain an edge by analyzing financial statements, industry trends, and other relevant data.

B is incorrect. Strong form efficiency suggests that all information, public and private, is fully reflected in a stock's current market price. This means that no investor has an advantage in predicting a return on a stock price because no one has access to information not already available to everyone else. Therefore, even with fundamental analysis, an investor cannot achieve superior gains in a strong form efficient market.

C is incorrect. Both weak and semi-strong form efficiencies suggest that all past market prices and all publicly available information are reflected in current prices. Therefore, even with fundamental analysis, an investor cannot achieve superior gains in a semi-strong form efficient market. This is because semi-strong form efficiency implies that share prices adjust to publicly available new information very rapidly and in an unbiased fashion, such that no excess returns can be earned by trading on that information following its official announcement.

CFA Level 1, Topic 5 – Equity, 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.

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Q.20 What is the simplest method to weight an index and the one used by Charles Dow to construct the Dow Jones Industrial Average?

A. Price-weighting.

B. Fundamental weighting.

C. Market capitalization-weighting.

Price-weighting is the simplest way to weight an index and was used by Charles Dow to construct the Dow Jones Industrial Average. In the price-weighting method, the weight assigned to each constituent security is determined by dividing its price by the sum of all the prices of the constituent securities. This method is simple and straightforward, as it only requires the current price of each security in the index. It does not take into account the total number of shares outstanding or the company's overall market capitalization. This method gives higher-priced stocks more weight in the index, which can skew the index towards the performance of a few high-priced stocks.

B is incorrect. This method attempts to address the disadvantages of market-capitalization weighting by using measures of a company's size independent of its security price to determine the weight on each constituent security. These measures can include book value, cash flow, revenues, earnings, dividends, and the number of employees. While this method can provide a more balanced view of a company's overall health and performance, it is more complex and requires more data than the price-weighting method. Furthermore, it can be subjective, as the choice of fundamental measures can vary and may not accurately reflect the company's market value.

C is incorrect. In this method, the weight on each constituent security is determined by dividing its market capitalization by the total market capitalization (the sum of the market capitalization) of all the securities in the index. While this method can reflect the overall market value of each company in the index, it can also skew the index towards the performance of a few large-cap stocks. Additionally, it requires more data and calculations than the price-weighting method.

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

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Q.21 The exhibit below illustrates the share price and earnings per share (EPS) for three companies (Tecra, Cosmos, and Latle) in the technology sector for the most recent financial year (2016) .

	Tecra	Cosmos	Latle
Price per share	782.50	560.20	430.60
EPS	446.10	450.10	220.50

Using the method of comparison, which of the following companies appears to be the *most likely* undervalued?

A. Latle.

B. Tetra.

C. Cosmos.

The Price to Earnings (P/E) ratio is a commonly used metric in finance to determine the relative value of companies. The P/E ratio is calculated by dividing the market value per share by the earnings per share (EPS). A lower P/E ratio could indicate that the stock is undervalued, assuming that all other factors are constant.

Let's calculate the P/E ratio for each company:

For Tecra, the P/E ratio is calculated as follows: Price per share (782.50) divided by EPS (446.10) equals 1.7541.

For Cosmos, the P/E ratio is calculated as follows: Price per share (560.20) divided by EPS (450.10) equals 1.245.

For Latle, the P/E ratio is calculated as follows: Price per share (430.60) divided by EPS (220.50) equals 1.953.

From these calculations, it is clear that Cosmos has the lowest P/E ratio, which suggests that it is the most undervalued company among the three.

A is incorrect. Latle is not the most undervalued company. Although its share price is the lowest among the three companies, its P/E ratio is the highest. This suggests that its earnings do not justify its current share price, making it overvalued rather than undervalued.

B is incorrect. Tecra is not the most undervalued company. Despite having the highest share price, its P/E ratio is not the lowest. This means that its earnings do not justify its current share price as effectively as Cosmos, making it less undervalued compared to Cosmos.

CFA Level 1, Topic 5 – Equity, Learning Module 8 – Equity Valuation: Concepts and Basic Tools, LOS 8a: Evaluate whether security, given its current market price and a value estimate, is overvalued, fairly valued, or undervalued by the market, and LOS 8i: Explain the rationale for using price multiples to value equity, how the price-to-earnings multiple relates to fundamentals, and the use of multiples based on comparables

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Q.22 Given the following information for a 2-stock index for the year 2016: **Stock A**

- Beginning price: 10$
- Ending price: 14$
- Total dividend in the period: 1$

Stock B

- Beginning price: 10$
- Ending price: 13$
- Total dividend in the period: 1$

The price return of the index is *closest to:*

A. 30%

B. 35%

C. 40%

For Stock A, the price return is calculated by subtracting the beginning price from the ending price, and then dividing the result by the beginning price. This gives us (14 - 10) / 10 = 40%.

Similarly, for Stock B, the price return is calculated as (13 - 10) / 10 = 30%.

The price return of the index is then calculated by taking the average of the price returns of Stock A and Stock B. This gives us (30% + 40%) / 2 = 35%.

A is incorrect. This option suggests a 30% price return of the index, which is not accurate. The 30% figure is actually the price return for Stock B alone, not the average price return of the index. The price return of the index is calculated by taking the average of the price returns of all stocks in the index, not just one. Therefore, option A is incorrect because it does not accurately represent the price return of the index.

C is incorrect. This option suggests a 40% price return of the index, which is also not accurate. The 40% figure is actually the price return for Stock A alone, not the average price return of the index. As with option A, the price return of the index is calculated by taking the average of the price returns of all stocks in the index, not just one. Therefore, option C is incorrect because it does not accurately represent the price return of the index.

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

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Q.23 Adjusting the weights of the constituent securities in the index is known as:

A. rebalancing.

B. readjustment.

C. reconstitution.

Rebalancing is a process that involves the adjustment of the weights of the constituent securities in a portfolio to maintain the original or desired allocation. This is typically done to ensure that the portfolio continues to meet the investment objectives and risk tolerance of the investor. The process of rebalancing may involve selling securities that have increased in value and buying those that have decreased in value. This is done to prevent the portfolio from becoming overexposed to certain asset classes and underexposed to others. Rebalancing is a crucial part of portfolio management as it helps to control risk and potentially enhance returns.

A is incorrect. While the term 'readjustment' may seem similar to 'rebalancing', it is not typically used in the context of portfolio or index management. The term lacks the specific connotation associated with maintaining or adjusting the weights of the securities in a portfolio. In finance, readjustment might refer to a variety of actions, such as adjusting the terms of a loan, restructuring a company, or changing an investment strategy, but it does not specifically refer to the process of adjusting the weights of securities in a portfolio or index.

C is incorrect. Reconstitution refers to the process of changing the constituent securities in an index. This might involve removing securities that no longer meet the criteria for inclusion in the index and adding new ones that do. While reconstitution does involve changes to the index, it is not the same as rebalancing. Rebalancing refers specifically to adjusting the weights of the securities in the index or portfolio, not changing the securities themselves. Therefore, while reconstitution might occur as part of the overall management of an index or portfolio, it is not the same as rebalancing.

CFA Level I, Topic 5 – Equity, Learning Module 2 – Security Market Indices, LOS 2f: Describe rebalancing and reconstitution of an index.

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Q.24 An equal-weighted index is composed of 2 stocks. Stock A sells for $256 and has 25,400 shares outstanding, and stock B sells for $57 and has 232,000 shares outstanding. The equal-weighted index value is *closest to:*

A. 122.60

B. 156.50

C. 185.00

The equal-weighted price index is a type of average that gives equal importance to each stock in the index, regardless of the stock's market capitalization or number of shares outstanding. In this case, the index is composed of two stocks: Stock A and Stock B.

The price of Stock A is \$256, and the price of Stock B is \$57.

To calculate the equal-weighted price index, we use the following formula:

$$\text{Equal-Weighted Index} = \frac{\text{Price of Stock A} + \text{Price of Stock B}}{\text{Number of Stocks}}$$

Substituting the given values:

$$\text{Equal-Weighted Index} = \frac{256 + 57}{2} = \frac{313}{2} = 156.50$$

Therefore, the equal-weighted price index is 156.50. This value represents the average price of the stocks in the index, giving equal weight to each stock, irrespective of its price or number of shares outstanding.

***A is incorrect**. This option suggests that the equal-weighted index value is closest to 122.60. However, this is not the case. As explained above, the equal-weighted index value is calculated by adding the prices of the two stocks and dividing by the number of stocks. In this case, the calculation gives us a value of 156.50, not 122.60. Therefore, option A is incorrect.*

***C is incorrect**. This option suggests that the equal-weighted index value is closest to 185.00. However, this is not the case. As explained above, the equal-weighted index value is calculated by adding the prices of the two stocks and dividing by the number of stocks. In this case, the calculation gives us a value of 156.50, not 185.00. Therefore, option C is incorrect.*

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

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Q.25 Mark Bowie, a trader, buys stock on margin, posting 40% of the initial stock price of CAD 40 as equity. The price below which a margin call will occur, given that the maintenance margin requirement for the position is 25% is *closest to*:

A. CAD 16

B. CAD 32

C. CAD 40

A margin call occurs when the equity in a margin account falls below the broker's required amount. In this case, Mark Bowie, a trader, buys stock on margin, posting 40% of the initial stock price of CAD 40 as equity. This means that Bowie's initial equity is:

$$0.4 \times 40 = \text{CAD } 16 \,\text{per share}$$

The margin call will take place when this equity drops below the 25% maintenance margin requirement. The formula to calculate the price below which a margin call will occur is:

$$\text{Share price} \times \frac{(1 - \text{Initial Margin Requirement})}{(1 - \text{Maintenance Margin Requirement})}$$

Substituting the given values:

$$40 \times \frac{(1 - 0.40)}{(1 - 0.25)} = 40 \times \frac{0.60}{0.75} = 32$$

A is incorrect. This option suggests that the price below which a margin call will occur is CAD 16. However, this is not correct as CAD 16 represents the value of Bowie's initial equity per share, not the price below which a margin call will occur. The price below which a margin call will occur is calculated using the formula mentioned above and in this case, it comes out to be CAD 32, not CAD 16. Therefore, option A is incorrect.

C is incorrect. This option suggests that the price below which a margin call will occur is CAD 40. However, this is not correct as CAD 40 represents the initial stock price, not the price below which a margin call will occur. The price below which a margin call will occur is calculated using the formula mentioned above and in this case, it comes out to be CAD 32, not CAD 40. Therefore, option C is incorrect.

CCFA Level 1, Topic 5 – Equity, Learning Module 1 – 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.

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Q.26 Prime bank intends to make an IPO later this year to mobilize funds in readiness for an ambitious expansion plan. If it opts for an underwritten offering, the risk that the general public may not take up the entire issue at the specified price will *most likely* be borne by:

A. the bank.

B. an investment bank.

C. buyers of the part that will have sold successfully.

The investment bank, acting as the underwriter, agrees to buy any unsold securities at the offering price. This is a common practice in Initial Public Offerings (IPOs) where the underwriter essentially guarantees that a certain amount will be raised from the issue. The underwriter takes on the risk of the issue not being fully subscribed by the public, and in return, they receive a commission on the securities they sell. If the issue is undersubscribed, the underwriter is obligated to purchase the remaining shares, thereby bearing the risk.

A is incorrect. The bank does not bear the risk in an underwritten offering. The bank's role in an IPO is to act as an intermediary, providing services that ensure traders settle their trades and that the resulting positions are not stolen or pledged more than once as collateral. The bank does not take on the risk of the issue not being fully subscribed by the public. This risk is transferred to the underwriter (investment bank) who agrees to buy any unsold shares at the offering price.

C is incorrect. The buyers of the part that will have sold successfully do not bear the risk that the general public may not take up the entire issue at the specified price. The buyers are only responsible for the shares they purchase and do not have any obligation or risk associated with the remaining unsold shares. The risk of the issue not being fully subscribed is borne by the underwriter, not the individual buyers of the shares.

CFA Level 1, Topic 5 – Equity, Learning Module 1 – Market Organization and Structure, LOS 1i: Define primary and secondary markets and explain how secondary markets support primary markets.

Q.27 Texas Corp. is a calculator manufacturing firm expected to pay a dividend of $2 next year that will grow at 5% for two more years. If the stock is expected to sell for $30 at the end of the third year, and the required rate of return is 11%, then the present value of the stock is *closest to*:

A. $25.00

B. $27.05

C. $31.00

The dividend discount model (DDM) is a method of valuing a company's stock price based on the idea that its stock is worth the sum of all future dividend payments, discounted back to their present value. In this case, dividends are expected to grow at a rate of 5% for two years, and the

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stock is expected to sell for \$30 at the end of the third year.

The formula to calculate the expected stock price is:

$$\text{Expected Price} = \frac{\text{Dividend in year 1}}{(1+r)^1} + \frac{\text{Dividend in year 2}}{(1+r)^2} + \frac{\text{Dividend in year 3} + \text{Selling price in yea}}{(1+r)^3}$$

Where:

- Dividend in year 1 = \$2
- Dividend in year 2 = \$2 \times 1.05 = \$2.1
- Dividend in year 3 = \$2.1 \times 1.05 = \$2.205
- Selling price in year 3 = \$30
- Required rate of return r = 11% = 0.11

Substituting the values into the formula:

$$\text{Expected Price} = \frac{2}{(1.11)^1} + \frac{2.1}{(1.11)^2} + \frac{2.205 + 30}{(1.11)^3}$$

First, calculate each term:

- First year: $\frac{2}{1.11} \approx 1.8018$
- Second year: $\frac{2.1}{1.2321} \approx 1.7047$
- Third year: $\frac{2.205+30}{1.36763} \approx \frac{32.205}{1.36763} \approx 23.544$

Now, sum these values:

$$1.8018 + 1.7047 + 23.544 \approx 27.05$$

A is incorrect. A value of \$25.00 would suggest a lower expected return on the stock than the required rate of return of 11%. This would mean that the stock is overvalued, which contradicts the principles of the dividend discount model. The model assumes that the stock is fairly valued when the discounted sum of the future dividends equals the stock price.

C is incorrect. A value of \$31.00 would suggest a higher expected return on the stock than the required rate of return of 11%. This would mean that the stock is undervalued, which again contradicts the principles of the dividend discount model. The model assumes that the stock is fairly valued when the discounted sum of the future dividends equals the stock price.

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CFA Level 1, Topic 5 – Equity, Learning Module 8 – Equity Valuation: Concepts and Basic Tools, LOS 8e: Explain the rationale for using present value models to value equity and describe the dividend discount and free-cash-flow-to-equity models.

Q.28 Which of the following is *most likely* a commercial industry classification system that was jointly developed by Standard and Poor's and MSCI Barra?

A. Russel Global Sectors.

B. Industry Classification Benchmark.

C. Global Industry Classification Standard.

The Global Industry Classification Standard (GICS) is the correct answer, as it is a commercial industry classification system that was jointly developed by Standard and Poor's and MSCI Barra. The GICS was specifically designed to facilitate global comparisons of industries. It classifies companies in both developed and developing economies. This classification system is widely used by the global financial community for investment research, portfolio management, and asset allocation. It provides a consistent and complete method for constructing and monitoring portfolios across multiple asset classes, and allows for meaningful global views and cross regional comparisons across all market capitalization levels, while ensuring flexibility to adapt to evolving industries.

A is incorrect. The Russel Global Sectors (RGS) is not the correct answer because it was not jointly developed by Standard and Poor's and MSCI Barra. The RGS classification system uses a three-tier structure to classify companies globally based on the products or services a company produces. While it is a valid classification system, it is not the one that was jointly developed by Standard and Poor's and MSCI Barra. Furthermore, the RGS is more focused on the nature of the products or services a company produces, rather than facilitating global comparisons of industries.

B is incorrect. The Industry Classification Benchmark (ICB) is also not the correct answer because it was not jointly developed by Standard and Poor's and MSCI Barra. The ICB, which Dow Jones and FTSE jointly developed, uses a four-tier structure to categorize companies globally based on the source from which a company derives most of its revenue. While it is a comprehensive and detailed classification system, it is not the one that was jointly developed by Standard and Poor's and MSCI Barra. Moreover, the ICB's focus is more on the source of a company's revenue, rather than facilitating global comparisons of industries.

CFA Level 1, Topic 5 – Equity, Learning Module 6 – Industry and competitive analysis, LOS 6b: Describe industry classification methods and compare methods by which companies can be grouped.

Q.29 Galaxy Ceramics is a ceramic and tiles manufacturing company based in Palo Alto. Some information regarding the stock is given below.

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Required rate of return	12%
Return on equity	10%
Earning per share	$5
Dividend	$1.50 per share

Using the data given in the table, the growth rate of Galaxy is *closest to*:

A. 3%

B. 6%

C. 7%

The growth rate of a company can be calculated using the formula:

$$\text{Growth Rate} = \text{Retention Rate} \times \text{Return on Equity (ROE)}$$

The retention rate is the proportion of net income that is retained by the company, and it is calculated as:

$$\text{Retention Rate} = 1 - \text{Dividend Payout Ratio}$$

In this case, the dividend payout ratio is:

$$\text{Dividend Payout Ratio} = \frac{\text{Dividends}}{\text{Net Income}} = \frac{1.5}{5} = 0.3 \,\text{or}\, 30\%$$

Therefore, the retention rate is:

$$\text{Retention Rate} = 1 - 0.3 = 0.7 \,\text{or}\, 70\%$$

The return on equity (ROE) is given as 10%. Now, we can calculate the growth rate:

$$\text{Growth Rate} = 0.7 \times 10\% = 7\%$$

A is incorrect. A growth rate of 3% would imply a much lower retention rate or return on equity than what is given. If we assume a retention rate of 70%, the return on equity would have to be approximately 4.3% to result in a growth rate of 3%, which is significantly lower than the given 10%. Alternatively, if we assume a return on equity of 10%, the retention rate would have to be approximately 30% to result in a growth rate of 3%, which is significantly lower than the calculated 70%. Therefore, a growth rate of 3% is not consistent with the given data.

B is incorrect. A growth rate of 6% would also imply a lower retention rate or return on equity than what is given. If we assume a retention rate of 70%, the return on equity would have to be approximately 8.6% to result in a growth rate of 6%, which is lower than the given 10%. Alternatively, if we assume a return on equity of 10%, the retention rate would have to be

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approximately 60% to result in a growth rate of 6%, which is lower than the calculated 70%. Therefore, a growth rate of 6% is not consistent with the given data.

CFA Level 1, Topic 5 – Equity, 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.30 In which of the following methods do analysts adjust book values of the firm's assets and liabilities to their fair values?

A. Asset-based models.

B. Market multiple models.

C. Discounted cash flow models.

Asset-based models are financial tools that analysts use to determine the intrinsic value of a company's common stock. This is achieved by adjusting the book values of the firm's assets and liabilities to their fair values. The intrinsic value is then calculated as the total asset value minus liabilities and preferred stocks. This method is particularly useful in situations where a company's book value may not accurately reflect its true value due to depreciation or other factors. Therefore, by adjusting these values to their fair market value, analysts can get a more accurate picture of a company's financial health and potential for growth.

B is incorrect. Market multiple models do not involve adjusting the book values of a firm's assets and liabilities to their fair values. Instead, these models are based chiefly on share price multiples or enterprise value multiples. They are used to compare a company's current market value to key business metrics such as earnings, sales, and cash flow. While these models can provide valuable insights into a company's performance and potential for growth, they do not involve adjusting the book values of assets and liabilities, which is the key characteristic of asset-based models.

C is incorrect. Discounted cash flow models estimate the intrinsic value of a company by calculating the present value of the future benefits expected from the security. This involves forecasting a company's future cash flows and then discounting them back to their present value using an appropriate discount rate. While this method can provide a comprehensive view of a company's financial health and potential for growth, it does not involve adjusting the book values of a firm's assets and liabilities to their fair values, which is the key characteristic of asset-based models.

CFA Level 1, Topic 5 – Equity, Learning Module 8 -Equity Valuation: Concepts and Basic Tools, LOS 8b: Describe major categories of equity valuation models..

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Q.31 Which of the following most appropriately measures the length of time it takes to convert a firm's cash into inventory and back into cash in the form of collections from inventory sales?

A. Sales cycle.

B. Operating cycle.

C. Net operating cycle.

The operating cycle is the most appropriate measure for the length of time it takes to convert a firm's cash into inventory and back into cash in the form of collections from inventory sales. This is because the operating cycle specifically focuses on the time period between the acquisition of inventory and the collection of cash from sales of that inventory. It is a key measure of a firm's liquidity and operational efficiency. The operating cycle is calculated as the sum of the number of days of receivables and the number of days of inventory. The number of days of receivables represents the average time it takes for a company to collect cash from its credit sales, while the number of days of inventory represents the average time it takes for a company to sell its inventory. Therefore, the operating cycle provides a comprehensive view of the cash conversion process in a firm.

A is incorrect. The sales cycle does not accurately measure the length of time it takes to convert a firm's cash into inventory and back into cash in the form of collections from inventory sales. Instead, the sales cycle measures the average time between when a sales opportunity or deal is created and when it is closed-won. This cycle focuses on the sales process, from the initial contact with a potential customer to the finalization of the sale. It does not take into account the time it takes to acquire inventory and convert it into cash through sales. Therefore, while the sales cycle is an important measure of sales efficiency, it does not provide a comprehensive view of the cash conversion process in a firm.

B is incorrect. The net operating cycle, while related to the operating cycle, is not the most appropriate measure for the length of time it takes to convert a firm's cash into inventory and back into cash in the form of collections from inventory sales. The net operating cycle measures the time from paying suppliers for materials to collecting cash from the subsequent sale of goods produced from these supplies. It is calculated as the operating cycle minus the number of days payable. The number of days payable represents the average time it takes for a company to pay its suppliers. While the net operating cycle provides a measure of a firm's overall cash conversion efficiency, it does not specifically focus on the time period between the acquisition of inventory and the collection of cash from sales of that inventory. Therefore, it does not provide a comprehensive view of the cash conversion process in a firm.

CFA Level 1, Topic 5 – Corporate Issuers, Learning Module 4 – Working Capital and Liquidity, LOS 4a: Explain the cash conversion cycle and compare issuer's cash conversion cycles.

Q.32 White Steel Co. is the market leader in the steel industry in Malaysia. White Steel has introduced many innovative products which have successfully penetrated the market time and time again. Compared to the industry, White Steel Co. has a shorter cash conversion cycle as shown in the following table:

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	Steel Industry	White Steel Co.
Days of Inventory	55	39
Days of Receivables	93	111
Days of Payables	60	70
Operating Cycle	148	150
Cash Conversion Cycle	88	80

Which of the following is the most appropriate justification for White's shorter cash conversion cycle?

A. White Steel's inventory is obsolete.

B. White Steel has tighter terms with its debtors.

C. Whiter Steel's payment terms are unfavorable for its creditors.

The cash conversion cycle is a key financial metric that measures the time it takes for a company to convert its investments in inventory and other resources into cash flows from sales. It is calculated as the sum of the number of days of inventory and the number of days of receivables, minus the number of days of payables. The shorter the cash conversion cycle, the more efficient the company is in managing its working capital.

White Steel Co. has a shorter cash conversion cycle than the steel industry average. This is primarily due to its higher number of days of payables, which is the only component subtracted in the cash conversion cycle formula. A higher number of days of payables means that White Steel takes longer to pay its bills and invoices to suppliers and other companies, which effectively reduces its cash conversion cycle. This could be interpreted as White Steel having unfavorable payment terms for its creditors, as it holds onto its cash for a longer period.

It's also worth noting that White Steel has a higher number of days of receivables than the industry average. This indicates that White Steel allows its customers a longer time to pay for their purchases, which could be a sign of relaxed credit terms. However, this would actually increase the cash conversion cycle, not decrease it, so it doesn't explain White Steel's shorter cycle.

Finally, White Steel has a shorter number of days of inventory than the industry average. This suggests that White Steel is efficient in turning its inventory into sales, which would also contribute to a shorter cash conversion cycle. However, this doesn't necessarily mean that White Steel's inventory is obsolete, as it could also be a sign of effective inventory management and sales performance.

A is incorrect. The statement that White Steel's inventory is obsolete is not supported by the data. In fact, the shorter number of days of inventory suggests that White Steel is efficient in managing its inventory and turning it into sales.

B is incorrect. The claim that White Steel has tighter terms with its debtors is contradicted by the data, which shows that White Steel has a higher number of days of receivables than the industry average. This suggests that White Steel actually has more relaxed terms with its debtors, allowing them a longer time to pay their debts.

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CFA Level 1, Topic 5 – Corporate Issuers, Learning Module 4 – Working Capital and Liquidity, LOS 4a: Explain the cash conversion cycle and compare issuer's cash conversion cycles;

Q.33 A company's executive is selecting a liquidity source that it can use without affecting its normal operations. The executive will *most likely*:

A. Utilize the cash in the company's bank account.

B. Negotiate a debt contract on behalf of the firm.

C. File for bankruptcy protection and reorganization.

Utilizing the cash in the company's bank account is the primary sources of liquidity, such as cash in bank accounts, represent readily accessible resources that a company can use without affecting its normal operations. Cash is the most liquid asset a company has, and it can be used immediately to meet any obligations. Using cash does not require any negotiations or agreements, and it does not change the company's financial position or credit rating. It is a straightforward and efficient way of maintaining liquidity without causing any disruptions or changes to the company's regular business activities.

B is incorrect. Negotiating a debt contract on behalf of the firm is not the most likely choice for a company executive looking for a liquidity source that won't affect normal operations. While debt can provide a significant source of liquidity, it comes with strings attached. Debt contracts often involve negotiations, which can be time-consuming and may distract from normal operations. Additionally, taking on debt changes a company's financial position. It increases the company's liabilities and can affect its credit rating, which may have implications for future borrowing. Furthermore, the company is obligated to make regular interest payments, which can strain its cash flow.

C is incorrect. Filing for bankruptcy protection and reorganization is a drastic measure that a company would only resort to in extreme circumstances. It is not a source of liquidity, but rather a legal process that a company undergoes when it is unable to meet its financial obligations. This process can be lengthy and complex, involving negotiations with creditors, layoffs, and restructuring of the company's operations. It can severely disrupt the company's normal operations and damage its reputation. Moreover, it does not provide immediate liquidity; instead, it aims to give the company breathing space to reorganize its finances and develop a plan to pay off its debts.

CFA Level 1, Topic 5 – Corporate Issuers, Learning Module 4 – Working Capital and Liquidity, LOS 4b: Explain liquidity and compare issuers' liquidity levels.

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Q.34 Which of the following is *least likely* a method for a private company to go public?

A. Direct listing.

B. Leverage buyouts.

C. Initial public offering.

A leveraged buyout (LBO) is a financial transaction in which a company is purchased with a combination of equity and significant amounts of borrowed money, structured in such a way that the company's cash flow is the collateral used to secure and repay the loan. The purpose of leveraged buyouts is to allow companies to make large acquisitions without having to commit a significant amount of capital. In the context of a private company going public, an LBO is not a method used. This is because an LBO is typically a strategy employed by private equity firms to acquire a company, not for a private company to go public. Therefore, it is least likely a method for a private company to go public.

A is incorrect. A direct listing is a method for a private company to go public. In a direct listing, a company sells shares directly to the public without getting help from intermediaries. It allows companies to avoid some of the traditional costs of an initial public offering, while still raising capital. This method has been used by several high-profile companies, including Spotify and Slack. Therefore, it is a viable method for a private company to go public, making option A incorrect.

C is incorrect. An initial public offering (IPO) is the most common method for a private company to go public. In an IPO, a private company becomes a public company by issuing shares to the public for the first time. The company hires investment banks to underwrite the IPO, and the shares are then listed on a public exchange. The company receives the proceeds from the sale of its shares, which it can use for various purposes, including growth and expansion. Therefore, an IPO is a common method for a private company to go public, making option C incorrect.

CFA Level 1, Topic 5 – Corporate Issuers, Learning Module 1 – Organizational Forms, Corporate Issuer Features and Ownership, LOS 1a: Compare the organizational forms of business.

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Q.35 Which of the following is *least likely* a step of the Capital Allocation process?

A. Idea generation

B. Replacement project

C. Capital allocation planning

A replacement project is not a step in the capital allocation process. Instead, it is a type of capital project. Capital projects are investment projects that are undertaken to maintain or expand the existing size of the business. They can include expansion projects, new products and services, regulatory, safety, and environmental projects, among others. A replacement project falls under this category as it is a project that is undertaken to replace existing assets in order to maintain the current scale of operations. It does not directly contribute to the capital allocation process, which is a strategic process that involves the allocation of financial resources to different areas within an organization.

A is incorrect. Idea generation is the first step of the capital allocation process. Ideas can originate from anywhere within an organization and are crucial to the capital allocation process. These ideas form the basis for potential investment opportunities that the organization can pursue. They are then evaluated and prioritized based on their potential return on investment and alignment with the organization's strategic objectives.

C is incorrect. Capital allocation planning is actually the third step of the capital allocation process. This step involves organizing and prioritizing the proposals that best fit the company's strategy. It is during this step that the organization decides which projects to invest in, based on the potential return on investment and strategic fit.

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

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Q.36 DEF investment group invested $150 million in a private equity fund with a 2.5% management fee based on the end-year asset under management (AUM) and a 20% incentive fee, which are calculated independently. The fund specifies a hurdle rate of 8%. In the first year, the fund yielded a return of 15%, and in the second year, it grew by 20%. The incentive fee paid in the second year is *closest to:*

A. $2.11 million.

B. $4.00 million.

C. $3.98 million.

In the first year, the management fee is calculated as 2.5% of the asset under management, which is $150 million multiplied by the growth rate of 15%, resulting in a management fee of $4.3125 million. The incentive fee is calculated as 20% of the excess return over the hurdle rate of 8%, resulting in an incentive fee of $2.1 million. Therefore, the total fees in the first year are $6.4125 million. After deducting the total fees from the asset under management multiplied by the growth rate, the return to investors in the first year is 10.725%. This results in an ending value of the first year (or beginning value of the second year) of $166.0875 million. In the second year, the incentive fee is calculated as 20% of the excess return over the hurdle rate of 8%, resulting in an incentive fee of approximately $3.98 million.

A is incorrect. This option suggests that the incentive fee paid in the second year is $2.11 million. This is not accurate because it does not correctly apply the calculation for the incentive fee. The incentive fee is calculated as 20% of the excess return over the hurdle rate of 8%. In the first year, the fund yielded a return of 15%, which after deducting the hurdle rate and the management fee, results in an incentive fee of $2.1 million. However, this is the incentive fee for the first year, not the second year. In the second year, the fund grew by 20%, and the calculation of the incentive fee should be based on this growth rate and the asset under management at the end of the first year. Therefore, option A is incorrect because it does not correctly calculate the incentive fee for the second year.

B is incorrect. This option suggests that the incentive fee paid in the second year is $4.00 million. This is not accurate because it does not correctly apply the calculation for the incentive fee. The incentive fee is calculated as 20% of the excess return over the hurdle rate of 8%. In the second year, the fund grew by 20%, and the calculation of the incentive fee should be based on this growth rate and the asset under management at the end of the first year. The correct calculation results in an incentive fee of approximately $3.98 million, not $4.00 million. Therefore, option B is incorrect because it does not correctly calculate the incentive fee for the second year.

CFA Level 1, Topic 5 – Alternative Investments, Learning Module 2 - Alternative Investment Performance and Returns, LOS 2b: calculate and interpret alternative investment returns both before and after fees.

Q.37 Based on the data provided in the following table, the cash conversion cycle of Shalak Inc. is *closest to*:

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Sales	$3,800,000
Cost of Goods Sold	$1,800,000
Gross Profit	$2,000,000
Credit Sales	100%
Purchases	$1,600,000
Avg. Acc. Payables	$310,000
Avg. Acc. Rec.	$430,000
Avg. Inventory	$290,000
days payable outstanding (DPO)	53 days

A. 47 days.

B. 100 days.

C. 112 days.

The cash conversion cycle (CCC) is a key financial metric that measures the time it takes for a company to convert its investments in inventory and other resources into cash flows from sales. The formula for the CCC is:

$$\text{CCC} = \text{Days of Inventory} + \text{Days of Receivables} - \text{Days Payable Outstanding}$$

For Shalak Inc., we are given the following data:

- Inventory: \$290,000
- Cost of Goods Sold (COGS): \$1,800,000
- Receivables: \$430,000
- Sales on credit: \$3,800,000
- Days Payable Outstanding: 53 days

Step 1: Calculate Days of Inventory

Days of Inventory is calculated as:

$$\text{Days of Inventory} = \frac{\text{Inventory}}{\text{COGS per day}}$$

Where COGS per day is:

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$$\text{COGS per day} = \frac{\text{COGS}}{365} = \frac{1,800,000}{365} \approx 4,931.51$$

Now calculate Days of Inventory:

$$\text{Days of Inventory} = \frac{290,000}{4,931.51} \approx 58.8 \text{ days}$$

Step 2: Calculate Days of Receivables

Days of Receivables is calculated as:

$$\text{Days of Receivables} = \frac{\text{Receivables}}{\text{Sales on credit per day}}$$

Where Sales on credit per day is:

$$\text{Sales on credit per day} = \frac{\text{Sales on credit}}{365} = \frac{3,800,000}{365} \approx 10,410.96$$

Now calculate Days of Receivables:

$$\text{Days of Receivables} = \frac{430,000}{10,410.96} \approx 41.3 \text{ days}$$

Step 3: Calculate the Cash Conversion Cycle

Finally, we subtract the Days Payable Outstanding from the sum of Days of Inventory and Days of Receivables to get the Cash Conversion Cycle:

$$\text{CCC} = 58.8 \text{ days} + 41.3 \text{ days} - 53 \text{ days} \approx 47.1 \text{ days}$$

CFA Level 1, Topic 5 – Corporate Issuers, Learning Module 4 – Working Capital and Liquidity, LOS 4a: Explain the cash conversion cycle and compare issuer's cash conversion cycles.

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Q.38 What is the *most likely* benefit of a corporation issuing new securities in a private placement instead of an initial public offering?

A. Lower cost of capital.

B. Cheaper offering costs.

C. More liquidity for investors.

The primary benefit of a corporation issuing new securities in a private placement instead of an initial public offering is cheaper offering costs, which is option B. This is primarily due to the fact that private placements usually require less disclosure than public ones. The process of disclosure in public offerings is often extensive and involves a significant amount of legal and administrative work, which can be quite costly. In contrast, private placements are typically made to a smaller number of sophisticated investors, which reduces the need for extensive disclosure and consequently lowers the associated costs. This makes private placements a more cost-effective method of issuing new securities for corporations.

A is incorrect. Private placement securities are typically less liquid than those issued in public offerings. This lack of liquidity increases the risk for investors, who consequently demand a higher return on their capital. This results in lower security prices and a higher cost of capital for the corporation. Therefore, while private placements may offer cost savings in terms of offering costs, they do not necessarily result in a lower cost of capital.

C is incorrect. As mentioned earlier, private placement securities are typically less liquid than those issued in public offerings. This is because they are usually sold to a smaller number of investors and are not listed on public exchanges. This makes it more difficult for investors to sell their securities, reducing liquidity. Therefore, while private placements may offer certain advantages, increased liquidity for investors is not one of them.

CFA Level 1, Topic 5 – Equity, Learning Module 1 – Market Organization and Structure, LOS 1i: Define primary and secondary markets and explain how secondary markets support primary markets

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Q.39 A 365-day year repurchase agreement (repo) has an initial principal amount of USD 90 million and a redemption amount due at the maturity of USD 93 million. The number of days between settlement and maturity is 300. The bond equivalent yield is *closest* to:

A. 5.56%.

B. 4.06%.

C. 4.00%.

The bond equivalent yield is calculated using the formula for the Add-On Rate (AOR). The AOR is a method of calculating returns on investments where the interest is added onto the principal amount and the total is then divided by the number of periods. The formula for AOR is:

$$\text{AOR} = (\frac{\text{Year}}{\text{Days}}) \times (\frac{\text{FV-PV}}{\text{PV}})$$

Where:

PV = principal amount (the price of the money market instrument)

FV = redemption value of the money market instrument at maturity (including the interest)

Days = number of days between the settlement and maturity periods

Year = number of days in a year

AOR = add-on rate (usually stated as an annual percentage rate)

In this case, the principal amount (PV) is USD 90 million, the redemption value at maturity (FV) is USD 93 million, the number of days between settlement and maturity is 300, and the number of days in a year is 365. Substituting these values into the formula gives:

$$\text{AOR} = (\frac{365}{300}) \times (\frac{93 - 90}{90}) = 4.06\%$$

A is incorrect. A bond equivalent yield of 5.56% would imply a higher return on the repurchase agreement than is actually the case. This could be the result of incorrectly calculating the AOR, perhaps by using a different number of days in the year or between settlement and maturity, or by using different values for the principal amount and redemption value.

C is incorrect. A bond equivalent yield of 4.00% would imply a lower return on the repurchase agreement than is actually the case. This could be the result of incorrectly calculating the AOR, perhaps by using a different number of days in the year or between settlement and maturity, or by using different values for the principal amount and redemption value.

CFA Level 1, 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.

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Q.40 What is *most likely* the definition of a Special Purpose Vehicle (SPV)?

A. A type of asset-backed security that is secured by a mortgage or collection of mortgages.

B. A subsidiary company with an asset/liability structure and legal status that makes its obligations secure even if the parent company goes bankrupt.

C. A structured financial product that pools together cash flow-generating assets and repackages this asset pool into discrete tranches that can be sold to investors.

A Special Purpose Vehicle (SPV) is a subsidiary company that is created to isolate financial risk. Its obligations are secure even if the parent company goes bankrupt. This is achieved by maintaining an asset/liability structure and legal status that separates the SPV's operations from the parent company. The SPV is designed to counter the risk of bankruptcy and is used by companies for securitization, risk sharing, and property sales. The SPV's actions are usually very tightly controlled and they are only allowed to finance, buy, and sell assets. This is why option B is the correct definition of a Special Purpose Vehicle (SPV).

A is incorrect. This option describes a type of asset-backed security that is secured by a mortgage or collection of mortgages. This is not the definition of a Special Purpose Vehicle (SPV). Instead, it is the definition of Mortgage-Backed Securities (MBS). MBS are financial products that are created by pooling together a group of mortgage loans. The cash flows from these loans are then sold to investors as securities. While MBS and SPVs are both financial instruments, they serve different purposes and have different structures.

C is incorrect. This option describes a structured financial product that pools together cash flow-generating assets and repackages this asset pool into discrete tranches that can be sold to investors. This is the definition of Collateralized Debt Obligations (CDOs), not SPVs. CDOs are complex financial instruments that are used to repackage individual loans into a product sold to investors on the secondary market. These are different from SPVs, which are separate legal entities created to isolate financial risk.

CFA Level 1, Topic 6 – Fixed Income, Learning Module 17 – Fixed Income Securitization, LOS 17b: Describe securitization, including the parties and the roles they play.

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Q.41 J Ahsan, CFA, a credit analyst with High Return Investments, has been working on the credit analysis of SnJ Inc. In his report, J Ahsan has written that SnJ Inc. has been using aggressive accounting policies for the last three years. This analysis is part of:

A. capacity.

B. character.

C. collateral.

The character of a company is evaluated by analyzing the management's strategy, their track record, the use of aggressive accounting policies and/or tax strategies, any history of fraud or misconduct, and how they have treated bondholders in the past. In the given scenario, J Ahsan, a credit analyst, has noted that SnJ Inc. has been using aggressive accounting policies for the last three years. This is a clear indication of the character of the company, as it shows the management's approach towards financial reporting and their willingness to potentially manipulate figures to present a more favorable financial position. This could potentially lead to financial instability in the long run, which is a risk for investors. Therefore, this analysis falls under the character category.

A is incorrect. The term capacity in finance refers to a company's ability to generate sufficient cash flows to service its debt and meet its financial obligations. It is a measure of the company's financial strength and stability. It involves an analysis of the company's profitability, liquidity, cash flow, and overall financial health. In the given scenario, there is no mention of SnJ Inc.'s financial performance or its ability to generate cash flows.

C is incorrect. Collateral refers to the assets that a company pledges as a guarantee to secure a loan. It serves as a form of protection for the lender, as it can be sold or seized in the event that the borrower defaults on the loan. The quality and value of a company's assets are assessed to determine the adequacy of the collateral. In the given scenario, there is no mention of SnJ Inc.'s assets or any collateral that it might have pledged.

CFA Level I, Topic 6 – Fixed Income, Learning Module 14 – Credit Risk, LOS 14a: describe credit risk and its components, probability of default and loss given default.

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Q.42 An investor with an investment horizon of 5 years is *most likely* facing which of the following risk if the Macaulay Duration is 7 years?

A. Lower interest rate risk.

B. Higher interest rate risk.

C. No risk, the investor is hedged against interest rate risk.

In finance, the duration gap is a financial metric that measures the sensitivity of the value of an investment or a portfolio to changes in interest rates. It is calculated as the difference between the Macaulay Duration and the investment horizon. In this case, the Macaulay Duration is 7 years and the investment horizon is 5 years, resulting in a positive duration gap of 2 years. This means that the investor is more exposed to the risk of interest rates increasing. When interest rates rise, the present value of the future cash flows from the investment decreases, leading to a decrease in the market price of the investment. Therefore, the investor is at risk of losing money if interest rates increase.

A is incorrect. An investor with a negative duration gap, where the investment horizon is greater than the Macaulay Duration, would face a lower interest rate risk. This is because they would be more exposed to reinvestment risk, which is the risk that the investor will have to reinvest the future cash flows from the investment at a lower interest rate. In this case, the investor's duration gap is positive, not negative, so they are not facing a lower interest rate risk.

C is incorrect. An investor would only be hedged against interest rate risk if their Macaulay Duration equals their investment horizon, as the reinvestment risk would offset the market price risk. In this case, the investor's Macaulay Duration is greater than their investment horizon, so they are not hedged against interest rate risk and do face a risk, specifically a higher interest rate risk.

CFA Level 1, Topic 6 – Fixed Income, Learning Module 10 – Interest Rate Risk and Return, LOS 10b: Describe the relationships among a bond’s holding period return, its Macaulay duration, and the investment horizon.

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Q.43 A financial analyst needs to assign a value to a five-year illiquid bond with an annual coupon payment of 5.5%. In his analysis, the financial analyst highlights two corporate bonds having the same credit quality:

1. 6-year, 5.50% annual coupon bond priced at 104.00.
2. 4-year, 6.50% annual coupon bond priced at 107.00.

Using the matrix pricing technique, the estimated price of the illiquid bond is closest to:

A. 101.37

B. 103.78

C. 104.56

The matrix pricing technique is a method used to estimate the price of a bond that is not actively traded. The technique involves using the yield to maturity (YTM) of other similar bonds that are actively traded in the market.

First, the YTM on the 6-year bond is calculated. The bond is priced at 104.00 and has an annual coupon payment of 5.5%. The YTM is the rate that equates the present value of these future cash flows to the current market price of the bond. By solving the equation, we find that the YTM is 0.0472 or 4.72%.

Similarly, the YTM on the 4-year bond is calculated. This bond is priced at 107.00 and has an annual coupon payment of 6.5%. By solving the equation, we find that the YTM is 0.0455 or 4.55%.

The estimated market discount rate is then calculated as the average of these two YTMs, which is 0.04635 or 4.635%. This rate is used as the discount rate to estimate the price of the illiquid bond.

Given this YTM of 4.635%, the estimated price of the illiquid bond is calculated by discounting its future cash flows at this rate. The result is 103.78, which is closest to option B.

A is incorrect. The estimated price of the illiquid bond is not 101.37. This would imply a higher YTM than the one calculated, which is not consistent with the given information about the bond's annual coupon payment and the prices and YTMs of the other similar bonds.

C is incorrect. The estimated price of the illiquid bond is not 104.56. This would imply a lower YTM than the one calculated, which is not consistent with the given information about the bond's annual coupon payment and the prices and YTMs of the other similar bonds.

CFA Level 1, Topic 6 – Fixed Income, Learning Module 6 - Fixed Income Bond Valuations: Prices and Yields, LOS 6c: Describe matrix pricing.

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Q.44 A bond has a duration of 10.62 and a convexity of 91.46. For a 200 bps increase in yield, the bond’s approximate percentage price change is closest to:

A. -24.90%

B. -19.41%

C. -1.62%

Estimated Price Change = - (Duration) x (Change in Yield) + 0.5 x (Convexity) x (Change in Yield)^2

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

Estimated Price Change = -10.62 x 0.02 + 0.5 x 91.46 x 0.02^2 = -19.41%

This means that for a 200 basis points (or 2%) increase in yield, the bond's price would decrease by approximately 19.41%.

A is incorrect. A bond's price change of -24.90% is too high given the provided duration and convexity. The formula for the estimated price change of a bond shows that the price change is inversely proportional to the change in yield and directly proportional to the bond's duration and convexity. Therefore, a higher price change would require a larger change in yield, a longer duration, or a higher convexity, none of which are present in this case.

C is incorrect. A bond's price change of -1.62% is too low given the provided duration and convexity. The formula for the estimated price change of a bond shows that the price change is inversely proportional to the change in yield and directly proportional to the bond's duration and convexity. Therefore, a lower price change would require a smaller change in yield, a shorter duration, or a lower convexity, none of which are present in this case.

CFA Level 1, Topic 6 – Fixed Income, Learning Module 12 – Yield Based Bond Convexity and Portfolio Properties, LOS 12a: Calculate and interpret convexity and describe the convexity adjustment.

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Q.45 The 2-period spot rate, S_2 is 9%, and the 1-period spot rate, S_1 is 4%. The one-year forward rate for, one year from now, $f_{1,1}$, is *closest to*:

A. 13%

B. 14.24%

C. 18.81%

$$(1 + S_2)^2 = (1 + S_1)(1 + f_{1,1})$$

In this formula, S_2 represents the two-year spot rate, S_1 represents the one-year spot rate, and $f_{1,1}$ represents the one-year forward rate one year from now. By substituting the given values into the formula, we get:

$$f_{1,1} = ([(1 + 0.09)^2]/(1.04)) - 1 = 0.1424 \text{ or } 14.24\%$$

A is incorrect. This option suggests that the forward rate is 13%, which is not correct. This seems to be a simple addition of the two spot rates (9% and 4%), which is not the correct way to calculate the forward rate. The forward rate is not simply the sum of the spot rates, but rather it is calculated based on the relationship between the spot rates and the time periods, as shown in the formula above.

C is incorrect. This option suggests that the forward rate is 18.81%, which is also not correct. This seems to be based on the incorrect calculation:

$$f_{1,1} = (1 + 0.09)^2 - 1 = 0.1881 \text{ or } 18.81\%$$

This calculation incorrectly assumes that the forward rate is simply the square of the two-year spot rate minus one. This is not the correct way to calculate the forward rate. The forward rate is calculated based on the relationship between the spot rates and the time periods, as shown in the formula above.

CFA Level 1, Topic 6 – Fixed Income, Learning Module 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.

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Q.46 Which of the following statements is/are *most* accurate?

I. The expected loss is equal to the default risk multiplied by the loss severity.
II. The difference in yield between a credit-risk and credit-risk-free bond of similar maturity is called the spread risk.
III. Bond prices are inversely related to spreads.

A. II

B. I and III.

C. I, II and III.

Statement I is correct. The expected loss on an investment is indeed calculated by multiplying the probability of default (default risk) by the potential loss if the default occurs (loss severity). This is a fundamental concept in risk management and finance, which helps investors and financial institutions to estimate the potential loss from an investment or loan, and thus to make informed decisions.

Statement II is incorrect. The difference in yield between a credit-risk and credit-risk-free bond of similar maturity is not called the spread risk, but the yield spread or credit spread. Spread risk refers to the risk that the spread between the yields of two bonds changes, which can affect the relative value of the bonds.

Statement III is correct. In finance, the spread refers to the difference between the yield of a risky bond and the yield of a risk-free bond of similar maturity. When the spread increases, it means that the market perceives the risky bond as more risky, and thus requires a higher yield to compensate for the increased risk. As the yield of a bond increases, its price decreases, because the fixed coupon payments of the bond become less attractive compared to other investments.

CFA Level 1, Topic 6 – Fixed Income, Learning Module 7 – Yield and Yield Spread Measures for Fixed rate Bonds, LOS 7b: Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.

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Q.47 As an investor, you must always be wary of where the bond is traded and issued, as this provision directly affects the tax status, regulations and law. Which of the following bonds is issued internationally, has lesser regulatory requirements, disclosure, and listing levels compared to other bonds?

A. Eurobonds.

B. Global bonds.

C. Foreign bonds.

Eurobonds are issued internationally, which means they are not confined to the jurisdiction of any single country. This unique characteristic of Eurobonds results in them having fewer regulatory requirements, disclosure, and listing levels compared to other types of bonds. The reason behind this is that they are not subject to the specific laws and regulations of a particular country, but rather, they operate under international law. This makes them a more flexible investment option for investors who are looking to diversify their portfolio on a global scale. Furthermore, the tax status of Eurobonds is also different from other bonds. Since they are not issued within a specific country, they are not subject to the same tax laws, which can often result in tax advantages for the investors. Therefore, the unique characteristics of Eurobonds, including their international issuance, lesser regulatory requirements, and different tax status, make them the correct answer to this question.

B is incorrect. Global bonds, contrary to Eurobonds, are issued simultaneously in the Eurobond market and at least one domestic bond market. This means that they are subject to the laws and regulations of the domestic market in which they are issued, in addition to the international laws that govern the Eurobond market. This results in a higher level of regulatory requirements, disclosure, and listing levels compared to Eurobonds. Furthermore, the tax status of global bonds is also different from Eurobonds, as they are subject to the tax laws of the domestic market in which they are issued. Therefore, the characteristics of global bonds do not match the description provided in the question.

C is incorrect. Foreign bonds are issued in a domestic market by a foreign issuer. This means that they are subject to the legal, regulatory, and tax requirements of the country in which they are issued. This results in a higher level of regulatory requirements, disclosure, and listing levels compared to Eurobonds. Furthermore, the tax status of foreign bonds is also different from Eurobonds, as they are subject to the tax laws of the country in which they are issued. Therefore, the characteristics of foreign bonds do not match the description provided in the question.

CFA Level 1, Topic 6 – Fixed Income, Learning Module 2 – Fixed Income Cash Flows and Types, LOS 2b: Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.

Q.48 With a discount rate of 3% per period, a 5-period zero-coupon bond with a par value of $1,000 has a value of:

A. $853.51

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B. \$860.00

C. \$862.61

The present value of a zero-coupon bond is calculated by dividing the par value by (1 + discount rate) raised to the power of the number of periods. The formula is as follows:

$$\text{Present Value} = \frac{\text{Par Value}}{(1 + r)^n}$$

Where:

- Par Value = \$1,000
- Discount Rate r = 3% = 0.03
- Number of periods n = 5

Substituting the given values into the formula:

$$\text{Present Value} = \frac{1,000}{(1.03)^5}$$

First, calculate $(1.03)^5$:

$$(1.03)^5 \approx 1.159274$$

Now calculate the present value:

$$\text{Present Value} = \frac{1,000}{1.159274} \approx 862.61$$

Therefore, the present value of the zero-coupon bond is \$862.61. This is the amount that an investor would be willing to pay today for the bond, given the specified discount rate and number of periods.

A is incorrect. This option suggests that the value of the bond is \$853.51. However, this does not align with the formula for calculating the present value of a zero-coupon bond. Using the given discount rate of 3% and the number of periods being 5, the calculation would be \$1,000 / (1.03^5), which equals \$862.61, not \$853.51. Therefore, option A underestimates the value of the bond, given the specified discount rate and number of periods.

B is incorrect. This option suggests that the value of the bond is \$860.00. However, this does not align with the formula for calculating the present value of a zero-coupon bond. Using the given discount rate of 3% and the number of periods being 5, the calculation would be \$1,000 / (1.03^5), which equals \$862.61, not \$860.00. Therefore, option B also underestimates the value

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of the bond, given the specified discount rate and number of periods.

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

Q.49 Who among the following is *most likely* to be the bond seller in the secondary market?

A. The issuer.

B. The investor.

C. The underwriter.

In the secondary bond market, the bonds that have already been issued in the primary market are bought and sold. The secondary market provides a platform for the investors to sell their bonds before maturity. This is where the investor comes into play. The investor, who initially bought the bond in the primary market, can decide to sell the bond in the secondary market. This could be due to a variety of reasons such as needing to liquidate their investment, or if they believe that the value of the bond is going to decrease in the future. Therefore, the investor is the most likely to be the bond seller in the secondary market.

A is incorrect. The issuer, typically a government or organization, is the entity that initially sells the bonds in the primary market to raise funds. Once the bonds have been issued, the issuer's role is essentially done. They have no active role in the secondary market where the bonds are traded among investors. The issuer does not sell the bonds in the secondary market, they are only responsible for paying the interest to the bondholder and repaying the principal amount at maturity. Therefore, the issuer is not likely to be the bond seller in the secondary market.

C is incorrect. The underwriter is a firm, usually an investment bank, that buys the newly issued securities from the issuer in the primary market. The underwriter then resells these securities to investors or dealers. The underwriter's role is to facilitate the issuance of new securities, they take on the risk of buying the securities and then reselling them. However, once the securities have been issued and sold, the underwriter's role is complete. They do not participate in the secondary market where the securities are traded among investors. Therefore, the underwriter is not likely to be the bond seller in the secondary market.

CFA Level I, Topic 6 – Fixed Income, Learning Module 3 – Fixed Income Issuance and Trading, LOS 3c: Compare primary and secondary fixed-income markets to equity Markets.

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Q.50 Which of the following yield spread measures *least likely* assume the spot yield curve is flat?

A. G-spread.

B. I-spread.

C. Z-spread.

The Z-spread, also known as the Z-spread, is a measure of the spread of a fixed-income security rate and the spot rate of the treasury curve. It is the constant spread that, when added to the yield at each point on the spot rate Treasury curve, will make the price of a security equal to the present value of its cash flows. This spread is used to discount a security's cash flows to match the current market price.

However, if the Z-spread were to assume that the spot yield curve is flat (i.e., the curve is perfectly flat), the Z-spread would be equal to the nominal spread. The nominal spread considers only one point on the treasury yield curve, whereas the Z-spread considers several points. This makes the Z-spread a more accurate measure than the nominal spread. Therefore, assuming that the spot yield curve is flat will reduce the accuracy of the Z-spread, making it the least likely to assume a flat spot yield curve.

A is incorrect. The G-spread, or the government bond spread, is a yield spread in basis points over an actual or interpolated government bond. It assumes that the yield curve is not flat, as it is based on the difference between the yield of a bond and the yield of a government bond with the same maturity. Therefore, it does not meet the criteria of assuming a flat spot yield curve.

B is incorrect. The I-spread, or the interpolated spread, is the spread over or under an interest rate swap rate. It is used to compare the yield of a non-treasury security with the yield of a treasury security that has a similar duration. The I-spread does not assume a flat yield curve, as it is based on the difference between the yield of a bond and the yield of a swap rate. Therefore, it does not meet the criteria of assuming a flat spot yield curve.

CFA Level I, Topic 6 – Fixed Income, Learning Module 7 – Yield and Yield Spread Measures for Fixed Rate Bonds, LOS 7b: Compare, calculate, and interpret yield and yield spread measures for fixed-rate bonds.

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Q.51 A decline in the effective duration of a callable bond *most likely* implies that a bond's

A. Yield-to-worst has risen.

B. Yield-to-maturity has risen.

C. Benchmark yield curve has shifted upwards.

The effective duration of a callable bond is a measure of the bond's sensitivity to changes in the benchmark yield curve. This means that it gauges how much the bond's price will change for a given change in the benchmark yield curve. When the benchmark yield curve shifts upwards, it implies that the interest rates have increased. Callable bonds have the feature that they can be called back by the issuer when interest rates fall. However, when interest rates rise, the likelihood of the bond being called back decreases. This decrease in the probability of the bond being called back leads to a decline in the effective duration of the callable bond.

A is incorrect. The yield-to-worst (YTW) of a bond is the lowest potential yield that can be received on a bond without the issuer actually defaulting. The YTW is not directly related to the effective duration of a callable bond. The effective duration is a measure of the bond's price sensitivity to changes in the benchmark yield curve, not to changes in the YTW.

B is incorrect. The yield-to-maturity (YTM) of a bond is the total return anticipated on a bond if it is held until it matures. YTM is considered a long-term bond yield expressed as an annual rate. The modified duration, on the other hand, measures the price sensitivity of a bond to changes in its YTM. However, the effective duration of a callable bond is not based on the YTM but on the changes in the benchmark yield curve.

CFA Level I, Topic 6 – Fixed Income, Learning Module – Curve Based and Empirical Fixed Income Risk Measures, LOS 13b: Calculate the percentage price change of a bond for a specified change in benchmark yield, given the bond's effective duration and convexity.

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Q.52 Which of the following is *least likely* an example of an internal credit enhancement?

A. Claim priorities to the underlying assets are ranked.

B. Posting more collateral than is required to secure financing.

C. Providing a credit line to reimburse cash flow shortfalls backing the issue.

Option C is the least likely example of an internal credit enhancement. Internal credit enhancements are strategies used within a structured finance transaction to reduce the risk of default. These strategies are designed to protect the investor from potential losses by structuring the transaction in a way that inherently reduces risk. However, providing a credit line to cover cash flow shortfalls is not an internal strategy. Instead, it is an example of an external credit enhancement because it involves a third party, the provider of the credit line, stepping in to cover shortfalls. This strategy does not inherently reduce risk within the transaction itself, but rather relies on an external source to cover potential losses. Therefore, it does not fit the definition of an internal credit enhancement.

A is incorrect. The strategy of ranking claim priorities to the underlying assets, also known as subordination or tranching, is indeed an internal credit enhancement. This strategy creates a hierarchy of claims that prioritizes certain investors over others in the event of a default. By doing so, it reduces the risk for those investors who are higher up in the hierarchy, as they will be paid out first in the event of a default. This strategy is designed to protect the investor from potential losses by structifying the transaction in a way that inherently reduces risk, which fits the definition of an internal credit enhancement.

B is incorrect. Posting more collateral than is required to secure financing, known as over-collateralization, is also an internal credit enhancement strategy. This strategy provides a cushion to absorb potential losses, thereby reducing the risk of default. By providing more collateral than is necessary, the issuer is essentially providing a safety net for the investor. This safety net is built into the structure of the transaction itself, making it an internal strategy to reduce risk. Therefore, it fits the definition of an internal credit enhancement.

CFA Level I, Topic 6- Fixed Income, Learning Module 18 – Asset Backed Security (ABS) Instruments and Market Features, LOS 18b: Describe typical credit enhancement structures used in securitizations.

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Q.53 A firm enters into a repo agreement to sell a 4% 12-year bond with a par value of $1 million and a market value of $975,000 for $950,000 and to repurchase it 90 days later (the repo date) for $955,000. The repo margin is *closest to*

A. 0.52%.

B. 2.05%.

C. 2.56%.

The repo margin, also known as the haircut, is calculated by finding the percentage difference between the market value of the bond and the amount loaned. In this case, the firm has entered into a repo agreement to sell a 4% 12-year bond with a market value of $975,000 for $950,000 and to repurchase it 90 days later for $955,000. The repo margin is calculated as follows:

Repo margin = (Market value - Amount loaned) / Market value

Repo margin = ($975,000 - $950,000) / $975,000

Repo margin = $25,000 / $975,000

Repo margin = 2.56%

A is incorrect. A repo margin of 0.52% would imply a much smaller difference between the market value of the bond and the amount loaned. This would mean that the firm is taking on a higher risk, as they would have less of a buffer in case the value of the bond decreases. This is not the case in this scenario, as the difference between the market value and the amount loaned is $25,000, resulting in a repo margin of 2.56%.

B is incorrect. A repo margin of 2.05% would suggest a smaller difference between the market value of the bond and the amount loaned than what is actually the case. This would mean that the firm is taking on a slightly higher risk, as they would have less of a buffer in case the value of the bond decreases. However, the actual difference between the market value and the amount loaned is $25,000, resulting in a repo margin of 2.56%, not 2.05%.

CFA Level I, Topic 6 – Fixed Income, Learning Module 4 – Fixed Income Market for Corporate Issuers, LOS 4b: Describe repurchase agreements (repos), their uses, and their benefits and risks.

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Q.54 Which of the following *most likely* measures the sensitivity of a bond's price to changes in the benchmark yield curve?

A. Effective Duration.

B. Modified Duration.

C. Macaulay Duration.

Effective Duration is the correct answer because it is a measure that is used to estimate the sensitivity of a bond's price to changes in the benchmark yield curve. The benchmark yield curve is a graphical representation of the interest rates on debt for a range of maturities. It shows the yield an investor would expect to earn if he lent money to the government for a given amount of time. When the yield curve changes, it can have a significant impact on a bond's price. Effective Duration takes into account the expected changes in cash flows as a result of changes in interest rates, making it a more accurate measure of a bond's price sensitivity to changes in the yield curve compared to other measures of duration.

B is incorrect. Modified Duration is a measure of the percentage price change of a bond for a 1% change in its yield to maturity, assuming that the bond's expected cash flows do not change. This is a less accurate measure of a bond's price sensitivity to changes in the yield curve because it does not take into account the expected changes in cash flows as a result of changes in interest rates. Therefore, while Modified Duration does measure a bond's price sensitivity to changes in interest rates, it is not the most accurate measure of a bond's price sensitivity to changes in the benchmark yield curve.

C is incorrect. Macaulay Duration measures the weighted average time until a bond's cash flows are received, with the weights being the present value of each cash flow. It is a measure of the length of time it would take for the price of a bond to be repaid by its internal cash flows. While Macaulay Duration does provide some indication of a bond's price sensitivity to changes in interest rates, it does not directly measure this sensitivity. Therefore, it is not the most accurate measure of a bond's price sensitivity to changes in the benchmark yield curve.

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

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Q.55 A 5% annual coupon paying bond issue has a term to maturity of six years. The bond's par value is $1,000 and is trading at a yield to maturity of 7%. The bond is *most likely* trading at:

A. Par.

B. A discount to par.

C. A premium to par.

The present value of a bond is the sum of the present values of its future cash flows, which include periodic coupon payments and the par value at maturity. In this case, the bond has a 5% annual coupon rate, a term to maturity of six years, and a par value of $1,000. This means that the bond pays $50 (5% of $1,000) in coupon payments each year for six years, and pays $1,000 at the end of the six years.

However, the bond is trading at a yield to maturity of 7%. This means that the bond's cash flows are discounted at a rate of 7% per year. When the bond's cash flows are discounted at this rate, the present value of the bond is less than its par value. Specifically, using the present value functions on the BAII Plus Pro calculator, the present value is determined as follows: FV = 1,000; PMT = 50; I/Y = 7%; N = 6; CPT => PV = -904.669. This means that the bond is trading at 90.47% (904.669 ÷ 1,000 × 100) of its par value, or at a discount to par.

A is incorrect. This option suggests that the bond is trading at par. However, as explained above, the bond's present value, when discounted at the yield to maturity of 7%, is less than its par value. Therefore, the bond is not trading at par, but at a discount to par.

C is incorrect. This option suggests that the bond is trading at a premium to par. However, as explained above, the bond's present value, when discounted at the yield to maturity of 7%, is less than its par value. Therefore, the bond is not trading at a premium to par, but at a discount to par.

CFA Level I, Topic 6 – Fixed income, Learning Module 6 – Fixed Income Bond Valuations: Prices and Yields, LOS 6a: Calculate a bond's price given a yield-to-maturity on or between coupon dates.

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Q.56 An investor considers purchasing a 10-year bond priced at $1,052 with a 7% coupon paid semi-annually if the comparable bonds yield 6%. Advise the investor if the investment is *most appropriate*.

A. Yes, the bond is undervalued by $21.60.

B. Yes, the bond is undervalued by $22.39.

C. Yes, the bond is overvalued by $21.60.

We can use a financial calculator to calculate the present value (PV) of the bond. The inputs for the calculation are as follows: N = 20, I = 3 (which is the semi-annual yield of 6% divided by 2), PMT = 35 (which is the semi-annual coupon payment of 7% of the face value of $1,000 divided by 2), and FV = $1,000 (which is the face value of the bond). The output of the calculation is the present value of the bond, which is $1074.39. The difference between this value and the price of the bond, $1052, is $22.39. This indicates that the bond is undervalued by $22.39, making it a good investment for the investor.

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

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Q.57 An increase in market interest rates will *most likely* benefit the holder of:

A. A call option.

B. A put option.

C. Both call and put options.

An increase in market interest rates is most beneficial to the holder of a call option. This is because a call option gives the holder the right, but not the obligation, to buy an asset at a specified price within a certain period of time. If market interest rates increase, the cost of borrowing to purchase the asset directly also increases. This makes the call option, which was purchased at a lower price, more attractive. Furthermore, the holder of the call option can use the difference between the full price of the asset and the price of the call option to earn interest. The higher the interest rates, the higher the potential interest income. This makes the call option more valuable and increases its price if the holder decides to sell it.

B is incorrect. A put option gives the holder the right, but not the obligation, to sell an asset at a specified price within a certain period of time. If market interest rates increase, the cost of borrowing to purchase the asset directly also increases. This makes the put option less attractive because the holder of the put option would benefit from a decrease in the price of the underlying asset, not an increase. Furthermore, the increase in market interest rates could also increase the cost of borrowing to purchase the put option, which could offset any potential benefits.

C is incorrect. While it is true that both call and put options can be used as financial instruments to hedge against changes in market interest rates, they do not necessarily benefit the holder in the same way. As explained above, a call option becomes more attractive when market interest rates increase, while a put option becomes less attractive. Therefore, an increase in market interest rates does not necessarily benefit the holder of both a call and a put option.

CFA Level I, Topic 6 – 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.

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Q.58 Which of the following is *least likely* an exchange-traded derivative instrument?

A. Futures.

B. Options.

C. Forwards.

The primary reason for this is that forwards are not typically exchange-traded derivatives. Instead, they are more commonly traded on over-the-counter (OTC) markets. OTC markets are decentralized venues, where trading is conducted directly between parties without a central exchange or intermediary. The terms of these contracts are privately negotiated between parties, and as such, they can be tailored to fit any business need. This flexibility makes them a popular choice for many businesses, but it also means they lack the standardization and regulation found in exchange-traded derivatives.

A is incorrect. Futures are indeed a type of derivative, but they are not the least likely to be exchange-traded. In fact, futures are standardized contracts that are typically traded on exchanges. These exchanges regulate the futures contracts, setting their terms and acting as the counterparty to both sides of the transaction. This ensures a high level of transparency and significantly reduces credit risk, as the exchange guarantees the performance of the contracts. Therefore, futures are not the least likely exchange-traded derivative instrument.

B is incorrect. Options, like futures, are also exchange-traded derivatives. They are often standardized contracts that are listed on exchanges, such as the Chicago Board Options Exchange (CBOE). On these exchanges, options contracts are regulated and their terms are standardized, much like futures contracts. This standardization and regulation make options a common choice for exchange trading. Therefore, options are not the least likely exchange-traded derivative instrument.

CFA Level 1, Topic 7 – Derivatives, Learning Moduel 1 – Derivative Instruments and Derivative Market Features, LOS 1b: Describe the basic features of derivative markets, and contrast over-the-counter and exchange-traded derivative markets.

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Q.59 Which of the following statements *most* accurately illustrates a consequence of arbitrage?

A. Short selling becomes restrictive.

B. The same good can sell for different prices in different markets in the future.

C. The combined actions of traders would force the convergence of trading prices.

Arbitrage is a financial strategy that involves the simultaneous purchase and sale of an asset to profit from a difference in the price. It is a trade that profits by exploiting the price differences of identical or similar financial instruments on different markets or in different forms. The combined actions of traders engaging in arbitrage would indeed force the convergence of trading prices. This is because traders would buy the asset where it is cheaper and sell it where it is more expensive, thus pushing down the price where it was more expensive and pushing up the price where it was cheaper. This process continues until the price difference (or arbitrage opportunity) no longer exists, which is when the prices have converged.

A is incorrect. Arbitrage does not lead to short selling becoming restrictive. Short selling is a trading strategy where a trader sells assets that they do not own, with the intention of buying them back later when the price drops to make a profit. While short selling can be used in arbitrage, it is not a direct consequence of arbitrage. Arbitrage involves taking advantage of price differences between markets, while short selling involves betting on a price decrease. Therefore, the statement that short selling becomes restrictive as a consequence of arbitrage is incorrect.

B is incorrect. The statement that the same good can sell for different prices in different markets in the future is not a consequence of arbitrage. In fact, the principle of arbitrage works against this. As explained earlier, arbitrage involves taking advantage of price differences between markets. If the same good could sell for different prices in different markets in the future, this would present an arbitrage opportunity. Traders would buy the good where it is cheaper and sell it where it is more expensive, thus pushing down the price where it was more expensive and pushing up the price where it was cheaper. This process would continue until the prices have converged, i.e., the same good cannot sell for different prices in different markets. Therefore, the statement in option B is incorrect.

CFA Level 1, Topic 7 – Derivatives, Learning Module 4 – Aribtrage, Replication, and the Cost of Carry in Pricing Derivatives, LOS 4a: Explain how the concepts of arbitrage and replication are used in pricing derivatives.

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Q.60 Downside risk is the financial risk associated with losses. Which of the following single-option transactions *most likely* has the highest downside risk?

A. Buying an in-the-money put.

B. Writing an at-the-money call.

C. Buying an out-of-the-money call.

Writing an at-the-money call carries the highest downside risk. This is due to the fact that when you write a call option, you are essentially selling someone else the right to buy a stock from you at a specific price. If the price of the stock increases significantly, you are obligated to sell the stock at the lower price, resulting in a potential loss. The potential risk is unlimited because there is no cap on how high the price of the stock can rise. The only profit you can make from this transaction is the premium paid by the option buyer, which is fixed and does not increase even if the stock price decreases.

A is incorrect. Buying an in-the-money put option means that you are purchasing the right to sell a stock at a specific price. The maximum profit you can make from this transaction is the difference between the strike price and the price of the stock when it decreases. However, the downside risk is limited to the premium you paid for the option. This is because if the price of the stock increases, you can simply choose not to exercise the option, and your loss would be the premium you paid.

C is incorrect. Buying an out-of-the-money call option means that you are purchasing the right to buy a stock at a specific price. The maximum profit you can make from this transaction is unlimited, as there is no cap on how high the price of the stock can rise. However, similar to buying an in-the-money put, the downside risk is limited to the premium you paid for the option. If the price of the stock decreases, you can simply choose not to exercise the option, and your loss would be the premium you paid.

CFA Level 1, Topic 7 – Derivatives, Learning Module 8- Pricing and Valuation of Options, LOS 8a: Explain the exercise value, moneyness, and time value of an option.

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Q.61 Which of the following derivative contracts *most likely* expose the contract owner to default risk?

A. Swaps.

B. Futures.

C. Options.

The Swaps are derivative contracts that are made against the counterparty. This means that the holder of the contract is exposed to default risk if the counterparty refuses to fulfill their commitment. In a swap contract, two parties agree to exchange a series of future cash flows. However, if one party defaults or refuses to perform their commitment, the other party is exposed to default risk. This risk is inherent in swap contracts because they are private agreements between two parties and are not regulated by an exchange or clearing house. Therefore, the risk of default is higher in swaps compared to other derivative contracts.

B is incorrect. Futures contracts do not expose the contract owner to default risk. This is because futures contracts are standardized and traded on an exchange. The exchange clearing-house itself acts as the counterparty to both parties in a futures contract, thus eliminating most potential default risk. The clearing house guarantees the performance of the contract, meaning that if one party defaults, the clearing house will step in and fulfill the obligations of the defaulting party.

C is incorrect. Options contracts also do not expose the contract owner to default risk. Like futures, options contracts are standardized and traded on an exchange. The exchange clearing-house acts as the counterparty to both parties, thus eliminating most potential default risk. In an options contract, the buyer has the right, but not the obligation, to buy or sell the underlying asset at a specified price before a certain date. The seller, on the other hand, has the obligation to fulfill the contract if the buyer decides to exercise their option. However, if the seller defaults, the clearing house will step in and fulfill the obligations of the defaulting party.

CFA Level 1, Topic 7 - Derivatives, Learning Module 2 – Forward Commitmens 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.

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Q.62 Consider a put option with a premium of $5 and a strike price of $20. The maximum possible loss for the writer of the put is *closest to*:

A. $5

B. $15

C. $20

In this case, the strike price is \$20, and the premium is \$5. The maximum potential loss for the put writer occurs when the price of the underlying asset falls to zero. The formula for calculating the maximum potential loss is:

$$\text{Maximum Potential Loss} = \text{Strike Price} - \text{Premium}$$

Substituting the given values:

$$\text{Maximum Potential Loss} = 20 - 5 = 15$$

This means that the maximum potential loss to the put writer is \$15 per option contract. This is because the writer of the put option is obligated to buy the underlying asset at the strike price of \$20, even if the price of the underlying asset falls to zero. However, since the writer has already received the premium of \$5, it offsets part of the loss.

CFA Level 1, Topic 7 – Derivatives, Learning Module 8 -Pricing and Valuation of Options, LOS 8a: Explain the exercise value, moneyness, and time value of an option.

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Q.63 Which of the following is *least likely* correct regarding digital assets? A digital asset:

A. exist as data on a network.

B. cannot represent physical assets.

C. may be characterized as a swap depending on its design, use, and function.

Digital assets are a broad category that encompasses anything that can be stored and transmitted electronically and has associated ownership and use rights. This includes data on a network, physical or virtual assets, a value, or a use right or service. The design, function, and use of a digital asset can lead to it being characterized in various ways, including as a commodity, swap, or other derivatives. Digital assets can take many forms, such as digital tokens or virtual currencies, and utilize various underlying technologies, such as distributed ledger technology. They have various features and applications that touch a range of regulatory domains.

Digital assets can indeed represent physical assets. This is one of the key features of digital assets. They can represent physical or virtual assets, a value, or a use right or service. For example, a digital token could represent a physical asset like a car or a house. This is a common practice in the world of blockchain and cryptocurrencies, where physical assets are tokenized to create digital assets that represent the physical asset.

A is incorrect. Digital assets are created and maintained with software (codes) and exist as data on a network. This is one of the defining characteristics of digital assets. They are not physical entities but exist in the digital realm, stored and transmitted electronically.

C is incorrect. Depending on the design, function, and use, a digital asset may be characterized differently, including as a commodity, swap, or other derivatives. This is because the nature of a digital asset can vary widely depending on its specific characteristics and use cases.

CFA Level 1, Topic 8 – Alternative Investments, Learning Module 7 – Introduction to Digital Assets, LOS 7a: Describe financial applications of distributed ledger technology.

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Q.64 An investor has a cash investment of $15,000 with a periodic rate of return of 7%. He borrowed an additional $5,000 at a periodic rate of 2% to increase his investment size. The leveraged rate of return for the period is *closet to:*

A. 8.0%

B. 8.6%

C. 9.0%

The leveraged rate of return is calculated using the formula:

$$r_L = \frac{r_c \times (V_c + V_b) - (V_b \times r_b)}{V_c}$$

Where:
V_c = cash investment.
r_c = periodic rate of return.
r_b = borrowing rate of return.
V_b = amount of borrowed funds.
r_L = leveraged rate of return for the period.

In this scenario, the investor has a cash investment of $15,000 and a periodic rate of return of 7%. He also borrowed an additional $5,000 at a periodic rate of 2% to increase his investment size. Therefore, the total investment is $20,000 ($15,000 cash investment + $5,000 borrowed). The borrowing cost is $100 (=$5,000 * 2%), and the investment return is $1,400 (=$20,000 * 7%).

Substituting these values into the formula, we get:

$$\text{Leveraged Rate of Return} = \frac{(\$1,400 - \$100)}{\$15,000} = 8.67\%$$

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

Q.65 GammaShort Hedge Fund had $50 million in capital at the beginning of 2016. Management fees (based on assets under management using end-of-period) and incentive fees are 2% and 20%, respectively. In 2016, GammaShort had a 14% return. The hurdle rate is 7%, and, the incentive fee is based on returns above the hurdle rate. Assuming that the performance fee is the calculated net of the management fee, then the investors' net return for the year 2016 is *closest to*:

A. 11.45%

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B. 12.22%

C. 10.78%

The management fee is calculated as 2% of the total assets under management at the end of the period. The assets under management at the end of 2016 are:

$$\text{Total Assets} = 50\,\text{million} \times 1.14 = 57\,\text{million}$$

Therefore, the management fee is:

$$\text{Management Fee} = 57\,\text{million} \times 0.02 = 1.14\,\text{million}$$

The incentive fee is calculated as 20% of the returns above the hurdle rate of 7%, after subtracting the management fee. First, calculate the total return above the hurdle rate:

$$\text{Return Above Hurdle} = 50\,\text{million} \times (0.14 - 0.07) = 50\,\text{million} \times 0.07 = 3.5\,\text{million}$$

Next, subtract the management fee from the return above the hurdle:

$$\text{Remaining Return} = 3.5\,\text{million} - 1.14\,\text{million} = 2.36\,\text{million}$$

Now, calculate the incentive fee:

$$\text{Incentive Fee} = 2.36\,\text{million} \times 0.20 = 472,000$$

The total fees paid to the hedge fund are the sum of the management fee and the incentive fee:

$$\text{Total Fees} = 1.14\,\text{million} + 472,000 = 1.612\,\text{million}$$

To find the net return for the investors, subtract the total fees from the total assets under management at the end of the period:

$$\text{Net Return} = 57\,\text{million} - 1.612\,\text{million} = 55.388\,\text{million}$$

Finally, calculate the net return as a percentage:

$$\text{Net Return Percentage} = \left(\frac{55.388\,\text{million}}{50\,\text{million}}\right) - 1 = 0.10776\,\text{or}\,10.78\%$$

A is incorrect. A return of 11.45% would be too high, as this does not take into account the management fee and the incentive fee that are subtracted from the total return. This would overstate the net return for the investors.

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B is incorrect. A return of 12.22% would also be too high for the same reasons as option A. It does not accurately reflect the net return for the investors after the fees are subtracted from the total return.

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

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Q.66 European put and call options on GHG's stock 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 options' life. The risk-free rate is 4.5%. If the put is selling for $3.80, the call's price should be *closest* to:

A. $6.52

B. $6.32

C. $7.12

$$C_0 = So + P - \frac{X}{(1+r)^t}$$

Where:

C0 is the price of the call option,

So is the current price of the underlying asset,

P is the price of the put option,

X is the exercise price of the options,

r is the risk-free rate, and

t is the time to expiration in years.

Substituting the given values into the formula, we get:

$$= 52 + 3.80 - (\frac{50}{1.045^{\frac{120}{365}}}) = 6.52$$

B is incorrect. The price of $6.32 is lower than the calculated price of the call option using the put-call parity formula. This would imply that the call option is undervalued, which is not consistent with the principles of arbitrage-free pricing in financial markets. In an efficient market, the price of the call option should reflect all available information, including the prices of the put option and the underlying asset, the exercise price, the risk-free rate, and the time to expiration.

C is incorrect. The price of $7.12 is higher than the calculated price of the call option using the put-call parity formula. This would imply that the call option is overvalued, which is also not consistent with the principles of arbitrage-free pricing. In an efficient market, the price of the call option should not be higher than what is implied by the put-call parity formula, as this would provide an arbitrage opportunity for traders to profit from the price discrepancy.

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

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Q.67 A hedge fund has a beginning year value of $370 million and a 2 plus 20 fee structure with no hurdle rate or watermark. The fund calculates the management fees using end-of-period assets under management and incentive fees net of management fees. If the ending value of the fund is $400 million, then the total fee of the hedge fund for the period is *closest to*:

A. $12.4 million.

B. $15.0 million.

C. $16.0 million.

The management fee is calculated as 2% of the end-of-period assets under management, which in this case is $400 million. Therefore, the management fee is $400 million * 2% = $8 million. The incentive fee is calculated as 20% of the net increase in the fund's value, after deducting the management fee. The net increase in the fund's value is $400 million - $8 million (management fee) - $370 million (beginning year value) = $22 million. Therefore, the incentive fee is $22 million * 20% = $4.4 million. Adding the management fee and the incentive fee gives the total fee, which is $8 million + $4.4 million = $12.4 million.

B is incorrect. This option suggests that the total fee of the hedge fund for the period is $15.0 million. However, this does not match with the calculations based on the given 2 plus 20 fee structure and the fund's beginning and ending values. The management fee, calculated as 2% of the end-of-period assets under management, is $8 million, and the incentive fee, calculated as 20% of the net increase in the fund's value after deducting the management fee, is $4.4 million. Adding these two fees gives a total fee of $12.4 million, not $15.0 million.

C is incorrect. This option suggests that the total fee of the hedge fund for the period is $16.0 million. However, this does not match with the calculations based on the given 2 plus 20 fee structure and the fund's beginning and ending values. The management fee, calculated as 2% of the end-of-period assets under management, is $8 million, and the incentive fee, calculated as 20% of the net increase in the fund's value after deducting the management fee, is $4.4 million. Adding these two fees gives a total fee of $12.4 million, not $16.0 million.

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

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Q.68 Which of the following expressions *most likely* refer to the non-monetary benefits of holding an asset?

A. Cost of carry.

B. Convenience cost.

C. Convenience yield.

The term 'convenience yield' is used in finance to refer to the non-monetary benefits that an investor derives from holding an asset. These benefits are not directly quantifiable in monetary terms, but they add value to the asset and make it more attractive to the investor. For instance, holding a physical asset like gold or real estate can provide a sense of security and satisfaction that cannot be measured in monetary terms. This is what is referred to as the convenience yield of the asset. It is a unique feature of physical assets and does not apply to financial assets or derivative products.

A is incorrect. The term 'Cost of carry' refers to the costs that an investor incurs while holding an asset. These costs can be financial, such as interest payments on borrowed funds used to purchase the asset, or non-financial, such as storage costs for physical assets. While these costs are an important consideration in investment decisions, they do not represent the non-monetary benefits of holding an asset. Instead, they represent the costs that the investor has to bear in order to enjoy the benefits of the asset.

B is incorrect. Convenience cost is a term used to refer to the extra amount that consumers are willing to pay for a product or service in order to make their lives easier or more convenient. For example, a consumer might be willing to pay a higher price for a product that is delivered to their doorstep, rather than having to go to a store to purchase it. While this concept is related to the idea of convenience, it does not refer to the non-monetary benefits of holding an asset. Instead, it refers to the monetary cost of convenience in the context of consumer behavior.

CFA Level 1, Topic 8 – Derivatives, Learning Module 4 - Arbitrage, Replication, and the Cost of Carry in Pricing Derivatives , LOS 4b: Explain the difference between the spot and expected future price of an underlying and the cost of carry associated with holding the underlying asset.

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Q.69 Luna Babbage is an investor who has invested $150,000 each in the hedge funds ART and EDD at the beginning of the calendar year. Both funds have a “2 and 10” fee structure, with management and incentive fees paid at the end of the year. The incentive fee is calculated based on returns above a 6% hurdle rate, net of management fees for both funds. At the end of the calendar year, the value of ART appreciates by 10%, while that of EDD depreciates by 4%. The incentive fee paid to the management of ART is *closest* to:

A. $270

B. $600

C. $3,570

First, we need to calculate the end of year capital for ART. Luna Babbage invested $150,000 in ART, which appreciated by 10% by the end of the year. Therefore, the end of year capital for ART is calculated as $150,000 multiplied by 1.10, which equals $165,000.

Next, we need to calculate the management fees for ART. The management fee is calculated as 2% of the end of year capital. Therefore, the management fees for ART are calculated as $165,000 multiplied by 0.02, which equals $3,300.

Then, we need to calculate the hurdle amount for both ART and EDD. The hurdle rate is 6% of the initial investment. Therefore, the hurdle amount is calculated as $150,000 multiplied by 0.06, which equals $9,000.

Finally, we can calculate the incentive fee for ART. The incentive fee is calculated as 10% of the returns above the hurdle rate, net of management fees. Therefore, the incentive fee for ART is calculated as the difference between the end of year capital and the initial investment, minus the management fees and the hurdle amount, all multiplied by 10%. This equals $270.

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

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Q.70 The table below illustrates details concerning otherwise identical call and put options on a U.S. small-cap stock.

	Call	Put
Time to expiration (days)	120	120
Exercise price	$85	$85
Option price	$14	$9
Volatility (Annual standard deviation, %)	14	12
Type of option	American	American
Risk-free rate	5.50%	5.50%

Holding everything else constant, which of the following changes will *most likely* increase the value of the option in question?

A. Decreasing the volatility of the call option.

B. Decreasing the exercise price of the put option.

C. Increasing the time to expiration of the put option.

The value of an option is directly related to the time to expiration. The longer the time to expiration, the higher the value of the option. This is because the longer the time to expiration, the more time the holder of the option has to decide whether to exercise the option or not. This flexibility adds value to the option. In the case of a put option, the holder has the right to sell the underlying asset at the exercise price. If the market price of the underlying asset falls below the exercise price, the holder can exercise the option and sell the asset at the higher exercise price. The longer the time to expiration, the more likely it is that the market price will fall below the exercise price, thus increasing the value of the put option.

A is incorrect. This option suggests decreasing the volatility of the call option. However, the value of an option is directly related to the volatility of the underlying asset. The higher the volatility, the higher the value of the option. This is because higher volatility increases the likelihood that the market price of the underlying asset will move in a direction that is favorable to the holder of the option. In the case of a call option, the holder has the right to buy the underlying asset at the exercise price. If the market price of the underlying asset rises above the exercise price, the holder can exercise the option and buy the asset at the lower exercise price. Higher volatility increases the likelihood that the market price will rise above the exercise price, thus increasing the value of the call option.

B is incorrect. This option suggests decreasing the exercise price of the put option. However, the value of a put option is inversely related to the exercise price. The higher the exercise price, the higher the value of the put option. This is because the holder of a put option has the right to sell the underlying asset at the exercise price. If the market price of the underlying asset falls below the exercise price, the holder can exercise the option and sell the asset at the higher exercise price.

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

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Q.71 Which of the following statements is *most likely* correct regarding derivatives?

A. May have an indefinite lifespan.

B. Transform the nature of a party's risk exposure.

C. Take their value and characteristics from the underlying.

Derivatives are financial instruments that derive their value from an underlying asset. This underlying asset can be a stock, bond, commodity, currency, interest rate, or even another derivative. The value of a derivative changes in response to changes in the price of the underlying asset. For example, a call option gives the holder the right to buy a stock at a certain price. If the price of the stock increases, the value of the call option will also increase. Similarly, a put option gives the holder the right to sell a stock at a certain price. If the price of the stock decreases, the value of the put option will increase. Therefore, the value and characteristics of derivatives are directly linked to the underlying asset.

A is incorrect. The lifespan of a derivative is determined at the time of contract initiation and it is usually finite. For example, options and futures contracts have specific expiration dates. After the expiration date, the contract becomes worthless and the holder of the contract has no rights or obligations.

B is incorrect. While derivatives can be used to manage risk, they do not transform the nature of the risk exposure. Instead, they transfer the risk from one party to another. For example, a farmer who is worried about the price of wheat falling can enter into a futures contract to sell wheat at a certain price at a future date. This transfers the risk of price fluctuations from the farmer to the buyer of the futures contract. However, the nature of the risk (i.e., the possibility of wheat prices falling) remains the same.

CFA Level 1, Topic 8 – Derivatives, Learning Module 1 - Derivative Instrument and Derivative Market Features, LOS 1a: define a derivative and describe basic features of a derivative instrument.

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Q.72 In which of the following private equity strategies is the current management team being replaced and the acquiring team is involved in managing the company?

A. Venture capital.

B. Management buy-ins.

C. Management buyouts.

In a management buy-in, the existing management team of a company is replaced by a new team that is brought in from outside. The new team acquires the company and takes over its management. This strategy is often used when the current management team is not performing up to expectations or when a fresh perspective is needed to revitalize the company. The new management team typically has significant experience and expertise in the industry, and they use this knowledge to make strategic decisions that will improve the company's performance and increase its value.

A is incorrect. Venture capital is a type of private equity investment where investors provide capital to startups and small businesses that are believed to have long-term growth potential. Venture capitalists typically look for companies with a strong management team already in place, a large potential market, and a unique product or service with a strong competitive advantage. They do not typically replace the management team, but rather work with them to grow the business. Therefore, venture capital does not involve replacing the current management team and having the acquiring team manage the company.

C is incorrect. In a management buyout, the existing management team of a company buys the company from its owners. This is different from a management buy-in because in a buyout, the management team is already in place and is not replaced. The management team uses their intimate knowledge of the company to continue running the business and to make strategic decisions that will increase its value. Therefore, a management buyout does not involve replacing the current management team and having the acquiring team manage the company.

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

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Q.73 Which of the following is *least likely* a characteristic of hedge funds? Hedge funds:

A. are almost always close-ended.

B. impose restrictions on redemptions.

C. are generally set up as private investment partnerships open to a limited number of investors willing and able to make a large initial investment.

Hedge funds are typically structured as open-ended funds, not close-ended. This means that the number of shares or units of the fund can vary over time based on investor demand. Investors can generally buy into or sell out of the fund at any time, with the fund's net asset value (NAV) calculated on a regular basis to determine the price of shares or units. This is in contrast to close-ended funds, which issue a fixed number of shares or units at inception, which are then traded on an exchange. The price of these shares or units is determined by market supply and demand, not the fund's NAV. This key difference in structure makes option A the correct answer.

B is incorrect. While it is true that some hedge funds may impose restrictions on redemptions to prevent a run on the fund, this is not a characteristic that distinguishes them from other types of investment vehicles. Many mutual funds, for example, also impose redemption restrictions to protect the interests of remaining investors. Therefore, the presence of redemption restrictions does not make a fund a hedge fund.

C is incorrect. While it is true that hedge funds are often set up as private investment partnerships open to a limited number of investors willing and able to make a large initial investment, this is not a characteristic that distinguishes them from other types of investment vehicles. Many private equity funds, for example, are also set up in this way. Therefore, the structure of the fund as a private investment partnership does not make it a hedge fund.

CFA Level 1, Topic 8 – Alternative Investments, Learning Module 6 – Hedge Funds, LOS 6a: Explain the investment features of hedge funds and contrast them with other asset classes.

Q.74 A hedge fund has a beginning year value of $200 million, 2% management fee, and 20% incentive fee with a hard hurdle rate of 10%. The fees are paid at the end of the period and the incentive fee is calculated net of management fee. If the ending value of the fund is $300 million, then the total fee of the hedge fund is *closest to*:

A. $14.8 million.

B. $18.8 million.

C. $20.8 million.

The management fee is calculated as 2% of the ending value of the fund. Given that the ending value is \$300 million, the management fee is calculated as:

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$$\text{Management Fee} = 0.02 \times 300\,\text{million} = 6\,\text{million}$$

The incentive fee is calculated as 20% of the profit made by the fund above the hurdle rate. The hurdle rate in this case is 10%, meaning the fund must achieve at least a 10% return on the beginning value before any incentive fee is applied.

First, calculate the profit:

$$\text{Profit} = \text{Ending Value} - \text{Beginning Value} - \text{Management Fee}$$

Substituting the given values:

$$\text{Profit} = 300\,\text{million} - 200\,\text{million} - 6\,\text{million} = 94\,\text{million}$$

Next, calculate the hurdle rate, which is 10% of the beginning value of the fund:

$$\text{Hurdle Rate} = 0.10 \times 200\,\text{million} = 20\,\text{million}$$

Now, calculate the profit above the hurdle rate:

$$\text{Profit Above Hurdle} = 94\,\text{million} - 20\,\text{million} = 74\,\text{million}$$

The incentive fee is 20% of the profit above the hurdle rate:

$$\text{Incentive Fee} = 0.20 \times 74\,\text{million} = 14.8\,\text{million}$$

Finally, the total fee is the sum of the management fee and the incentive fee:

$$\text{Total Fee} = 6\,\text{million} + 14.8\,\text{million} = 20.8\,\text{million}$$

A is incorrect. This option suggests that the total fee is $14.8 million. This is incorrect because it only takes into account the incentive fee and ignores the management fee. The management fee is a fixed percentage of the fund's value, regardless of its performance. In this case, the management fee is 2% of $300 million, which is $6 million. This should be added to the incentive fee to get the total fee. Therefore, option A underestimates the total fee.

B is incorrect. This option suggests that the total fee is $18.8 million. This is incorrect because it underestimates the incentive fee. The incentive fee is calculated as 20% of the profit made above the 10% hurdle rate. In this case, the profit above the hurdle rate is $74 million, and 20% of this is $14.8 million. This should be added to the management fee of $6 million to get the total fee. Therefore, option B underestimates the total fee.

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

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Q.75 A European call option on a non-dividend paying stock has 4 months to maturity. The exercise price of the option is $100, and the risk-free rate is 1.5%. .If the current underlying price is $105 and the current call option price is $6.5, the time value of the call option is *closest to:*

A. $1.00

B. $5.50

C. $12.00

The time value of an option is defined as the difference between the current option price and the option's current payoff (or exercise value). In this case, the current price for a call option at any time $T = t$ is denoted by c_t. The formula for calculating the time value is as follows:

$$\text{Time Value} = c_t - \text{Max}(0, S_t - X(1 + r)^{-(T-t)})$$

Substituting the given values into the formula, we get:

Time Value = 6.5 - Max(0, 105 - 100(1.015)^{-0.3333})

This simplifies to:

Time Value = 6.5 - Max(0,5.50)

And finally:

Time Value = 6.50 - 5.50 = $1.00

CFA Level I, Topic 8, Derivatives, Learning Module 8: Pricing and Valuation of Options. LOS (a): Explain the exercise value, moneyness, and time value of an option.

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Q.76 Which of the following sources of venture capital (VC) financing can be used to support a major marketing campaign of a company that has recently initiated commercial production and sales?

A. Seed-stage financing.

B. Later stage financing.

C. Formative stage financing.

Later stage financing type of financing is typically provided to companies that have already initiated commercial production and are in need of additional funds to support a major marketing campaign. At this stage, the company has already proven its business model and has a product or service that is ready for the market. The funds from later stage financing can be used to expand the company's reach, increase its market share, and enhance its competitive position. This type of financing is often provided by venture capital firms, private equity firms, or other institutional investors who are looking for companies with a proven track record and a clear path to profitability.

A is incorrect. Seed-stage financing is typically provided to companies that are still in the early stages of their development. This type of financing is used to support market research and product development. It is generally the first stage at which venture capital funds invest. Companies at this stage are usually pre-revenue and are still working on developing their product or service. They are not yet ready for a major marketing campaign, as they are still in the process of validating their business idea and proving that there is a market for their product or service.

C is incorrect. Formative stage financing includes both seed-stage and early-stage funding. This type of financing is provided to companies that are still in the early stages of their development. It includes funds for market research, product development, and initial marketing efforts. However, it does not typically include funds for a major marketing campaign. Companies at this stage are still working on developing their product or service and proving their business model. They are not yet ready for a major marketing campaign, as they are still in the process of validating their business idea and proving that there is a market for their product or service.

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

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Q.77 Which of the following is *most likely* accurate regarding direct real estate investing? Direct real estate investing:

A. requires expertise in the local real estate market.

B. eliminates the need for management of the property.

C. requires less capital than indirect real estate investing.

Direct real estate investing indeed requires expertise in the local real estate market. This is due to the fact that the success of a real estate investment largely depends on the investor's understanding of the local market conditions, trends, and property values. An investor needs to have a deep understanding of the local market to make informed decisions about when to buy, what to buy, and at what price. This knowledge can help the investor to identify potential risks and opportunities, negotiate better deals, and ultimately achieve higher returns. Therefore, expertise in the local real estate market is a critical requirement for direct real estate investing.

B is incorrect. The statement that direct real estate investing eliminates the need for management of the property is not accurate. In fact, direct real estate investing often involves a significant amount of property management. This can include a wide range of tasks such as maintaining the property, making necessary repairs, dealing with tenants, and ensuring compliance with local laws and regulations. Therefore, rather than eliminating the need for property management, direct real estate investing often increases the need for effective property management.

C is incorrect. The assertion that direct real estate investing requires less capital than indirect real estate investing is not true. Direct real estate investing involves the purchase of physical properties, which often requires a significant amount of capital. In contrast, indirect real estate investing, such as investing in real estate investment trusts (REITs) or real estate mutual funds, typically requires less capital. This is because indirect real estate investing allows investors to buy shares in a portfolio of properties, rather than having to buy an entire property. Therefore, direct real estate investing typically requires more capital than indirect real estate investing.

CFA Level 1, Topic 8 – Alternative Investments, Learning Module 4 – Real Estate and Infrastructure, LOS 4c: Explain features and characteristics of infrastructure.

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Q.78 A retail options trader bought a single call option on Avilerae Tech's stocks at the strike price of $25 for the option premium of $3.20. If the current trading price of Avilerae Tech is $21.80, the option is *most likely*:

A. In the money.

B. At the money.

C. Out of the money.

The strike price of the option is greater than the current market price of the underlying security. In this case, the strike price of the Avilerae Tech's stock option is $25, while the current trading price of the stock is $21.80. This means that if the option were to be exercised at this point, it would not be profitable as the cost of exercising the option (the strike price) is higher than the price at which the stock can currently be bought in the market. This is the definition of an option being 'Out of the money'. It's important to note that the option premium, which is the price paid to buy the option, does not factor into whether an option is in, at, or out of the money. The option premium is a separate cost and does not affect the strike price or the market price of the underlying security.

A is incorrect. This option suggests that the call option is 'In the money'. An option is considered 'In the money' when the strike price is less than the market price of the underlying security. In this case, the strike price of the option ($25) is greater than the market price of the underlying security ($21.80), so the option is not 'In the money'. If the market price were higher than the strike price, the option could be exercised for a profit, which is not the case here.

B is incorrect. This option suggests that the call option is 'At the money'. An option is considered 'At the money' when the strike price is equal to the market price of the underlying security. In this case, the strike price of the option ($25) is not equal to the market price of the underlying security ($21.80), so the option is not 'At the money'. If the market price were equal to the strike price, the option could be exercised without any profit or loss, which is not the case here.

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

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Q.79 Which of the following is *least likely* an activity of the risk management framework?

A. Performing strategic risk analysis

B. Predicting expected political risk

C. Establishing risk governance policies

While understanding the external risk landscape, including political risks, is crucial for comprehensive risk management, predicting specific political risks is not typically a direct activity of the Risk Management Framework (RMF). The RMF focuses more on establishing a structured approach to manage all risks, including political ones, rather than predicting specific political changes or events. The prediction of political risks often involves specialized knowledge and falls more into the realm of political analysis rather than general risk management frameworks. Therefore, it is least likely to be an activity of the RMF.

A is incorrect. Strategic risk analysis involves identifying, assessing, and prioritizing risks that could impact the organization's long-term objectives and strategies. It is a crucial part of the RMF as it helps the organization to understand the potential risks they might face and to develop strategies to mitigate these risks. Therefore, it is not the least likely activity of the RMF.

C is incorrect. Establishing risk governance policies involves creating structures, processes, and policies to ensure that risk management activities are effectively carried out and aligned with the organization's overall objectives. It is an essential part of the RMF as it ensures that the organization has a clear and structured approach to managing risks. Therefore, it is not the least likely activity of the RMF.

CFA Level 1, Topic 9 – Portfolio Management, Learning Module 6 - Introduction to Risk Management, LOS 6b: Describe features of a risk management framework.

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Q.80 Which of the following are most likely components of an Investment Policy Statement (IPS)?

I. Duties and responsibilities of the investment manager
II. Procedures to update the IPS
III. Investment expertise of the investment manager

A. I and II.

B. I and III.

C. I, II and III.

An Investment Policy Statement (IPS) is a document that outlines the guidelines, investment philosophy, and strategies for an investor's portfolio. It serves as a roadmap for the investment manager to follow in managing the investor's assets. The IPS typically includes the duties and responsibilities of the investment manager and the procedures to update the IPS. These components are crucial as they define the roles and expectations of the investment manager and provide a mechanism for keeping the IPS relevant and up-to-date with the investor's changing needs and market conditions.

A includes both 'Duties and responsibilities of the investment manager' and 'Procedures to update the IPS'. These are key components of an IPS. The duties and responsibilities of the investment manager are outlined to provide clear guidelines on what is expected from the manager in managing the investor's portfolio. This includes the manager's role in implementing the investment strategy, monitoring and reviewing the portfolio, and reporting to the investor. The procedures to update the IPS are also an important component as they ensure that the IPS remains relevant and aligned with the investor's changing needs and circumstances.

B is incorrect. While it correctly includes 'Duties and responsibilities of the investment manager', it incorrectly includes 'Investment expertise of the investment manager'. The investment expertise of the manager is not typically a component of the IPS. While the manager's expertise is undoubtedly important in managing the portfolio, it is not a formal part of the IPS. The IPS focuses more on the investment strategy and guidelines, rather than the manager's qualifications or expertise.

C is incorrect. This option incorrectly includes all three components. As explained above, while the 'Duties and responsibilities of the investment manager' and 'Procedures to update the IPS' are key components of an IPS, the 'Investment expertise of the investment manager' is not. Therefore, including this component makes option C incorrect.

CFA Level 1, Topic 9 – Portfolio Management, Learning Module 4 - Basics of Portfolio Planning & Construction, LOS 4b: Describe the major components of an IPS.

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Q.81 Which of the following is referred to as the capital market line?

A. The capital allocation line considers only the risky portfolio as the optimal risky portfolio.

B. The capital allocation line uses the market portfolio as the optimal risky portfolio.

C. The capital allocation line uses the risk-free portfolio as the optimal risky portfolio.

The Capital Market Line (CML) is a line that illustrates the rates of return for efficient portfolios depending on the risk-free rate of return and the level of risk (standard deviation) for a specific portfolio. The CML is derived from the Capital Allocation Line (CAL), but it specifically uses the market portfolio as the optimal risky portfolio. The market portfolio, in this context, is the combination of all possible investments in the world, weighted by their market values. It is considered the optimal risky portfolio because it offers the highest expected return for a given level of risk. This is why option B is the correct answer.

A is incorrect. The CAL can consider any combination of risky assets, but it does not necessarily have to be the market portfolio. The CAL is a graphical representation of all the possible combinations of the risk-free asset and the risky portfolio. However, when we talk about the Capital Market Line (CML), which is a special case of the CAL, the optimal risky portfolio is specifically the market portfolio. Therefore, the assertion in option A is misleading and incorrect in the context of the CML.

C is incorrect. The risk-free portfolio, by definition, is not risky. The CAL uses a combination of the risk-free asset and a risky portfolio. However, in the context of the CML, the optimal risky portfolio is the market portfolio, not the risk-free portfolio. Therefore, the assertion in option C is incorrect.

CFA Level 1, Topic 9 – Portfolio Management, Learning Module 2 – Portfolio Risk and Return: Part II, LOS 2b: Explain the capital allocation line (CAL) and the capital market line (CML).

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Q.82 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 10 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 Ph.D. 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 some large-cap stocks. His investment strategy involves evaluating the risks and returns of his portfolio shares in isolation.

A. Investor A.

B. Investor B.

C. Both 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 evaluating each asset in isolation. Investor B holds a Ph.D. in Economics and has a sound knowledge of different sectors of the economy. This knowledge allows him to diversify his investments across different sectors, thereby reducing the risk associated with his portfolio. He does not focus on individual assets but rather on the overall performance of his portfolio. This approach aligns with the portfolio perspective as it involves the evaluation of combined risks and returns of multiple assets.

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 10 years and always earns above-market returns because he regularly evaluates the risk and return of his single asset portfolio. This approach is contrary to the portfolio perspective as it involves the evaluation of a single asset in isolation. The portfolio perspective requires the evaluation of combined risks and returns of multiple assets, which is not the case with Investor A. His strategy is more of a single-asset perspective rather than a portfolio perspective.

C is incorrect. Investor C is a new investor who recently started investing in some large-cap stocks. His investment strategy involves evaluating the risks and returns of his portfolio shares in isolation. This approach is contrary to the portfolio perspective as it involves the evaluation of each asset in isolation. The portfolio perspective requires the evaluation of combined risks and returns of multiple assets, which is not the case with Investor C. His strategy is more of an individual-asset perspective rather than a portfolio perspective.

CFA Leve 1, Topic 9 – Portfolio Management, Learning Module 3 - Portfolio Management: An Overview, LOS 3a: Describe the portfolio approach to investing.

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Q.83 Two portfolios have the following characteristics:

Portfolio	Return	Beta	
A	8%	0.7	
B	7%	1.1	

Given a market return of 10% and a risk-free rate of 4%, calculate Jensen's Alpha for both portfolios and comment on which portfolio has performed better.

A. -0.2% and -3.6% respectively - Portfolio A has performed better than B.

B. -0.2% and -10.6% respectively - Portfolio B has performed better than A.

C. 8.2% and 10.6% respectively - Portfolio B has performed better than A.

Jensen's Alpha is a risk-adjusted performance measure that represents the average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM), given the portfolio's beta and the average market return. This is used to determine the excess return that a portfolio generates over the expected return.

For Portfolio A, Jensen's Alpha is calculated as follows:

$$\text{Jensen's Alpha} = Rp - [Rf + Bp(Rm - Rf)]$$

Substituting the given values, we get:

$$\text{Porfolio A's Jensen's Alpha} = 8\% - [4\% + 0.7(10\% - 4\%)]$$

This gives us a Jensen's Alpha of -0.2% for Portfolio A.

Similarly, for Portfolio B, Jensen's Alpha is calculated as follows:

$$\text{Porfolio B's Jensen's Alpha} = 7\% - [4\% + 1.1(10\% - 4\%)]$$

This gives us a Jensen's Alpha of -3.6% for Portfolio B.

A higher Jensen's Alpha indicates that a portfolio has performed better than expected given its level of systematic risk. In this case, Portfolio A has a higher Jensen's Alpha than Portfolio B, indicating that it has performed better.

B is incorrect. The calculation of Jensen's Alpha for both portfolios is incorrect in option B. The Jensen's Alpha for Portfolio A is -0.2% and for Portfolio B is -3.6%, not -10.6%. Furthermore, the statement that Portfolio B has performed better than A is incorrect as a higher Jensen's Alpha indicates better performance, and in this case, Portfolio A has a higher Jensen's Alpha.

C is incorrect. The calculation of Jensen's Alpha for both portfolios is incorrect in option C. The Jensen's Alpha for Portfolio A is -0.2% and for Portfolio B is -3.6%, not 10.6%. Furthermore, the

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statement that Portfolio B has performed better than A is incorrect as a higher Jensen's Alpha indicates better performance, and in this case, Portfolio A has a higher Jensen's Alpha.

CFA Level 1, Topic 9 – Portfolio Management, Learning Module 2 - Portfolio Risk & Return: Part II, LOS 2i: calculate and interpret the Sharpe ratio, Treynor ratio, M2, and Jensen's alpha.

Q.84 An investor has purchased shares of large-cap equity stock. The covariance of the stock with the market index is 0.0320, while the standard deviation of the stock and the market index is 22.5% and 15.7%, respectively. The return of the large-cap equity stock *most likely* follows a trend which:

A. Follows the general market.

B. Resembles the general market.

C. Moves opposite to the general market.

The beta of the equity stock is calculated as $+1.30[\frac{0.0320}{(0.157^2)}]$. Beta is a measure of a stock's risk in relation to the market or, alternatively, its sensitivity to market movements. A positive beta indicates that the return of the equity stock follows the general market trend. In this case, the beta of 1.30 suggests that the stock is 30% more volatile than the market. This means that if the market increases by 1%, we can expect the stock to increase by 1.3%, and vice versa. Therefore, the stock's returns do not just resemble the market's returns; they follow and amplify the market's movements.

B is incorrect. The phrase "Resembles the general market" is somewhat ambiguous. It implies that the stock's returns are somewhat similar to the market, but it does not specify the direction or magnitude clearly. While the stock's returns may resemble the market's returns in some ways, the precise beta calculation gives a clearer picture. The beta of 1.30 indicates that the stock does not just resemble the market; it follows and amplifies the market's movements. Therefore, option B is not the best choice because it does not accurately describe the relationship between the stock's returns and the market's returns.

C is incorrect. The statement "Moves opposite to the general market" would be accurate if the stock had a negative beta. A negative beta would indicate that the stock moves in the opposite direction to the market. However, in this case, the beta is positive (1.30), indicating that the stock moves in the same direction as the market, not the opposite. Therefore, option C is not correct because it does not accurately describe the relationship between the stock's returns and the market's returns.

CFA Level 1, Topic 9 – Portfolio Management, Learning Module 4 - Basics of Portfolio Planning & Construction, LOS 4d: Explain the difference between the willingness and the ability (capacity) to take risk in analyzing an investor's financial risk tolerance .

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Q.85 From the employee perspective, one difference between a defined contribution (DC) and a defined benefit (DB) plan is that in the case of the latter:

A. future benefits are undefined.

B. investment risk exposure is low.

C. employees are required to contribute a portion of their wages each period.

In a Defined Benefit (DB) plan, the investment risk exposure is indeed low for the employees. This is because the employer bears the responsibility of ensuring that the assets invested are sufficient to generate the promised payments upon the employee's retirement. The employer is the one who takes on the investment risk and is responsible for making up any shortfall in the plan's funding. This is in contrast to a Defined Contribution (DC) plan, where the employees bear the investment risk. In a DC plan, the employees are responsible for ensuring that they have enough funds available to meet their retirement needs. The amount of retirement benefits they will receive depends on the performance of the investments they choose. Therefore, the investment risk exposure is high for the employees in a DC plan.

A is incorrect. The statement that future benefits are undefined is not accurate in the context of a DB plan. In a DB plan, the future benefits are indeed defined. The employer promises to pay the employee a specific benefit for life beginning at retirement. The benefit is calculated using a formula that typically factors in the employee's earnings history, length of service, and age. Therefore, the future benefits are predefined in a DB plan, not undefined.

C is incorrect. The statement that employees are required to contribute a portion of their wages each period is more applicable to a DC plan, not a DB plan. In a DC plan, employees contribute a fixed amount or a percentage of their wages to an individual account in the plan. The employer may also make matching or non-elective contributions to the plan. The final benefit received by the employee depends on the contributions made and the performance of the investments. In contrast, in a DB plan, the employer is typically responsible for all of the contributions, and the employee is not required to contribute a portion of their wages each period.

CFA Level 1, Topic 9 – Portfolio Management, Learning Module 3 - Portfolio Management: An Overview, LOS 3c: Describe defined contribution and defined benefit pension plans.

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Q.86 What are the *most likely* implications for investors using the Markowitz efficient frontier for making investment decisions?

A. The slope of the efficient frontier is concave.

B. Investors are rewarded with increasing increases in returns for assuming more risk.

C. Portfolios to the right of the global minimum variance portfolio are the most efficient.

The Markowitz efficient frontier is a critical concept in modern portfolio theory. It represents the set of portfolios that maximize expected return for a given level of risk or minimize risk for a given level of expected return. The efficient frontier is a graphical representation of these optimal portfolios and is typically upward sloping and concave. This is because as investors take on more risk, they require a higher return to compensate for that risk. However, the relationship between risk and return is not linear, but rather diminishing - hence the concave shape. This is why option A is the correct answer.

B is incorrect. The statement that investors are rewarded with increasing increases in returns for assuming more risk is incorrect. While it is true that investors require a higher return to compensate for taking on more risk, the relationship between risk and return is not linear, but rather diminishing. This means that for each additional unit of risk an investor takes on, they receive less and less additional return. This diminishing return to risk is what gives the efficient frontier its concave shape. Therefore, investors are not rewarded with increasing increases in returns for assuming more risk, but rather with decreasing increases in returns.

C is incorrect. The statement that portfolios to the right of the global minimum variance portfolio are the most efficient is incorrect. The global minimum variance portfolio is the portfolio on the efficient frontier with the lowest possible risk. Portfolios to the right of this portfolio on the efficient frontier have higher risk. However, because of the concave shape of the efficient frontier, these portfolios do not offer a proportionally higher return to compensate for their higher risk. Therefore, they are not the most efficient portfolios. The most efficient portfolios are those that offer the highest return for a given level of risk, or the lowest risk for a given level of return, and these are represented by the points on the efficient frontier.

CFA Level 1, Topic 9 – Portfolio management, Learning Module 1 – Portfolio Risk and Return: Part 1, LOS 1g: Describe and interpret the minimum-variance and efficient frontiers of risky assets and the global minimum-variance portfolio.

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Q.87 Portfolio A generates a 9% return with a 1.15 Sharpe ratio and portfolio B generates a 9% return with a 1.05 Sharpe ratio. Which is the better portfolio?

A. Portfolio A.

B. Portfolio B.

C. You are indifferent to portfolio A or B.

The Sharpe ratio is a measure of risk-adjusted return. It is calculated by subtracting the risk-free rate from the expected return of the portfolio and then dividing by the standard deviation of the portfolio's excess return. The formula for the Sharpe ratio is:

$$\text{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p}$$

Where:

- R_p is the expected return of the portfolio,
- R_f is the risk-free rate,
- σ_p is the standard deviation of the portfolio's excess return.

In this case, both Portfolios A and B generate the same return of 9%, but Portfolio A has a higher Sharpe ratio of 1.15 compared to Portfolio B's Sharpe ratio of 1.05. This means that Portfolio A is achieving the same return with less risk than Portfolio B.

The higher the Sharpe ratio, the better the portfolio's performance on a risk-adjusted basis.

B is incorrect. A lower Sharpe ratio implies that Portfolio B achieves the same return with more risk compared to Portfolio A. Thus, Portfolio B is not the better choice as it provides the same return with more risk.

C is incorrect. Since Portfolio A has a higher Sharpe ratio (1.15) compared to Portfolio B (1.05) for the same return, you should prefer Portfolio A over Portfolio B. Indifference would not be justified as Portfolio A offers a better risk-adjusted return.

CFA Level 1, Topic 9 – Portfolio Management, Learning Module 2 - Portfolio Risk & Return: Part II, LOS 2i: calculate and interpret the Sharpe ratio, Treynor ratio, M2, and Jensen's alpha.

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Q.88 A portfolio consists of 30 assets, with the average correlation being 0.75 among all pairs of assets. The average variance of each asset is 0.0675. Assuming equal weights the risk of the portfolio will be *closest* to:

A. 4.84%

B. 15.63%

C. 22.62%

The portfolio variance is given as:

$$\sigma_P^2 = \frac{\bar{\sigma}^2}{N} + \frac{(N-1)}{N}\bar{Cov}$$

In this formula, N represents the number of assets in the portfolio, $\bar{\sigma}^2$ is the average variance of the portfolio, $\bar{Cov}$ is the average covariance between the assets, and σ_P^2 is the portfolio variance. The average variance of each asset in this portfolio is given as 0.0675, and the average correlation among all pairs of assets is 0.75. The portfolio consists of 30 assets, hence N is 30.

Substituting these values into the formula, we get:

$$\text{Portfolio risk} = \sqrt{\frac{0.0675}{30} + \frac{(30-1)}{30} \times 0.75 \times 0.0675}$$
$$= 22.62\%$$

This calculation shows that the risk of the portfolio, assuming equal weights, is closest to 22.62%.

A is incorrect. A portfolio risk of 4.84% would imply a significantly lower average variance or correlation among the assets, or a much larger number of assets in the portfolio. Given the provided average variance of 0.0675 and correlation of 0.75 among 30 assets, the portfolio risk cannot be as low as 4.84%.

B is incorrect. A portfolio risk of 15.63% would also imply a lower average variance or correlation, or a larger number of assets. Given the provided parameters, the portfolio risk is higher than 15.63%. Therefore, option B is not the correct answer.

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

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Q.89 An investment analyst estimates that the stock price of major companies trading at the security exchange market has growth potential. A portfolio manager wants to rely on the advice of the investment analyst to diversify his portfolio by including stocks of companies trading at the securities exchange market that indicate a rapid growth rate in revenue in the last two financial years and with a high probability of future investments. Based on his prior experience with companies in the banking sector and having read numerous news articles, the investment analyst advises the portfolio manager to consider investing in the banking sector instead of the oil sector. The investment analyst is *most likely* to have displayed which of the following forms of bias?

A. Framing bias.

B. Hindsight bias.

C. Availability bias.

The investment analyst is most likely displaying availability bias. This is because he is basing his advice on his own experiences and knowledge, specifically his experience with companies in the banking sector. Availability bias is a cognitive bias that causes us to rely on immediate examples when evaluating a specific topic, concept, method or decision. The analyst's advice is influenced by his familiarity and accessibility to information about the banking sector, hence he recommends it over the oil sector. This bias can lead to skewed decision making as it does not consider all relevant information. In this case, the analyst should have conducted a comprehensive analysis of all sectors, including the oil sector, to provide a more balanced and informed recommendation.

A is incorrect. Framing bias refers to the tendency of people to react differently depending on how information is presented to them, often in terms of losses or gains. In this scenario, the investment analyst's advice is not influenced by how the information is framed. He is not reacting to the portfolio manager's question based on how it is presented, but rather based on his own experiences and knowledge. Therefore, framing bias is not the most likely bias displayed by the investment analyst in this situation.

B is incorrect. Hindsight bias, also known as the "knew-it-all-along" effect, is the inclination to see events that have already occurred as being more predictable than they were before they took place. In this case, the investment analyst is not basing his advice on past events being expected and rational. He is not using past growth rates to justify his recommendation, but rather his own experiences and knowledge. Therefore, hindsight bias is not the most likely bias displayed by the investment analyst in this situation.

CFA Level 1, Topic 9 – Portfolio Management, Learning Module 5 - The Behavioral Biases of Individuals, LOS 5b: Discuss commonly recognized behavioral biases and their implications for financial decision-making.

Q.90 Bruce Craig is in the business of trading steel in Chicago, which he inherited from his father one month ago. His financial adviser notes the following aspects of his situation:

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- He is 24 years old;
- His investment horizon is 10-20 years;
- His primary objective for investing is aggressive growth;
- His business returns are not stable as he is not being able to take prudent business decisions.

Given the information above, which of the following statements is correct?Craig has a:

A. low ability to take risk, but a high willingness to take risk.

B. high ability to take risk, but a low willingness to take risk.

C. high ability to take risk, but a high willingness to take risk.

Option A accurately reflects Bruce Craig's financial situation. Craig's business returns are unstable, which indicates a low ability to take risk. The ability to take risk is determined by the financial stability of an individual or business. In Craig's case, his unstable business returns suggest that he does not have a strong financial foundation to absorb potential losses from risky investments. This instability in his business returns could be due to a variety of factors, such as market volatility, poor business decisions, or external economic conditions. Therefore, his ability to take risk is low.

On the other hand, Craig's age, investment horizon, and investment objective suggest a high willingness to take risk. At 24 years old, Craig has a long investment horizon of 10-20 years. This means he has more time to recover from potential losses, which allows him to take on more risk. Furthermore, his primary objective for investing is aggressive growth. This type of investment strategy typically involves a higher level of risk in order to achieve higher returns. Therefore, despite his low ability to take risk, Craig's willingness to take risk is high.

B is incorrect. This option suggests that Craig has a high ability to take risk but a low willingness to take risk. However, as explained above, Craig's unstable business returns indicate a low ability to take risk. His young age, long investment horizon, and aggressive growth objective suggest a high willingness to take risk. Therefore, this option does not accurately reflect Craig's financial situation.

C is incorrect. This option suggests that Craig has both a high ability and willingness to take risk. While it is true that Craig has a high willingness to take risk due to his age, investment horizon, and investment objective, his ability to take risk is low due to his unstable business returns. A high ability to take risk would require stable income and financial security, which Craig currently lacks. Therefore, this option does not accurately reflect Craig's financial situation.

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

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