FRM Part I Exam

Mock Questions with Answers - FRM Part I - Mock Exam #1

Offered by AnalystPrep

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Q.1 Fatima Dow, a derivatives trader at HEC Hedge Fund, entered into a March silver futures contract on the New York Mercantile Exchange (NYMEX) to purchase 5,000 troy ounces of silver at the futures price of USD 16.96 per ounce. According to NYMEX rules, an initial margin of USD 6,400 and a maintenance margin of USD 3,000 is required to enter and retain the futures position.
If the price of silver futures contracts dropped to USD 16.92, USD 16.90, and USD 16.73, at the end of the first, second, and third day, respectively, then what is the margin account balance at the end of the second day?

A. USD 5,750

B. USD 1,850

C. USD 6,100

D.USD 2,700

The correct answer is **C.**

Explanation: At the end of the first day, when the price of silver futures contract dropped from USD 16.96 to USD 16.92 per ounce, the margin account balance declined by:

$$(\text{USD } 16.96 - \text{ USD } 16.92) \times 5000 = \text{USD } 200$$

At the end of first day, the margin account balance $= \text{USD } 6,400 - \text{ USD } 200 = \text{USD } 6,200.$

At the end of the second day, when the price of futures contract dropped from USD 16.92 to USD 16.90 per ounce, the margin account balance declined by $(\text{USD } 16.92 - \text{USD } 16.90) \times 5000 = \text{ USD } 100$

At the end of second day, the margin account balance $= \text{USD } 6,200 - \text{USD } 100 = \text{ USD } 6,100$

Section: Financial Markets and Products

Chapter: Options Markets

Learning objective: Describe the rationale for margin requirements and explain how they work.

Q.2 An exotic option where the payoff of the option is not based on the price of the underlying at the end of the contract, but on the arithmetic average of the prices during the life of the option is most likely called a/an:

A. Gap option

B. Lookback option

C. Asian option

D.Compound option

The correct answer is **C.**

Explanation: Asian options are options where the payoff depends on the arithmetic average of the price of the underlying asset during the life of the option.

Option A is incorrect. A gap option is a type of binary option whose stated strike price is different from its payoff strike.

Option B is incorrect. A lookback option is an exotic option that allows investors to “look back” at the underlying prices occurring over the life of the option and then exercise based on the underlying asset’s optimal value.

Option D is incorrect. A compound option or split-fee option is an option on an option. The exercise payoff of a compound option involves the value of another option. A compound option then has two expiration dates and two strike prices.

Section: Financial Markets and Products

Chapter: Exotic Options

Learning objective: Identify and describe the characteristics and payoff structure of the following exotic options: gap, forward start, compound, chooser, barrier, binary, lookback, Asian, exchange and basket options.

Q.3 Which of the following cases includes a violation of GARP's rules of conduct?

A. Frank Benton - a risk manager and participant in the FRM program - oversees all investments in the healthcare startups for an investment bank. After thorough analysis and evaluating all necessary disclosures, Benton approves a significant loan facility to LLL Medicine (a young startup initiated by Frank's brother).

B. Andrea Jenkins, FRM, is a rising star at Trust Hedge Fund. Behind Jenkins' success is her ability to fully concentrate on investment analysis since all other concerns – like the evaluation of an investment's suitability based on funds' internal rules, verification of compliance with laws, etc. – are handled by a third-party accounting firm.

C. On a quarterly basis, Lisa Stone, a bank manager, presents to the board of directors a summary of the key ratios used to identify the credit quality of existing borrowers with large exposures. The analysis is based on quarterly reports published by clients. In addition, she always includes one slide with her own opinion on changes in ratios presented in case of adverse market movements. The slide has a footnote clarifying that the presented information is based on Stone's estimations.

D.Jack Merton, who recently passed part one of the FRM exam, was reviewing his analysis on interest rate risk presented to the ALCO committee of Warsaw Bank last week. He noticed a major mistake and immediately informed all parties involved in this mistake.

The correct answer is **B.**

Explanation: GARP Members should comply with all applicable laws, rules, and regulations. A delegation of those responsibilities violates the GARP's rules of conduct.

Option A is incorrect. Benton prepared a detailed analysis and made all necessary disclosures, giving his employer the chance to decide on whether Benton's approval was biased or not.

Option C is incorrect. Members may present their own opinion as long as it is clearly separated from factual information.

Option D is incorrect. Members shall not knowingly misrepresent any information. In cases where the misrepresentation was not intentional, members are not in violation of rules.

Section: Foundations of Risk Management

Chapter: GARP Code of Conduct

Learning objective: Describe the potential consequences of violating the GARP Code of Conduct

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Q.4 Enterprise-wide VaR is not likely to account for all types of risk. In particular, enterprise-wide VaR may not factor in:

A. Credit risk

B. Market risk

C. Funding liquidity risk

D.None of the above. Enterprise-wide risk is likely to account for all types of risk.

The correct answer is **C.**

Explanation: Banks often categorize risks into three broad types: market risk, credit risk, and operational risk. However, enterprise-wide VaR is not likely to account for all three, especially operational risk. In addition, enterprise-wide VaR may not factor in funding liquidity risk - the risk that a sudden reduction in funding to the bank might force the sale of assets under duress, leading to losses.

Section: Foundations of Risk Management

Chapter: The Governance of Risk Management

Learning objective: Evaluate the relationship between a firm’s risk appetite and its business strategy, including the role of incentives.

Q.5 A regional bank recently invested in a new bond-pricing software. To test it, the risk management team priced a bond at 3 different rates. The results are presented below:

Interest Rate	Price of Bond
2.13%	USD 100.115
2.15%	USD 99.100
2.17%	USD 98.250

What is the estimate of the bond's convexity?

A. 104.06

B. 416.25

C. 10,406.15

D.41,624.62

The correct answer is **D.**

Explanation: Convexity is given by:

$$C = \frac{1}{P}[\frac{P^{+} + P^{-} - 2P}{(\Delta r)^2}]$$

Where

P^{+} - a value of the position when all rates increase by Δr

P^{-} - a value of the position corresponding to the decrease of all rates by Δr

From the given information, we can see that the interest rate went down from 2.15% to 2.13% and also went up from 2.15% to 2.17%. thus, $\Delta r = 0.02\% = 0.0002$

$$\therefore C = \frac{(100.115 + 98.250 - 2 \times 99.100)}{(99.100 \times 0.0002^2)} = 41,624.62$$

Section: Valuation and Risk Models

Chapter: Applying Duration, Convexity, and DV01

Learning objective: Define, compute, and interpret the convexity of a fixed-income security given a change in yield and the resulting change in price.

Q.6 An analyst believes that future 15-year real earnings of the S&P 500 are a function of the trailing dividend payout ratio of the stocks in the index (DB) and the yield curve slope (YC). She collects data and obtains the following multiple regression results:

	Coefficient	Standard error
Intercept	−15.2%	3.589%
DB	0.37	0.099
YC	0.18	0.133

If the number of observations is assumed to be 1003, test the statistical significance of the independent variable DB at the 1% level of significance, quoting the value of the test statistic and the conclusion. If needed, refer to the t-table by clicking the link below: t-distribution-table

A. Test statistic = 0.2676; The DB regression coefficient is statistically different from zero

B. Test statistic = 3.7373; The DB regression coefficient is statistically different from zero

C. Test statistic = 0.2676; The DB regression coefficient is not statistically different from zero

D.Test statistic = 3.7373; The DB regression coefficient is not statistically different from zero

The correct answer is **B.**

Explanation: We are testing the following hypothesis:

$H_0 : \beta_1 = 0 \quad \text{vs.} \quad H_\alpha : \beta_1 \neq 0$

The test statistic is 0.37/0.099 = 3.7373

$t_{a/2,n-k-1} = t_{0.01,1000} = 2.576$

The test statistic (3.7373) is greater than the upper critical value (2.576) of the t-distribution with 1000 degrees of freedom. Therefore, we reject the null hypothesis and conclude that the DB regression coefficient is statistically different from zero at the 1% level of significance.

Section: Quantitative Analysis

Chapter: Regression with Multiple Explanatory Variables

Learning objective: Construct, apply and interpret joint hypothesis tests and confidence intervals for multiple coefficients in a regression

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Q.7 Karsley Bank, located in Arizona, wishes to establish its footing in Delaware by acquiring Quota Bank. Employees and senior management of the latter do not want their business to be enjoined to that of the former in part because they feel their bank's future is bright. In particular, the directors of Quota Bank fear that the new owners may opt to fire them in favor of new management located in Arizona. The directors decide to seek advice from a reputable investment bank on how to fend off the takeover. Assuming you were one of the advisory panel members, which of the following would likely not form part of your advice?

A. That Quota Bank adds to its charter a provision that if another company acquires one-third of the shares, other shareholders have the right to sell their shares to that company for a large premium over market prices

B. That Quota Bank should file a lawsuit to dispute the possible takeover

C. That Quota Bank adds to its charter a provision making it impossible for any new owners to terminate the contracts of existing directors

D.That Quota Bank grants its employees stock options that can be exercised in the event of a takeover

The correct answer is **B.**

Explanation: Options A, C, and D are all possible and realistic actions that Quota Bank can take to discourage other companies from acquiring the bank.

However, going to court by filing a lawsuit might have little or no impact in light of the information given in the question. Takeover bids are legal procedures between a willing buyer and a willing seller. Legal proceedings would work only if the potential owners engage in outlawed activities in an attempt to pull off the acquisition.

Section: Financial Markets and Products

Chapter: Banks

Learning objectives:

- **Describe investment banking financing arrangements, including private placement, public offering, best efforts, firm commitment, and Dutch auction approaches.**
- **Describe the potential conflicts of interest among commercial banking, securities services, and investment banking divisions of a bank and recommend solutions to the conflict of interest problems.**

Q.8 In an options trading seminar, an instructor presents a case where a trader buys a European call option on a stock currently priced at $100. The option has a strike price of $100 and expires in one year. Given the stock's volatility and the market conditions, the instructor calculates the delta of the option and uses it to discuss hedging strategies. What does the delta of this call option primarily represent?

A. The probability that the option will be exercised at expiration.

B. The rate of change of the option's price with respect to the stock's price.

C. The sensitivity of the option's price to changes in the risk-free rate of interest.

D.The time decay of the option's value as it approaches expiration.

Delta represents the rate of change of the option's price with respect to changes in the underlying stock's price. For a call option, delta is positive and indicates how much the price of the option is expected to increase for every $1 increase in the price of the underlying stock. This sensitivity to the stock's price is crucial for traders in implementing hedging strategies, as it helps them determine how many shares of the stock they need to buy or sell to neutralize the option's price movement.

A is incorrect because the delta does not represent the probability that the option will be exercised. It merely indicates the option's price sensitivity to the stock's price movements.

C is incorrect because delta does not measure the sensitivity of the option's price to changes in interest rates; that metric is known as rho, which reflects how much the price of an option changes in response to changes in the risk-free interest rate.

D is incorrect because delta does not represent the time decay of the option’s value, which is instead measured by the theta of the option.

Section: Valuation and Risk Models

Chapter: Binomial Trees

Learning objective: Define and calculate delta of a stock option.

Q.9 A financial analyst is investigating the historical return distributions of a portfolio. The analyst observes that while the individual market subsets appear to be normally distributed, the overall return distribution exhibits unexpected characteristics when data is pulled from different time points. The historical data shows a standard deviation that averaged 2% over time, but current volatility estimates are at 3%. When constructing a risk model to estimate Value at Risk (VaR) and expected shortfall, which approach would most accurately capture the distribution's underlying characteristics?

A. Use a 2% standard deviation based on historical mean volatility.

B. Apply a fat-tailed distribution across all historical data.

C. Assume a normal distribution with a 3% standard deviation.

D.Average the volatilities from different market environments.

Risk models like VaR and Expected Shortfall are forward-looking and must reflect current market conditions rather than historical averages. Although the analyst observed normally distributed returns within individual market periods, the key insight is that volatility has recently increased from an average of 2% to 3%. Using the current 3% standard deviation ensures that the model captures the heightened risk environment accurately, without underestimating potential losses. Since the normal distribution assumption still holds within these subsets, combining it with the up-to-date volatility makes this the most appropriate and realistic approach.

A is incorrect. Using the average volatility masks current market risk. VaR would be understated, as current volatility (3%) is higher than the historical mean.

B is incorrect. While fat tails can help model extreme risks, the analyst noted normal distributions within subsets. The fat tails arise from volatility variation over time, not inherently fat-tailed data. So this approach misses the true cause of the non-normality.

D is incorrect. This would result in the same problem as (A): understating current volatility. Volatility is not additive or linear, and averaging across regimes distorts current risk measures.

Section: Valuation and Risk Models

Chapter: Measuring and Monitoring Volatility

Learning objective: Differentiate between conditional and unconditional distributions and describe regime switching.
