2020 年 10 月 FRM 一级模拟考试（一）

1. Which of the following statements comparing VaR with expected shortfall is true?

   A. Expected shortfall is sub-additive while VaR is not.

   B. Both VaR and expected shortfall measure the amount of capital an investor can expect to lose over a given time period and are, therefore, interchangeable as risk measures.

   C. Both VaR and expected shortfall depend on the assumption of a normal distribution of returns.

   D. VaR can vary according to the confidence level selected, but expected shortfall will not.

2. Given the following information, which of the following amounts is closest to d(1.0), the discount factor for the first year?

	Bond A	Bond B
Bond maturity in years	0.5	1
Coupon	6.00%	12.00%
Price	101.182	102.341

   A. 0.9099

   B. 0.9138

   C. 0.9655

   D. 0.9823

3. Gloria Brown, FRM, calculated the intrinsic value of RTN Company and expects the stock to generate a 25% annual return over the foreseeable future. However, Brown is concerned that her price forecast may be too high. She conducted a hypothesis test and concluded that at a 5% significance level, the null hypothesis can be rejected that RTN Company's investment return would be equal to or less than 25% per year. The one-tailed test utilized a z-test. Indicate the meaning of the significance level chosen by Brown and state the correct rejection region.

	Significance level	Rejection region
A.	Brown will reject a true null hypothesis 5% of the time	$z > 1.645$
B.	Brown will reject a false null hypothesis 95% of the time	$z < -1.645$
C.	Brown will reject a true null hypothesis 5% of the time	$z < -1.645$
D.	Brown will reject a false null hypothesis 95% of the time	$z > 1.645$

4. An investor owns a stock and is bullish over the short term. Which of the following strategies will be the most appropriate one for this investor if the primary concern is to make a bet on the volatility of the stock?

   A. A covered call

B. A protective put

C. An at-the-money strip

D. An at-the-money strap

5. Paper Products Inc.'s research department developed a new type of environmentally friendly paper. The marketing department surveyed a random sample of 100 people. The survey is designed to gauge customer interest level in the new product. The sample indicates an average purchase of 2,500 reams per year with a variance of 160,000 reams. The researcher's supervisor is concerned that the sample size is too small. The researcher advises against increasing the sample size, stating that "there is a risk of sampling from more than one population." Determine the standard error of the sample mean and indicate whether the researcher's statement is correct or incorrect.

	Standard error	Researcher's statement
A.	8	Correct
B.	40	Incorrect
C.	8	Incorrect
D.	40	Correct

6. A stock index is valued at USD 750 and pays a continuous dividend at the rate of 2% per annum. The 6-month futures contract on that index is trading at USD 757. The risk-free rate is 3.50% continuously compounded. There are no transaction costs or taxes. Is the futures contract priced so that there is an arbitrage opportunity? If yes, which of the following numbers comes closest to the arbitrage profit you could realize by taking a position in one futures contract?

A. 4.18

B. 1.35

C. 12.60

D. There is no arbitrage opportunity.

7. You are given the following information about a call option:

- Time to maturity = 2 years
- Continuous risk-free rate = 4%
- Continuous dividend yield = 1%
- $N(d_1) = 0.64$

Calculate the delta of this option.

A. -0.64

B. 0.36
C. 0.63
D. 0.64

8. Which of the following cannot be used to transfer credit risk from a bank's balance sheet?
A. Credit derivatives
B. Credit default swaps
C. Securitization
D. US government bond futures

9. If the hazard rate is 1.5%per year for the first three years and 2.5% per year for the next three years, What is the probability of default between years two and five?
A. 0.0190
B. 0.02955
C. 0.09063
D. 0.06107

10. Which technique below does not contribute to credit risk mitigation?
A. Bond insurance
B. Buy-and-hold
C. Netting
D. Collateralization

11. Over-the-counter CDSs helped transfer credit risk in the loan book, but also generated new_ of a systemic nature
A. Credit spread risk
B. Counterparty credit risk
C. Interest rate risk
D. None of the above

12. An insurance company estimates that 40% of policyholders who have only an auto policy will renew next year, and 60% of policyholders who have only a homeowner policy will renew next year. The company estimates that 80% of policyholders who have both an auto and a homeowner policy will renew at least one of those policies next year. Company records show that 65% of policyholders have an auto policy, 50% of policyholders have a homeowner policy, and 15% of policyholders have both an auto and a homeowner policy.

Using the company's estimates, what is the percentage of policyholders that will renew at least one policy next year?

A. 20%

B. 29%

C. 41%

D. 53%

13. What are the minimum values of an American-style and a European-style 3-month call option with a strike price of $80 on a non-dividend-paying stock trading at $86 if the risk-free rate is 3%?

	American	European
A.	$6.00	$6.00
B.	$5.96	$6.00
C.	$6.00	$6.59
D.	$6.59	$6.59

14. Isabelle Burns, FRM, is an investment advisor for a firm whose client base is composed of high net worth individuals, in her personal portfolio, Burns has an investment in Torex, a company that has developed software to speed up Internet browsing. Burns has thoroughly researched Torex and believes the company is financially strong yet currently significantly undervalued. According to the GARP Code of Conduct, Burns may:

A. Not recommend Torex as long as she has a personal investment in the stock.

B. Not recommend Torex to a client unless her employer gives written consent to do so.

C. Recommend Torex to a client, but she must disclose her investment in Torex to the client.

D. Recommend Torex to a client without disclosure as long as it is a suitable investment for the client.

15. A single stock has a price of USD 10 and a current daily volatility of 2%. Using the delta-normal method, the VaR at the 95% confidence level of a long at-the-money call on this stock over a one-day holding period is approximately:

A. USD 1.655

B. USD 0.165

C. USD 0.335

D. USD 0.235

16. If the expected variance of a regression error term depends on the value of the independent

variable, then this:

A. Does not violate the assumptions of the classical linear regression model.

B. Would violate the assumptions of the classical linear regression model and is called serial correlation.

C. Would violate the assumptions of the classical linear regression model and is called homoscedasticity.

D. Would violate the assumptions of the classical linear regression model and is called heteroscedasticity.

17. A $1,000 par bond with 22 years to maturity and a 4% semiannual coupon has a yield to maturity of 5%. Assuming a 5 basis point change in yield, the convexity of the bond is closest to:

A. 258

B. 502

C. 942

D. 129

18. Between 1993 and 1995, Nick Leeson's actions resulted in losses of approximately $1.25 billion and forced Barings into bankruptcy. Which of the following actions would least likely have prevented the bankruptcy of Barings' Bank?

A. Information on account gains and losses being more transparent.

B. Management being more suspicious of huge reported profits.

C. All traders being required to meet SIMEX (Singapore International Monetary Exchange) standards.

D. A system of checks and balances being established to detect wildly speculative positions.

19. Colleagues Benjamin Ecko and Bernard Charles recently discussed the application of the normal distribution for random variables. Ecko claimed that the z-statistic measures the distance, in standard deviation units, that a given observation is from the population mean. Charles claimed that there is a 95% chance that the z-statistic lies above negative 1.96. Regarding the statements of Ecko and Charles:

A. Ecko is correct; Charles is correct.

B. Ecko is correct; Charles is incorrect.

C. Ecko is incorrect; Charles is correct.

D. Ecko is incorrect; Charles is incorrect.

20. Metallgesellschaft Refining and Marketing offered customers long-term contracts with fixed prices for petroleum contracts. Their strategy to hedge this exposure:
    A. Did not account for funding risk created by a mismatch between the timing of the hedge cash flows and the contract cash flows.
    B. Failed because of improper internal controls.
    C. Was based on fraudulent reporting.
    D. Suffered from poor diversification.

21. A USD 1 million loan has a probability of 0.5% of defaulting in a year. The recovery rate is estimated to be 40%. What is the expected credit loss and the standard deviation of the credit loss?

	Expected credit loss	Standard deviation of the credit loss
A.	USD3,000.	USD1791
B.	USD3,000.	USD42,320
C.	USD6,000.	USD1791
D.	USD6,000.	USD42,320

22. Three months ago a company entered in a one-year forward contract to buy 100 ounces of gold. At the time, the one-year forward price was USD 1,000 per ounce. The nine-month forward price of gold is now USD 1,050 per ounce. The continuously-compounded risk-free rate is 4% per year for all maturities, and there are no storage costs. Which of the following is closest to the value of the contract?
    A. USD 5,000
    B. USD 4,852
    C. USD 7,955
    D. USD 1,897

23. You wish to hedge an investment in zirconium using futures. Unfortunately, there are no futures that are based on this asset. To determine the best futures contract for you to hedge with, you run a regression of daily changes in the price of zirconium against daily changes in the prices of similar assets which do have futures contracts associated with them. Based on your results, futures tied to which would likely introduce the least basis risk into your hedging positions?

Changes in Price of Zirconium = $\alpha + \beta$ (Changes in Price of Asset)

Asset	α	β	R^2
A	1.25	1.03	0.62
B	0.67	1.57	0.81
C	0.01	0.86	0.35
D	4.56	2.30	0.45

A. Asset A

B. Asset B

C. Asset C

D. Asset D

24. Two firms, Bell-Con and Bro-Con, enter into a fixed-for-fixed currency swap, with an agreement to make periodic payments annually. Bell-Con pays 3.5% in euros and receives 3% in U.S. dollars. At the beginning of the swap, Bell-Con pays a principal amount to Bro-Con of USD 250 million, and Bro-Con pays EUR 200 million to Bell-Con. What amounts are exchanged every period, and what happens to the principal amounts at the swap's conclusion?

A. Bell-Con will pay EUR 8.75 million to Bro-Con, Bro-Con will pay USD 6 million to Bell-Con, and there will be no other payments exchanged at swap conclusion.

B. Bell-Con will pay EUR 7 million to Bro-Con, Bro-Con will pay USD 7.5 million to Bell-Con, and the principal amounts will be re-exchanged at swap conclusion.

C. Bell-Con will pay EUR 7 million to Bro-Con, Bro-Con will pay USD 6 million to Bell-Con, and there will be no other payments exchanged at swap conclusion.

D. Bell-Con will pay EUR 8.75 million to Bro-Con, Bro-Con will pay USD 7.5 million to Bell-Con, and the principal amounts will be re-exchanged at swap conclusion.

25. Canadian Bank, Inc.,(CBI) has the following annual gross income amounts in its business lines over its most recent three years:

	2018	2017	2016
Retail banking	$380 million	$344 million	$326 million
Commercial banking	$712 million	$645 million	$599 million
Investment banking	$846 million	$777 million	$687 million

Using the standardized approach, which of the following amounts represents CBI's operational risk capital requirement for 2019? (Assume that the beta factors for retail banking, commercial banking, and investment banking are 12%, 15%, and 18%, respectively.)

A. $253.2 million.

B. $265.8 million.

C. $274.9 million.

D. $278.4million.

26. SCU stock is currently priced at $106 per share, and the risk-free interest rate is 3.25%. Assuming that SCU does not pay any dividends, what is the lower bound of an American put option on SCU that expires in three months and has an exercise price of $l10?

A. $0

B. $0.48

C. $3.11

D. $4.00

27. An investor is looking to create an options portfolio on XYZ stock that will have virtually zero vega exposure while maximizing the ability to profit from increases in interest rates. If the current price of XYZ is $50, which of the following would accomplish his goals?

A. Sell a call with a strike price of $50

B. Buy a call with a strike price of $25

C. Sell a put with a strike price of $50

D. Buy a put with a strike price of $25

28. Joe Brocato is currently following two stocks in the pharmaceutical industry: ABC and XYZ. He is bullish on ABC, but bearish on XYZ. ABC is currently priced at $53.60 and XYZ is currently priced at $9.80. He is considering an options strategy to capitalize on his expectations. Brocato gathers the following three months of data on put and call options for both stocks:

ABC		
call	strike	put
$8.50	$45.00	$0.20
$4.40	$50.00	$0.50
$1.10	$55.00	$2.75
XYZ		
Call	Strike	Put
$2.50	$7.50	$0.15
$0.55	$10.00	$0.75
$0.10	$12.50	$2.75

In three months, assume ABC has increased in price by $1.00 while XYZ has dropped by $1.67. Which of the following strategies would have been the most profitable in three

months?

A. Short the ABC put option with the $45 strike price, and short the XYZ call option with the $7.50 strike price.

B. Go long the ABC put option with the $45 strike price, and go long the XYZ call option with the $7.50 strike price.

C. Go long the ABC call option with the $55 strike price, and go short the XYZ put option with the $10 strike price.

D. Short the ABC call option with the $55 strike price, and go long the XYZ put option with the $10 strike price.

29. A risk manager is calculating the VaR of a fund with a data set of 25 weekly returns. The mean weekly return is 7% and the standard deviation of the return series is 15%. Assuming that weekly returns are independent and identically distributed, what is the standard deviation of the mean weekly return?

A. 0.4%

B. 0.7%

C. 3.0%

D. 10.0%

30. lf the discount factors for six months, 12 months, 18 months, and 24 months are 0.99,0.98,0.97, and 0.96 (respectively). What is the price of a two-year bond paying a coupon of 3% per year (on a semi-annual basis)?

A. 99.32

B. 100.02

C. 101.85

D. 102.43

31. The risk-free rate is 5% and the expected market risk premium is 10%. A portfolio manager is projecting a return of 12%. The portfolio has a beta of 0.7, and the market beta is 1.0. After adjusting for risk, this portfolio is expected to:

A. Equal the performance predicted by the CAPM.

B. Outperform the CAPM return.

C. Underperform the CAPM return.

D. Unable to determine based on the information provided.

32. A stock price is currently 40.It is known that it will be 42 or 38 at the end of a month. The

risk-free rate is 4% per annum with continuous compounding. What is the value of a one-month call option with a strike price of 39?

A. 0.534.

B. 1.000.

C. 1.051.

D. 1.595

33. The current spot price for cotton is $0.325 per pound. The annual risk-free rate is 3.0%, and the cost to store and insure cotton is $0.002 per pound per month. A 3-month futures contract for cotton is trading at $0.3368 per pound. Is there an arbitrage opportunity available, and if so, how should an investor take advantage of it?

A. There is no arbitrage opportunity available.

B. Yes, the investor should sell the futures contract, borrow at the risk-free rate, and buy the spot asset.

C. Yes, the investor should buy the futures contract, sell the spot asset, and lend at the risk-free rate.

D. Yes, the investor should buy the futures contract, borrow at the risk-free rate, and buy the spot asset.

34. If it is necessary to be long 2,500 deep-in-the-money call options in order to create a gamma neutral position, which of the following actions would best restore the original delta-neutral position after the addition of the options?

A. Sell 1,250 shares of the underlying asset.

B. Buy 1,250 shares of the underlying asset.

C. Sell 2,500 shares of the underlying asset.

D. Buy 2,500 shares of die underlying asset.

35. In the Northern Rock case one of the lessons is that there is a tradeoff between funding liquidity and interest rate risk: When funding liabilities have shorter duration than loan assets, the bank is exposed to____interest rate risk and___funding liquidity risk.

A. lower, higher

B. lower, lower

C. higher, higher

D. higher, lower

36. A German housing corporation needs to hedge against rising interest rates. It has chosen to

use futures on 10-year German government bonds. Which position in the futures should the corporation take, and why?

A. Take a long position in the futures because rising interest rates lead to rising futures prices.

B. Take a short position in the futures because rising interest rates lead to rising futures prices.

C. Take a short position in the futures because rising interest rates lead to declining futures prices.

D. Take a long position in the futures because rising interest rates lead to declining futures prices.

37. An investor buys a stock for $40 per share and simultaneously sells a call option on the stock with an exercise price of $42 for a premium of $3 per share. Ignoring dividends and transaction costs, which of the following amounts represents the maximum profit the writer of this covered call can earn if the position is held to expiration?

A. $1

B. $2

C. $3

D. $5

38. A bank has $500 million in assets with a modified duration of 7 and $400 million in liabilities with a modified duration of 5. Accounting only for duration effects, the impact of a 50-basis-point parallel upward shift in the yield curve on the bank's equity value is closest to a:

A. $7.5 million decrease

B. $7.5 million increase

C. $15 million decrease

D. $15 million increase

39. It is currently August 2010, and the spot price of soybeans is $5.05/bushel. Storage costs for soybeans on a continuously compounded basis are $0.45/bushel annually. The appropriate continuously compounded interest rate is 8%. If a soybean farmer has just finished harvesting his crop but would like to sell half of the crop in February 2011 and half in May 2011 by going short futures contracts, which of the following statements is most accurate? The farmer should store his crop only if the:

A. February futures contract price is at least $5.48/bushel and the May futures contract

price is at least $5.70/bushel.

B. February futures contract price is at least $5.48/bushel and the May futures contract price is at least $5.73/bushel.

C. February futures contract price is at least $5.50/bushel and the May futures contract price is at least $5.70/bushel.

D. February futures contract price is at least $5.50/bushel and the May futures contract price is at least $5.73/bushel.

40. An analyst is estimating the sensitivity of the return of stock A to different macroeconomic factors. He prepares the following estimates for the factor betas:

$$\beta_{\text{industrial production}} = 1.3 \quad \beta_{\text{interest rate}} = -0.75$$

Under baseline expectations, with industrial production growth of 3% and an interest rate of 1.5%, the expected return for Stock A is estimated to be 5%.

The economic research department is forecasting an acceleration of' economic activity for the following year, with GDP forecast to grow to 4.2% and interest rates increasing 25 basis points to 1.75%. What return of Stock A can be expected for next year according to this forecast?

A. 4.8%

B. 6.4%

C. 6.8%

D. 7.8%

41. An oil producer has an obligation under an agreement to supply one million barrels of oil at a fixed price. The producer wishes to hedge this liability using futures in order to address possibility of an upward movement in oil prices. In comparing a strip hedge to a stack and roll hedge, which of the following statements is correct?

A. A stack and roll hedge tends to involve fewer transactions.

B. A strip hedge tends to have smaller bid-ask spreads.

C. A stack and roll hedge tends to have greater liquidity.

D. A strip hedge tends to realize gains and losses more frequently.

42. A large publicly held company refines crude oil into gasoline and sells gasoline wholesale with long-term contracts at fixed prices. The firm also owns the land, with full rights, from which it pumps crude oil. The firm financed the purchase of the land by issuing floating-rate bonds. This firm could reduce the volatility of its earnings by entering into a(n):

I Interest-rate swap

II Oil commodity swap

A. I only

B. II only

C. Both I and II

D. Neither I nor II

43. What is the minimum USD annual premium that an insurance company should charge for a two-year term life insurance policy with face value of USD 1 million when the policyholder is a woman aged 71? (assume an interest rate of 3% compounded annually.)

	Males			**Females**		
Age (Years)	Probability of Death within 1 Year	Survival Probability	Life Expectancy	Probability of Death within 1 Year	Survival Probability	Life Expectancy
…	…	…	…	…	…	…
70	0.023380	0.73427	14.32	0.015612	0.82818	16.53
71	0.025549	0.71710	13.66	0.017275	0.81525	15.78
72	0.027885	0.69878	13.00	0.019047	0.80117	15.05
73	0.030374	0.67930	12.36	0.020909	0.78591	14.34

A. 18,153

B. 17,874

C. 17,996

D. 17,767

44. Long-Term Capital Management (LTCM) experienced financial difficulty in the late 1990s. Which of the following statements is false regarding their troubles?

A. The amount of their positions in swaps was very large, but due to offsetting positions, the amount of their risk was in theory very small.

B. LTCM required their investors to invest for three years, thereby increasing funding risk.

C. LTCM obtained financing through repurchase agreements at very favorable terms.

D. Due to the size of their positions, LTCM could not liquidate their assets without selling at large discounts.

45. Jimmy Deininger, FRM, is a portfolio manager who runs a large $400,000,000 long equity portfolio. Relative to the S&P 500, Deininger's portfolio has a beta of 1.07. Currently, S&P futures are trading at 1,368, and the futures multiplier is 250. Deininger wishes to create a hedge for his portfolio for the next four months using S&P futures. How many futures

contracts should Deininger buy or sell to hedge this portfolio?

A. Long hedge; 1,490 contracts

B. Short hedge; 1,053 contracts

C. Long hedge; 992 contracts

D. Short hedge; 1,251 contracts

46. Which of the following statements about stressed VaR, stressed ES, or stress testing is wrong?

A. Stressed VaR calculates a percentile of the distribution of losses over a short period of time conditional on a stressed scenario from the past recurring.

B. Stressed ES is the average loss conditional on the loss being greater than the stressed VaR level in the stressed scenario.

C. Stress testing looks at the full consequences of a particular stress scenario that may or may not have occurred in the past, the time horizon is usually much longer than for stressed VaR/ES.

D. It is possible to back-test stressed VaR or the output from stress testing.

47. A portfolio manager of an endowment wants to compare the VaR estimates from the delta-normal method to the historical simulation method. The €100,000,000 portfolio is restricted from using derivative securities. The daily return is expected to be 0.0004, with a daily standard deviation of 0.0095. The manager uses a 2% level of significance that has a z-value of 2.05. The manager ranked the 250 daily returns from last year from highest to lowest，and reports the lowest six returns to be: -0.0191，-0.0259，-0.0311，-0.0354，-0.0368，and -0.0384. What is the daily VaR using the delta-normal method compared to the historical simulation method?

A. The delta-normal method estimate is the same as that of the historical simulation method.

B. The delta-normal method estimated VaR is -€910,000.

C. The historical simulation method estimated VaR is -€2,590,000.

D. The historical simulation method estimated VaR is -€3,680,000.

48. Your firm uses a proprietary forecasting model that requires parameter estimates of random variables that are believed to follow the Poisson distribution. You are attempting to assess the probability of the number of defects in an assembly production process for a given company. Assume that there is a 0.005 probability of a defect for every production run. What is the probability of 7 defects in 1,000 production runs?

A. 3.0%

B. 4.4%

C. 8.6%

D. 10.4%

49. You are analyzing a portfolio that has a Jensen's alpha of 4.75% and an actual return of 14.2%. The risk-free rate is 4.25% and the equity risk premium is 6%. Based on the information provided, the beta of the portfolio is closest to:

A. 0.77

B. 0.87

C. 0.97

D. 1.07

50. An option trader is attempting to judge whether an option's premium is cheap or expensive. To do so, he employs a GARCH (1, 1) model to forecast volatility. The particular model he estimates has an intercept term equal to 0.000005, a parameter estimate on the latest estimate of variance of 0.85, and a parameter estimate on the latest innovation of 0.13. If the latest volatility estimate from the model were 2.2% per day and the option's underlying asset changed 3%, the trader's estimate of the next period's standard deviation is closest to:

A. 0.07%

B. 2.31%

C. 5.20%

D. 2.62%

51. The yield curve is upward sloping. You have a short T-Bond interest rate futures position. The following bonds are eligible for delivery:

Bonds	Spot-Price (USD)	Conversion Factor	Coupon Rate
A	102.44	0.98	4%
B	106.59	1.03	5%
C	98.38	0.95	3%

The futures price is 103-17/32 and the maturity date of the contract is September 1. The bonds pay their coupon amount semi-annually on June 30 and December 31. With these data, the cheapest-to-deliver bond is:

A. Bond A

B. Bond B

C. Bond C

D. Insufficient information to determine

52. Stampede Capital Management has entered into a currency swap with Polar Investments in which Stampede pays 3.5% per annum in euros and receives 2.8% per annum in dollars. Stampede pays a principal amount of $130 million to Polar, while Polar pays €100 million to Stampede at inception of the swap. The yield curve in both Germany and the United States is upward-sloping with the following interest rates:

	1-year	2-year
Germany	4.00%	4.50%
United States	2.00%	2.25%

The swap will last for another two years and the current exchange rate is EUR/USD=1.33. What is the value of the currency swap to Stampede?

A. $0.21 million
B. $0.54 million
C. $1.06 million
D. $1.95 million

53. As research analyst at his firm, Richard Starr is assigned the task of examining the relevance of the capital asset pricing model by running hypothesis tests on the risk-free rate and the market risk premium. Starr's supervisor makes the following statement: "For the CAPM to be valid, the mean 1-year Treasury bill rate should equal 4% and the mean market risk premium should be positive." Starr collects historical rate of return data for 1-year Treasury bills and for the annual market risk premiums over the past 30 years. He then conducts tests of hypotheses using the historical Treasury bill and market risk premium data. To examine the claims of his supervisor, identify whether Starr should perform one-tailed or two-tailed tests of these hypotheses.

	Risk-free rate hypothesis	Market risk premium hypothesis
A.	One-tailed test	One-tailed test
B.	One-tailed test	Two-tailed test
C.	Two-tailed test	One-tailed test
D.	Two-tailed test	Two-tailed test

54. An investor with a long position in a futures contract wants to issue instructions to close out the position. A market-if-touched order would be used if the investor wants to:

A. Execute at the best available price once a trade occurs at the specified or better price.
B. Execute at the best available price once a bid/offer occurs at the specified or worse

price.

C. Allow a broker to delay execution of the order to get a better price.

D. Execute the order immediately or not at all.

55. Which best describes the relationship between economic capital and unexpected loss?

A. Economic capital is a multiple of unexpected loss

B. Economic capital is unrelated to unexpected loss

C. Economic capital is equal to (synonymous with) unexpected loss

D. Economic capital is unexpected loss plus credit value at risk (CVaR)

56. Given the information in the table below and given that the 2-year spot rate is 10.263%, what is the appropriate action of an arbitrageur? Assume annual coupons and compounding.

	Bond A	Bond B	Bond C
Maturity in years	1	2	2
Coupon rate	0%	0%	10%
Price	95.2381	82.6446	100

A. The arbitrageur should short the 1-and 2-year zero-coupon bonds and buy the 2-year coupon bond.

B. The arbitrageur should buy the 1-and 2-year zero-coupon bonds and short the 2-year coupon bond.

C. The arbitrageur should buy the 1-year zero-coupon and 2-year coupon bond and short the 2-year zero-coupon bond.

D. The arbitrageur should short the 1-year zero-coupon and 2-year coupon bond and buy the 2-year zero-coupon bond.

57. The efficient frontier is defined by the set of portfolios that, for each volatility level, maximizes the expected return. According to the capital asset pricing model (CAPM), which of the following statements is correct with respect to the efficient frontier?

A. The capital market line always has a positive slope and its steepness depends on the market risk premium and the volatility of the market portfolio.

B. The capital market line is the straight line connecting the risk-free asset with the zero beta minimum variance portfolio.

C. Investors with the lowest risk aversion will typically hold the portfolio of risky assets that has the lowest standard deviation on the efficient frontier.

D. The efficient frontier allows different individuals to have different portfolios of risky assets based upon their individual forecasts for asset returns.

58. The current price of a stock is $25. A put option with a $20 strike price that expires in six months is available. $N(d_1) = 0.9737$ and $N(d_2) = 0.9651$. If the underlying stock exhibits an annual standard deviation of 25%, and the current continuously compounded risk-free rate is 4.25%, the Black-Scholes-Merton value of the put is closest to:

A. $0.01

B. $0.03

C. $0.33

D. $0.36

59. An investor buys a December 2010 put of XYZ limited with a strike of USD 65 for USD 5, and sells a December 2010 put of XYZ limited with a strike of USD 50 for USD 3. Which of the following pairs represents the type of option strategy and the maximum profit of the strategy, respectively?

	Option strategy	Maximum profit
A.	Bull spread	USD 15
B.	Bear spread	USD 15
C.	Bull spread	USD 13
D.	Bear spread	USD 13

60. Jeff Spider, FRM, is a consultant for SPA Consulting. He has been engaged by Limbo Company to select an equity investment manager for their defined benefit pension plan. Spider is considering Cutter Investments. The money management firm's 10 year performance is as follows: 35.1%, 15.6%, 12.0%, 22.2%, 50.3%, -20.0%, -33.4%, -30.6%, 30.8%, 13.0%. From the data provided, Spider calculated the following statistics:

- Mean 9.5%
- Median 14.3%
- Excess kurtosis -0.9761

Indicate whether the returns distribution is positively or negatively skewed and whether the returns distribution is leptokurtic or platykurtic.

	Skewed	Kurtosis
A.	Positively	Leptokurtic
B.	Negatively	Platykurtic
C.	Positively	Platykurtic
D.	Negatively	Leptokurtic

61. The CFO at a non-dividend-paying firm asks a financial analyst to evaluate a plan by the firm to grant stock options to its employees. The firm has 60 million shares outstanding. Under the proposal, the firm would issue 3 million employee stock options, with each option giving the holder the right to buy one share of the firm's stock at a strike price of USD 70. The employee stock options would expire in 4 years. A four-year call option on the stock with the same strike price is currently valued at SGD 4.39 using the Black-Scholes-Merton model. Which of the following is the best estimate of the price of one employee stock option assuming that the call option is correctly priced?

A. SGD 3.97

B. SGD 4.18

C. SGD 4.39

D. SGD 4.45

62. Which of these is the biggest risk for property-casualty insurance?

A. Longevity risk

B. Mortality risk

C. Natural disasters

D. Inflation

63. If you hedge a portfolio with a futures contract that has twice the standard deviation of its underlying and a correlation of 0.5, the optimal hedge ratio is closest to:

A. 0.25

B. 0.50

C. 1.00

D. 2.00

64. Given the following 1-year transition matrix, what is the probability that a Baa-rated firm will default over a 2-year period?

Rating from	Rating to			
	Aaa	Baa	Caa	Default
Aaa	90%	10%	0%	0%
Baa	10%	80%	5%	5%
Caa	1%	4%	80%	15%

A. 5.00%

B. 9.75%

C. 14.50%

D. 20.00%

65. Which of the following pairs represent the correct effects on expected loss from increasing both loss given default (LGD) and draw down?

	LGD	Draw down
A.	Increase	Increase
B.	No effect	Increase
C.	Increase	No effect
D.	No effect	No effect

66. A 1-year American put option with an exercise price of $40 will be worth $10.00 at maturity with a probability of 0.25 and $0.00 with a probability of 0.75. The current stock price is $36. The discount rate is 5%. The optimal strategy is to:

A. Exercise the option because the payoff from exercise exceeds the present value of the expected future payoff.

B. Not exercise the option because the payoff from exercise is less than the discounted present value of the future payoff.

C. Exercise the option because it is currently at-the-money.

D. Not exercise the option because it is out-of-the-money.

67. The 3-month Eurodollar futures contract trades on the Chicago Mercantile Exchange (CME) and is the most popular interest rate futures in the United States. This contract settles in cash, and the minimum price change is one “tick” which is a price change of one basis point, or $25 per $1 million contract. If the quoted price for the June 2009 Eurodollar futures contract is 96.89, the value of one contract is closest to:

A. $968,900

B. $970,000

C. $984,450

D. $992,225

68. Borough Corporation has selected a single risk metric to target in its risk management process. Steve Roland, FRM, and Bill Pound, FRM, are discussing the implications of the choice. Roland says that having a single quantifiable risk metric is generally accepted as necessary in risk management. Pound says that the metric should be augmented with scenario analysis to account for crises and the human element of the market. With respect to these statements:

A. Both Roland and Pound are incorrect.
B. Both Pound and Roland are correct.
C. Roland is correct and Pound is incorrect.
D. Pound is correct and Roland is incorrect.

69. The annual returns for a portfolio are normally distributed with an expected value of £50 million and a standard deviation of £25 million. Which of the following amounts is closest to the probability that the value of the portfolio one year from today will be between £91.13 million and £108.25 million?
A. 0.025
B. 0.040
C. 0.075
D. 0.090

70. Which of the following statements about stress testing are true?
I. Stress testing can complement VaR estimation in helping risk managers identify crucial vulnerabilities in a portfolio.
II. Stress testing allows users to include scenarios that did not occur in the lookback horizon of the VaR data but are nonetheless possible.
III. A drawback of stress testing is that it is highly subjective.
IV. The inclusion of a large number of scenarios helps management better understand the risk exposure of a portfolio.
A. I and II only
B. III and IV only
C. I, II, and III only
D. I, II, III, and IV

71. An analyst gathered the following data about three stocks:

Stock	Beta	Estimated Return
A	1.5	15.0%
B	1.1	15.7%
C	0.6	14.2%

If the risk-free rate is 8% and the risk-premium on the market is 7%, are Stock A and Stock C undervalued, properly valued, or overvalued, according to the security market line (SML)?

	Stock A	Stock C
A.	Undervalued	Undervalued

B. Overvalued Overvalued

C. Undervalued Overvalued

D. Overvalued Undervalued

72. You are using linear regression to analyze the relationship between a stock's returns and an industry index. The regression provides the following results.

	Coefficient	Standard Error
Intercept	3.8	2.25
Industry Index	2.2	0.58
	Sum of Squares	
Residual	272.49	
Total	1,264.72	

Assume that the sample uses ten years of quarterly observations.

Based on the information provided, which of the following statements is incorrect?

A. The industry index is significant at the 99% level.

B. The correlation coefficient between the stock and the industry index is 0.89.

C. The intercept is significant at the 95% level.

D. There are a total of 40 observations in the sample.

73. Based on the information provided, which of the following amounts are closest to the 2-year spot rate and the forward rate in 1.5 years (ending in year 2), respectively?

Maturity	STRIPS Price	Spot Rate	Forward Rate
0.5 years	98.7654	2.50%	2.50%
1.0 years	97.0662	3.00%	3.50%
1.5 years	95.2652	3.26%	3.78%
2.0 years	93.2775	?	?

	2-year spot rate	1.5-year forward rate
A.	1.755%	4.26%
B.	3.510%	4.06%
C.	1.755%	4.06%
D.	3.510%	4.26%

74. Assume an investor enters into a volatility swap as the receive-realized and pay-fixed volatility. The investor's position is most similar to which trading strategy:

A. Covered call

B. Bull spread

C. Long straddle

D. Short strangle

75. The S&P 500 Index is trading at 1,025. The S&P 500 pays an expected dividend yield of 1.2%, the current risk-free rate of interest is 2.75%, and the prevailing market rate of interest is 4.25%. The price of a 3-month futures contract on the S&P 500 Index is closest to:

A. 1,028.98

B. 1,032.85

C. 1,035.17

D. 1,041.01

76. If the variance of the sampling distribution of an estimator is smaller than all other unbiased estimators of the parameter of interest, the estimator is:

A. Reliable

B. Efficient

C. Unbiased

D. Consistent

77. Consider a $1,000-face value, 12-year, 8%, semiannual coupon bond with a YTM of 10.45%. The change in value for a decrease in yield of 38 basis points is closest to:

A. Increase of $22.76

B. Decrease of $22.76

C. Increase of $23.06

D. Decrease of $23.06

78. The market portfolio (M) contains the optimal allocation of only risky assets and no risky assets. Let the S_1 be the Sharpe ratio of this market portfolio. There exists a risk-free asset. Initially, an investor is fully (100%) invested in M with a portfolio Sharpe ratio of S_1. Subsequently, the investor borrows 30% at the risk-free rate, such that she is 130% invested in the market portfolio(M) where this leverage portfolio has a Sharpe ratio of S_2。After the leverage (i.e., borrowing at the risk-free rate to invest +30% in M, is the investor still on the efficient frontier and how do the Sharpe ratios?

A. No (no longer efficient), and $S_2<S_1$.

B. No, but $S_2=S_1$.

C. Yes (still efficient), but $S_2<S_1$.

D. Yes and $S_2=S_1$.

79. A portfolio, invested in two assets with equal weights, has a volatility of 11.18% when the covariance (and correlation) between the asset returns is zero. If the covariance increases from zero to 0.0160, while the weights and individual asset volatilities remain unchanged, what is the change to portfolio volatility?

A. Increase by 3.14%

B. Increase by 6.29%

C. Increase by 12.65%

D. Not enough information

80. Suppose that the price of an asset at the close of trading yesterday was USD 20 and its volatility was estimated as 1.4% per day. The price at the close of trading today is USD 19. What is the new volatility estimate using the EWMA with a λ of 0.9?

A. 2.06%

B. 2.07%

C. 2.08%

D. 2.09%

81. Portfolio manager Sally has a position in 100 option contracts with the following position greeks: theta = +25,000; vega = +330,000 and gamma = -200; ie., positive theta, positive vega and negative gamma. Which of the following additional trades, utilizing generally at-the-money(ATM) options, will neutralize(hedge) the portfolio with respect to theta, vega and gamma?

A. Sell short-term options + sell long-term options (all roughly at-the-money)

B. Sell short-term options + buy long-term options (~ ATM)

C. Buy short-term options + sell long-term options (~ ATM)

D. Buy short-term options + buy long-term options (~ ATM)

82. Which option combination most closely simulates the economics of a short position in a futures contract?

A. Payoff of a long call plus a short put

B. Profit of a long call plus a short put

C. Payoff of a long put plus short call

D. Profit of long put plus short call

83. Which type of option produces discontinuous payoff profiles, meaning that the payoff does

not increase or decrease continuously with the underlying asset value?

A. Chooser options

B. Barrier options

C. Binary options

D. Lookback options

84. To equalize the cash portion of assets under management, a portfolio manager enters into a long futures position on the S&P 500 Index with a multiplier of 250. The cash position is $5,000,000, which at the current futures value of 1,000 requires the manager to be long 20 contracts. If the current initial margin is $12,500 per contract, and the current maintenance margin is $10,000 per contract, the variation margin the portfolio manager needs to advance if the futures contract value falls to 985 at the end of the first day of the position is closest to:

A. $25,000

B. $30,000

C. $50,000

D. $75,000

85. In its annual report, a property casualty insurance company presents a summary of key ratios as follow:

- Loss ratio: 75%
- Expense ratio: 30%

Each of the following statements is true except which is false?

A. The expense ratio includes loss adjustment expenses.

B. The expense ratio includes marketing expenses and commissions paid to brokers.

C. Because its combined ratio is greater than 100%, it is not a profitable business.

D. For each $1 in premiums received, it pays out about $0.75 in claims to its customers.

86. Gregory is analyzing the historical performance of two commodity funds tracking the Reuters/Jefferies-CRB® Index (CRB) as benchmark. He collected the data on the monthly returns and decided to use the information ratio (IR) to assess which fund achieved higher returns more efficiently and presented his findings.

	Fund I	Fund II	Benchmark Returns
Average monthly return	1.4888%	1.468%	1.415%
Average excess return	0.073%	0.053%	0.000%
Standard deviation of returns	0.294%	0.237%	0.238%
Tracking error	0.344%	0.341%	0,000%

What is the information ratio for each fund, and what conclusion can be drawn?

A. IR for Fund I = 0.212, IR for Fund II = 0.155; Fund II performed better as it has a lower IR.

B. IR for Fund I = 0.212, IR for Fund II = 0.155; Fund I performed better as it has a higher IR.

C. IR for Fund I = 0.248, IR for Fund II = 0.224; Fund I performed better as it has a higher IR.

D. IR for Fund I = 0.248, IR for Fund II = 0.224; Fund II performed better as it has a lower IR.

87. A factor analysis of the dividend-adjusted returns of ABC Ltd.'s stock price was undertaken to determine which economic factors contributed to its performance. The regression was performed on 460 observations. The results are as follows:

Table 1:

Predictor	Coefficient	Standard Error of coefficient
Intercept	-0.0243	0.005772
All share index	0.0256	0.017655
Industrial index	0.0469	0.006398
Financial index	0.0012	0.001412

Table 2:

Sum of Squared Regression (SSR)	12,466.47
Sum of Squared Errors (SSE)	1,013.22
Sum of Squared Total (SST)	13,479.69

Which one of the following options correctly describes which variables are significant at the 5% level, and the R^2 statistic, respectively?

	Significant variables at 5% level	R^2 statistic
A.	Intercept; Industrial index	0.924834
B.	Intercept; Industrial index	0.075166
C.	All share index; Industrial Index	0.924834
D.	All share index; Industrial Index	0.075166

88. A homeowner has a 30-year, 5% fixed rate mortgage with a current balance of USD 250,000. Mortgage rates have been decreasing. Which of the following is closest to the amount that the homeowner would save in monthly mortgage payments if the existing mortgage was refinanced into a new 30-year, 4% fixed rate mortgage?

A. USD 145

B. USD 150
C. USD 155
D. USD 160

89. Which of the following statements regarding the trustee named in a corporate bond indenture is correct?
A. The trustee has the authority to declare a default if the issuer misses a payment.
B. The trustee may take action beyond the indenture to protect bondholders.
C. The trustee must act at the request of a sufficient number of bondholders.
D. The trustee is paid by the bondholders or their representatives.

90. The current value of the S&P 500 index is 1,457, and each S&P futures contract is for delivery of 250 times the index. A long-only equity portfolio with market value of USD 300,000,000 has beta of 1.1. To reduce the portfolio beta to 0.75, how many S&P futures contract should you sell?
A. 288 contracts
B. 618 contracts
C. 906 contracts
D. 574 contracts

91. A risk manager for Bank XYZ is considering writing a 6-month American put option on a non-dividend paying stock ABC. The current stock price is USD 50, and the strike price of the option is USD 52. In order to find the no-arbitrage price of the option, the manager uses a two-step binomial tree model. The stock price can go up or down by 20% each period. The manager's view is that the stock price has an 80% probability of going up each period and a 20% probability of going down. The annual risk-free rate is 12% with continuous compounding. The no-arbitrage price of the option is closest to:
A. USD 2.00
B. USD 2.93
C. USD 5.22
D. USD 5.86

92. Local Bank, Inc. (LBI) has loaned funds to a private manufacturing company, named We Make It All (Make It). The current balance of the loan is $1 million and it is secured by a piece of land and the corresponding building owned by Make It. Due to an economic downturn, Make It suffered a loss for the first time in its 10-year operating history and is

currently experiencing some cash flow difficulties. In addition, the land and building that is held as collateral has recently been appraised at only $800,000. Based only on the information provided, which of the following risks face by LBI have increased?

A. Bankruptcy risk and default risk
B. Bankruptcy risk and settlement risk
C. Default risk and downgrade risk
D. Default risk, downgrade risk, and settlement risk

93. The involvement of the board of directors is important within the context of a firm's decision to hedge specific risk factors. Which of the following statements regarding the setting of risk appetite is correct?

I. Risk appetite may be conveyed strictly in a qualitative manner.
II. Debt holders and shareholders are both likely to desire minimizing the firm's risk appetite.

A. I only
B. II only
C. Both I and II
D. Neither I nor II

94. If the current market price of a stock is USD 50, which of the following options on the stock has the highest gamma?

A. Call option expiring in 30 days with strike price of USD 50
B. Call option expiring in 5 days with strike price of USD 30
C. Call option expiring in 5 days with strike price of USD 50
D. Put option expiring in 30 days with strike price of USD 30

95. MTGE4, MTGE7 and MTGE10 are mortgage-backed securities (MBS) that pay 4%, 7% and 10% coupon, respectively prevailing mortgage rates are 10%. Assuming these securities have the same maturity and coupon frequency, which of the following is correct?

A. In most cases, convexity is sufficient to approximate MBS price changes resulting from yield changes for the purpose of estimating VaR.
B. In most cases, duration is sufficient to approximate MBS price changes resulting from yield changes for the purpose of estimating VaR.
C. The option embedded in a MBS makes the implementation of the duration-convexity method less appropriate for the purpose of estimating VaR.

D. As rates fall, MTGE10 price change approximations using the duration-convexity method are likely to be better than MTGE4 price change approximations.

96. Which of the following statements is not a consequence of the securitization?
A. Securitization makes originating banks approve and monitor loans carefully.
B. Securitization transfers the default risk of the underlying assets to investors.
C. Securitization enabled the originating institutions offer lower interest rates on mortgages.
D. Securitization may allow institutional investors to indirectly hold assets that they are prevented from holding directly.

97. The board of directors of a growing insurance company has recommended the firm establish an enterprise risk management (ERM) framework. Which of the following represents a key benefit for the firm that it will likely attain after establishing an ERM framework?
A. Increasing the organization's risk appetite and its expected return on new projects
B. Improving the firm's risk reporting practices
C. Allowing the board of directors to validate risk models to ensure their accuracy
D. Increasing the expected correlation between risk factors where there is exposure across the enterprise

98. A one-year project has a 3% chance of losing USD 10 million, a 7% chance of losing USD 3 million, and a 90% chance of gaining USD 1 million. What are (a) the VaR and (b) the expected shortfall when the confidence level is 95% and the time horizon is one year?

	VaR	ES
A.	3million	7.2million
B.	3million	6.0million
C.	10million	7.2million
D.	10million	10million

99. Which type of hedge fund focuses on isolating mispricings in foreign exchange markets?
A. Fixed income arbitrage hedge funds.
B. Global macro hedge funds.
C. Managed futures hedge funds.
D. Convertible arbitrage hedge funds.

100. In an FRA, an annualized rate of 3% will be received and six-month LIBOR will be paid on a principal of USD 5，000,000 for a six-month period starting in 18 months. If the annualized

six-month forward rate in 18 months proves to be 3.5%, what is the settlement on the FRA? When is it made?

A. 10079

B. 12285

C. 13045

D. 14253