2020 年 10 月 FRM 二级押题卷

1. The central feature of Basel III's first pillar is the regulatory capital (i.e., CET1, Tier 1, and total capital) requirements which require minimum fractions of risk-weighted assets (RWA). In addition to these minimums, as of early 2019 (when the buffers were fully phased in), Basel specifies three buffers: the capital conservation buffer (CCB), the G-SIB buffer, and the countercyclical buffer (CCyB). This is all very confusing, so you ask your colleague Mary to summarize these additional buffers and their motivations. She makes the following five points:

   I. For all three, the additional buffer must be CET1

   II. For all three, breach of the buffer requirements implies the bank's ability to pay dividends will be restricted

   III. The CCB requires an additional 2.5% of CET1 capital and is meant to ensure that banks have an additional layer of usable capital that can be drawn down when losses are incurred.

   IV. The additional G-SIB requirement includes five buckets {1.0%, 1.5%, 2.0%, 2.5%, or 3.5%} https://www.bis.org/fsi/fsisummaries/g-sib_framework.htm and is meant to reduce the likelihood and severity of the failure of a global systemically important financial institution

   V. The CCyB requirement varies between zero and 2.5% and is meant to protect the banking sector from periods of excess aggregate credit growth that have often been associated with the build-up of system-wide risks

   Is Mary correct in her summary?

   A. No, unfortunately, none of her statements is correct. I II. and III

   B. I and II. are correct, but the others (III., IV., and V.) are wrong

   C. III., IV., and V. are correct, but the others (I. and II.) are wrong

   D. Yes, all five statements are correct

2. Whichever value-at-risk (VaR) method is used, the risk measurement process needs to simplify the portfolio by mapping the positions on the selected risk factors. Mapping is

the process by which the current values of the portfolio positions are replaced by exposures on the risk factors. Which of the following statements is correct?

I. Long currency forward contract = long foreign currency spot + long foreign currency bill + short U.S. dollar bill

II. Long 6×12 FRA = long 6-month bill + short 12-month bill

III. Long call option = long $N(d_1)$ asset + short $N(d_2)$ bill

IV. Long call option = long Δ asset + short (ΔS - c) bill

A. Ⅰand Ⅱ

B. Ⅰ, Ⅱ andⅢ

C. ⅢandⅣ

D. All

3. A risk consultant is reviewing a bank's process for implementing its economic capital framework. The bank holds a wide variety of derivative exposures with various counterparties, some of which have posted collateral. In describing guidelines for evaluating the bank's counterparty credit risk, which of the following statements is incorrect?

A. The different data architectures for risk and return had to be reconciled. The resulting improvements in data consistency have allowed the development of more accurate，reliable, and informative models.

B. Wrong-way risk arises when the credit value adjustment to the counterparty is increasing.

C. VaR models are generally preferred to simulations in assessing longer-term uncollateralized counterparty exposures.

D. In modeling exposure, a longer forecasting period should be used for non-margined counterparties compared to counterparties who have posted margin.

4. Bank HJK has written puts on Bank PQR stock to a hedge fund and sold CDS protection

on Bank PQR to a manufacturer. Bank HJK and Bank PQR operate in several of the same businesses and geographies and their performances are highly correlated. Many in the market are concerned that rising interest rates could negatively impact the credit quality of Bank HJK's numerous borrowers, which in turn would increase the credit spread of Bank HJK. From the perspectives of the hedge fund and the manufacturer, which of the following is correct with respect to their counterparty risk exposure to Bank HJK?

	Hedge Fund	Manufacturer
A.	Right-way risk	Wrong-way risk
B.	Wrong-way risk	Right-way risk
C.	Right-way risk	Right-way risk
D.	Wrong-way risk	Wrong-way risk

5. As part of validating the VaR model used at a bank, the risk management team analyzes previous 1-day 95% and 1-day 99% VaR estimates. Over the past 1,000 days, there were 11 exceptions of the 1-day 99% VaR and 33 exceptions of the 1-day 95% VaR measures. What can most accurately be said about the model at each of the confidence levels?

   A. The test statistic for backtesting the 95% VaR model over the 1,000-day period is approximately 0.3178.

   B. The test statistic for backtesting the 99% VaR model over the 1,000-day period is approximately 0.3178.

   C. Reject the hypothesis that the 95% VaR model is approximately calibrated at a 99% confidence level.

   D. Reject the hypothesis that the 99% VaR model is approximately calibrated at a 99% confidence level.

6. The risk and audit committee of the board of XYZ Bank has hired an outside consultant to review operations at the firm. Several years ago, XYZ set up a new arbitrage trading department to explore statistical arbitrage trading strategies that were new to the firm

at the time. A prominent and experienced algorithmic trader was hired to head the department, and the department has succeeded in generating steady profits each year since its inception. Recently, the arbitrage trading department has begun to expand into high frequency trading (HFT).

While conducting interviews with key employees, the consultant learns that the CRO is concerned that the arbitrage trading department operates with more autonomy than other areas of the firm. The consultant also finds that trading limits are not applied to arbitrage trading activities through standard information technology (IT) control measures.

When questioned, the head of arbitrage trading explained that the lack of IT-based trading limits is necessary since the existing risk controls are not flexible enough to handle the volume, spread, and complexity of the department's trading strategies. Instead, a detailed limit report is prepared for the trading desk daily. This report is reviewed each day with the head trader and revised as needed. Furthermore, the head of arbitrage trading disagrees with the CRO's claim, stating that the department does not operate autonomously but reports directly to the CEO, providing the CEO with a summary of the limit report in a weekly briefing package.

One of the documents reviewed by the consultant was a list of "rules of thumb" the traders in the arbitrage trading department use when assessing opportunities and deciding how to model positions and their risks. Which rule of thumb is correct?

A. When stress testing a portfolio of long-short positions, correlation will be relevant for estimating VaR but not for estimating ES.

B. When modeling the correlation between asset returns with large outliers, Kendall's Tau should be used to obtain more conservative estimates.

C. When evaluating the market risk of two assets, a Pearson correlation of returns of zero does not necessarily imply that the returns are independent.

D. If the 1-day autocorrelation coefficient of a time-series is greater than 0.5 then, on average, a deviation from the long-term mean will "revert" to that long-term mean by at least 50% in a day.

7. Following Black and Scholes (1973), option pricing theory has been used to evaluate default risky debt in many different situations. We have developed methods to evaluate credit risks for individual risky claims, for portfolios of risky claims, and for derivatives. The basic model to value risky debt using option pricing theory is the Merton (1974) model, While KMV derives default probabilities using the "Expected Default Frequency for each obligor. Which of the following statements about Merton model and KMV model is false?

   A. One advantage of the KMV approach is that probabilities of default are obtained using the current equity value, so that any event that affects firm value translates directly into a change in the probability of default.

   B. With KMV's model, the capital structure includes equity, short-term debt, long-term debt, and convertible debt. KMV then solves for the firm value and volatility.

   C. The Merton model allows us to price risky debt by viewing it as risk-free debt minus a put written on the firm issuing the debt. The Merton model is practical mostly for simple capital structures with one debt issue that has no coupons.

   D. Merton model assumes that firm value is normally distributed with constant volatility and that the firm has one zero-coupon debt issue. If firm value exceeds the face value of debt at maturity, the firm is not in default.

8. Peter is studying for the Financial Risk Manager (FRM) exam and he thinks the historical evolution of the Basel regulations is confusing. In particular, he wants to better understand the difference between the original Basel I accord (aka, the 1988 Basel Accord that was implemented by 1992) and Basel II, which was finally published over ten years later in 2004. His colleague Mary explains that, in comparison to the original accord, Basel II contained four significant innovations. Specifically, in comparison to the original Basel I accord (which do include the 1995/1996 Amendments) that came before, Mary says that significant innovations in Basel II included the following:

I. In addition to credit risk and market risk, Basel II required capital for operational risk

II. Basel II eliminated risk weights and risk-weighted assets (RWA) and replaced them with direct calculation of risk charges

III. Basel II contained specific requirements for supervision related to capital and risk management (Pillar 2) and required public disclosures (Pillar 3)

IV. To fine-tune the accord's design, Basel II made repeated use of Quantitative Impact Studies (QIS) to which banks contributed data (i.e., feedback) that was analyzed by supervisors

Is Mary correct?

A. Yes, all four statements are correct.

B. I. and II. are correct but III and IV are inaccurate.

C. Only II. is inaccurate but I, III, and IV are correct.

D. Unfortunately, none of her statements are correct.

9. The risk management department of ABC Bank are required to estimate the total risk weighted assets, ECKO, a junior analyst, is identifying standardized approach based on the historical P/L data, he decides to choose the Pearson Correlation as an adequate approximate relationship between operational risk exposure and gross income because he consider Operational risk exposure increases linearly in proportion to revenue. Furthermore, ECKO also suggests use Johnson SB distribution as equity default correlation distribution rather than ordinal method. Robin, ECKO's supervisor, made some argument on the suggestion, he points that the ECKO does not take into account that the relationship between the size and operational risk of bank does not remain constant or that operational risk exposure increase with a bank's size in a non-linear fashion. Robin also points that the volatility of equity return and extreme outliers are much higher than that of bond return, it is better for ECKO to use ordinal method such as Spearman or Kendall's τ relationship. How does Mikey Chou, the CRO of ABC bank, most likely responds to Robin's guidance on ECKO?

A. Agree with both guidance.

B. Agree with the first one but disagree with the second guidance.

C. Disagree with the first one but agree with the second guidance.

D. Disagree with both guidance.

10. Peter, the municipal bond analyst observes that in recent years there have occurred only about 6.0 U.S. municipal defaults per year. If he makes the highly simplifying assumption that 6.0 defaults per year is the average in a Poisson process (distribution), what is the probability that the next municipal default will occur within three month?

A. 8.42%

B. 17.00%

C. 39.35%

D. 77.69%

11. Risk analysts at a bank are stress testing a proposed CNY 800 million loan in a portfolio to shocks in various operational and market variables. The loan would be fully funded by deposits paying an average interest rate of 2.5% and analysts have correctly calculated the RAROC to be 13.5% using the following base-case set of estimates:

Expected annual revenue	CNY 50 million
Expected loss	CNY 6 million
Unexpected loss	CNY 20 million
Economic capital required	CNY 100 million
Annual operating expenses to maintain the loan	CNY 14 million
Expected rate of return on economic capital	3.5%

The bank has an internal RAROC target of 10.0% for all the loans in its portfolio. With all other variables hold constant, which of the following shocks would cause the RAROC to fall below the target?

A. Annual operating expenses increase by 25%.

B. The expected loss increases by 50%.

C. The interest rate paid on deposits rises to 3.0%.

D. The loan now requires CNY 125 million of economic capital.

12. An underwriter structures a collateralized loan obligation (CLO) composed of 100 identical loans, each with a notional value of GBP 800,000 to be repaid in one year with an interest rate of LIBOR + 3%. The CLO has one planned payment at maturity and its capital structure is given by:

Tranche	Face Value	Coupon
Equity	GBP 5 million	
Mezzanine debt	GBP 10 million	LIBOR + 5.0%
Senior debt	GBP 65 million	LIBOR + 0.5%

At maturity the CLO accumulates GBP 6,625,000 of losses from defaults and unpaid interest. If LIBOR was flat at 1% over the 1-year period, and assuming no recovery on the defaults, how would the losses be absorbed by the capital structure?

A. The equity tranche will lose some of its value, and the other tranches will not be affected.

B. The equity tranche will lose all of its value, and the other tranches will not be affected.

C. The equity tranche will lose some of its value, and the mezzanine tranches will lose some of its value.

D. The equity tranche will lose all of its value, and the mezzanine tranche will lose some of its value.

13. The annual mean and variance of a portfolio are 7% and 0.16%, respectively. The current value of the portfolio is GBP 1,000,000. How does the 1-week 99% VaR that is calculated using a normal distribution assumption (normal VaR) compare with the

1-week 99% VaR that is calculated using the lognormal distribution assumption (lognormal VaR)?

A. Lognormal VaR is greater than normal VaR by GBP 66.81

B. Lognormal VaR is greater than normal VaR by GBP 83.69

C. Lognormal VaR is less than normal VaR by GBP 66.841

D. Lognormal VaR is less than normal VaR by GBP 83.69

14. The OTC derivatives market was considered by many to have been partly responsible for the 2008 credit crisis. When the G20 leaders met in Pittsburgh in September 2009 in the aftermath of the 2008 crisis, they wanted to reduce systemic risk by regulating the OTC market. Which of the following is not a post-crisis change in regulation of OTC markets?

A. All standardized OTC derivatives should be cleared through CCPs.

B. Standardized OTC derivatives should be traded on electronic platforms.

C. All trades in the OTC market should be reported to a central trade repository.

D. OTC derivatives can be settled separately.

15. Treasury analysts at a bank are preparing the bank's financial reports for the recent fiscal year-end. The bank has the following balance sheet (in KRW billions):

Asset Requiring Funding		**Basel III Factor**	**Deposits and Capital**		**Basel III Factor**
Cash	20	0%	**Retail Deposits (less stable)**	40	90%
Corporate Bond (A-rated)	30	50%	**Wholesale Deposits**	48	50%
Mortgages	30	65%	**Tier 2 Capital**	4	100%
Property	20	100%	**Tier 1 Capital**	8	100%
Total	**100**			**100**	

In order to comply with Basel III requirements using factors in the table above, what is the minimum amount of stable funding the bank is required to hold and does the bank satisfy the net stable funding ratio (NSFR) requirement?

A. KRW 54.5 billion; the bank satisfies the NSFR requirement.

B. KRW 54.5 billion; the bank does not satisfy the NSFR requirement.

C. KRW 72 billion; the bank satisfies the NSFR requirement.

D. KRW 72 billion; the bank does not satisfy the NSFR requirement.

16. Sound risk measurement practice reminds us that estimators are only as useful as their precision. That is, estimators that are less precise will have limited practical value. Which of the following statements least describes spectral risk measurement and coherent risk measures?

A. A coherent risk measure is a weighted average of the quantiles of the loss distribution where the weights are user-specific based on individual risk aversion. ES is a special case of coherent risk measure.

B. Both VaR and ES are spectral risk measurement, when the loss distribution is elliptical, VaR also meets the requirement of subadditivity and is qualified to be a coherent measure.

C. The monotonicity in coherent risk measure indicates the larger risk, the larger return.

D. The curve of ES is smoother than that of VaR and ES is less sensitive to ghost effect.

17. A recent review of the measures related to banks' operational risk modelling practices and capital outcomes revealed that the committee's expectations failed to materialize. The inherent complexity of the AMA arising from a wide range of internal modeling practices have exacerbated variability in risk-weighted capital ratios. The committee has therefore determined that the withdrawal of internal modeling approaches for operational risk regulatory capital from the Basel Framework is warranted.

Each of the followings is the advantage of SMA over the other approach for operational risk capital measurement except which is not?

A. The basic indicator approach and standardized approach do not correctly estimate the Operational Risk capital, i.e., gross income as a constant proxy indicator for

operational exposure appeared to be not a good assumption.

B. It appeared that capital under AMA is difficult to compare across banks due to a wide range of practices adopted by different banks.

C. The SMA is a single, non-model-based method used to estimate operational risk capital that combines financial statement information with the internal loss experience of a specific bank.

D. SMA introduces historical loss component to account for future operational risk loss exposure, as such, the loss component serves to offer an incentive for a bank to improve on its operational risk management practices but in the cost of less sensitivity to risk in comparison with AMA.

18. A CRO at an investment bank has asked the risk department to evaluate the bank's 3-year derivative exposure position with a counterparty. The 1-year CDS on the counterparty is currently trading at a spread of 180 bps. The table below presents trade and forecast data on the CDS spread, the expected exposure, and the recovery rate on the counterparty:

	Year 1	Year 2	Year 3
Expected exposure (AUD million)	15	15	15
CDS spread (bps)	180	300	420
Recovery rate (%)	85	75	65

Additionally, the CRO has presented the risk team with the following set of assumptions to use in conducting the analysis:

- The counterparty's time-to-default follows a distribution of constant hazard rate.
- The investment bank and the counterparty have signed a credit support annex (CSA) to cover this exposure, which requires collateral posting of AUD 13 million throughout the life of the contract
- The current risk-free rate of interest is 2% and the term structure of interest rates remains flat over the 3-year horizon
- Collateral and exposure values will remain stable over the life of the contract.

Given the information and the assumptions above, what is the correct estimate for the credit valuation adjustment for this position?

A. AUD 0.140 million

B. AUD 0.172 million

C. AUD 0.442 million

D. AUD 1.051 million

19. A regional bank is formalizing its policies and procedures to help identify and analyze the risk of potential money laundering transactions. Well-managed organizations need customer identification and transaction monitoring policies, procedures, controls, a Money Laundering Reporting Officer (MLRO) who is responsible for managing and updating the overall program. According to Basel Committee guidelines, which of the following incorrectly describes a best practice that the bank should use in identifying, verifying and profiling customers to help mitigate money laundering risk?

A. The senior management should have direct role in facilitating the firm-wide awareness program (treated separately from the training program) to underscore the requirement for “clean business” without giving any conflicting messages.

B. The senior management should have direct role in the account opening, transactions and closing of Politically Exposed Persons and Correspondent banking accounts.

C. The senior management should ensure that the money laundering reporting officer is a senior experienced person with proper deputy-support and access to the information needed to perform his/her function

D. The senior management should ensure customer due diligence processes typically obtains a standard level of verification and then is the same across all customers without discrimination. It ideally includes electronic verification where required/possible.

20. A quantitative analyst wants to compute the value of a 2-year zero-coupon bond with a

face value of GBP 1,000. The current 1-year spot rate is 5% and the analyst makes the following projections for the 1-year spot rate in 1-year:

1-year forward-rate	Probability
6%	0.5
4%	0.5

The analyst uses two methods to calculate the bond's value:

- Method A: Averaging the rates and then discounting the bond over the 2 years.
- Method B: Using a binomial tree to discount the bond at the different rates, and then averaging the values.

What is the convexity adjustment premium and by which method the calculated value is higher?

	Method	convexity adjustment
A.	A	0.0745
B.	B	0.0745
C.	A	0.0823
D.	B	0.0823

21. A portfolio manager is concerned about a possible market correction and would like to reduce portfolio VaR by selling EUR 25,000 of one of the four stocks that make up the portfolio. An analyst has been given the following information about each of the stocks in the portfolio:

Stock	Current Value (EUR)	Individual VaR (EUR)	Marginal VaR
A	900,000	261,000	0.095
B	1,250,000	531,000	0.126
C	1,750,000	654,000	0.105
D	1,100,000	444,000	0.157

Which stock should the portfolio manager sell in order to minimize the portfolio VaR?

A. Stock A

B. Stock B

C. Stock C

D. Stock D

22. An analyst wants to know the greatest performance contributor to the Alpha Fund relative to its benchmark over a 1-year period. Both the fund and the benchmark contain four major asset classes: equity, fixed income, real estate, and commodities. The following table details the benchmark weigh and asset class returns for the Alpha Fund and the benchmark for this period:

Asset Class	Benchmark Weight	Benchmark Return	Alpha Fund Weight
Equity	50%	30%	45%
Fixed Income	20%	10%	10%
Real Estate	10%	20%	20%
Commodities	20%	25%	25%

Based on the above information, which asset class has made the highest asset allocation contribution to the fund's performance?

A. Equity

B. Fixed Income

C. Real Estate

D. Commodities

23. A committee of risk management practitioners discusses the difference between pricing deep out-of-the-money call options on FB stock and pricing deep out-of-the-money call options on the EUR/JPY foreign exchange rate using the Black-Scholes-Merton (BSM) model. The practitioners price these options based on two distinct probability distributions of underlying asset prices at the option expiration date.

- A lognormal probability distribution
- An implied risk-neutral probability distribution obtained from the volatility smile to options of the same maturity

Using the lognormal instead of the implied probability distribution will tend to.

A. Price the option on FB relatively high and price the option on EUR/JPY relatively low.

B. Price the option on FB relatively low and price the option on EUR/JPY relatively high.

C. Price the option on FB relatively low and price the option on EUR/JPY relatively low.

D. Price the option on FB relatively high and price the option on EUR/JPY relatively high.

24. Consider the following three companies, each with an intended use case for artificial intelligence and machine learning (AI&ML):

I. In the category of operations-focused uses, Acme Trading Inc wants to score the liquidity of individual bonds by comparing them to similar bonds (similar in features such as duration) but there is no labeled training dataset

II. In the category of SupTech, a National Supervisor wants to incorporate sentiment derived from Twitter posts which themselves are unstructured data (note that tweets are semi-structured because structured JSON objects contain unstructured "tweets" as themselves text)

III. In the category of operations-focused uses, Bland Financial Corp wants to teach artificial intelligence tools to react to order imbalance and queue position in the limit order book by feeding non-labeled data to an algorithm that chooses an action and learns by receiving feedback (sometimes the feedback is human).

Which solutions, respectively, are probably BEST for each of the above use cases?

A. I. Classification trees, II. Cluster analysis, III. Ridge Regression

B. I. Random forests, II. Support vector machines, III. Supervised learning

C. I. Regression, II. Penalized regression, III. Natural Language Processing (NLP)

D. I. Cluster analysis, II. Natural Language Processing (NLP), and III. Reinforcement learning

25. A firm's risk management staff obtained a 1-day 95% VaR estimate using historical simulation and a 100-day look back period. Over the following 10 trading days, the lowest portfolio return is -2590. Rounded to the neatest percent, what should the risk manager's result be for the updated 1-day 95% ES?

Order	Return	Days Ago	Order	Return	Days Ago
1	-8900	98	6	-5100	90
2	-6900	69	7	-4900	44
3	-6800	99	8	-4100	26
4	-6000	41	9	-3700	37
5	-5700	92	10	-2600	5

A. 7150

B. 5725

C. 5400

D. 5098

26. Treasury managers at a bank are planning to enter into a repurchase agreement (repo) transaction with a large hedge fund. In this transaction, the bank will borrow a fixed sum of cash while lending USD 100 million par value in Treasury bonds to the hedge fund. Which statement below is correct regarding the mechanics of this repo transaction?

A. A higher bond price reduces the hedge fund's credit exposure to the bank.

B. The repo rate for securities trading "special" is higher than the rate for general securities.

C. A positive repo rate results in a forward repurchase price that is lower than the bond's initial repo price.

D. A repo transaction's term and rate are normally set equal to the maturity and coupon of the underlying security.

27. A person named Jack Ryan has applied to open a new account at Quadstreet

International Bank. The bank has a modern, well-established, and compliant customer acceptance policy. Immediately the bank is able to determine two facts: Jack is a high-risk customer, but he previously had an account at another large bank. Further, Quadstreet does conduct business with Jack's previous bank and considers it to be reputable. With respect to money laundering and terrorism financing (ML/FT), which of the following statements is TRUE about Jack Ryan's application?

A. Jack's identity must be established and verified before carrying out any transactions.

B. Because Jack is a high-risk customer, the bank is required to avoid him like any high-risk customer.

C. Because Jack already has an account at a reputable bank, he can be classified as lowrisk and well-identified.

D. If Jack is a politically exposed person (PEP), he can be classified as low risk on the assumption that the media already vets him and he cannot evade scrutiny.

28. A credit risk manager has prepared a presentation to new analysis to illustrate the impact of model risk. As one example, the manager discusses three mistakes that would weaken the power of test during the back-testing on a daily holding period VaR model constructed at 95% confidence level over a 252-day period.

I. Mistook the Kupiec test result (LR_{uc}) 3.96 for 3.69 during the back-testing at 95% confidence level.

II. Assumed number of failures increases in a constant proportion to time periods.

III. Misused non-rejection regions on the condition of a lower confidence level.

Which of the mistakes mentioned above are correct?

A. I, II and III.

B. I and II.

C. II and III.

D. I and III.

29. Your bank is considering making a USD 500million loan that will be fully funded by deposits paying an average annual interest rate of 2%. The loan has an interest rate of 7% per year. The expected loss on this loan is assumed to be 1.5% and the operating costs associated with it are assumed to be equal to 1% of the face value of the loan. Assuming that economic capital is set at 10% of the loan book and that it earns 6% per year, furthermore, Two-thirds of the economic capital consists of common equity whose risk premium is twice as much as the market risk premium and the rest consists of preferred stock with the cost of 3%. Given that the risk free rate is 1.5% and the market returns is 6%. What is the risk-adjusted return on capital for this loan and is it profitable for your bank to deal this lending?

A. 25% and it is profitable for your bank to deal this lending

B. 25% and it is not profitable for your bank to deal this lending

C. 31% and it is profitable for your bank to deal this lending

D. 31% and it is not profitable for your bank to deal this lending

30. A US pension fund had assets and liabilities valued at USD 840 million and USD 450 million, respectively, at the end of 2017. The fund's assets were fully invested in equities and commodities while its liabilities consisted entirely of fixed-income obligations. The fund reported that by the end of 2018 the value of assets decreased by 14.0% and the value of liabilities increased by 3.5%. Assuming no changes were made to the composition of the assets and liabilities during the year, what was the change in the pension fund's surplus over the 1-year period?

A. USD -133.4 million

B. USD -117.6 million

C. USD 256.7 million

D. USD 390.0 million

31. The Fama–French (1993) model explains asset returns with three factors. There is the traditional CAPM market factor and there are two additional factors to capture a size

effect and a value/growth effect:

$$E(r_i) = r_f + \beta_{i,MKT}E(r_m - r_f) + \beta_{i,SMB}E(SMB) + \beta_{i,HML}E(HML)$$

In the following statements, each of the following statements is true EXCEPT which is false?

A. Fama and French's SMB and HML factors are constructed to be factor mimicking portfolios. They are constructed to capture size and value premiums respectively and use the (CAPM and multifactor) concept of diversification to ensure that the factors capture size and value effects by averaging across many stocks.

B. Just as the average investor holds the market, the average stock does not have any size or value tilt. It just has market exposure.

C. In Equation, the first factor in addition to the market factor in the Fama-French model is SMB, which refers to the differential returns of small stocks minus big stocks (hence SMB), where small and big refer simply to the market capitalization of the stocks.

D. The other factor in the Fama-French model is the HML factor, which stands for the returns of a portfolio of high book-to-market stocks minus a portfolio of low book to market stocks. The book-to-market ratio is market capitalization divided by book value, or the inverse of equity value normalized by book value.

32. One of the board members has suggested that the CIO look at several hedge funds that have reported strong performance in recent years. The CRO is familiar with many of these funds and is aware that several invest heavily in illiquid assets and that this may cause standard risk measures based on daily returns to give a misleading picture of their risk. Which of following statements about daily risk measures applied to hedge funds that invest in illiquid assets is correct?

A. Correlation with other investments will be artificially lowered, giving the appearance of low systematic risk.

B. Infrequent trading reduces the smoothing effects from mark-to-market valuation, giving the appearance of high volatility.

C. Returns of illiquid assets tend to exhibit negative serial correlation, leading to higher long-term volatility.

D. All else being equal, illiquid assets tend to have lower Sharpe ratios, causing the incorrect appearance of an illiquid premium.

33. Prior to crisis, the focus of the Basel regulations had been on ensuring that banks had sufficient capital for the risks they were taking. It turned out that many of the problems encountered by financial institutions during the crisis were not as a result of shortage of capital. They were instead a result of liquidity risks taken by banks. Each of the change in following account subject will enhance the net stable funding ratio except which is not?

A. Increase in cumulative perpetual preferred stock and debt subordinated to depositors with an original maturity of five years.

B. Increase in borrowing with a remaining maturity greater than one year.

C. Increase cash via short-term instruments, securities and increase loans to financial entities if they have a residual maturity of less than one year.

D. Increase in loans to retail and small business customers with a remaining maturity less than one year.

34. A large bank is reviewing its processes and procedures to manage operational risk in accordance with best practices established by the Basel Committee. In implementing the three lines of defense model, which of the following statements is correct?

A. The internal audit function should serve as the first line of defense and continually validate operational procedures used by the business lines.

B. Business line managers, as part of the first line of defense, should provide a credible challenge to the internal audit function.

C. The corporate operational risk function, as part of the second line of defense, should challenge risk inputs from business line managers.

D. The corporate operational risk function should serve as the third line of defense and validate model assumptions made by senior management.

35. A mutual fund manager is stress testing a portfolio to simulate large outflows from the fund. In the simulation, the manager assumes a liquidation of 50,000 shares of a company with a share price of USD 20. The daily return of this position is lognormally distributed with an estimated mean of 0.0% and volatility of 1.0%, and the average bid-ask spread of this position is USD 1.5. Using the constant spread approach, what is the best estimate of the 1-day 99% liquidity-adjusted VaR of this position and which one is true about this approach method?

A. USD60, 530 and it is endogenous spread approach.

B. USD60, 530 and it is exogenous spread approach.

C. USD56, 500 and it is endogenous spread approach.

D. USD56, 500 and it is exogenous spread approach.

36. Mary assigns to John a long position in an at-the-money (ATM) call option with a one year term and strike a price of $100.00. The current stock price is $100.00 with volatility of 60.0%. The risk-free rate is 3.0% with continuous compounding. $N(d_1) = 0.64$ and $N(d_2) = 0.40$. The present-valued expected exposure (EE) to the counterparty, who holds the short option position, is $23.00 with a probability of counterparty default of 5.0% and loss given default (LGD) of 75.0%. Which is nearest to John's payment for the long option position, if his cost includes a credit valuation adjustment (CVA)?

A. $6.15

B. $19.37

C. $24.32

D. $26.04

37. A German bank uses the loss distribution approach to estimate its operational risk. Which of the following decisions will most likely cause the bank to significantly overestimate its operational risk capital?

A. Establishing a minimum threshold of EUR 10,000 for internal and external

operational loss events to be included in the dataset

B. Using a Gaussian copula to model dependence between several marginal loss distributions representing different business units at the bank

C. Assuming that operational loss events and severity across the bank's business units are perfectly dependent

D. Relying solely upon historical internal loss events and severity collected over the past five years

38. An analyst in the model validation team is reviewing the firm's VaR model. Which practice is most likely to introduce model risk into a firm's VaR model?

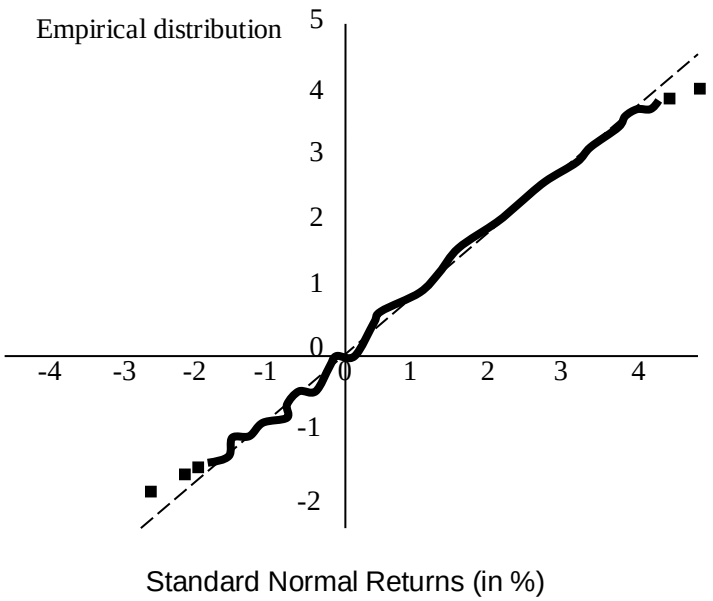
A. Using a 99% confidence level instead of a 95% confidence level for a new simulation run

B. Assuming a variable correlation between assets in a hedged portfolio across a quarterly forecast period

C. Running a Monte Carlo simulation to estimate the standard deviation of the model's output

D. Backtesting the 95% VaR model on 99% or even higher confidence level for the purpose of capturing extreme value and verifying the model.

39. A risk manager is evaluating a distribution of returns over the past 250 trading days and generates the following QQ-plot:



Which of the following is correct regarding the distribution of these empirical observations, as compared to a normal distribution?

A. The empirical distribution has comparatively heavier tails.

B. The empirical distribution has negative mean.

C. The empirical distribution has comparatively lighter tails.

D. The empirical distribution has a large positive skew.

40. Alex, FRM, is a senior manager at a small investment company specialized in alpha generation. Alex is now considering the optimal weightings of three assets in his portfolio. The following table shows some basic information about the three assets, which strategy will most increase the ratio of expected excess return to margin VAR for the entire portfolio?

Asset	Weight	Expected excess return	Volatility	Beta to the portfolio
X	45%	9.0%	20.0%	0.97
Y	35%	8.0%	22.5%	0.99
Z	20%	9.5%	26.0%	1.08

A. increase the weight on asset X, decrease the weight on asset Y

B. increase the weight on asset Y, decrease the weight on asset X

C. increase the weight on asset Y, decrease the weight on asset Z

D. increase the weight on asset Z, decrease the weight on asset X

41. Initially, VaR was developed as a methodology to measure portfolio risk. There is much more to VaR than simply reporting a single number, however. Over time, risk managers have discovered that they could use the VaR process for active risk management. A typical question may be, "Which position should I alter to modify my VaR most effectively?" Such information is quite useful because portfolios typically are traded incrementally owing to transaction costs. This is the purpose of VaR tools, which include marginal, incremental, and component VaR. Which of the following statements about portfolio VaR is false?

A. Marginal VaR— The change in portfolio VaR resulting from taking an additional dollar of exposure to a given component. It is also the partial (or linear) derivative with respect to the component position.

B. Incremental VaR— the change in VaR owing to a new position. It differs from the marginal VaR in that the amount added or subtracted can be large, in which case VaR changes in a nonlinear fashion.

C. Component VaR— A partition of the portfolio VaR that indicates how much the portfolio VaR would change approximately if the given component was deleted. By construction, component VaRs sum to the portfolio VaR.

D. These Incremental VaR measures add up to the total portfolio VaR, which gives a quick decomposition of the total risk.

42. Consider a pair of two speculative credits, rated BB and BB-, with default probabilities respectively of 2% and 3%. If their joint default probability is 0.4%, which is nearest to the implied default correlation?

A. Zero

B. 0.083

C. 0.1424

D. 0.3750

43. Most financial assets are managed by professional investors, who thus at least indirectly allocate the lion's share of capital across firms. Efficient allocation therefore depends on the quality of these professionals and the ability of financial markets to identify and direct capital to the best stewards. Therefore, if capital markets are to be reasonably efficient, investors must be able to measure the performance of their asset managers. Which of the following statements about performance measures is false?

A. M^2 focuses on total volatility as a measure of risk, but its risk adjustment leads to an easy-to-interpret differential return relative to the benchmark index.

B. The return for the perfect timer in each year is the average of the return on stocks and the return on bills. (maximum)

C. Market timing involves shifting funds between a market-index portfolio and a safe asset, depending on whether the market index is expected to outperform the safe asset.

D. Managers can manipulate their performance measures by adjusting their risk-return profile in response to performance in the early part of an evaluation period.

44. A European put option has two years to expiration and a strike price of $101.00. The underlying is a 7% annual coupon bond with three years to maturity. Assume that the risk-neutral probability of an up move is 0.5 in year 1 and 0.60 in year 2. The current interest rate is 3.00%. At the end of year 1, the rate will either be 5.99% or 4.44%. If the rate in year 1 is 5.99%, it will either rise to 8.56% or rise to 6.34% in year 2. If the rate in one year is 4.44%, it will either rise to 6.34% or rise to 4.70%. The value of the put option today is closet to:

A. USD 0.77

B. USD 0.85

C. USD 1.49

D. USD 1.98

45. A portfolio manager is evaluating the performance of a diversified portfolio, Which of the following indicators is more appropriate?

A. TR

B. IR

C. M^2

D. Dollar weighted return

46. The CFO at a bank is preparing a report to the board of directors on its compliance with Basel requirements. The bank's average capital and total exposure for the most recent quarter is as follows:

REGULATORY CAPITAL	USD MILLION
Total Common Equity TIer 1 Capital	118
Additional TIer 1 Capital	28
Prior to regulatory adjustments	34
Regulatory adjustments	6
Total TIer 1 Capital	146
TIer 2 Capital	36
Prior to regulatory adjustments	45
Regulatory adjustments	9
Risk Weighted Assets for Market Risk	1240
Risk Weighted Assets for Operational Risk	720
Credit Risk Capital Charge	112
Total Average Exposure	3950

Using the Basel III framework, which of the following is the best estimate of the bank's current leverage ratio?

A. 3.69%

B. 4.34%

C. 5.43%

D. 6.39%

47. A manager has a portfolio with only one position: a $90 million investment in U.S. stock. The manager is considering adding a $50 million position U.S. bond or Euro stock to the portfolio. The current volatility of U.S. stock is 10%. The manager wants to limit portfolio VaR to $25 million at the 99% confidence level. Position U.S. bond has a return volatility of 9% and a correlation with U.S. stock equal to 0.7. Position Euro stock has a return volatility of 2% and a correlation with U.S. stock equal to zero. Determine which of the two proposed additions, U.S. bond or Euro stock, will keep the manager within his risk budget.

A. Invest in Euro stock, the portfolio VaR will be 21.1

B. Invest in Euro stock, the portfolio VaR will be29.3

C. Invest in U.S. bond , the portfolio VaR will be21.1

D. Invest in U.S. bond , the portfolio VaR will be29.3

48. Which of the following statements regarding WWR and RWR is correct?

A. A long put option is subject to WWR if both risk exposure and counterparty default probability decrease.

B. A long call option experiences RWR if the interaction between risk exposure and counterparty default probability produces an overall decline in counterparty risk.

C. Declining local currency can decrease the position gain in a foreign currency transaction, while increasing risk exposure of the counterparty.

D. The 2007-2009 credit crisis provides an example of WWR from the perspective of a long who had sold credit default swaps (CDSs) as protection against bond issuers' default.

49. A risk analyst estimates that the hazard rate for a company is 0.1 per year. Assuming a constant hazard rate model, what is the probability that the company will survive in the first year and then default before the end of the second year?

A. 8.09%

B. 8.61%

C. 11.3%

D. 21.3%

50. Which of the following statements is (are) not true regarding a credit default swap (CDS)?

I. When buying protection in a CDS contract, an exposure will be the result of the reference entity's credit spread widening.

II. Credit default swaps are off-balance-sheet arrangements that allow one party (the beneficiary) to transfer the credit risk of a reference asset to another party (the guarantor) without actually selling the asset.

III. Credit default swaps can be thought of as insurance against the default of some underlying instrument or as a call option on the underlying instrument.

A. Ⅰand Ⅲ

B. Ⅱand Ⅲ

C. Ⅲonly

D. Ⅰ only

51. Betty and Peter are discussing the proper definition of "risk culture." In particular, they are interested in the relationship between corporate culture and risk culture. Betty and Peter each have a different perspective, as summarized this way:

I. Betty argues that risk culture (RC) refers to the firm's basic assumptions: RC is the set of values and beliefs about risk shared by the firm's employees.

II. Peter argues that risk culture (RC) refers to norms and behavior: RC is how individuals discuss, behave, decide, and act with respect to the firm's risks Ⅰand

III

According to Carretta and Schwizer, who has the better definition of risk culture?

A. Neither has a good definition

B. Betty has the superior definition because RC is about beliefs; aka, basic assumptions

C. Peter has the superior definition because RC is ultimately about behaviors, decisions, and actions; aka, conduct

D. Both Betty and Peter have valid definitions of RC

52. In finance, every risk is also an opportunity. The traders try to forecast changes in correlation and attempt to financially gain from these changes in correlation. What should a trader do, if he expects the correlation to rise in the future?

I. Enter correlation swaps as a party to pay for realized correlation

II. Buying call options on an index and selling call options on individual components

III. Paying fixed in a variance swap on an index and receiving fixed on individual components

A. I and II

B. II and III

C. III

D. All

53. A firm has entered into a USD 20 million total return swap on the NASDAQ 100 index as the index payer with ABC Corporation, which will pay 1-year LIBOR + 2.5%. The contract will last 1 year, and cash flows will be exchanged annually. Suppose the NASDAQ 100 Index is currently at 2,900 and LIBOR is 1.25%. The firm conducts a stress test on this total return swap using the following scenario:

NASDAQ 100 in 1 year: 3,625

LIBOR in 1 year: 0.50%

For this scenario, what is the firm's net cash flow in year 1?

A. A net cash outflow of USD 4.40 million.

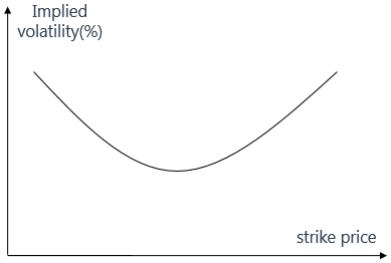
B. A net cash outflow of USD 4.25 million.

C. A new cash inflow of USD 4.25 million.

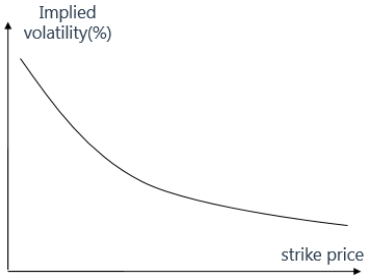
D. A new cash inflow of USD 4.40 million.

54. ABC, an automobile parts supplier, has made an offer to acquire EFG, creator of software for airline industry. The offer is to pay EFG's shareholders the current market value of their stock in ABC' stock. Both companies believe there will be synergies from this acquisition. Mikey, CRO the ABC, pointed that the liquidity of the market maybe but not necessarily extremely worsen in the near future though the synergies could enhance the competitiveness of company. On Mikey's view, the ABC equity options would exhibit which of the following volatility traits? C

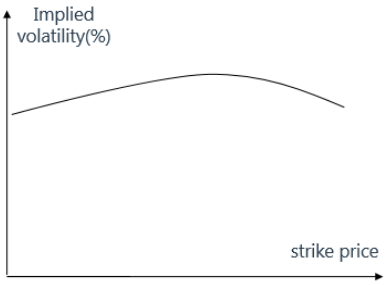
A.



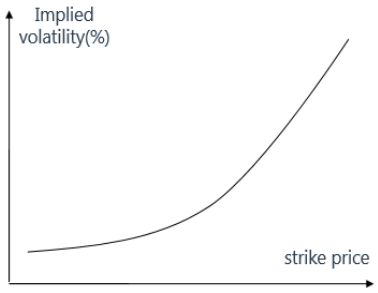
B.



C.



D.



55. Suppose a portfolio has a notional value of $1,000,000 with 20 credit positions. Each of the credits has a default probability of 2% and a recovery rate of zero. Each credit position in the portfolio is an obligation from the same obligor, and therefore, the credit portfolio has a default correlation equal to 1. What is the credit value at risk at

the 99% confidence level for this credit portfolio?

A. $0

B. $1,000

C. $20,000

D. $980,000

56. A risk analyst constructs a binomial interest rate tree by using the Ho-Lee model. The time step is monthly and the annualized drift is 80 bps in the first month and 120 bps in the second month. Assuming the current annualized short-term rate is 3.2% and the annual basis point-volatility is 2.1%, what is the interest rate in the lowest node after 2 months?

A. 1.82%

B. 2.15%

C. 2.76%

D. 3.03%

57. A bank is using the VaR and stressed VaR (SVaR) market risk framework according to the Basel 2.5 guidelines. The bank's internal models for market risk have generated the following risk measures for the current trading book positions (VaR and SVaR are in USD millions):

The supervisor has set both multiplication factors, m and m(S), to 3.0. What is the correct capital requirement for general market risk for the bank under Basel 2.5? (note: this question inspired by Question 42 of GARP's 2020 Part 2 Practice Exam).

			Multiplicative factors, m and m(S)	3.0
Confidence Level	Previous day		60-day average	
	VaR	SVaR	VaR	SVaR
	(mm)	(mm)	(mm)	(mm)
95.00%	$110.0	$190.0	$127.0	$238.0
99.00%	185.0	360.0	140.0	270.0
99.90%	283.0	740.0	228.0	490.0

A. $630.0 million

B. $810.0 million

C. $1,230.0 million

D. $2,154.0 million

58. Assume that a trader wishes to set up a hedge such that he sells $100,000 of a Treasury bond and buys Treasury TIPS as a hedge. Using a historical yield regression framework, assume the DV01 on the T-bond is 0.072, the DV01 on the TIPS is 0.051, and the hedge adjustment factor (regression beta coefficient) is 1.2. What is the face value of the offsetting TIPS position needed to carry out this regression hedge?

A. $138,462

B. $169,412

C. $268,499

D. $280,067

59. An information technology analyst at a large global bank is preparing a plan to aggregate the bank's data and increase the quality of the firm's data governance practices. The bank has several business divisions that represent product lines that are offered across multiple regions. To effectively aggregate the risk data and ensure a strong data governance process, which of the following conditions would the analyst point out as posing the greatest information technology challenge to the bank?

A. Most of the risk data are located on spreadsheets at the individual business units.

B. The bank rapidly integrates the information technology systems of each company that it acquires into its own technology platform.

C. The product lines are divided into legal entities by geographic region, but data from each entity is aggregated in a centralized data warehouse.

D. The bank installs technology platforms before investing in approved strategic initiatives that require those platforms.

60. Three months later, there will be a new 10-year issue auction. ABC, a company suffered

from a lack of liquidity want to finance through repurchase agreements. ABC company has two types of collateral, one is general collateral consists of several times-old issue and the other is the most recently issued bond. Assume the lender of cash is willing to take possession of on-the-run bonds, what is the relationship between general repo rates and special repo rates and what is the change of special spread before the next auction?

A. general repo rates is higher than special repo rates and their spreads will widen
B. general repo rates is higher than special repo rates and their spreads will narrow
C. general repo rates is lower than special repo rates and their spreads will widen
D. general repo rates is lower than special repo rates and their spreads will narrow

61. The revised Basel III framework were announced in December 2017. The reforms deal primarily with credit risk and, to a lesser extent, operational risk. Which of the followings is not mentioned in the Basel III reforms?

A. Increasing the reliance on external credit ratings as an assessment of credit risk.
B. Required input floors for PD, LGD, and EAD to force more conservative estimates of credit.
C. For credit valuation adjustment (CVA) risk, the standardized approach or the basic approach, both of which are discussed in the bank's counterparty credit risk capital requirement.
D. Introducing a leverage ratio buffer for global systemically important banks.

62. A credit manager who is well versed in lessons learned from the 2007–2009 subprime mortgage crisis in the US is overseeing the structured credit book of a bank in order to identify potential problems of information flow (frictions) between the parties involved in the securitization process. Which of the following is a correct combination of a potential friction in the securitization process and an appropriate mechanism to mitigate that friction?

A. Friction between the asset manager and the investor: Adverse selection problem.

This problem can be mitigated by the asset manager charging due diligence fees to the investor.

B. Friction between the arranger and the originator: Model error problem. This problem can be mitigated by the arranger providing a credit enhancement to the securitized products with its own funding.

C. Friction between the investor and credit rating agencies: Principal-agent conflicts. This problem can be mitigated by requiring credit rating agencies to be paid by originators and not by investors for their rating services.

D. Friction between the servicer and the mortgagor: Moral hazard problem. This problem can be mitigated by requiring the mortgagor to escrow funds for insurance and tax payments.

63. Silverfind Financial International is planning to conduct a risk control self-assessment (RCSA) for each of its business units. Which of the following is MOST LIKELY to be a feature or element of the firm's RCSA?

A. Staff within a business unit are excluded from providing input into their own business unit's RCSA scorecard in order to avoid conflicts of interest.

B. Any process with an inherent risk that is greater than its residual risk will be assigned a "red flag" because this is a situation that requires a process fix.

C. Managers will first identify and assess inherent risks by making no inferences about controls embedded in the process; i.e., controls are assumed to be absent.

D. In order to estimate realistic outcomes, risks are identified by assuming the mitigation impact of in-place controls; that is, the risk exposure sought is net of control and mitigation.

64. As an illustrative example of the "most important area for collaboration" between econometrics and machine learning, Hal Varian considers the (case study) relationship between advertising campaigns and website visits. With respect to this case study, which of the following BEST summarizes the key insight that illustrates a collaboration

between econometrics and machine learning?

A. The study substitutes a predictive model for a conventional control group in order to demonstrate causality

B. The study employs machine learning in order to generate a model with a higher multiple coefficient of determination

C. The study borrows from econometrics in a way that better generates exploratory data analysis (EDA) and renders the complex relationships easier to understand

D. A BSTS model forecasts directly the beta coefficient of advertising spend as an explanatory variable, then econometric methods are employed to overly time-series covariates

65. A credit analyst makes the following statements:

Statement 1: Financial institutions face barriers in applying machine learning systems because supervisory learning approaches are difficult to apply.

Statement 2: Combining machine learning with human decisions tends to produce inferior model results.

The analyst is accurate with respect to:

A. Statement 1 only.

B. Statement 2 only.

C. both statements

D. neither statements

66. A portfolio holds 100,000 shares of a stock and this single position has a value of $3.0 million. The stock is quoted bid $29.00, offer $31.00. The stock's daily volatility is 1.43% or 143 basis points. For purposes of value at risk (VaR), we will assume the stock's arithmetic returns are normally distributed (aka, normal VaR) and the expected daily return rounds to zero (under these assumptions absolute VaR is identical to relative VaR).

Which is NEAREST to the position's one-day 99.0% confident liquidity-adjusted value at

risk(LVaR)?

A. $15,000

B. $80,000

C. $200,000

D. $1.0 million

67. Assume the spot foreign exchange (FX) rate between the US dollar and the Japanese Yen is 110.00 which can be represented as USDJPY 110.00 or JPY 110.00 where USD is the base currency and JPY is the quote currency; aka, quote 110.00 yen per one dollar of the base or "per unit" currency. The USD interest rate is 2.50% and the JPY interest rate is 0.450%. The period is one year, and the compound frequency is annual. If the covered interest rate (CIP) arbitrage framework enforces a perfectly accurate one-year forward exchange rate, then what is the implied one-year "swap rate" which is here simply defined as the difference between the forward FX rate and the spot FX rate; put simply, what is the difference, F(USDJYP) -S(USDJPY), or F(USDJPY) - 110.00?

A. -2.20 JPY (or -2.20 USDJPY)

B. Zero

C. + 5.80 JPY

D. + 13.70 JP

68. Over the next 24 hours, Greenlux State Bank estimates that the following cash inflows and outflows (all figures in millions) will occur:

Deposit withdrawals	$70.0
Deposit inflows	$100.0
Scheduled loan repayments	$60.0
Acceptable loan requests	$90.0
Borrowings from the money market	$80.0
Sales of bank assets	$30.0
Stockholder dividend payments	$20.0
Revenues from sale of nondeposit	$10.0

services	
Repayment of bank borrowings	$50.0
Operating expenses	$40.0

What is the bank's projected net liquidity position?

A. -30.0 million

B. +10.0 million

C. +40.0 million

D. +90.0 million

69. Suppose that Acme Bank reports interest-sensitive assets (ISA) of $490.0 million and interest sensitive liabilities (ISL) of $610.0 million. Recall that the relative interest-sensitive gap (aka, Relative IS GAP) is equal to the Dollar IS GAP divided (aka, scaled) by the size of the bank (where IS assets is a valid measure of size). Respectively, what is the bank's relative IS GAP; its interest-sensitivity ratio (ISR); and the impact of rising interest rates on its net interest margin (NIM)?

A. The Relative IS GAP is -120.0; the ISR is 1.245; rising interest rates will lower the NIM

B. The Relative IS GAP is -0.245; the ISR is 0.803; rising interest rates will lower the NIM

C. The Relative IS GAP is -0.245; the ISR is 1.245; rising interest rates will increase the NIM

D. The Relative IS GAP is +4.08; the ISR is 0.803; rising interest rates will increase the NIM

70. Geofinancial Bank currently has the following (very) simplified balance sheet:

Assets		Liabilities	
Bonds	$30.0	Deposits	$30.0
Loans	$70.0	Bonds	$50.0
		Equity	$20.0

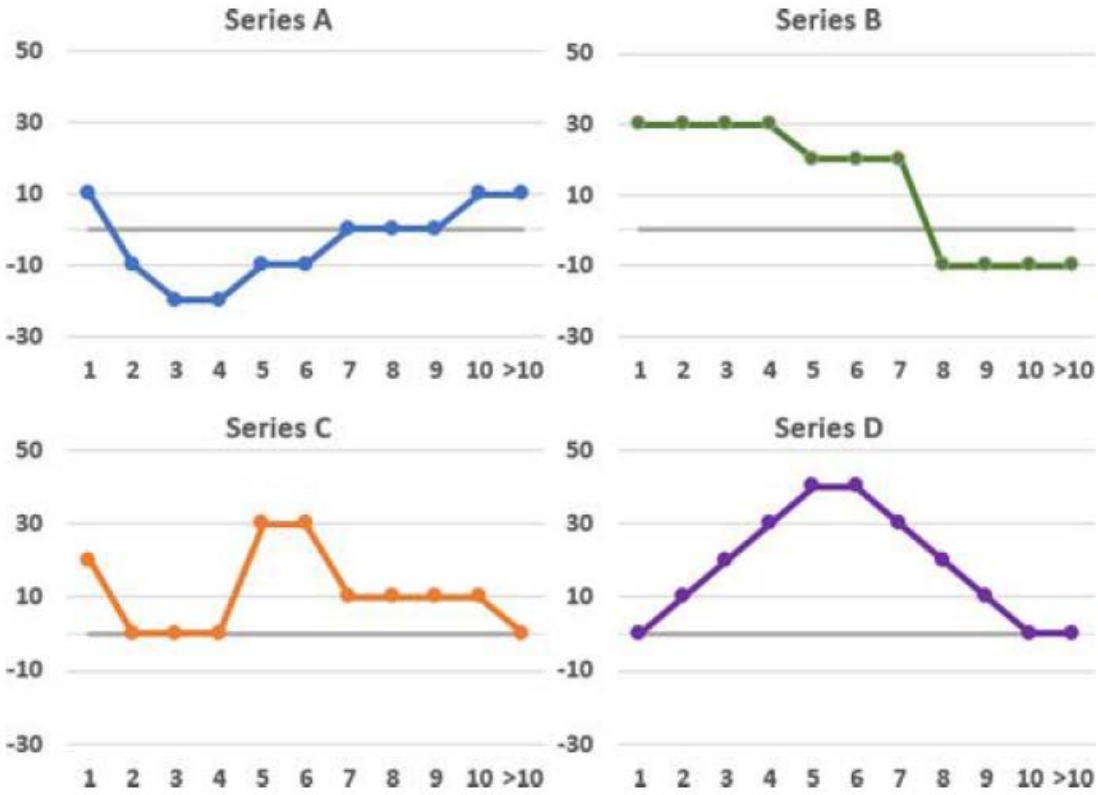
Further, the maturities of these accounts are as follows:

- Assets: The bonds ($30.0 million) expire in one year. In regard to the loans ($70.0), $40.0 million expire in five (5) years, $10.0 million expire in seven (7) years, and

$20.0 million expire in ten (10) years.

- Liabilities: In regard to the deposits ($20.0 million), $10.0 million expire in one (1) year, and $20.0 million expire in two (2) years. In regard to the bonds ($50.0 million), $10.0 million expire in five (5) years, $30.0 million expire in seven (7) years, and $10.0 million expire in beyond ten (>10) years.
- Equity ($20.0 million) is presumed to expire in ten (10) years

Consider the following possible term structures of expected cash flows:



Which term structure of expected cash flows is accurate for Geofinancial Bank?

A. Series A

B. Series B

C. Series C

D. Series D

71. The staff at Umbrella Street Bank, which is a commercial bank (it could also be a savings institution or credit union), produces several liquidity risk reports on a daily, weekly, monthly, and quarterly basis. Among these liquidity risk reports is a deposit tracker

report. Among the following metrics, which is MOST LIKELY to appear in their deposit tracker report?

A. Loan-to-deposit (LTD) ratio (current and forecast) versus board-approved lower floor (limit) of 120.0%

B. Loan-to-deposit (LTD) ratio (current and forecast) versus board-approved upper ceiling (limit) of 80.0%

C. Market-to-book ratio of common equity (current and forecast) versus investor communicated target of 1.30

D. The leverage-adjusted duration gap (current and forecast) versus board-approved upper ceiling of 3.5 years

72. Which of the following provides the BEST explicit link(s) between a bank's contingency funding plan (CFP) and its liquidity stress testing framework?

A. Communication plan

B. Limit structure and escalation levels

C. Funding sources concentration and non-core funding

D. Industry factors such as profitability trends in the financial sector

73. According to Rose and Hudgins, the factors affecting the choice of non-deposit funding sources include the following: the relative costs of each funding source; the risk of each funding source, including the dependability and volatility; the length of time for which funds will be needed; the size of the financial institution needing the funds; and regulations on the use of other sources of funds. In regard to the various sources of non-deposit funding, which of the following statements is TRUE?

A. The Fed Funds market is the least popular because its effective interest rate is higher than the alternatives

B. Repurchase agreements are more popular than Fed Funds because they are simpler, however, they incur greater credit risk

C. The advantages of the commercial paper (CP) market are the lack of credit risk and

consistently high (i.e., low volatility) credit availability, however, volume tends to be low and relative cost is high

D. Advances from Federal Home Loan Banks (aka, FHLBanks) are highly popular among thrifts and small banks as a stable source of flexible (with respect to maturity) funding at below-market interest rates

74. At initiation of a repurchase agreement (repo), Counterparty A sells a security to Counterparty B for settlement on June 1st, 2015 at an invoice price of USD 180.0 million. At the same time, Counterparty A agrees to repurchase the security three months later, for settlement on September 1st, 2015, at a purchase price equal to the original invoice price plus interest at a repo rate of 0.90%. Using the actual/360 convention of most money market instruments, which is nearest to the repurchase price?

A. $414,000

B. $180,000,000

C. $180,414,000

D. $181,620,000

75. At the time of the Bear Stern's demise in March 2008, Paul Friedman was a Senior Managing Director at the firm with responsibility for its fixed income repo desk. About the repo market's role in the collapse of Bear Sterns, he said in testimony before the Financial Crisis Inquiry Commission, "During the week of March 10, 2008, Bear Stearns suffered from a run on the bank that resulted, in my view, from an unwarranted loss of confidence in the firm by certain of its customers, lenders, and counterparties. In part, this loss of confidence was prompted by market rumors, which I believe were unsubstantiated and untrue, about Bear Stearns' liquidity position. Nevertheless, the loss of confidence had three related consequences." Each of the following was one of his cited three consequences EXCEPT which was not?

A. Prime brokerage clients withdrew their cash and unencumbered securities at a rapid and increasing rate

B. Repo market lenders declined to roll over or renew repo loans, even when the loans were supported by high-quality collateral such as agency securities

C. Counterpart to non-simultaneous settlements of foreign exchange trades refused to pay until Bear Stearns paid first

D. Short sellers seized on the panic and drove the stock price down which reduced equity capital available, and equity capital was already the least stable source of funds.

76. According to the Financial Stability Board, market structure is characterized by "the number and size of market participants, barriers to entry and exit, and accessibility of information and technologies to all participants." For their purposes, the key elements of market structure are concentration, contestability, and composition. According to their research, each of the following statements is TRUE except which is false?

A. Smartphones have hindered and slowed innovation in fintech due to the composition of the hardware market and the concentration of the operating system market.

B. Application programming interfaces (APIs) are the de facto standard for sharing data and the mechanism of choice enabling data-rich organizations to become platforms for third-party innovation.

C. A demographic demand factor is the growing influence of millennials and generation Z (the first generation of digital natives) who are more likely to adopt fintech and more likely to trust new technology startups for financial services.

D. Cloud computing offers advantages such as economies of scale, flexibility, operational efficiencies, and cost-effectiveness. An example of a cloud service model is Infrastructure as a Service (Iaas) and an example of a cloud deployment model is a hybrid cloud.

77. According to Claessens et al, there are several drivers of the rapid growth in the Fintech credit market. However, which single variable explains MOST of the fintech credit

market's growth?

A. GDP per capita.

B. Competition (Lerner index).

C. More competitive banking sector.

D. Country-specific factors (dummy coefficients).

78. Hal Varian introduces "trees" as non-linear methods that are effective alternatives to linear or logistic regression for prediction. Classification trees such as binary trees (i.e., two branches at each node) are used for multiple outcomes, while regression trees handle continuous dependent variables. In regard to some of the different tools and techniques for manipulating and analyzing big data, each of the following statements is true EXCEPT which statement is inaccurate?

A. Random forest is a technique that uses multiple classification and/or regression trees.

B. The primary drawback of trees is that, because they lack methods for coping with missing values, trees require all observations in the dataset to be complete cases.

C. Trees sometimes do not work well when the underlying relationship is linear, but on the other hand they tend to thrive when there are important non-linear relationships and interactions.

D. Elastic net regression adds a penalty term to the sum of squared residuals in a multivariate regression model such that it includes the special case of ordinary least squares (OLS) when the penalty term equals zero.

79. With respect to tools and techniques for manipulating and analyzing big data, each of the following statements is true EXCEPT which is false?

A. Classifier performance is often improved by adding randomness and examples of this include boosting, bagging and bootstrapping.

B. When using a large data set (e.g., big data), the data should be parsed at least into separate training and testing sets; or even training, validation, and testing sets.

C. Random forests have the advantage of intuitive usability by offering simple summaries of data relationships, but their disadvantage is inferior out-of-sample performance especially with nonlinear data.

D. Pruning a tree is an example of regularization because it imposes a cost for tree complexity (e.g., number of terminal nodes) with the goal of simplifying the model and generating better out-of-sample predictions.

80. The Financial Stability Board's Financial Innovation Network (FSB FIN, November 2017) observes that "artificial intelligence and machine learning (AI&ML) are being rapidly adopted for a range of applications in the financial services industry." Specific use cases of AI&ML include (i) customer-focused applications; (ii) operations-focused uses; (iii) trading and portfolio management; and (iv) regulatory compliance and supervision. Further, according to FSB FIN, each of the following statements is true EXCEPT which is inaccurate?

A. Deep learning can be used for supervised, unsupervised, or reinforcement learning.

B. The key risk of artificial intelligence is that its ability to contextualize implies it will soon be able to fully replicate human intelligence and therefore eventually replace humans.

C. Machine learning is a sub-category of artificial intelligence (AI) that extends familiar statistical methods and generally deals with optimization, prediction and categorization but not causal inference.

D. Reinforcement learning falls in between supervised and unsupervised learning, and it feeds an unlabeled dataset to the algorithm which chooses an action and then receives human feedback that helps it learn.