2019年5月一级押题卷（答案）

1. Answer: D

2. Answer: C

3. Answer: D

4. Answer: C

The probability that a bond rated "A" now will be rated "B" or lower two years from now equals to 1 minus the probability that the bond remains A after two years.

P(A→A→A) = 90%*90% = 81%

P(A→B→A) = 10%*10% = 1%

P(A→C→A) = 0

P(A→D→A) = 0

1-(81%+1%+0+0) = 18%

5. Answer: D

6. Answer: C

The Basel Committee states "At banks that were highly exposed to the financial crisis and fared comparatively well, senior management - as a whole - took an active interest in the development and operation of stress testing… stress testing at most banks, however, did not foster internal debate nor challenge prior assumptions…" Therefore, the Basel Committee recommends that prior assumptions used in stress testing be challenged to ensure that the stress test best captures the potential for extreme scenarios given current market conditions.

7. Answer: C

Market value of the US Treasury bond futures: 100,000*(94+30/32)*100% = $94,937.5

$$N=\left(\frac{MD_T-MD_B}{MD_F}\right)\left(\frac{B}{F_B}\right)=\left(\frac{0\text{-}2.3}{9.25}\right)\left(\frac{25{,}000{,}000}{94{,}937.5}\right)\approx -65$$

Mike needs to short 65 contracts to hedge his position.

8. Answer: A

$$\text{VaR}=82\times 1.62\%\times 1.645\times 0.6\times 800=1{,}049$$

9. Answer: A

Date	December S&P 500 Futures Price	Daily Gain/Loss (USD)	Balance	Variation Margin
10-Sep	1,734	-	2,000,000	
11-Sep	1,756	550,000	2,550,000	
12-Sep	1,712	-1,100,000	1,450,000	550,000
13-Sep	1,698	-350,000	1,650,000	

On 12-Sep, the loss was 1,100,000. The balance dropped to 1,450,000 and a margin call was received. Jenny had to add a variation margin of 550,000 to bring his account back to the initial margin ($2m). Remember, only when the balance level is below the maintenance margin ($1.5m) then a variation margin is necessary.

10. Answer:C

P(A): Bond A's probability of default

P(B): Bond B's probability of default

P(AB): the probability that both Bond A and Bond B default

We have known that:

$$P(AB)=5\%, P(B|A)=50\%$$

So we can get:

$$P(A)=\frac{P(AB)}{P(B|A)}=\frac{5\%}{50\%}=10\% \quad P(B)=10\%$$

	A default	A not default
B default	5%	10%-5% = 5%
B not default	10%-5% = 5%	85%
	10%	90%

$P(\overline{A}\overline{B}) = 85\%$

11. Answer: D

A. Treynor ratio = $\frac{E(R_P) - R_F}{\beta_P}$, thus the portfolio with the higher beta will have the lower Treynor ratio.

B. Jensen's alpha is particularly well-suited for comparing portfolios with the same beta (system risk).

C. Sharp ratio = $\frac{E(R_P) - R_F}{\sigma(R_P)}$, thus the higher volatility will have the lower Sharpe ratio.

12. Answer: A

13. Answer: B

14. Answer: D

The Schwarz information criterion (SIC) has the highest penalty factor. The mean squared error (MSE) does not penalize the regression model based on the increased number of parameters, k. The penalty factors for S^2, AIC, and SIC are T/(T-K), $e^{(2K/T)}$, $T^{(K/T)}$, respectively. Thus, SIC has the greatest penalty factor.

15. Answer:B

Implementation of ERM requires integration. Establishing a centralized risk management unit, infusion of a holistic risk management approach into business processes and applying coordinated risk transfer strategies bring increased efficiency and better performance in various bank practices including risk reporting.

16. Answer: D

$w_1 \times 4.5 + w_2 \times 14 = 6$

$w_1 \times 102 + w_2 \times 103 = 101$

$w_1 = 0.8253; w_2 = 0.1633$

$\text{convexity} = 0.8253 \times 35 + 0.1633 \times 400 = 94$

17. Answer: A

$$P = 0.5A + 0.5B$$

$$\mu(P) = 0.5\mu(A) + 0.5\mu(B) = 0.5 \times 7\% + 0.5 \times 12\% = 9.5\%$$

$$\sigma_P = \sqrt{(0.5\sigma_A)^2 + (0.5\sigma_B)^2 + 2 \times 0.5\sigma_A \times 0.5\sigma_B \times \rho}$$

$$= \sqrt{(0.5 \times 20\%)^2 + (0.5 \times 15\%)^2 + 2 \times 0.5 \times 20\% \times 0.5 \times 15\% \times 0} = 12.5\%$$

$$P(X > 12\%) = N\left(X > \frac{12\% - 9.5\%}{12.5\%}\right) = N(X > 20\%) = 1 - 0.5793 = 42.07\%$$

18. Answer: B

19. Answer: B

For an American call, if exercise now, the profit is S-K.

If exercise at time T, the profit is $S - D - Ke^{-r(T-t)}$.

If $S - D - Ke^{-r(T-t)} < S - K, D > K\left(1 - e^{-r(T-t)}\right)$, the American call will exercise now.

$D = 1,\ K\left(1 - e^{-r(T-t)}\right) = 50 \times \left(1 - e^{-1.5\%(2/12 - 1/12)}\right) = 0.062$

So, the American call will exercise now.

20. Answer: A

$\lambda^T = 0.5,\ T=23,\ \lambda = (0.5)^{1/23} = 0.97$

The weight applied to the return that is five days ago is:

$\lambda^{(5-1)}(1 - \lambda) = 0.026$

21. Answer: C

$$\sigma_A = \frac{0.30}{\sqrt{20}} = 0.067 \qquad \sigma_B = \frac{0.40}{\sqrt{40}} = 0.063$$

$$\sigma_C = \frac{0.25}{\sqrt{30}} = 0.046 \qquad \sigma_D = \frac{0.35}{\sqrt{50}} = 0.049$$

So, estimator C is most computationally efficient.

22. Answer: C

$$P = \omega_A A + \omega_B B$$

$$\omega_A = \frac{40,000}{40,000+60,000} = 0.4,\ \omega_B = \frac{60,000}{40,000+60,000} = 0.6$$

$$\sigma_P = 100,000 \times \sqrt{(\omega_A\sigma_A)^2 + (\omega_B\sigma_B)^2 + 2 \times \omega_A\sigma_A \times \omega_B\sigma_B \times \rho}$$

$$= 100,000 \times \sqrt{(0.4 \times 16\%)^2 + (0.6 \times 20\%)^2 + 2 \times 0.4 \times 16\% \times 0.6 \times 20\% \times 0.3}$$

$$= 15200$$

$$\mu_P = 40,000 \times 8\% + 60,000 \times 9\% = 8600$$

Range of return: $[\mu_P - 2\sigma_P, \mu_P + 2\sigma_P] = [8600 - 2 \times 15200, 8600 + 2 \times 15200]$

$$= [8600 - 2 \times 15200, 8600 + 2 \times 15200] = [-21800, 39000]$$

Range of value: $[100000 - 21800, 100000 + 39000] = [78200, 139000]$

23. Answer: C

$$E(A) = 0.2 \times 0.3 + 0.6 \times 0.1 + 0.2 \times (-0.2) = 0.08$$

$$E(B) = 0.2 \times 0.2 + 0.6 \times 0.1 + 0.2 \times (-0.1) = 0.08$$

$$\text{cov}(A,B) = 0.2 \times (0.3 - 0.08) \times (0.2 - 0.08) + 0.6 \times (0.1 - 0.08) \times (0.1 - 0.08)$$
$$+ 0.2 \times (-0.2 - 0.08) \times (-0.1 - 0.08) \approx 0.0156$$

24. Answer: C

25. Answer: C

$$\frac{10\% \times 60\%}{10\% \times 60\% + 90\% \times 30\%} = 18\%$$

26. Answer: B

27. Answer: B

28. Answer: A

29. Answer: D

30. Answer: A

$$F=\frac{1}{2}\times\frac{t_1^2+t_2^2-2\rho t_1 t_2}{1-\rho^2}=\frac{1}{2}\times\frac{2.34^2+1.64^2-2\times0.3\times2.34\times1.64}{1-0.3^2}=3.22$$

So the risk analyst should reject the null hypothesis since the F-statistic is more than 2.9957.

31. Answer: C

$$\frac{(75\times4+65\times3)-60\times7}{7}=10.71$$

32. Answer: A

$$N=\frac{(0.8-2)\times5,000,000}{2,000\times250}=-12$$

33. Answer: B

34. Answer: A

35. Answer: C

$$u=e^{\sigma\sqrt{t}}=e^{30\%\sqrt{2}}=1.5285$$
$$d=1/u=0.6543$$
$$p=\frac{e^{rt}-d}{u-d}=\frac{e^{1.5\%\times2}-0.6543}{1.5285-0.6543}=43\%$$

36. Answer: B

37. Answer: C

38. Answer: C

39. Answer: D

40. Answer: C

41. Answer: A

$c = p + S - Ke^{-rt}$

42. Answer: C

C is correct. The current annual yield on both coupon and zero-coupon bonds are the same at approximately 6%. If rates are higher than 6% then the coupon bond would be preferred due to higher reinvestment income on 3 intermediate coupons to be received.

43. Answer: D

$$1980 - 1.96 \times \frac{\sigma}{\sqrt{200}} = 1940 \qquad 1980 + 1.96 \times \frac{\sigma}{\sqrt{200}} = 2020$$

$$\sigma = 288$$

$$1980 - 1.96 \times \frac{288}{\sqrt{n}} = 1970 \qquad 1980 + 1.96 \times \frac{288}{\sqrt{n}} = 1990$$

$$n = 3200$$

44. Answer: C

The call option is deep-in-the-money and must have a delta close to one. The put option is deep out-of-the-money and must have a delta close to zero. Therefore, when the underlying stock falls by USD 1, the value of the deep in-the-money put will increase by an amount very close to zero. The choice that is closest to satisfying both conditions is C.

45. Answer: A

According to the CAPM, $E(R_P) = R_F + \beta\left[E(R_M) - R_F\right]$

A. The expected return on a security decreases when its correlation with the market return decreases. A is correct.

B. $E(R_P)=R_F+\beta[E(R_M)-R_F]=(1-\beta)R_F+\beta E(R_M)$, for a security with a beta greater than 1.0, 1-β<0, so an increase in the risk-free rate will decrease its expected return. B is incorrect.

C. $\beta=\frac{cov(R_M,R_P)}{\sigma_M^2},\sigma_M^2=\frac{cov(R_M,R_P)}{\beta}$, so a stock with a beta of 2.0 will have a lower standard deviation than a stock with a beta of 0.5. C is incorrect.

D. $E(R_P)=R_F+\beta[E(R_M)-R_F]=R_F+\frac{cov(R_M,R_P)}{\sigma_M^2}\times[E(R_M)-R_F]$, so the expected return on a security will decrease when the standard deviation of the market return increases. D is incorrect.

46. Answer: D

0.46A + 0.8B = 1.02

0×A + 4B = 5.1

A = 0, B = 1.275

1.275 × 1000 = 1,275

47. Answer: A

Risk Factor	Asset A	Exposure
β_1	1.5	1.5×1,000,000
β_2	1.4	1.4×1,000,000

Risk Factor	Asset B	Asset C	Exposure
β_1	0.8	-1.2	0.8×3,000,000+(-1.2)×2,000,000 = 0
β_2	-0.6	0.2	(-0.6)×3,000,000+0.2××2,000,000 = -1.4×1,000,000

So, answer A will meet the require.

48. Answer: A

The futures price is higher than the spot price, this denotes a cost of lean hogs.

B. The increase in supply will decrease the futures price.

49. Answer: B

Economic capital covers the difference between the worst-case loss and the expected loss. It is true that loss frequency is typically modeled using a Poisson distribution and loss severity tends to be modeled with a lognormal distribution. Operational loss data available from data vendors tends to be biased towards large losses and are most useful for determining relative loss severity. In the standardized approach to calculating operational risk, a bank's activities are divided up into several different business lines, and a beta factor is calculated for each line of business. The bank does not have to estimate unexpected losses under the standardized approach.

50. Answer: A

51. Answer: C

$$\left[1000-30e^{-2\%\times0.25}\right]e^{2\%\times0.5}=979.8998$$

52. Answer: B

A. 108.87 - 1.063 × 101.25 = 1.24

B. 111.93 - 1.096 × 101.25 = 0.96

C. 115.86 - 1.127 × 101.25 = 1.75

D. 118.41 - 1.155 × 101.25 = 1.47

53. Answer: B

54. Answer: C

The forward rate, Ft, is given by the interest rate parity equation:

$$F_t = S_0 \times e^{(r-r_f)\times t}$$

where S0 is the spot exchange rate, r is the domestic (USD) risk-free rate, and rf is the foreign (EUR) risk-free rate, t is the time to delivery.

Substituting the values in the equation:

$$F_1 = 1.25 \times e^{(0.04-0.07)\times 1} = 1.21$$

55. Answer: B

$$1.75\omega_A + 4.5\omega_C = 2.5$$
$$\omega_A + \omega_C = 1$$
$$\omega_A = 0.727 \quad \omega_C = 0.273$$
$$0.727 \times 99.34 + 0.273 \times 106.53 = 101.3$$

56. Answer: B

A calendar spread can be created by selling a European call option with a certain strike price and buying a longer-maturity European call option with the same strike price. The reverse calendar spread is the opposite which buy a short-maturity option and sell a long-maturity option. The original position is short 100 March calls with a strike price of USD 50 and long 100 April calls with a strike price of USD 50. Therefore, it is a calendar spread.

A butterfly spread involves positions in options with three different strike prices. It can be created by buying a European call option with a relatively low strike price K_1, buying a European call option with a relatively high strike price K_3, and selling two European call options with a strike price that is halfway between K_1 and K_3. The final position is sells the 100 April calls (from the given data, we can guess the strike price will be 50) and buys 50 March calls with a strike at USD 30 and 50 March calls with a strike at USD 70.

57. Answer: C

According to GARP Code of Conduct: GARP Members Shall make a distinction between fact and opinion in the presentation of analysis and recommendations.

58. Answer: C

According to "Operational Risk" in Valuation and Risk Models, a scale adjustment should

be made to external data. After the appropriate scale adjustment, data obtained through sharing arrangements with other banks can be merged with the bank's own data to obtain a larger sample for determining the loss severity distribution.

59. Answer: C

According to "Measures of Financial Risk" in Valuation and Risk Models, a risk measure is said to be coherent if it satisfies the following properties:

- Monotonicity: $Y \geq X \rightarrow \rho(Y) \leq \rho(X)$
- Subadditivity: $\rho(X + Y) \leq \rho(X) + \rho(Y)$
- Positive homogeneity: $\rho(hX) = h\rho(X)$ for $h > 0$
- Translational invariance: $\rho(X + n) = \rho(X) - n$ for some certain amount n.

VaR is not coherent as it is not subadditive, therefore B, D is not correct.

ES is the average of the worst $100(1 - \alpha\%)$ of losses. ES is coherent, therefore C is correct, A is not correct.

60. Answer: C

TBA (To Be Announced) market is a forward market with a delivery option. Just as in the case of the delivery option in note and bond futures, the TBA seller will pick the cheapest-to-deliver (CTD) pool, that is, the pool that is worth the least subject to the issuer, maturity, and coupon requirements.

61. Answer: A

$$\beta = \rho \times \left(\frac{\sigma_i}{\sigma_M}\right) = 2$$

$$R_i = R_f + \beta \times (R_M - R_f) = 2\% + 2 \times (8.4\% - 2\%) = 14.8\%$$

62. Answer: D

$$UL_P = \sqrt{\sum_{i=1}^{n}\sum_{j=1}^{n}\omega_i\omega_j\rho_{ij}UL_iUL_j}$$

$$ULC_i = \frac{\sum_{j=1}^{n}UL_j\rho_{ij}}{UL_P} \cdot UL_i$$

Sum of the ULCs of all loans will equal the portfolio-level UL.

63. Answer: C

Net Exposure

$= (\text{FX asset}_i - \text{FX liabilities}_i) + (\text{FX bought}_i - \text{FX sold}_i)$

$= \text{net foreign assets}_i + \text{Net FX bought}_i$

Initial Exposure: EUR1,500,000; GBP2,500,000; JPY8,700,000; AUD1,500,000

A: EUR1,500,000; GBP2,500,000; JPY8,700,000; AUD2,500,000

B: EUR1,500,000; GBP2,500,000; JPY8,700,000; AUD2,000,000

C: EUR500,000; GBP1,500,000; JPY8,700,000; AUD500,000

D: EUR1,500,000; GBP2,500,000; JPY8,700,000; AUD1,500,000

64. Answer: B

Long futures: $F_t - F_0$

Given that the basis stays the same, so that:

Basis = $S_0 - F_0 = 875 - 925 = S_t - F_t = 900 - F_t$

$F_t = 950$

$F_t - F_0 = 950 - 925 = 25$

Long call: Max $(S_t - K, 0) - 20$ = Max $(900 - 925, 0) - 20 = -20$

65. Answer: A

According to "Quantifying Volatility in VaR Models" in Valuation and Risk Models:

There are two possible explanations for the fat tails: (i) conditional volatility is time-varying; and (ii) the conditional mean is time-varying. Time variations in either could, arguably, generate fat tails in the unconditional distribution, in spite of the fact that the conditional distribution is normal. However, even detractors of market efficiency assumptions would agree that conditional means do not vary enough on a daily basis to make those variations a first order effect.

66. Answer: C

67. Answer: C

Asset-liability mismatch refers to the purchase of long-term assets through short-term financing. Banks used commercial paper and repurchase agreements to finance the purchase of long-term assets. So they have to face funding liquidity risk.

68. Answer: C

1,250 = N×0.5

N = 2,500

2,500×0.65 = 1,625

Purchase an additional 375 shares of the stock

69. Answer: C

Monthly rate of prepayment = (350,000 – 150,000)/(90,000,000 – 150,000) = 0.0022

Conditional prepayment rate = $1-(1-0.0022)^{12}$ = 2.63%

70. Answer: A

The dealer needs to hedge an obligation of EUR 1 million payable in 3 months. It should long forward contract to hedge with 1.27 offer price.

The payoff is: (1.23 – 1.27)×1 m = -40,000

71. Answer: A

Risk-neutral probability of exercising the call option = $N(d_2)$ = 1 – 63% = 37%

$c = SN(d_1) - Ke^{-rT}N(d_2) = 75\times45\% - 70\times e^{-4\%\times1}\times37\% = 8.87$

72. Answer: A

Role and Responsibilities of CRO

- Providing the overall leadership, vision, and direction for enterprise risk management;
- Establishing an integrated risk management framework for all aspects of risks across the organization;
- Developing risk management policies, including the quantification of the firm's risk appetite through specific risk limits;

- Implementing a set of risk indicators and reports, including losses and incidents, key risk exposures, and early warning indicators;
- Allocating economic capital to business activities based on risk, and optimizing the company's risk portfolio through business activities and risk transfer strategies;
- Communicating the company's risk profile to key stakeholders such as the board of directors, regulators, stock analysts, rating agencies, and business partners; and
- Developing the analytical, systems, and data management capabilities to support the risk management program.

73. Answer: D

Both cases are relative to fictitious transactions

74. Answer: D

75. Answer: B

- If the variance of the residuals is constant across all observations in the sample, the regression is said to be homoskedastic.
- We conclude the coefficient on OIL in Regression 1 is significant. Also, the coefficient on BILL in Regression 3 is significant. That means the regressor in Regression 1 is correlated with the omitted variable BILL. Therefore, there is omitted variable bias.

  Ommitted variable bias should satisfy two conditions:

  1) At least one of the included regressors must be correlated with the omitted variable.
  2) The omitted variable must be a determinant of the dependent variable, Y.
- The t-statistic of intercept in Regression 3 = 0.83. Although the intercept is above 0, it is not significant.

76. Answer: D

Gaussian Copula provides few tail dependence and maps the input variables into new variables that follow a normal distribution. It employs the copula correlation as one of its inputs and preserves the marginal distributions of the input variables.

77. Answer: D

A mortgage bond is a bond backed by a pool of mortgages on a real estate asset.

Equipment trust certificates is a variation of a mortgage bond where a particular piece of equipment underlies the bond.

Debentures are unsecured bonds. But if the company is highly rated and has not issued any secured bonds, then the debentures are almost the equivalent of mortgage bonds.

Subordinated debenture bonds have a claim that is at the bottom of the list of creditors if the issuer goes into default.

78. Answer: A

$$F_0 = S_0 \times (1 + R_f) - LR$$
$$10.25 = 10 \times (1 + 4\%) - LR$$
$$LR = 0.15$$

79. Answer: B

80. Answer: A

$$\sigma_L = \sqrt{\frac{0.000175}{1 - 0.025 - 0.82}} = 3.36\%$$
$$SR = \frac{E(R_P) - R_F}{\sigma} = \frac{15\% - 5\%}{3.36\% \times \sqrt{250}} = 0.19$$

81. Answer: C

ABS CDO: equity: 20%*10%=2%; mezzanine: 20%*20%=4% and senior: 20%*70%=14%.

If the underlying subprime pool loses 20%, then ABS CDO loses 20%-10%(equity) = 10%.

ABS CDO's equity, mezzanine and senior tranches will loss 100%, 100%, (10%-2%-4%)/14%=29%.

82. Answer: C

83. Answer: D

$$H_0: \mu = 0, H_A: \mu \neq 0$$

$$t_A = \frac{0.21\%}{1.13\%/\sqrt{48}} = 1.29; t_B = \frac{0.47\%}{3.43\%/\sqrt{48}} = 0.95$$

$$t_C = \frac{0.54\%}{1.98\%/\sqrt{48}} = 1.89; t_D = \frac{0.67\%}{2.19\%/\sqrt{48}} = 2.12$$

$$H_0: \mu \leq 0.5\%, H_A: \mu > 0.5\%$$

$$t_D = \frac{0.67\% - 0.5\%}{2.19\%/\sqrt{48}} = 0.54$$

Thus, the correct answer is Fund D

84. Answer: B

The expected increase of the stock is 112×10%=11.2

The stock's price is expected to increase, so the investor will buy call 560,000/7=80,000 option.

80,000×(115-110)-560,000=-160,000, so the investor will have a loss of 160,000.

85. Answer: D

86. Answer: C

The value of the roll is the difference in proceeds between 1) starting with a given pool and buying the roll and 2) holding that pool over the month.

If the value of the roll is positive, the roll is said to trade above carry.

$$AI = 100 \times \frac{0.04}{12 \times 2} = 0.167$$

Selling the Jan TBA:

$$10 \times \frac{102 + 0.167}{100} = 10.2167$$

Investing these proceeds to Feb at 0.5% earns interest:

$$10.2167 \times 0.5\% \times \frac{31}{360} = 0.0044$$

Purchasing the Feb TBA, which has experienced a 1% paydown, costs:

$$10 \times \frac{101.73 + 0.167}{100} \times 99\% = 10.0879$$

The net proceeds from the roll are:

$10.2167 + 0.0044 - 10.0879 = 133{,}128$

Given the February price declined to 101.50

$\text{net proceeds} = 155{,}899$

Holding the pool over the month:

$$10 \times \left(\frac{4\%}{12} + 1\%\right) = 133{,}333$$

87. Answer: D

$$\frac{\frac{150 \times 1.18 \times (1+4\%)}{1.16} - 150}{150} = 5.8\%$$

88. Answer: B

The chance that the return on the S&P 500 will be more than 10% is 1-38%-32%=30%.

$$\frac{30\% \times (1 - 24\%/30\%)}{1 - 60\%} = 15\%$$

89. Answer: C

90. Answer: D

$$\text{PV}(\text{USD}) = \left(10{,}000{,}000 \times \frac{1.5\%}{2}\right) \times 0.9975 + \left(10{,}000{,}000 \times \frac{1.5\%}{2} + 10{,}000{,}000\right)$$

$$= 10{,}099{,}437$$

$$\text{PV}(\text{EUR}) = 8{,}080{,}808 \times (1 + 0.5\%) \times 1.245 \times 0.9950$$

$$= 10{,}060{,}354$$

$$10{,}099{,}437 - 10{,}060{,}354 = 39083$$

91. Answer: B

B is correct. The value of each employee stock option is computed as:

$$\frac{N}{N+M} \cdot c = \frac{60000000}{60000000 + 3000000} * 4.39 = \text{SGD}4.1809$$

Where:

N = total number of shares outstanding

M = number of new shares (options) contemplated

92. Answer: A

Stop loss (buy) orders are used to prevent further losses. When the stock price continues to rise to USD 127, the stop loss buy order is triggered and the short position is therefore terminated. The loss is capped to 127-112=USD 15.

93. Answer: C

$1,500,000 / 2 \times 32 \times 1.2 + 1,500,000 / 2 \times 35 / 1.05 = 53,800,000$

$53,800,000 - 5,000,000 = 3,800,000$

94. Answer: C

With respect to the 5-year shift:

$$\text{key rate }'01 = 24.1234 - 24.246642 = -0.5408$$

$$\text{key rate duration} = -\frac{0.5408}{0.0001 \times 24.1234} = -224.18$$

95. Answer: B

96. Answer: A

97. Answer: A

98. Answer: C

According to a normal distribution, the critical value of 2.33 denotes a 98% confidence level based on two-side. The significance level is 2% with 1% each side. So there is a 1% probability of a particular observation failing below the range of the confidence interval.

99. Answer: A

The board does not provide reports to regulators, information request from supervisors would be made at the bank level, not the board level.

100. Answer: C