



Subject: Basel

Chapter: Unit 2

**Category: Practice question
solution**

Answer 1.

Under the exposure the credit equivalent amount would be:

$$\begin{aligned} \text{CE} &= 30 + 0\% \times 100 + 0.5\% \times 200 + 1\% \times 100 + 5\% \times 200 \\ &= \$42 \text{ million} \end{aligned}$$

Under the original exposure method, it would be

$$\begin{aligned} \text{CE} &= 0.5\% \times 100 + 1\% \times 100 + 2\% \times 100 + 2\% \times 100 + 5\% \times 100 + 8\% \times 100 \\ &= \$18.5 \text{ million} \end{aligned}$$

Answer 2.

$$(0.0 \times \$20) + (0.0 \times \$20) + (0.5 \times \$50) + (1.0 \times \$150) = \$175 \text{ million}$$

Answer 3.

B

Solution:

The add-on factor is 1.5% of the interest rate swap principal for swaps with a maturity greater than five years.

$$\text{Credit equivalent amount} = \max(V, 0) + a \times L$$

Where:

V = current value of the derivative to the bank

a = add-on factor

L = principal amount

$$\text{Credit equivalent amount} = \$3.5 + (0.015 \times \$200) = \$6,500,000$$

The risk-weight factor for a corporate counterparty under Basel I is 50% for derivatives and 100% for corporate loans. This means the risk-weighted assets (RWA) are:

$$\text{RWA} = 0.50 \times \$6,500,000 = \$3,250,000$$

Answer 4.

D

Reason - Saugatuck National Bank must compare the VaR calculated using its current method for each of the 250 trading days to the actual loss over the same period to determine the multiplicative

factor. If the actual loss is greater than the estimated loss, an exception is recorded. If, over the previous 250 days, the number of exceptions is:

- Less than 5, m_c is usually set equal to three.
- 5, 6, 7, 8, or 9, m_c is set equal to 3.4, 3.5, 3.65, 3.75, and 3.85, respectively.
- Greater than 10, m_c is set equal to four.

Therefore, with 11 exceptions recorded, m_c should be set equal to four.

Answer 5.

$$b = [0.11852 - 0.05478 \times \ln(0.001)]^2 = 0.247$$

$$MA = 1 / (1 - (1.5 \times 0.247)) = 1.59$$

$$\text{Risk-weighted assets} = 12.5 \times 150 \times 0.5 \times (0.034 - 0.001) \times 1.59 = \$49.19 \text{ million}$$

Under Basel I, the RWA for corporate loans was 100% or \$150 million in this case. Thus, the IRB approach lowers the RWA for higher rated corporate loans, in this case from \$150 million to \$49.19 million.

Answer 6.

CA bank with a BI of 13 billion will fall into bucket 4, which covers a BI range of 10 billion to 30 billion. With the BI component formula of 1.74 billion + 0.23(BI - 10 billion) for bucket 4 banks, the BI component for this bank will be equal to 1.74 billion + 0.23(13 billion - 10 billion) = 2.43 billion.

Answer 7.

Business Line	Year 1	Year 2	Year 3
Corporate Finance	$5 \times 18\% = 0.90$	$10 \times 18\% = 1.80$	$15 \times 18\% = 2.7$
Retail Banking	$5 \times 12\% = 0.60$	$-25 \times 12\% = -3.0$	$5 \times 12\% = 0.60$
Total	1.5	-1.2	3.3

Because a negative number cannot be used in the numerator, we replace 1.2 in Year 2 with zero. However, unlike the BIA, the number of years remains at three. Entering these totals into the capital charge calculation yields:

$$K_{TSA} = \frac{(1.5+0+3.3)}{3} = 1.6$$

Thus, Delta Bank would hold \$160 million operational risk capital under Basel II using the standardized approach.

Answer 8:

A

Reason –

The standardized model approach simply sums the market risks across the market-risk categories. The internal model approach applies a penalty multiplier to the average VaR.

Answer 9:

A

Reason -

While a bank's internal losses are not factored in for the bucket 1 group, internal losses are factored in for banks in buckets 2 and 3 to the extent that they allow for differentiation among banks with different risk profiles.

Answer 10:

B

Reason –

The first Basel Accord did not include any consideration of operational risk. The Basel Accord was created in 1988. The other two statements are referring to credit risk, not the market risk.

Answer 11:

D

Reason –

The Basel Accord established a scale by which the multiplier may be increased for the number of exceptions above four (or 100 given 5,000 data points). For example, if a model has 5 exceptions, the multiplier will increase by 0.40 to 3.40 (or similarly, the floor value of 3 will be multiplied by 1.13 to get 3.4). This in turn increases the amount of capital a bank must hold, and in turn lowers performance measures like return on equity.