



Questions #1-6 of 60

Questions 61 through 66 relate to Ethical and Professional Standards.

Blue Lotus LP Case Scenario

Mikale Natschavin, CFA, is the managing director of Blue Lotus LP, a boutique investment bank specializing in M&A consulting in the professional services arena. Blue Lotus also manages a fund (Xeta fund) for several institutional clients. The fund was run by a team of four managers. During the recent downturn, commensurate with the decline in the size of the fund, Blue Lotus downsized the firm.

Paul Vakil, CFA, one of the managers of Xeta, was laid off by Blue Lotus. During his exit interview Natschavin wished Vakil well and, on behalf of the firm, gave him permission to use Xeta fund's past performance when seeking new employment opportunities. Vakil included the performance of the fund to demonstrate his success but did not give any indication of a team approach. Vakil also did not mention to Natschavin or the personnel manager that he was still in possession of the company-issued laptop. Vakil had stored several models the team had developed in pursuing investment strategies on that laptop's hard disk.

Within a few months, Vakil joined the equity research department of Patarsby and Singly, a brokerage firm. Vakil, with the help of a quant specialist at Patarsby, improved the models and started using them in his new role. Things turned out very well for Vakil at Patarsby, and clients waited eagerly for release of his monthly recommendations. During a society event, Vakil ran into Alia Dutt, CFA, one of the other team managers of Xeta fund. Dutt congratulated Vakil. Later in the evening, Vakil spoke to Dutt about one of the companies he is following—Sandhirst, Inc. Vakil stated that his preliminary research indicates that the short-term outlook for Sandhirst is very promising. Dutt also met Neil Savin, Frapco, Inc.'s controller at the event. Frapco is a national grocery chain and a long-time client of Blue Lotus. Savin informed Dutt that the new layout in the stores has been a hit, and that he expects revenues and earnings for the current quarter to be well above consensus forecast.

The next day, Dutt placed a large order for Sandhirst stock for the Xeta fund. Dutt also placed a large order for a retail ETF. Dutt is a member of an online forum where she discusses investments under a pseudonym. Dutt has formed a very loyal following over time as others realized that her posts were very articulate and, therefore, the work of a professional. Dutt recommended Frapco stock in the forum but attributed the recommendation to a general uptick in grocery store margins nationwide—a known fact based on recent earnings announcements of other grocers.

The following week at a charity golf tournament, Vakil met with Bob Snead, his college roommate. Snead was a very successful hedge fund manager. Both of the funds run by Snead were currently closed to new investment, though Snead was considering reopening the investments in the near future. At Vakil's insistence, Snead agreed to allow new investments into the two funds using a newly started intermediary fund as long as Vakil is the fund's manager. Vakil quickly convinced his bosses at Patarsby to open an intermediary fund and marketed the fund to existing Patarsby clients.

as a way into Snead hedge funds. Not knowing how long the deal with Snead would hold up, and wanting to quickly ramp up assets under management, Vakil accepted deposits from all Patarsby clients, even some that were relatively new accounts.

Question #1 of 60

Question ID: 1220609

Regarding Vakil's reference to Xeta fund's performance in his resume, which of the following is *most accurate* regarding compliance with the Code and Standards? Vakil violated:

- A) Standard III(D) – Performance Presentation.**
- B) Standard IV(A) – Duties to Employer: Loyalty.**
- C) Standard III(D) – Performance Presentation as well as Standard IV(A) – Duties to Employer: Loyalty.**

Explanation

Vakil obtained permission from Blue Lotus to use the past performance and, therefore, is not violating the Standard IV(A): Duties to Employer: Loyalty. By not crediting the entire team in the management of Xeta fund, Vakil violated Standard III(D): Performance Presentation.

For Further Reference:

(Study Session 1, Module 2.6, LOS 2.a, 2.b)

Question #2 of 60

Question ID: 1220610

Vakil's use of the Blue Lotus models at Patarsby is *least likely* to be a violation under:

- A) Standard I(C) – Professionalism: Misrepresentation.**
- B) Standard II(A) – Integrity of Capital Markets: Material Nonpublic Information.**
- C) Standard IV(A) – Duties to Employer: Loyalty.**

Explanation

By taking the models without permission from his past employer, Vakil violated Standard IV(A) – Duties to Employer: Loyalty. Vakil also failed to disclose using his past employer's model, violating Standard I(C) – Professionalism: Misrepresentation. The models are proprietary but do not constitute material nonpublic information (insider information).

For Further Reference:

(Study Session 1, Module 2.7, LOS 2.a, 2.b)

Question #3 of 60

Question ID: 1220611

Vakil's conversation with Dutt regarding Sandhirst stock is *most likely* a violation of:

- A) Standard IV(A) - Duties to Employer: Loyalty.**
- B) Standard II(A) - Integrity of Capital Markets: Material Nonpublic Information.**

C) Standard III(C) - Duties to Clients: Suitability.

Explanation

By discussing his research with Dutt, including recommending a specific stock, Vakil violated his duty to his employer by disclosing sensitive business information to outsiders. However, the information is not material nonpublic information and, thus, is not a violation under Standard II(A) – Integrity of Capital Markets: Material Nonpublic Information.

For Further Reference:

(Study Session 1, Module 2.3, LOS 2.a, 2.b)

Question #4 of 60

Question ID: 1220612

With regards to investments in Sandhirst stock and retail ETF, Dutt *most likely* violated:

- A) Standard II(A) – Material and Nonpublic Information by investing in Sandhirst stock but not by investing in the retail ETF.**
- B) Standard II(A) - Material and Nonpublic Information by investing in the retail ETF but not by investing in Sandhirst stock.**
- C) Standard II(A) - Material and Nonpublic Information in both instances.**

Explanation

By transacting in Sandhirst stock, Dutt did not rely on any material nonpublic information and, therefore, is not in violation of Standard II(A) – Material and Nonpublic Information. However, her investment in the retail ETF relies on material nonpublic information about Frapco.

For Further Reference:

(Study Session 1, Module 2.3, LOS 2.a, 2.b)

Question #5 of 60

Question ID: 1220613

Dutt's recommendation of Frapco stock in the online forum is *most likely*:

- A) a violation of Standard II(A) – Material and Nonpublic Information even though she attributed the recommendation to publicly available information.**
- B) not a violation under Standard II(A) – Material and Nonpublic Information.**
- C) violation of Standard III(E): Preservation of Confidentiality.**

Explanation

Trading for oneself or causing others to trade based on material nonpublic information is a violation under Standard II(A) – Material and Nonpublic Information.

For Further Reference:

(Study Session 1, Module 2.3, LOS 2.a, 2.b)

Question #6 of 60

Vakil's conduct regarding the intermediary fund to channel investments into Snead funds is *most likely* a violation under:

- A) Standard II(B) Integrity of Capital Markets: Market Manipulation.
- B) Standard III(D) Duties to Clients: Suitability.**
- C) Standard III(D) Duties to Clients: Fair Dealing.

Explanation

Because the Snead hedge funds may not be suitable for all clients, Vakil violated Standard III(D) Duties to Clients: Suitability. No clients were treated unfairly and there was no market manipulation.

For Further Reference:

(Study Session 1, Module 2.6, LOS 2.a, 2.b)

Questions #7-12 of 60

Questions 67 through 72 relate to Quantitative Methods.

Kate Sawyer Case Scenario

Research associate Kate Sawyer is responsible for identifying the determinants of performance for her firm's Progressive Fund (PF). All tests performed at Sawyer's firm are examined at the 0.05 level of significance. Sawyer examines the following regressions using monthly data observed for a 36 month period:

$$(1) R_{PF,t} = b_0 + b_1 R_{M,t} + b_2 VMG_t + e_{PF,t}$$

$$(2) \hat{e}_{PF,t}^2 = a_0 + a_1 R_{M,t} + a_2 VMG_t + u_{PF,t}$$

where:

$R_{PF,t}$ = the return on the Progressive Fund in month t

$R_{M,t}$ = the return on the Wilshire 5000 stock market index in month t

VMG_t = the return on value stocks minus the return on growth stocks in month t

$\hat{e}_{PF,t}^2$ = the estimated squared regression errors derived from (1)

Exhibit 1: Equation (1) Regression Results

Variable	Coefficient	p-values
Constant	-0.005	0.030
R_M	1.250	0.001
VMG	0.200	0.980

The R^2 from equation (1) equals 0.80. A colleague, Jack Lockhart, makes two recommendations to Sawyer:

- Recommendation 1: My research indicates that inflation-rate changes are highly correlated with the Wilshire 5000 stock index returns. Therefore, I recommend adding the inflation change variable to your regression.
- Recommendation 2: My research indicates that the slope coefficients of your regression changed significantly after the passage of Regulation Fair Disclosure, which took place in the middle of your 3-year sample period. Your regression pools across two distinct sample periods. Therefore, I recommend correcting your current regression equation for model misspecification.

In her conversation with Lockhart, Sawyer explains that she is concerned that her regression equation (1) may ignore other important determinants of performance for the Progressive Fund. Sawyer explains that she is aware that the omission of important independent variables affects the quality of the parameter estimates of the regression. She makes the following claims, assuming the omitted variables are correlated with the included variables:

- Claim 1: The parameter estimates of equation (1) are unbiased.
- Claim 2: The parameter estimates of equation (1) are inconsistent.

Question #7 of 60

Question ID: 1220616

Of the slopes for the two independent variables, R_M and VMG, determine which are statistically significant at the 0.05 level?

- A) Both slopes are statistically significant.
- B) Only the slope for R_M is statistically significant.**
- C) Only the slope for VMG is statistically significant.

Explanation

The p-value is the probability that the null hypothesis, H_0 : slope = zero, is true. The decision rule is to reject the null hypothesis if the p-value is less than the significance level (i.e., there is only a very small chance that the null hypothesis is correct). The p-value for the R_M slope is less than the significance level, and the p-value for the VMG slope is greater than the significance level. Therefore, the R_M slope is statistically significant (reject the null hypothesis that the R_M slope equals zero) and the VMG slope is not statistically significant (cannot reject the null hypothesis that the VMG slope equals zero).

For Further Reference:

(Study Session 2, Module 5.1, LOS 5.a)

Question #8 of 60

Question ID: 1220617

The R^2 derived for equation (1) indicates which of the following for equation (1)?

- A) Regression sum of squares exceeds the error sum of squares.**
- B) Regression sum of squares exceeds the total sum of squares.
- C) Mean regression sum of squares is less than the mean total sum of squares.

Explanation

The equation for the R^2 equals the regression sum of squares divided by the total sum of squares. The total sum of squares equals the regression sum of squares plus the error sum of squares. Therefore, the R^2 equals:

$$R^2 = \frac{\text{regression sum of squares}}{\text{regression sum of squares} + \text{error sum of squares}}$$

The problem states that the R^2 equals 0.80. Because the R^2 exceeds 50%, the regression sum of squares must exceed the error sum of squares.

For Further Reference:

(Study Session 2, Module 5.3, LOS 5.g)

Question #9 of 60

Question ID: 1220618

Sawyer decides to test regression equation (1) for the existence of conditional heteroskedasticity. Sawyer is likely to conclude that her regression does not exhibit conditional heteroskedasticity if the R^2 from equation (2) is:

- A) close to 0.
- B) close to 1.
- C) close to 0.80.

Explanation

Conditional heteroskedasticity refers to regression errors whose variance is not constant. If there is conditional heteroskedasticity, the variance changes as function of the independent variables. The squared residual (i.e., residual is the estimated error) is used to proxy the error variance. A low R^2 in equation (2) indicates that the slopes in equation (2) are very close to zero, indicating that the error variance is unaffected by the independent variables. For instance, if all the slopes in equation (2) equal zero, then the error variance equals the intercept (a_0 , which is constant over time).

For Further Reference:

(Study Session 2, Module 5.6, LOS 5.k)

Question #10 of 60

Question ID: 1220619

Regarding Lockhart's Recommendation 1, the econometric problem that is *most likely* to be introduced by including the inflation change variable in regression equation (1) is:

- A) model misspecification.
- B) serial correlation.
- C) multicollinearity.

Explanation

According to Recommendation 1 provided by Lockhart, the inflation change variable is highly correlated with the Wilshire index returns (one of the independent variables). If Sawyer includes the inflation change variable along with the Wilshire index returns, the regression will be plagued by multicollinearity (the inclusion of correlated independent variables).

Multicollinearity causes the standard errors for the regression parameter estimates to be biased upward, which, in turn, causes the t -statistics to be biased downward (deflated).

For Further Reference:

(Study Session 2, Module 5.8, LOS 5.l)

Question #11 of 60

Question ID: 1220620

Regarding Lockhart's Recommendation 2, the *most likely* form of model misspecification to which he refers is:

- A) stationarity model misspecification.
- B) time-series model misspecification.
- C) functional form model misspecification.**

Explanation

According to Recommendation 2, the data should not be pooled across all 36 months. The sample clearly is split into two parts: pre-Reg FD and post-Reg FD. Sawyer should run separate regressions for each subperiod, or should employ dummy variables to control for the structural shift related to the passage of Reg FD. In either case, by pooling across the two very different sample periods, Sawyer's regression is an example of a misspecified functional form.

For Further Reference:

(Study Session 2, Module 5.9, LOS 5.m)

Question #12 of 60

Question ID: 1220621

Regarding Claim 1 and Claim 2 made by Sawyer about the effects of omitted variables, which claims are correct?

- A) Claim 1 only.
- B) Claim 2 only.**
- C) Both Claim 1 and Claim 2.

Explanation

Sawyer is incorrect with respect to Claim 1 and is correct with respect to Claim 2. If the omitted variables are correlated with the included variables, then the omitted variable regression parameter estimates [i.e., from equation (1)] will be biased and inconsistent. Desirable properties, on the other hand, are unbiasedness and consistency. An estimator is unbiased if the expected value of the estimate equals the true population value. An estimator is consistent if the estimate approaches the true population value as the sample size increases. The existence of omitted variables (that are correlated with the included variables) destroys both of these desirable properties.

For Further Reference:

(Study Session 2, Module 5.9, LOS 5.m)

Questions #13-18 of 60

Questions 73 through 78 relate to Financial Reporting and Analysis.

Whitmore Corporation Case Scenario

Gary Smith, CFA, has been hired to analyze a specialty tool and machinery manufacturer, Whitmore Corporation (WMC). WMC is a leading producer of specialty machinery in the United States. At the end of 2014, WMC purchased York Tool Company (YTC), an Australian firm in a similar line of business. YTC has partially integrated its marketing functions within WMC but still maintains control of its operations and secures its own financing. Following is a summary of the income statement and balance sheet for YTC (in millions of Australian dollars – AUD) for the past three years as well as exchange rate data over the same period.

Income Statement (AUD millions)			
	2014	2015	2016
Revenues	765	820	870
COGS	484	520	580
SG&A	171	183	200
Depreciation expense	50	50	50
Interest expense	18	17	16
Income before tax	42	50	24
Taxes	21	25	12
Net income	21	25	12

Balance Sheet (AUD millions)							
	2014	2015	2016		2014	2015	2016
Cash	22	25	20	Current liabilities	616	593	584
Accounts receivable	400	422	460	Long-term debt	180	170	160
Inventories	20	25	30				
Prepaid expenses	8	20	25	Common stock	50	50	50
Net fixed assets	500	450	400	Retained earnings	104	129	141
Total assets	950	942	935	Total liabilities & equity	950	942	935

Exchange rates (AUD / USD)			
	2014	2015	2016
Average exchange rate	1.40	1.30	1.45
Year-end exchange rate	1.20	1.40	1.50
Historical exchange rate	1.20	1.20	1.20

Smith has discovered that WMC has a small subsidiary in Ukraine. The subsidiary follows IAS accounting rules and uses FIFO inventory accounting. The Ukrainian subsidiary was acquired 10 years ago and has been fully integrated into WMC's operations. WMC obtains funding for the subsidiary whenever the company finds profitable investments within Ukraine or

surrounding countries. According to forecasts from economists, the Ukrainian currency is expected to depreciate relative to the U.S. dollar over the next few years. Local currency prices are forecasted to remain stable, however.

One of the managers at WMC asks Smith to analyze a third subsidiary located in India. The manager has explained that real interest rates in India over the past three years have been 2.00%, 2.50%, and 3.00%, respectively, while nominal interest rates have been 34.64%, 29.15%, and 25.66%, respectively. Smith requests more time to analyze the Indian subsidiary.

Question #13 of 60

Question ID: 1220623

Calculate the percent change in YTC net income shown on the WMC financial statements from 2015 to 2016.

- A) -52.0%.
- B) -55.2%.
- C) **-56.9%.**

Explanation

Because YTC operates independently and makes its own financing decisions, the local currency (AUD) should be the functional currency. When the local currency is the functional currency, the subsidiary's financial statements are consolidated with the parent's financial statements using the current rate method. Under the current rate method, all of the income statement items are translated using the average rate for the year. To calculate the percent change in net income, we must translate these items for 2016 and 2015 and then calculate the rate of change.

$$2015 \text{ translated net income} = 25 / 1.30 = 19.23$$

$$2016 \text{ translated net income} = 12 / 1.45 = 8.28$$

$$\text{growth in net income} = (8.28 / 19.23) - 1 = -56.94\%$$

For Further Reference:

(Study Session 5, Module 15.4, LOS 15.d)

Question #14 of 60

Question ID: 1220624

If WMC uses the temporal method, YTC's net monetary liabilities leave WMC exposed to loss in the event of:

- A) currency (AUD) depreciation.
- B) **currency (AUD) appreciation.**
- C) either currency depreciation or currency appreciation.

Explanation

Under the temporal method, the nonmonetary assets and liabilities are remeasured at historical rates. Thus, only the monetary assets and liabilities are exposed to changing exchange rates. Therefore, under the temporal method, exposure is defined as the subsidiary's net monetary asset or net monetary liability position. A firm has net monetary assets if its monetary assets exceed its monetary liabilities. If the monetary liabilities exceed the monetary assets, the firm has a net monetary liability exposure.

Since very few assets are considered to be monetary (mainly cash and receivables), most firms have net monetary liability exposures. If the parent has a net monetary liability exposure when the foreign currency (AUD) is appreciating, the result is a loss. Conversely, a net monetary liability exposure coupled with a depreciating currency will result in a gain.

For Further Reference:

(Study Session 5, Module 15.3, LOS 15.d)

Question #15 of 60

Question ID: 1220625

Determine whether the translated total asset turnover for YTC for 2016 would be higher under the current rate method or under the temporal method.

- A) Temporal method.
- B) Current rate method.
- C) No difference between temporal and current rate methods.

Explanation

Note that no calculations are necessary to answer this question. Revenues are translated using the same average exchange rate in the temporal and current rate methods. The only difference in the total asset turnover ratio must therefore be in the denominator (i.e., total assets). Under the current rate method, assets are translated using the current rate. Under the temporal method, monetary assets are translated using the current rate, and nonmonetary assets are translated using the historical rate. Because the historical rate is lower than the current rate, the nonmonetary assets (and therefore total assets) will have a higher value under the temporal method. A higher asset value means a lower total asset turnover ratio under the temporal method. The calculation of the total asset turnover ratio using both methods is provided for reference below:

total asset turnover = revenue / total assets

	Temporal	Current Rate
Cash	20 / 1.50 = 13.33	20 / 1.50 = 13.33
Accounts receivable	460 / 1.50 = 306.67	460 / 1.50 = 306.67
Inventories	30 / 1.20 = 25.00	30 / 1.50 = 20.00
Prepaid expenses	25 / 1.20 = 20.83	25 / 1.50 = 16.67
Fixed assets	400 / 1.20 = 333.33	400 / 1.50 = 266.67
Total assets	699.16	623.34
Revenues	870 / 1.45 = 600.00	870 / 1.45 = 600.00
Total asset turnover	600.00 / 699.16 = 0.86	600.00 / 623.34 = 0.96

For Further Reference:

(Study Session 5, Module 15.5, LOS 15.d)

Question #16 of 60

Question ID: 1220626

For the period 2014–2016, WMC's annual USD revenue growth rate attributable to its Australian subsidiary is *most likely*:

- A) 1.85% lower than the local currency revenue growth rate.**
- B) 3.62% higher than the local currency revenue growth rate.**
- C) 3.45% lower than the local currency revenue growth rate.**

Explanation

$$\text{AUD revenue growth rate} = (870 / 765)^{1/2} - 1 = 6.64\%$$

Revenues are translated at average rate:

$$\text{2014 USD revenues} = 765 / 1.40 = 546.43; \text{2016 USD revenues} = 870 / 1.45 = 600$$

$$\text{USD revenue growth rate} = (600 / 546.43)^{1/2} - 1 = 4.79\%$$

The USD revenue growth rate is 1.85% lower than the local currency (AUD) revenue growth rate.

For Further Reference:

(Study Session 5, Module 15.8, LOS 15.i)

Question #17 of 60

Question ID: 1220627

Which of the following statements regarding the consolidation of WMC's Ukrainian subsidiary for the next year is *least likely* correct? Compared to the temporal method, the Ukrainian subsidiary's translated:

- A) net income before translation gains or losses would be higher using the current rate method.**
- B) debt-to-equity ratio would be higher using the current rate method.**
- C) gross profit margin would be lower using the current rate method.**

Explanation

Under both the current rate and temporal methods, the revenues for the Ukrainian subsidiary would be translated using the average rate. Cost of goods sold (COGS) would be translated using the historical rate for the temporal method and the average rate for the current rate method. Note that because local currency prices are expected to be constant in Ukraine, there will be no difference between LIFO and FIFO since all beginning, purchased, sold, and ending inventory will have the same cost. When a currency is depreciating, the COGS based on historical cost (temporal method) will be higher than COGS translated at the average rate (current rate method) since the average rate will incorporate the historical exchange rate and the most recent (depreciated) exchange rate, decreasing the COGS. For instance, if COGS in the local currency is 10 and the historical and average exchange rates are 1 and 1.5 (local currency per reporting currency), then COGS under the temporal method will be 10 and under the current rate method will be 6.67. Since translated sales are the same under both methods, gross profit and the gross profit margin will be higher under the current rate method.

For Further Reference:

(Study Session 5, Module 15.6, LOS 15.f)

Question #18 of 60

Which of the following statements related to the consolidation of WMC's Indian subsidiary is *least likely* correct?

- A) The Indian economic environment meets the criteria to be classified as a hyperinflationary economy.
- B) IFRS would allow WMC to translate the inflation-indexed value of nonmonetary assets of the Indian subsidiary at the current exchange rate.
- C) **WMC can reduce potential translation losses from the Indian subsidiary by issuing debt denominated in U.S. currency and purchasing fixed assets for the subsidiary.**

Explanation

U.S. accounting standards define a hyperinflationary economy as one in which the 3-year cumulative inflation rate exceeds 100%. The Indian economy can be characterized as hyperinflationary. The inflation rate over the past three years can be calculated as follows:

$$\text{year 1 inflation} = [(1 + 0.3464) / (1 + 0.020)] - 1 = 32\%$$

$$\text{year 2 inflation} = [(1 + 0.2915) / (1 + 0.025)] - 1 = 26\%$$

$$\text{year 3 inflation} = [(1 + 0.2566) / (1 + 0.030)] - 1 = 22\%$$

$$\text{cumulative 3-year inflation} = (1.32)(1.26)(1.22) - 1 = 103\%$$

U.S. accounting standards allow the use of the temporal method, with the functional currency being the parent's reporting currency, when a foreign subsidiary is operating in a hyperinflationary environment. IFRS accounting standards allow the parent to translate an inflation-adjusted value of the nonmonetary assets and liabilities of the foreign subsidiary at the current inflation rate, removing most of the effects of high inflation on the value of the nonmonetary assets and liabilities in the reporting currency. In a hyperinflationary environment, the parent company can reduce translation losses by reducing its net monetary assets or increasing its net monetary liabilities. In order to do this, the parent should issue debt denominated in the subsidiary's local currency and invest the proceeds in fixed assets for the subsidiary to use in its operations.

For Further Reference:

(Study Session 5, Module 15.7, LOS 15.g)

Questions #19-24 of 60

Questions 79 through 84 relate to Corporate Finance.

Voyager, Inc., Case Scenario

Voyager, Inc., a primarily internet-based media company, is buying The Daily, a media company with exposure to newspapers, television, and the internet.

Company Descriptions

Voyager, Inc., is organized into two segments: internet and newspaper publishing. The internet segment operates websites that offer news, entertainment, and advertising content in text and video format. The internet segment represents 75% of the company's total revenues. The newspaper publishing segment publishes 10 daily newspapers. The newspaper publishing segment represents 25% of the company's total revenues.

The Daily is organized into three segments: newspaper publishing (60% of revenues), broadcasting (35% of revenues), and internet (5% of revenues). The newspaper publishing segment publishes 101 daily newspapers. The broadcasting segment owns and operates 25 television stations. The internet segment consists of an internet advertising service. The Daily's newspaper publishing and broadcasting segments cover the 20 largest markets in the United States.

Voyager's acquisition of The Daily is the company's second major acquisition in its history. The previous acquisition was at the height of the merger boom in the year 2000. Voyager purchased the Dragon Company at a premium-to-net-asset value, thereby doubling the company's size. Voyager used the pooling method to account for the acquisition of Dragon; however, because of FASB changes to the Business Combination Standard, Voyager will use the acquisition method to account for the Daily acquisition.

(in millions, except per share data)	Voyager, Inc. (before merger)	The Daily (before merger)
Revenues	\$1,800	\$7,600
Operating income	\$415	\$998
Earnings	\$200	\$650
Assets	\$1,900	\$14,700
Debt	\$200	\$2,500
Equity	\$1,100	\$7,600
Number of shares	117.6 million	213.1 million
Stock price per share	\$68	\$35
Earnings per share	\$1.70	\$3.05
PE ratio	40.0x	11.5x

Voyager has made an all-cash offer of \$45 per share to acquire The Daily. Wall Street is skeptical about the merger. While Voyager has been growing its revenues by 40% per year, The Daily's revenue growth has been less than 2% per year. Michael Renner, the CFO of Voyager, defends the acquisition by stating that The Daily has accumulated a large amount of tax losses and that the combined company can benefit by immediately increasing net income after the merger. In addition, Renner states that the new Voyager will eliminate the inefficiencies of its internet operations and thereby boost future earnings. Renner believes that the merged companies will have a value of \$17.5 billion.

In the past, The Daily's management has publicly stated its opposition to merging with any company, a position management still maintains. As a result of this situation, Voyager submitted its merger proposal directly to The Daily's board of directors, while the firm's CEO was on vacation. Upon returning from vacation, The Daily's CEO issued a public statement claiming that the proposed merger was unacceptable under any circumstances.

Voyager used the pooling of interests method when accounting for the 2000 acquisition of Dragon, rather than the acquisition method it would use today. Which of the following is *least likely* a feature of the pooling of interests method?

- A) Operating results for prior periods are restated as though the two firms were always combined.
- B) The pooling of interests method combines historic book values and fair values.**
- C) The pooling of interests method combines historic book values.

Explanation

Historically, two accounting methods have been used for business combinations: (1) the purchase method and (2) the pooling-of-interests method. However, over the last few years, the pooling method has been eliminated from U.S. GAAP and IFRS. Now, the acquisition method is required.

The pooling-of-interests method, also known as uniting-of-interests method under IFRS, combined the ownership interests of the two firms and viewed the participants as equals—neither firm acquired the other. The assets and liabilities of the two firms were simply combined. Key attributes of the pooling method include the following:

- The two firms are combined using historical book values.
- Operating results for prior periods are restated as though the two firms were always combined.
- Ownership interests continue, and former accounting bases are maintained.

Note that fair values played no role in accounting for a business combination using the pooling method—the actual price paid was suppressed from the balance sheet and income statement.

For Further Reference:

(Study Session 5, Module 13.4, LOS 13.c)

Question #20 of 60

Question ID: 1220631

Based on Renner's comments defending Voyager's acquisition of The Daily, indicate whether his comments about net income and elimination of inefficiencies are *most likely* correct.

- A) Only Renner's comment that unused tax losses will immediately translate into higher net income is correct.**
- B) Only Renner's comment that the elimination of inefficiencies within the internet operations will create additional value is correct.
- C) Both comments are correct.

Explanation

If the target of a merger has unused tax losses accumulated, the merged company can use the tax losses to immediately lower its tax liability, thus increasing its net income (Correct). The internet operation of The Daily is insignificant compared to the overall merger value. Any improvement in the cost structure of the internet operation will not have a significant impact on overall earnings. In addition, the high-growth characteristics of the internet segment would not warrant a cost restructuring of the operations (Incorrect).

For Further Reference:

(Study Session 8, Module 23.1, LOS 23.b)

Question #21 of 60

Question ID: 1220632

Assuming that Renner's estimate of the value of the merged companies is correct, calculate the acquirer's gain from the merger.

- A) \$7,910.5 million.
- B) **\$9,503.2 million.**
- C) \$11,634.2 million.

Explanation

First, we must separate the synergistic value from the combined value of the firm as follows:

$$V_{AT} = V_A + V_T + S - C$$

where:

V_{AT} = the combined value of the firm

V_A = the value of the acquirer before the merger

V_T = the value of the target before the merger

S = the synergistic value from the merger

C = the cash paid to the target

Rearranging the formula, the synergistic value can be isolated as follows:

$$\begin{aligned} S &= V_{AT} - V_A - V_T + C \\ &= 17,500 - (68 \times 117.6) - (35 \times 213.1) + (45 \times 213.1) \\ &= 17,500 - 7,996.8 - 7,458.5 + 9,589.5 \\ &= \mathbf{\$11,634.2 \text{ million}} \end{aligned}$$

Next, calculate the acquirer's gain as follows:

$$\text{acquirer's gain} = S - (P_T - V_T)$$

where:

S = the synergistic value from the merger

P_T = the price paid for the target

V_T = the value of the target before the merger

$$\begin{aligned} \text{acquirer's gain} &= 11,634.2 - [(45 \times 213.1) - (35 \times 213.1)] \\ &= 11,634.2 - (9,589.5 - 7,458.5) \\ &= \mathbf{\$9,503.2 \text{ million}} \end{aligned}$$

For Further Reference:

(Study Session 8, Module 23.4, LOS 23.k)

Question #22 of 60

Question ID: 1220633

Assume that Voyager offers 63 million shares of its stock, rather than cash, to acquire The Daily. The share price of the combined company is *closest* to:

- A) \$145 per share.
- B) \$150 per share.**
- C) \$155 per share.

Explanation

$$\text{total shares} = 63.0 + 117.6 = 180.6 \text{ million}$$

$$V_{AT} = 7,996.8 + 7,458.5 + 11,634.2 - 0 = 27,089.5$$

$$\text{new share price} = 27,089.5 / 180.6 = 150.0$$

For Further Reference:

(Study Session 8, Module 23.4, LOS 23.k, 23.l)

Question #23 of 60

Question ID: 1220634

The management of The Daily is not pleased with the \$45 per share offering price. Which of the following is the *most likely* takeover defense The Daily would consider in an effort to stop the acquisition?

- A) Immediately amend The Daily bylaws to establish a staggered board.
- B) File suit against Voyager for antitrust violations.**
- C) Restrict the voting rights of shareholders owning more than 10% of The Daily stock.

Explanation

The legal action based on antitrust is the only choice given that is a post-offer defense. Staggered boards, restricted voting rights, and poison puts are all pre-offer defenses that would not be possible after the tender offer has been made.

For Further Reference:

(Study Session 8, Module 23.2, LOS 23.f)

Question #24 of 60

Question ID: 1220635

Which of the following *best* characterizes Voyager's proposal to merge with The Daily?

- A) Bear hug.**
- B) Proxy fight.
- C) White knight.

Explanation

A hostile merger occurs when the management of a merger target is opposed to the proposed merger. In such a situation, the acquiring company may initiate a bear hug in which the merger proposal is delivered directly to the board of directors of the target company. Voyager has initiated a bear hug in the hopes of gaining board support for the proposed merger before management can react to the proposal. If the bear hug is unsuccessful, the acquirer may appeal directly to the target's shareholders through a tender offer in which the acquirer offers to buy shares directly from shareholders or through a proxy fight in which a proxy solicitation is used to convince shareholders to elect a board of directors chosen by the acquirer. The board of directors would then replace the target's management and allow the merger to move forward. A white knight is a takeover defense, not a type of merger.

For Further Reference:

(Study Session 8, Module 23.2, LOS 23.e)

Questions #25-30 of 60

Questions 85 through 90 relate to Equity Valuation.

Yummy Doughnuts Case Scenario

Yummy Doughnuts (YD) sells a variety of doughnuts and other related items through both company-owned locations and franchise locations. YD has experienced significant growth over the past five years. However, barriers to entry are low and competition is increasing.

Linda Haas, CFA, follows YD for Gibraltar Capital. Gibraltar Capital prides itself on its thorough fundamental analysis of investment opportunities. The company uses a bottom-up approach to the investment process. Haas's security selection process utilizes residual income models to determine a stock's intrinsic value. Haas obtains YD's 2018 financial statements shown in Exhibit 1. In addition, Haas provides supporting information about YD's financials and other related material found in Exhibit 2.

Exhibit 1: Yummy Doughnuts's 2018 Income Statement and Balance Sheet

In millions, except for per share items	2018
Revenue	\$300
Cost of goods sold	\$205
SG&A	\$40
Depreciation expense	\$6
Income from operations	\$49
Interest expense	\$1
Pretax income	\$48
Income tax (40% tax rate)	\$19
Net income	\$29

Shares outstanding 18.6

EPS \$1.56

In millions	2018		2018
Assets		Liabilities and equity	
Cash	\$15	Accounts payable	\$12
Accounts receivable	\$27	Accrued expenses	\$26
Inventory	\$16	Current liabilities	\$38
Current assets	\$58		
Property and equipment	\$113	Total long-term debt (7% coupon, at par value)	\$12
Long-term investments	\$10	Equity	\$131
Total assets	\$181	Total liabilities & equity	\$181

Exhibit 2: Additional Information

- YD uses the FIFO method of inventory valuation.
- 2018 cash operating taxes equal \$15 million. This amount includes all appropriate tax adjustments. 2018 NOPAT was estimated to be \$42 million.
- Haas believes that YD will have a 17% ROE and a 10% long-term growth rate over the foreseeable future.
- Haas estimates YD's cost of equity to be 15.0%.
- YD expects annual capital expenditures to remain at about \$37 million.
- YD's stock currently trades at \$15.50 per share.
- YD's bonds are currently trading at par value.
- YD's total adjusted capital base was \$200 million at the end of 2017.

Haas makes the following statements during her YD presentation to the investment committee:

- Statement 1: Based on ROE mean reversion, YD's continuing residual income is assumed to decline to zero over time.
- Statement 2: The residual income model states that if YD's ROE equals its equity cost of capital, then YD's intrinsic value will equal its book value per share.

Question #25 of 60

Question ID: 1220637

For this question only, a careful evaluation of YD's financial statement reveals that the decrease in value of available-for-sale securities has been reported in the other comprehensive income (OCI) section of stockholder's equity. The *most likely* impact on the computation of residual income due to accounting for available-for-sale securities would be:

- A) a reduction in residual income due to lower ROE.
- B) a reduction in residual income due to lower ROE and book value.
- C) an increase in residual income due to higher ROE.

Explanation

A decrease in the value of available-for-sale securities that bypasses the income statement would artificially increase net income and, consequently, ROE. Book value is unaffected as the decrease is accounted for in the OCI section of shareholders' equity.

For Further Reference:

(Study Session 11, Module 30.5, LOS 30.k)

Question #26 of 60

Question ID: 1220638

Based on Exhibit 1 and Exhibit 2, YD's weighted average cost of capital (WACC) is *closest* to:

- A) 12%.
- B) 13%.
- C) 15%.

Explanation

$$\text{WACC} = \left(\frac{\text{MVD}}{\text{MVD} + \text{MVCE}} \right) \times [r_d (1 - \text{tax rate})] + \left(\frac{\text{MVCE}}{\text{MVD} + \text{MVCE}} \right) r$$

r_d = debt coupon given as 7.0%

tax rate = 40% (given in Exhibit 1)

r = equity cost = 0.15 (given in Exhibit 2)

MVD = market value of debt = book value of debt for YD = 12

MVCE = market value of common equity = $\$15.50 \times 18.6 = \288.3

$$\text{WACC} = \left(\frac{12}{12 + 288.3} \right) \times [0.07 (1 - 0.40)] + \left(\frac{288.3}{12 + 288.3} \right) \times 0.15 = 0.146$$

For Further Reference:

(Study Session 6, Module 18.1, LOS 18.a and Study Session 9, Module 25.1, LOS 25.g)

Question #27 of 60

Question ID: 1220639

For this question only, assume a weighted average cost of capital (WACC) of 12.0%. YD's economic value added (EVA) during the year 2018 is *closest* to:

- A) \$6 million.
- B) \$18 million.
- C) \$24 million.

Explanation

$$\text{\$WACC} = \text{WACC} \times \text{capital} = 0.12 \times 200 = 24$$

$$\text{EVA} = \text{NOPAT} - \$\text{WACC} = 42 - 24 = 18$$

For Further Reference:

(Study Session 11, Module 30.1, LOS 30.a)

Question #28 of 60

Question ID: 1220640

Based on Exhibit 1, Exhibit 2, and the single-stage residual income model, YD's intrinsic value is *closest* to:

- A) \$8.00 per share.
- B) \$10.00 per share.**
- C) \$12.00 per share.

Explanation

$$V_0 = B_0 + [(\text{ROE} - r) \times B_0] / (r - g)$$

book value = equity / total shares

book value = 131 / 18.6 = 7.04 (from Exhibit 1)

r = cost of equity = 0.15 (given in Exhibit 2)

ROE = 0.17 (given in Exhibit 2)

g = 0.10 (given in Exhibit 2)

$$V_0 = 7.04 + [(0.17 - 0.15) \times 7.04] / (0.15 - 0.10) = 9.86$$

For Further Reference:

(Study Session 11, Module 30.3, LOS 30.f)

Question #29 of 60

Question ID: 1220641

Haas notes that the multi-stage residual equity income model captures more detail in calculating YD's intrinsic value. An assumption of the model is that ROE fades to the cost of equity over time, which is known as a persistence factor (varying from 0 to 1). Identify which characteristic indicates a higher persistence of abnormal earnings.

- A) Low dividend payout.**
- B) Low price-to-earnings ratio.
- C) High dividend yield.

Explanation

It is difficult for a company to maintain a high ROE because of competition. The persistence factor will be lower for those companies. A company that has a low dividend payout has greater growth opportunities than a company with a high dividend payout. The greater growth opportunities should support a higher persistence factor.

For Further Reference:

(Study Session 11, Module 30.4, LOS 30.h)

Question #30 of 60

Question ID: 1220642

Haas makes a statement about an assumption concerning residual income (Statement 1) and the residual income model (Statement 2). Which of the statements is correct?

- A) Only Statement 1 is correct.
- B) Only Statement 2 is correct.
- C) Both Statements 1 and 2 are correct.

Explanation

Statement 1 is correct. The multistage residual income model uses continuing residual income to denote the long-run residual income. Based on reversion to the mean, and increasing competition for YD, continuing residual income would be expected to decline to zero over time. Statement 2 is correct. Based on the residual income model formula, $V_0 = B_0 + (ROE - r) \times B_0 / (r - g)$. If $ROE = r$, then $V_0 = B_0$.

For Further Reference:

(Study Session 11, Module 30.2, LOS 30.d, 30.j)

Questions #31-36 of 60

Questions 91 through 96 relate to Fixed Income.

TFC Investments Case Scenario

Michael Thomas, CFA, is a fixed-income portfolio manager for TFC Investments. As part of his portfolio strategy for the Prosperity Fund, Thomas seeks out bonds that he expects to be upgraded or downgraded. Potential upgrades that Thomas identifies are added to the portfolio (or, if already in the portfolio, are increased in proportion to other holdings). Potential downgrades are sold from the portfolio. Thomas's portfolio's current holdings include several bonds issued by companies in the oil and gas exploration and refining industries. Year-end rating updates are expected to occur in a few days, and Thomas is preparing to adjust his portfolio in advance of expected changes in credit ratings.

Thomas has been discussing his fixed-income strategies with fellow portfolio manager Shawna Reese. Reese suggests that while Thomas's general approach is suitable, the overall credit-analysis strategy could be improved. Reese recommends using the credit valuation adjustment as a metric in credit analysis.

Reese makes the following statement to Thomas:

Reese's statement: "Credit valuation adjustment is the sum of the expected loss for each period based on the risk-neutral probability of default."

Reese provides information about 4% Pistar, Inc., bonds, which are currently rated AA with a negative outlook. The bonds have a modified duration of 7.8, and the credit spread on the bonds is expected to be the same as the average for that rating category. Reese wants to calculate the impact of a downgrade on Pistar, Inc.'s bonds given the information in Exhibit 1.

Exhibit 1: Average Credit Spreads by Ratings Category

AAA	AA	A	BBB	BB	B	CCC
0.24%	0.29%	0.39%	0.58%	0.89%	1.12%	1.78%

As part of his portfolio analysis, Thomas also compares ABS to corporate bonds and makes the following statements:

- Statement 1: Securitization allows for higher leverage and lower cost to the issuer.
- Statement 2: A highly granular pool would have hundreds of clearly defined loans, allowing for use of summary statistics as opposed to investigating each borrower.
- Statement 3: ABS investors earn a lower risk premium relative to similarly rated general obligation bonds.

Thomas concludes his analysis by comparing the swap rate curve to a government bond yield curve.

Question #31 of 60

Question ID: 1220651

Reese's statement about credit valuation adjustment is *most likely*:

- A) correct.
- B) incorrect about the use of risk-neutral probability of default.
- C) incorrect about the sum of expected losses.**

Explanation

Credit valuation adjustment (CVA) is the sum of the *present value* of the expected loss for each period (and not simply just the sum of the expected losses).

For Further Reference:

(Study Session 13, Module 35.1, LOS 35.a)

Question #32 of 60

Question ID: 1220652

Under the option analogy of the structural model, owning a company's debt is economically equivalent to owning a riskless bond and simultaneously:

- A) buying an American put option on the assets of the company.
- B) selling a European put option on the assets of the company.**
- C) buying a European put option on the assets of the company.

Explanation

Under the structural model's debt option analogy, owning a company's debt is economically equivalent to owning a riskless bond that pays K dollars at time T, plus simultaneously selling a European put option on the assets of the company with maturity T and strike price K.

For Further Reference:

(Study Session 13, Module 35.4, LOS 35.d)

Question #33 of 60

Question ID: 1220653

If Reese uses the risk-neutral probabilities of default to value the Pistar, Inc., bonds, she is *most likely* to conclude that the bond is:

- A) fairly valued.
- B) overvalued.
- C) undervalued.

Explanation

Risk neutral probability of default is the probability of default implied in the current market price. If CVA is calculated using risk-neutral probability, the value of risky bond will be estimated to be equal to its market price.

For Further Reference:

(Study Session 13, Module 35.1, LOS 35.a)

Question #34 of 60

Question ID: 1220654

What is the expected change in price of Pistar, Inc., bonds on account of credit migration?

- A) −0.29%.
- B) −0.39%.
- C) −0.78%.

Explanation

$$\begin{aligned}\Delta\%P &= -(\text{modified duration of the bond}) \times (\Delta \text{ spread}). \\ &= -(7.8) \times (0.0039 - 0.0029) = -0.0078 \text{ or } -0.78\%.\end{aligned}$$

For Further Reference:

(Study Session 13, Module 35.3, LOS 35.c)

Question #35 of 60

Question ID: 1220655

Regarding Thomas's statements about ABS, which statement is *least* accurate?

- A) Statement 1.
- B) Statement 2.
- C) Statement 3.

Explanation

Statement 3 is inaccurate. Due to the higher complexity of collateralized debt, ABS investors earn a higher risk premium relative to similarly rated general obligation bonds.

For Further Reference:

(Study Session 13, Module 35.7, LOS 35.h)

Question #36 of 60

Question ID: 1220656

Which of the following statements regarding the choice between government bond yield curves and swap-rate curves as a benchmark interest rate curve is *most accurate*?

- A) The swap-rate curve is preferred because swap curves are comparable across countries since they reflect similar levels of credit risk.**
- B)** Government bond yield curves are preferred because they are based on a more complete set of market yields.
- C)** Government bond yield curves are preferred because the lack of a liquid secondary market can distort swap yields compared with government bond yields.

Explanation

Market participants typically prefer to use the swap-rate curve as a benchmark (rather than a government bond yield curve) for the following reasons:

- The availability of swaps and the equilibrium pricing are driven only by the interaction of supply and demand. It is not affected by technical market factors that can affect government bond yields.
- The swap market is not regulated by any government, which makes swap rates across different countries more comparable.
- Swap curves across countries are also more comparable than sovereign bond yield curves because swap curves reflect similar levels of credit risk, while sovereign bond yield curves also reflect credit risk unique to each country's government bonds.
- The swap curve typically has yield quotes at 11 maturities between 2 and 30 years. The U.S. government bond yield curve typically only has on-the-run issues trading at four maturities between 2 and 30 years.

For Further Reference:

(Study Session 12, Module 32.3, LOS 32.f)

Questions #37-42 of 60

Questions 97 through 102 relate to Fixed Income.

MediSoft, Inc., Case Scenario

MediSoft, Inc., develops and distributes high-tech medical software used in hospitals and clinics across the United States and Canada. The firm's software provides an integrated solution to monitoring, analyzing, and managing output from a variety of diagnostic medical equipment including MRIs, CT scans, and EKG machines. MediSoft has grown rapidly since

its inception 10 years ago, averaging 25% growth in sales over the past decade. Twelve months after its IPO, MediSoft made two bond offerings, the first of which was a convertible bond.

At the time of issuance, the convertible bond had a coupon rate of 7.25%, a par value of \$1,000, a conversion price of \$55.56, and 10 years until maturity. Two years after issuance, the bond became callable at 102% of par value. Soon after the issuance of the convertible bond, the company issued another series of bonds, which were putable but contained no conversion or call features. The putable bonds were issued with a coupon of 8.0%, a par value of \$1,000, and 15 years until maturity. The putable bond has a European-style option exercisable 10 years after issuance at par. The bonds were issued three years ago.

MediSoft's convertible bonds are now trading in the market for a price of \$947 with an estimated straight value of \$917. The company's putable bonds are trading at a price of \$1,052. Volatility in the price of MediSoft's common stock has been relatively high over the past few months. Currently, the stock is priced at \$50 on the New York Stock Exchange and is expected to continue its annual dividend in the amount of \$1.80 per share.

High-tech industry analysts for Brown & Associates, a money management firm specializing in fixed-income investments, have been closely following MediSoft ever since it went public three years ago. In general, portfolio managers at Brown & Associates do not participate in initial offerings of debt investments, preferring instead to see how the issue trades before considering taking a position in the issue. Because MediSoft's bonds have had ample time to trade in the marketplace, analysts and portfolio managers have taken an interest in the company's bonds. At a meeting to discuss the merits of MediSoft's bonds, the following comments were made by various portfolio managers and analysts at Brown & Associates:

"Choosing to invest in MediSoft's convertible bond would benefit our portfolios in many ways, but the primary benefit is the limited downside risk associated with the bond. Because the straight value will provide a floor for the value of the convertible bond, downside risk is limited to the difference between the market price of the bond and the straight value."

"Decreasing volatility in the price of MediSoft's common stock as well as increasing volatility in the level of interest rates are expected in the near future. The combined effects of these changes in volatility will be a decrease in the price of MediSoft's putable bonds and an increase in the price of the convertible bonds. Therefore, only the convertible bonds would be a suitable purchase."

Question #37 of 60

Question ID: 1220644

Calculate the market conversion premium per share for MediSoft's convertible bonds.

- A) \$2.61.
- B) \$2.95.
- C) \$5.56.

Explanation

First, calculate the conversion ratio:

$$\text{conversion ratio} = \frac{\text{par value}}{\text{conversion price}} = \frac{1,000}{55.56} = 18$$

Now, calculate market conversion price:

$$\text{market conversion price} = \frac{\text{market bond price}}{\text{conversion ratio}} = \frac{947}{18} = 52.61$$

Finally, calculate the market conversion premium per share as the difference between the market conversion price and the market price of the stock:

$$\text{market conversion premium} = 52.61 - 50.00 = 2.61$$

For Further Reference:

(Study Session 13, Module 34.8, LOS 34.o)

Question #38 of 60

Question ID: 1220645

The minimum value of the convertible bond today is *closest* to:

- A) \$900.
- B) \$917.
- C) \$947.

Explanation

Minimum value of a convertible = Max (straight value, conversion value)

Straight value = \$917 (given)

Conversion value = $18 \times \$50 = \900

Minimum value of the convertible = \$917

For Further Reference:

(Study Session 13, Module 34.8, LOS 34.o)

Question #39 of 60

Question ID: 1220646

Suppose that MediSoft wants to issue new bonds but wants to issue the bonds at-or-above par value. Which of the following bonds would *most closely* match their criteria?

- A) 7-year, 7.25% convertible bond with a conversion price of \$56.
- B) 7-year, 7.25% callable bond, callable in two years at 102% of par.
- C) 7-year, 8% coupon bond extendible for five years at the same coupon rate.

Explanation

The 7-year, 7.25% convertible bond has a market price of \$947 (given) and, therefore, does not qualify (as it is below par). A similar option-free bond would be worth less (given in the case as \$917). A similar callable bond would be worth even less. This value is not given but would be below \$917 and, therefore, below par. A 7-year bond extendible by five years would be valued the same as an equivalent 12-year puttable bond with an European put option that is exercisable in seven years. The value of the puttable bond is given as \$1,052; this bond meets the criteria.

For Further Reference:

(Study Session 13, Module 34.1, LOS 34.a)

Question #40 of 60

Question ID: 1220647

Under what circumstances will the analyst's comments regarding the limited downside risk of MediSoft's convertible bonds be accurate?

- A) Short-term and long-term interest rates are expected to remain the same.**
- B)** The Federal Reserve Bank decides to pursue a restrictive monetary policy.
- C)** The convertible bond is trading in the market as a common stock equivalent.

Explanation

If interest rates are not expected to change then the straight value of the bond will not change (ignoring the change in value resulting from the passage of time). If the straight value does not change, then downside risk is indeed limited to the difference between the price paid for the bond and the straight value. If, however, interest rates rise as the price of the common stock falls, the conversion value will fall and the straight value will fall, exposing the holder of the convertible bond to more downside risk.

For Further Reference:

(Study Session 13, Module 34.8, LOS 34.q)

Question #41 of 60

Question ID: 1220648

If the OAS on MediSoft's straight bond was estimated to be 48bps, which of the following statements is *most accurate*?

- A)** The OAS of callable bond will be greater than 48bps, and the OAS of the convertible bond will be less than 48bps.
- B)** The OAS of the convertible bond will be less than 48bps, while the OAS of the putable bond will be greater than 48bps.
- C) The OAS of the callable, putable and convertible bond should be equal to 48bps.**

Explanation

OAS, or option-adjusted spread, is the constant spread that is added to each node in an interest rate tree to force the model value to equal the market price of the bond. OAS might be more appropriately called the "option-removed spread" (i.e., the spread added after the option feature is removed). Because the option feature is removed via adjustment to cash flows, bonds with similar credit and liquidity risk should have similar OAS.

For Further Reference:

(Study Session 13, Module 34.4, LOS 34.g)

Question #42 of 60

Question ID: 1220649

Evaluate the portfolio managers' comments regarding the changes in the values of MediSoft's bonds resulting from changes in the volatility of the company's common stock and the volatility of interest rates. The managers were:

- A) correct only with regard to the convertible bonds.
- B) correct only with regard to the putable bonds.
- C) incorrect with regard to both securities.

Explanation

Decreasing volatility of common stock prices would devalue any options related to the stock. The convertible bond contains an embedded call option on the stock, which would experience a decrease in value. Increasing interest rate volatility would increase the value of options related to interest rates. MediSoft's convertible bond is also callable and the value of the call on the bond would increase. The total value of the convertible bond is as follows: convertible bond value = straight value + call on stock – call on bond. The combined effect of the changes in the values of the options is a decrease in the value of the convertible bond. Thus the statement regarding the volatility effects on MediSoft's convertible bonds is incorrect. The value of the putable bond can be summarized as follows: putable bond value = option-free value + put on bond. The increase in put option value resulting from the increase in interest rate volatility would increase the value of the putable bond. Therefore, the statement regarding the volatility effects on MediSoft's putable bonds is also incorrect.

For Further Reference:

(Study Session 13, Module 34.8, LOS 34.p)

Questions #43-48 of 60

Questions 103 through 108 relate to Derivatives.

Lothar Corporation Case Scenario

James Walker is the chief financial officer for Lothar Corporation, a U.S. mining company that specializes in worldwide exploration for and excavation of precious metals. Lothar Corporation generally tries to maintain a debt-to-capital ratio of approximately 45% and has successfully done so for the past seven years. Due to the time lag between the discovery of an extractable vein of metal and the eventual sale of the excavated material, the company frequently must issue short-term debt to fund its operations. Issuing these one- to six-month notes sometimes pushes Lothar's debt-to-capital ratio above its long-term target, but the cash provided from the short-term financing is necessary to complete the majority of the company's mining projects.

Walker has estimated that extraction of silver deposits in southern Australia has eight months until project completion. However, funding for the project will run out in approximately six months. In order to cover the funding gap, Walker will have to issue short-term notes with a principal value of \$1,275,000 at an unknown future interest rate. To mitigate the interest rate uncertainty, Walker has decided to enter into a forward rate agreement (FRA) based on LIBOR which currently has a term structure as shown in Exhibit 1.

Exhibit 1	Exhibit 2
<i>LIBOR Rates ($t = 0$)</i>	<i>LIBOR Rates ($t = 90$)</i>

	LIBOR		LIBOR
90-day	4.28%	90-day	5.12%
180-day	4.52%	150-day	5.96%
240-day	5.11%	210-day	6.03%
360-day	5.92%	300-day	6.41%

Three months after establishing the position in the forward rate agreement, LIBOR interest rates have shifted, causing the value of Lothar's FRA position to change as well. The new LIBOR term structure is shown in Exhibit 2.

While Walker is estimating the change in the value of the original FRA position, he receives a memo from the chief operating officer of Lothar, Maria Steiner, informing him of a major delay in one of the company's South African mining projects. In the memo, Steiner states the following:

"As usual, the project delay will require a short-term loan to cover the funding shortage that will accompany the extra time until project completion. I have estimated that in 210 days, we will require a 90-day project loan in the amount of \$2,350,000. I would like you to establish another FRA position, this time with a contract rate of 6.95%."

Walker discusses some of these strategies with Pete Barka, partner at the brokerage firm that clears derivatives trades for Lothar. Barka suggests options on the Nasdaq 100 index futures as a use for Lothar's excess cash. September futures price on the Nasdaq 100 index is currently at 4243. Three-month calls and puts with a strike price of 4200 are available. Exhibit 3 shows information about the options.

Exhibit 3: Three-Month Options on Nasdaq 100

Strike price (for both calls and puts)	\$4200
Call premium	\$243
Put premium	\$196
Implied volatility	26%
Continuously compounded risk-free rate	0.35%
$N(d_1)$	0.5597
$N(d_2)$	0.5080

Question #43 of 60

Question ID: 1220658

Given data in Exhibit 1, which of the following was *closest* to the price of the FRA on the date of the contract's inception?

- A) 4.7%.
- B) 6.8%.
- C) 7.2%.

Explanation

Walker is entering into a 6 × 8 forward rate agreement (FRA), which represents a 2-month (60-day) loan that will begin six months (180 days) from now. The relevant LIBOR rates for this contract are 180-day and 240-day LIBOR. To calculate the contract rate on the 6 × 8 FRA, first un-annualize the 180- and 240-day rates as follows:

$$R_{180} = 0.0452(180/360) = 0.0226 \quad R_{240} = 0.0511(240/360) = 0.0341$$

Next, calculate the rate on the 6 × 8 FRA as follows (note we are using the 180-day and 240-day LIBOR rates to find the 60-day rate that lies between them):

$$FRA_{6 \times 8} = \left(\frac{1 + R_{240}}{1 + R_{180}} \right) - 1 = \left(\frac{1.0341}{1.0226} \right) - 1 = 0.0112$$

The 0.0112 or 1.12% rate represents a 60-day rate. Annualizing the rate will yield the following:

$$FRA_{6 \times 8} = 0.0112 \left(\frac{360}{60} \right) = 0.0675 = 6.75\% \approx 6.8\%$$

For Further Reference:

(Study Session 14, Module 37.4, LOS 37.a)

Question #44 of 60

Question ID: 1220659

Which of the following is *closest* to the value of the forward rate agreement three months after the inception of the contract (from Walker's perspective)? For this question only, assume that the interest rate at inception was 6.0%.

- A) \$2,340.
- B) -\$3,266.
- C) \$3,266.

Explanation

For this question, we must find the value of the FRA three months (90 days) after the inception of the contract. First find the contract rate on a new FRA. Since we are 90 days past the inception of the original contract an equivalent new contract would be a 3 × 5 FRA, which would represent a 2-month (60-day) loan that would begin three months (90 days) from now. Thus, the relevant LIBOR rates are going to be 90-day and 150-day LIBOR. Calculate the FRA rate the same way as in the previous question:

$$R_{90} = 0.0512 \left(\frac{90}{360} \right) = 0.012800 \quad R_{150} = 0.0596 \left(\frac{150}{360} \right) = 0.024833$$

$$FRA_{3 \times 5} = \left(\frac{1 + R_{150}}{1 + R_{90}} \right) - 1 = \left(\frac{1.024833}{1.012800} \right) - 1 = 0.011881$$

$$FRA_{3 \times 5} = 0.011881 \left(\frac{360}{60} \right) = 0.07129 = 7.129\%$$

Now take the difference between the new FRA rate and the original rate (given as 6.0% in the question) on an un-annualized basis and multiply by the notional principal (i.e., the amount that will be borrowed).

$$\left[(0.07129 - 0.06) \left(\frac{60}{360} \right) \right] \times \$1,275,000 = \$2,399$$

Finally, discount this difference to the present using the 150-day LIBOR rate.

$$\frac{\$2,399}{\left[1 + \left(0.0596 \times \frac{150}{360} \right) \right]} = \$2,340$$

For Further Reference:

(Study Session 14, Module 37.5, LOS 37.b)

Question #45 of 60

Question ID: 1220660

Using the Black model, the call option on the index futures is *best* valued as:

- A) the present value of the difference between the strike rate multiplied by 0.5597 and the current futures price multiplied by 0.508.
- B) the present value of the difference between the current futures price times 0.5597 and the exercise price multiplied by 0.508.**
- C) the future value of the difference between the current spot price multiplied by 0.5597 and the exercise price multiplied by 0.508.

Explanation

Using the Black model, the call option is valued as $C_0 = e^{-rT}[F_T N(d_1) - XN(d_2)]$.

For Further Reference:

(Study Session 14, Module 38.6, LOS 38.i)

Question #46 of 60

Question ID: 1220661

When the silver is removed from the mine, it will be sold to an Australian subsidiary before being exported. Walker is concerned that the price of silver and the Australian dollar will both depreciate over the next eight months. Which of the following strategies will be *most* appropriate given Walker's expectations? Establish:

- A) a short position in a silver forward contract and a short position in a U.S. dollar currency forward contract.
- B) a long position in a silver forward contract and a short position in an Australian dollar currency forward contract.
- C) a short position in a silver forward contract and a long position in a U.S. dollar currency forward contract.**

Explanation

The company will need to sell silver in eight months. Thus, if the price of silver is expected to fall over that time frame, Walker should be short a forward contract on the price of silver to lock in a higher selling price now. Walker will also need to convert Australian dollars to U.S. dollars after the extracted Australian silver is sold. Thus, he is effectively long

Australian dollars and will need either a short currency forward contract on Australian dollars or equivalently a long currency forward contract on U.S. dollars if he expects the Australian dollar to depreciate.

For Further Reference:

(Study Session 14, Module 37.6, LOS 37.a)

Question #47 of 60

Question ID: 1220662

Which of the following is the *most accurate* way to replicate a payer swap?

- A) A zero-cost portfolio consisting of a long cap and a short floor with the same strike rate.**
- B) A short cap and long floor with strike rate equal to the swap fixed rate.
- C) A long FRA with maturity equal to the swap tenor.

Explanation

If the exercise rate on a cap and floor is same, a long cap and short floor can be used to replicate a payer swap. If the value of such long cap and short floor is same, their (common) exercise rate should be equal to the swap fixed rate.

For Further Reference:

(Study Session 14, Module 38.6, LOS 38.j)

Question #48 of 60

Question ID: 1220663

Which of the following transactions should Walker initiate in order to comply with Steiner's request regarding the funding shortage at the South African gold mine? Establish:

- A) a long position in an off-market FRA by making a payment to the short position.**
- B) a short position in an off-market FRA by receiving a payment from the long position.
- C) a long position in an off-market FRA by receiving a payment from the short position.

Explanation

In answering this question, you must first compute the contract rate for a zero value (arbitrage free) 7×10 FRA (i.e., the FRA expires in 210 days and the underlying loan expires in 300 days). The contract rate for the 7×10 FRA is computed as follows:

$$R_{210} = 0.0603 \left(\frac{210}{360} \right) = 0.0352 \quad R_{300} = 0.0641 \left(\frac{300}{360} \right) = 0.0534$$

$$FRA_{7 \times 10} = \left(\frac{1 + R_{300}}{1 + R_{210}} \right) - 1 = \left(\frac{1.0534}{1.0352} \right) - 1 = 0.0176$$

$$\text{FRA}_{7 \times 10} = 0.0176 \left(\frac{360}{90} \right) = 0.0704 = 7.04\%$$

Since the contract rate on an arbitrage free is higher than the desired rate of 6.95%, Walker must establish a position in an off-market FRA. He will need a long position because he will be borrowing at the contract rate, not lending. Since having a contract rate that is lower than the market rate ($6.95\% < 7.04\%$) is valuable to the long, Walker will have to make a payment to the short position at the contract inception.

For Further Reference:

(Study Session 14, Module 37.5, LOS 37.b)

Questions #49-54 of 60

Questions 109 through 114 relate to Portfolio Management.

Pearl Asset Management Case Scenario

Hong Zhou, Jianguo Yeung, and Jm Leor Joeng work for Pearl Asset Management, a large private wealth advisory firm. During lunch they discuss various unique client situations they face and how they plan to resolve them.

Yeung mentions that yesterday, he met one of his clients who was very concerned about current market volatility and its impact on his portfolio. Specifically, the client is concerned about the impact of extreme stress events.

Zhou, Yeung, and Joeng are all developing multifactor models to attempt to explain asset price returns. Zhou has built his model based on standardized sensitivities of asset returns to intrinsic valuation model inputs. When Zhou asks Yeung about factors that his model uses to explain the differences in returns of different asset classes, Yeung replies that he can't define exactly what the factors are but insists that his model uses statistical relationships that have been proven to hold over time. Joeng discounts both Zhou and Yeung's approaches and instead insists that surprises cause stock prices to move. Hence, he has built his model based on surprises rather than sensitivities to absolute factors.

Zhou wishes to combine the actively managed Lincoln investment fund with a passively managed fund that tracks the Russell 2000 (which is the benchmark for the Lincoln fund). Expected risk and return data is as follows:

	Lincoln Fund	Russell 2000
Expected annual return	7.6%	6.5%
Return standard deviation	19.0%	11.0%
Active risk	5.0%	0.0%
The risk-free rate is 3.0%		

Joeng asks Zhou about risk premium on an asset. Specifically, Joeng wants to know the impact on the risk premium if an asset's future value is negatively correlated with investors' utility from future consumption. Joeng also wants to know the relationship between a country's growth rate and the real risk-free rate.

Question #49 of 60

Question ID: 1220665

To address the client's concerns about extreme stress events on the portfolio value, Yeung is *most likely* to communicate the portfolio's:

- A) VaR.
- B) relative VaR.
- C) conditional VaR.**

Explanation

Yeung should present the portfolio's conditional VaR, which is the expected loss in the tail (given that VaR is exceeded). VaR just communicates the maximum loss a certain percentage of the time. Relative VaR is appropriate only for clients concerned about performance relative to a benchmark.

For Further Reference:

(Study Session 16, Module 45.2, LOS 45.e)

Question #50 of 60

Question ID: 1220666

Regarding the use of multifactor models, which of the following statements is *most likely* to be correct?

- A) Zhou is using a macroeconomic model, Yeung is using a fundamental factor model, and Joeng is using principal component analysis.
- B) Zhou is using a fundamental factor model, Yeung is using principal component analysis, and Joeng is using a macroeconomic model.**
- C) Zhou is using principal component analysis, Yeung is using a macroeconomic model, and Joeng is using a fundamental factor model.

Explanation

Macroeconomic models are based on surprises in macroeconomic data. Principal component analysis is used to identify the factors of a statistical factor model, which cannot necessarily be described using conventional economic variables. Fundamental factor models use firm-specific valuation metrics such as PE with standardized sensitivities.

For Further Reference:

(Study Session 16, Module 44.2, LOS 44.d)

Question #51 of 60

Question ID: 1220667

To achieve the optimal level of active risk, what proportion of funds would Zhou allocate to the Lincoln fund?

- A) 53%.
- B) 82%.
- C) 151%.**

Explanation

Information ratio for Lincoln fund = $IR = \text{active return} / \text{active risk} = (7.6\% - 6.5\%) / 5\% = 0.22$

Sharpe ratio of benchmark = $SR_B = (6.5\% - 3\%) / 11\% = 0.32$

The optimal amount of active risk can be calculated as:

$$\sigma_A^* = (IR / SR_B) \times \sigma_B = (0.22 / 0.32) \times 11.0\% = 7.56\%$$

The weight of the active Lincoln portfolio should be $7.56\% / 5.0\% = 1.51$, and the weight on the benchmark portfolio would be $1 - 1.51 = -0.51$.

For Further Reference:

(Study Session 17, Module 47.3, LOS 47.d)

Question #52 of 60

Question ID: 1220668

The highest Sharpe ratio that Zhou can achieve by combining the Lincoln fund and the Russell 2000 is *closest* to:

- A) 0.39.
- B) 0.42.
- C) 1.12.

Explanation

The highest Sharpe ratio can be calculated using the relation $SR_P^2 = SR_B^2 + IR^2$:

$$SR_P = \sqrt{SR_B^2 + IR^2} = \sqrt{0.32^2 + 0.22^2} = 0.388$$

Thus, the highest Sharpe ratio that can be achieved by combining the active and passive portfolios is approximately 0.39.

For Further Reference:

(Study Session 17, Module 47.3, LOS 47.d)

Question #53 of 60

Question ID: 1220669

With regard to Joeng's question, Zhou would *most appropriately* reply that the risk premium would be:

- A) lower.
- B) higher.
- C) unaffected by the correlation.

Explanation

An asset whose value is negatively correlated to the investor's utility from future consumption provides a poor hedge against bad consumption outcomes. That is, the asset pays off more when the investor's utility is low. Such assets would command a higher risk premium.

For Further Reference:

(Study Session 17, Module 46.1, LOS 46.c)

Question #54 of 60

Question ID: 1220670

For countries with high expected economic growth, it is *least likely* that:

- A) real risk-free rates will be high.
- B) inter-temporal rate of substitution will be high.**
- C) investors will save less.

Explanation

For countries with high expected economic growth rates, real rates will be high. Investors will be less concerned about the future, and the inter-temporal rate of substitution will be *low*. Also, investors will want to increase current consumption and, hence, will borrow more and save less.

For Further Reference:

(Study Session 17, Module 46.1, LOS 46.c)

Questions #55-60 of 60

Questions 115 through 120 relate to Portfolio Management.

Millennium Investments Case Scenario

Millennium Investments (MI), an investment advisory firm, provides asset allocation recommendations for its clients. Richie Shepard, senior analyst at MI, is using a two-factor macroeconomic model to evaluate a portfolio of two stocks: WMB and REL. The two factors in the model are surprises in inflation and in real GDP growth rate (both given in percentages). The portfolio is invested 60% in WMB. Factor sensitivity and other information for the two stocks are shown in Exhibit 1.

Exhibit 1: WMB and REL

Stock	E(R)	Inflation	GDP Growth Rate
WMB	9%	−2.2	+3.0
REL	10.8%	−1.0	+3.3

Another stock (not in the portfolio), PSL, has a factor sensitivity of −0.9 to inflation and +1.2 to GDP growth rate.

Shepard is also looking at evaluating three portfolios using a single-factor model. Information about the three portfolios is shown in Exhibit 2.

Exhibit 2: Portfolio Factor Sensitivity and Expected Return

Portfolio	Expected Return	Factor Sensitivity
X	0.10	1.00
Y	0.12	1.25

Z	0.15	1.50
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Shepard is meeting with a client to discuss inclusion of actively managed funds in that client's portfolio. To prepare for the meeting, Shepard prepares a presentation to illustrate the merits and risks of this change. Shepard cannot recall the term that is used to capture the sum of active factor risk and active specific risk.

Shepard feels that the economy is finally out of recession and poised for robust growth over the next three to five years.

Question #55 of 60

Question ID: 1214413

Using the information in Exhibit 1, the expected return on the portfolio is *closest* to:

- A) 8.4%.
- B) 9.2%.
- C) **9.7%.**

Explanation

$$E(R_P) = 0.6E(R_{WMB}) + 0.4E(R_{REL}) = 0.6(9\%) + 0.4(10.8\%) = 9.72\%$$

For Further Reference:

(Study Session 16, Module 44.2, LOS 44.d)

Question #56 of 60

Question ID: 1214414

Using information in Exhibit 1, the portfolio's sensitivity to inflation is *closest* to:

- A) -1.1.
- B) **-1.7.**
- C) -2.2.

Explanation

$$\beta_{P,INF} = 0.6\beta_{WMB,INF} + 0.4\beta_{REL,INF} = 0.6(-2.2) + 0.4(-1.0) = -1.72$$

For Further Reference:

(Study Session 16, Module 44.2, LOS 44.d)

Question #57 of 60

Question ID: 1214415

Last year, PSL's actual return was 8% (0.5% unexplained by the model). Inflation surprise, as well as GDP growth rate surprise, was +0.5%. PSL's expected return was *closest* to:

- A) **7.35%.**
- B) 7.50%.
- C) 8.50%.

Explanation

$$8 = E(R) + (-0.9 \times 0.5) + (1.2 \times 0.5) + (0.5)$$

$$E(R) = 7.35\%$$

For Further Reference:

(Study Session 16, Module 44.2, LOS 44.d)

Question #58 of 60

Question ID: 1214416

Using information in Exhibit 2, taking advantage of an arbitrage opportunity would *most likely* require shorting:

- A) portfolio X.
- B) portfolio Y.**
- C) portfolio Z.

Explanation

Consider portfolio A comprising 50% portfolio X and 50% portfolio Z. Portfolio A will have an expected return of 12.5% and a factor sensitivity of 1.25. A long position in portfolio A and short position in portfolio Y will have an expected return of 0.5% with zero factor sensitivity.

For Further Reference:

(Study Session 16, Module 44.1, LOS 44.b)

Question #59 of 60

Question ID: 1214417

The term that Shepard cannot recall is *most likely*:

- A) active total risk.
- B) active risk squared.**
- C) alpha risk.

Explanation

Active risk squared = active factor risk + active specific risk

For Further Reference:

(Study Session 16, Module 44.3, LOS 44.e)

Question #60 of 60

Question ID: 1214418

Based on Shepard's economic outlook, it can be *most appropriately* concluded that:

- A) government bonds will outperform corporate bonds.
- B) higher-rated corporate bonds will outperform lower-rated corporate bonds.**

C) lower-rated corporate bonds will outperform higher-rated corporate bonds.

Explanation

Credit spreads tighten during times of economic expansions. During such times, lower-rated bonds outperform higher-rated bonds.

For Further Reference:

(Study Session 17, Module 46.1, LOS 46.f)