Solution to Self-Assessment #4

Instructions - Question 1-3

A company XYZ with 3000 stocks in markets is trading at 15$ per share today. The company goes through a 5 for 3 stock split today and has not paid any dividends recently.

Question 1. What would be the adjusted stock price of XYZ after the stock split?

a. 15$
b. 25$
c. 9$
d. 12$

Solution: 5 for 3 stock split represents that 3 old stocks give you 5 new stocks. This implies, 5 * New_Stock_Price = 3 * Old_Stock_Price (15$) This implies, New_Stock_Price = (15*3/5)$ = 9$
Thumb Rule: When number of stocks increase after stock split, price decreases and vice versa. (Why? Because market cap of the firm is constant before and after stock split) A company XYZ with 3000 stocks in markets is trading at 15$ per share today. The company goes through a 5 for 3 stock split today and has not paid any dividends recently.

Question 2. What would be the number of stocks of XYZ available in the market after the stock split?

a. 3000
b. 1800
c. 15000

d. 5000

Solution: 5 for 3 stock split represents that 3 old stocks give you 5 new stocks. Then, 3000 old stocks proportionally convert into 5000 new stocks

Question 3. What would be the market value of all stocks of XYZ after the stock split?

a. 3000$
b. 45000$
c. 27000$

d. 75000$

Solution: Stock split is only a cosmetic event. It never changes the market value (market cap) of a firm Therefore, the market value of firm before stock split = 3000 * 15$ = 45,000$

the market value of firm after stock split = 5000 * 9$ = 45,000$

Instructions - Question 4-5 Given the beta of Herbalife is 1.58, Apple is 1.32, Costco is 0.87 and Walmart is 0.62

Question 4. Which of the following statements is true for Apple stock?
a. When the market goes down by 1.32%, on average, Apple stock goes down by 1%
b. When the market goes up by 1.32%, on average, Apple stock goes up by 1%
c. When the market goes down by 1%, on average, Apple stock goes down by 1.32%

d. Both a and b

Solution: Based on the definition of beta of a stock:
When the market goes up by 1%, on average, Apple stock goes up by 1.32% When the market goes down by 1%, on average, Apple stock goes down by 1.32%

Question 5. Based on the beta values, which of the following stocks is the least risky to invest in?

a. Herbalife
b. Apple
c. Costco

d. Walmart

Question 6. Suppose two portfolios have the same average return, the same standard deviation of returns, but portfolio A has a higher beta than portfolio B. According to the Treynor measure, the performance of portfolio A ___________.

A. is better than the performance of portfolio B
B. is the same as the performance of portfolio B
C. is poorer than the performance of portfolio B
D. cannot be measured as there is no data on the alpha of the portfolio

Answer 1. (C)

Explanation: $$Treynor\ Ratio = \frac{r_p - r_f}{\beta_p}$$

Higher the Beta, lesser is the Treynor ratio. Therefore, A is a poorer performer as compared to B.

**Question 7. A trader sends a market order to buy 1000 shares in the following limit-order book:
Her average fill price is:**

A. 124.20
B. 124.30
C. 124.65
D. 124.70

Answer 2. (D)

Explanation:

Price	Share
124.3	0.4
124.9	0.2
125	0.4
Average Price	124.7

Question 8. Suppose that you invest $10,000 into a Home Depot stock and incur a 0.60% fee when you buy. Shares than rise 8% and you sell incurring another cost of 0.80%. What is your net return?

A. 6.73%
B. 5.00%
C. 6.49%
D. 3.20%

Answer 3. (C)

Explanation:

Initial Value	10000
Value after 0.6% Fee	9940
Value after 8% price raise	10735.2
Value after 0.8% Fee	10649.3184
	6.49%

Answer 6. (D)

Explanation: If markets are efficient, it shouldn't be possible to consistently generate alpha since arbitrage is not possible when information travels

Question 9. Which of the following statements is(are) true if the efficient market hypothesis holds?

A. It implies perfect forecasting ability
B. It implies the market is irrational and prices follow a particular pattern
C. It implies that prices reflect all available information

Answer 9. (C)

Explanation: Check the definition of Efficient Markets. An efficient capital market is one in which stock prices fully reflect available information.

Question 10. The weak form of the efficient market hypothesis implies that

A. Security prices reflect all information found in past prices and volume
B. Past price changes can be used to predict future price changes
C. Only major market events can be predicted
D. Security prices reflect all publicly available information

Answer 10. (A)

Explanation: Weak Form - Security prices reflect all information found in past prices and volume (definition from slide)