Instructions - Question 1-3 IN GENERAL, some answers need to have the $ sign in front of the number

For questions (1) to (3), please use the below data for Herbalife. The company did not pay any dividends in 2018.

Date	COMNAM	Stock Split	Price
1/31/2018	HERBALIFE NUTRITION LTD		$ 82.99
2/28/2018	HERBALIFE NUTRITION LTD		$ 92.10
3/29/2018	HERBALIFE NUTRITION LTD		$ 97.47
4/30/2018	HERBALIFE NUTRITION LTD		$ 105.73
5/31/2018	HERBALIFE NUTRITION LTD	2 for 1	$ 50.77
6/20/2018	HERBALIFE NUTRITION LTD		$ 53.72
7/31/2018	HERBALIFE NUTRITION LTD		$ 51.63
8/31/2018	HERBALIFE NUTRITION LTD		$ 56.59
9/28/2018	HERBALIFE NUTRITION LTD		$ 54.55
10/31/2018	HERBALIFE NUTRITION LTD		$ 53.26
11/30/2018	HERBALIFE NUTRITION LTD		$ 57.25
12/31/2018	HERBALIFE NUTRITION LTD		$ 58.95

1. What is the return for the month of February?

a. 22.54%

b. 10.98%

c. -9.89%

d. 9.89%

Solution: Return is % change in price (no dividends).

Return = (92.1 - 82.99)/82.99 * 100% = 10.98%

2. What is the return for the month of May?

a. -3.96%

b. 5.81%

c. -51.98%

d. 4.50%

Solution: Return is given by: $r_t = \frac{p_t f_t + d_t}{p_{t-1}}$

In this case:

$$p_t = 50.77, f_t = 2\,, d_t = 0,\ p_{t-1} = 105.73$$

Hence, r_t = 50.77*2/105.73 = 0.96037

Return (in %) = (0.96037 – 1) *100% = -3.96%

3. What is the compound return for Herbalife from February to December 2018? [Note: This question involves multiple calculations. Please make use of a calculator or Excel to compute the return quickly]

a. 59.89%

b. 37.34%

c. 42.07%

d. 25.32%

Solution: We calculate compound returns using formula:

$$\text{Compound return} = (r_1 + 1) \times (r_2 + 1) \times \cdots \times (r_n + 1) - 1$$

Applying the above formula for all the months, we get compound return = 42.07%

Prices	Month	Adjusting Stock Split Effect	Period Returns	(1+r factors)	
82.99	Jan	82.99			
92.1	Feb	92.1	0.109772262	1.109772262	**February Return = 0.1098 = 10.98%**
97.47	Mar	97.47	0.058306189	1.058306189	
105.43	Apr	105.73	0.084744024	1.084744024	
50.77	May	101.54	-0.039629244	0.960370756	**May Return = -0.0396 = -3.96%**
53.72	Jun	107.44	0.05810518	1.05810518	
51.63	Jul	103.26	-0.038905436	0.961094564	
56.59	Aug	113.18	0.096068177	1.096068177	
54.55	Sep	109.1	-0.036048772	0.963951228	
53.26	Oct	106.52	-0.023648029	0.976351971	
57.25	Nov	114.5	0.074915509	1.074915509	
58.95	Dec	117.9	0.029694323	1.029694323	
				0.420653091	**Compound Return = 0.4207 = 42.07%**

4. Which of the following doesn't change as a result of a stock split?

a. Stock price

b. Number of stocks in market

c. Market value of the firm

d. Dividend paid per stock

Change this to none of the above - to avoid confusion between dividend per stock vs. total dividends

Solution: Market value of a firm is not affected in a cosmetic event such as stock split.

Number of stocks and stock price change during a stock split. Dividend paid per stock changes but total dividend paid across all stocks doesn't change during a stock split.

Instructions - Question 5-7

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.

5. 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)

6. 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

7. 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 8-10 Add note: Betas represent the market risk of the stock.

Given the beta of Herbalife is 1.58, Apple is 1.32, Costco is 0.87 and Walmart is 0.62

8. 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%

9. Based on the beta values, which of the following stocks has the greatest return potential but also poses the greatest risk? "greatest market risk"

a. Herbalife

b. Apple

c. Herbalife and Apple have equal return potential

d. Walmart

Solution: The stock with the maximum beta has the greatest return potential but also poses the greatest risk. Hence, Herbalife is the correct answer.

10. 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

Solution: The stock with the least beta has the least return potential but also poses the least risk. Hence, Walmart is the correct answer.