**Question #1** (15 points total)

Using the data provided on the tab labeled Question 1, calculate the Beta of Workday, Inc. (WDAY) by estimating the excess-return version of the Capital Asset Pricing Model (CAPM) using the time-series of data provided. Calculate Beta in two ways – using the mathematical formula for Beta as well as the regression function in Excel.

**Question #2** (15 points total)

Suppose that the annual return of the S&P 500 stock index is expected to be 15.0% in 2021. Suppose also that the annual return on 1 year Treasury Bills (a proxy for the risk free rate of return) is expected to be 0.25% in 2021. Using your estimate of Beta from Question 1, use the CAPM to estimate the expected annual return of Workday’s stock for 2021.

**Question #3** (20 points total)

Workday, Inc.’s June 18, 2021 $240.00 Call option is currently trading for $10.00 per share of underlying stock and has the characteristics listed below. Using Excel’s solver function, calculate the implied volatility of this option.

Current Date: May 10, 2021

Current Stock Price: $237.21

Risk-free rate: 0.10%

Maturity Date: Friday, June 18, 2021

*Please ensure the settings in Solver are saved, visible and properly set in the worksheet you turn in to be graded. Points will be deducted if I cannot see the solver settings you use to calculate the answer.*

**Question #4** (15 points total)

Using your estimate of stock return volatility from Question 3, estimate the Call price (C0) and Put price (P0) for the option given in Question 3 using a two period binomial approach. Note – the Time to Maturity for the binomial model should be 1⁄2 the Time to Maturity used in Question 3 (i.e., just divide Time to Maturity from Question 3 by 2).

**Question #5** (20 points total)  
Using the data provided on the tab labeled Question 5:

a) As a financial analyst your job is to analyze the performance of new stocks that just listed, via an initial public offering (IPO) on the NASDAQ stock market, to determine Buy/Sell recommendations your brokerage firm will make on these stocks. Based on your analysis you are required to classify stocks into one of two categories - “Buy” or “Sell”. If the 21 Day Return of the stock is greater than the 21 Day Return of the NASDAQ and the Total Revenue of the firm is positive, then the stock is classified as a “Buy”. If these two conditions are not satisfied, the stock is classified as a “Sell”.

Using an Excel IF function, create one formula that will classify a stock into either the “Buy” or “Sell” category. Classify all stocks by applying this formula individually to each stock listed. You may “nest” other Excel functions with the IF function in your answer, but you must use an IF function to receive at least partial credit for this problem.

b) Suppose that instead of making Buy/Sell recommendations, your firm has made specific recommendations regarding the number of shares of each stock to be bought. Using these recommendations and the given commission structure, create one formula that uses the Excel IF function to calculate the total commission that would be charged for each stock purchase. You may use only the Excel IF function to receive credit for this problem.

The commission structure, highlighted in green on the tab labeled Question 5, is as follows:

* •  If the 21 Day Return of the stock is less than or equal to 25.0%, the firm recommends buying 1,000 shares.
* •  If the 21 Day Return of the stock is greater than 25% but less than or equal to 50.0%, the firm recommends buying 2,000 shares.
* •  If the 21 Day Return of the stock is greater than 50% but less than or equal to 75.0%, the firm recommends buying 3,000 shares.
* •  If the 21 Day Return of the stock is greater than 75.0%, the firm recommends buying 4,000 shares.
* •  The commission charged for the first 1,500 shares purchased is $0.15 (15 cents) per share.
* •  The commission charged for the next 1,000 shares purchased is $0.12 (12 cents) per share.
* •  The commission charged for the number of shares greater than 2,500 is $0.10 (10 cents) per share.

**Question #6** (15 points total)

Using the data provided on the tab labeled “Question 6 – Data” use the VLOOKUP function to fill in the table on Tab “Question 6 – Answer” for the companies and variables listed. Use the *FDIC Certificate Number* field as the unique data ID field.