**MIDTERM EXAM REVIEW**

SECTION I – TIME VALUE OF MONEY (10 points)

EXAMPLE: What is the future value of $2,000 after 2 years if the interest rate is 10% compounded annually?

|  |  |
| --- | --- |
| **TVM TEMPLATE** |  |
| **INPUT** |  |
| PV= |  |
| FV= |  |
| RATE= |  |
| TIME= |  |
| PMT= |  |
|  |  |
| **OUTPUT** |  |
|  | =Fv(RATE,NPER,PMT,PV) |

SECTION II – PORTFOLIO MANAGEMENT – 30%

Historical Analysis / Scenario Analysis

1. Calculate the Average Return, Standard Deviation, Combining 2 asset classes (return and Standard Deviation), Correlation









1. Starting with $100,000 (INPUT of three asset classes that you investing – given the weights, the historical returns, historical standard deviations) – OUTPUT: average return, sharp ratio for risky asset (Premium/Standard Deviation) – Combine return/SD Ret=Ws.Rs+Wb.Rb SD=Sqrt[Wb^2.SDb^2)+(Ws^2.SDs^2)+2(Ws.Wb.SDs.SDb.Corr)]

SR = (Rp – Rf)/SDp



1. I will have info on 2 portfolios and the market benchmark, and you will calculate the CAPM = Rf + B(Rm – Rf) , Sharpe Ratio, Alpha=Rp – CAPM



SECTION III – Stock trading returns / valuation – 20%

1. Buy a stock, sell a stock, receive a dividend – calculate the return HPR% (margin, selling short or outright)
	1. Example: Buy $100, sell $120, receive div $4 – calculate HPR%= HPR%=(CF/I) (120-100+4)/100 = 24/100 = 24%
	2. Example: The same numbers with 50% margin loan @10% interest): (120-50-5+4-50)/50 = 19/50 = 38%

Another Example: Bought 100 shares x $100. Borrow 50% of the investment at 10% interest rate. You received $4 div per share. You sold it at $120 x 100 shares. What is $ return and % return (HPR%):

Initial Investment

100 x 100 = (10,000)

Borrow @10% 50% 5,000

Net Invest (5000)

 Sold 100x120 12,000

Less debt (5000)

Less Interest (500)

Net 6,500

Rec 400

Net 6,900

Inv (5,000)

Profit 1,900

HPR = profit / Inv. 1,900/5,000 = 38%

* 1. Short Selling: Borrow shares and sell at $100. Buy back all shares at $80 – calculate HPR%= 100-80/100 = 20%
1. Stock Valuation: INPUT/OUTPUT: Enterprise Value

EV = (Shares Outs x Stock Price) + Debt – Cash,

EV=EBITDA x Multiple

Intrinsic Value (Expected Pr+Div)/(1+CAPM)

CAPM = Rf + b. (Rm – Rf)

and

Div. Disc Model

Next year’s = DIV (1+Div growth) / (CAPM-Div Growth)

This Year’s = DIV / (CAPM – Div Growth)

CAPM = Rf + b (Rm – Rf)





SECTION IV – BONDs– 30%

1. Calculate Bond Price / Invoice Price
	1. MV of the Bond = Price x 10, Invoice Price = MV + Accrued Interest



1. YTM, YTC, YTW, Current Yield – (input Issue Date, Trading Day, Price of The bond, redemption, frequency, coupon rate)



1. Price, Duration, Convexity – Spreadsheet that you need to build)



The formula for calculating the convexity is as follows:

$$Convexity=\frac{\frac{1}{(1+y)^{2}} \sum\_{1}^{n}\frac{CF}{(1+y)^{t}} (t^{2}+t)}{MV . f^{2}}$$

Where $y$is the periodic yield, t is the time period, CF is the cash flow payment or the coupon payment, n is the number is periods, and$ f$is the frequency of payments per year.