FINANCIAL MANAGEMENT
FORMULA SHEET

CHAPTER 1: NATURE, SIGNIFICANCE AND SCOPE OF FINANCIAL MANAGEMENT	
Economic Value Added (EVA)	EVA = NOPAT – (% Cost of Capital x Capital)
Net Profit Margin (NPM)	$NPM = \frac{\text{Net profit after Taxes}}{\text{Sales}}$
Return on Investment (Du Pont)	$ROI = \frac{EBIT}{Sales} \times \frac{Sales}{Assets} \times \frac{EBIT}{Assets}$
CHAPTER 2: CAPITAL BUDGETING	
Present Value of Single Cash Flow	$PV = \frac{\text{Future Value}}{(1+i)^t}$
Future Value of Single Cash Flow	$FV^t = PV * (1+i)^t$
Future Value of Annuity	$FVA = R \frac{(1+ i)^t - 1}{i}$
Present Value of Annuity	$PVA = R \frac{(1 + i)^t - 1}{i\ (1+i)^t}$
Present Value of Perpetuity	$\frac{R}{i}$
Present Value of Growing Perpetuity	$\frac{R}{i - g}$
Net Present Value	$NPV = \left[\frac{R_1}{(1+K)^1} + \cdots + \frac{R_n}{(1+k)^n} + \frac{S_n}{(1+k)^n} + \frac{W_n}{(1+k)^n}\right] - \left[C_0 + \frac{C_1}{(1+k)^t} + \cdots + \frac{C_n}{(1+k)^n}\right]$ NPV = Sum of Discounted Cash Inflows – Discounted Cash Outflows
Pay Back Period	$Pay\ Back\ Period = \frac{Initial\ Investment}{Annual\ cash\ flows}$
Average Rate of Return	$ARR = \frac{Average\ net\ income\ after\ taxes}{Average\ investment}$
Internal Rate of Return	$IRR(r) = r_L + \left[\frac{PV_c - PV_{CFAT}}{DPV}\right] \times Dr$ Or $= r_H - \left[\frac{PV_c - PV_{CFAT}}{DPV}\right] \times Dr$

Profitability Index	$$Profitability\ index = \frac{PV\ of\ Future\ cash\ flows}{Initial\ cash\ investment}$$
Standard Deviation	$$Standard\ Deviation \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}}$$ $$\sigma = \sqrt{\sum_{i=1}^{n} \left(CF_t \times \overline{CF}\right)^2 \times P_i}$$
Co-efficient of Variation	$$Co - efficient\ of\ Variation = \frac{Standard\ Deviation}{Mean} \times 100$$
Certainty Equivalent Approach	$\alpha = \frac{\text{Certain Net Cash Flows}}{\text{Uncertain Net Cash Flow}}$ $NPV = \frac{\alpha\ NCF_t}{(1 + K_f)^t}$ α= the risk adjustment factor or the certainty equivalent coefficient NCFt = the forecasts of net cash flow without risk adjustment K_f = risk- free rate of return assumed to be constant for all periods
Expected NPV	$ENPV = \frac{\sum ENCF_t}{(1 + K)^t}$ Where ENPV is the expected net present value, ENCFt expected net cash flows in period t and k is the discount rate. $ENCF^t$ = NCF * Probability
CHAPTER 3: CAPITAL STRUCTURE	
Value of Firm	$\text{Value of Firm} = \frac{\text{EBIT}}{\text{Ko}}$
Value of Equity	$\text{Value of Firm} = \frac{\text{EBIT} - \text{Interest}}{\text{Ke}}$
Total Value of Firm	Total Value of Firm = Value of Debt + Market Value of Equity

Overall Cost of Capital	$Ko = K_d \times \frac{D}{(D+E)} + K_e \times \frac{E}{(D+E)}$
Modigliani Miller Approach	$V_l = V_u = \frac{EBIT}{K_{ol}} = \frac{EBIT}{K_{ou}}$
Operating Leverage	$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{Operating Profit (EBIT)}}$
Financial Leverage	$\text{Financial Leverage} = \frac{\text{Operating Profit (EBIT)}}{\text{Profit Before Tax}}$
Combined Leverage	$DCL = DOL \times DFL = \frac{\text{Contribution}}{EBIT} \times \frac{EBIT}{PBT} = \frac{\text{Contribution}}{PBT}$
Working Capital Leverage	$\text{Working Capital Leverage} = \frac{CA}{TA + DCA}$
CHAPTER 4: SOURCES OF RAISING LONG TERM FINANCE AND COST OF CAPITAL	
Cost of Debt	Kd after taxes = Kd (1 – tax rate)
Cost of Preference Shares	Kp (cost of pref. share) $= \frac{\text{Annual dividend of preference shares}}{\text{Market price of the preference stock}}$
Cost of Equity (CAPM)	$Ke = R_f + \beta\,(R_m - R_f)$
Weightage Average Cost of Capital	**WACC = (Equity Weight * K_e) + (Debt Weight * K_d)** $\text{Equity Weight} = \frac{\text{Value of Equity}}{\text{Total Capital Employed}}$ $\text{Debt Weight} = \frac{\text{Value of Debt}}{\text{Total Capital Employed}}$
CHAPTER 6: DIVIDEND POLICY	
Walters Model	$P = \frac{D + \frac{r}{k}(E - D)}{k}$

Gordon's Model	$P = \frac{E(1-b)}{k_e - br}$
Dividend Pay-out Ratio	$Dividend\ Payout\ Ratio = \left(\frac{Total\ Dividends}{Net\ Income}\right) \times 100$
Retention Ratio	$Retention\ Ratio = \frac{Net\ Income - Dividends}{Net\ Income}$ $= 1 - \frac{Dividends}{Net\ Income}$ $= 1 - Payout\ Ratio$
CHAPTER 7: WORKING CAPITAL	
Working Capital	Current Assets – Current Liabilities
Operating Cycle	Operating Cycle = R + W + F + D – C
Period of Raw Material Stock	$Period\ of\ raw\ material\ stock = \frac{Average\ value\ of\ Raw\ material\ stock}{Consumption\ of\ raw\ material\ per\ day}$
Period of Credit Granted by supplier	$Period\ of\ Credit\ granted\ by\ supplier = \frac{Average\ level\ of\ creditors}{Purchase\ of\ raw\ materials\ per\ day}$
Period of Production	$Period\ of\ Production = \frac{Average\ value\ of\ work\ in\ progress}{Average\ cost\ of\ production\ per\ day}$
Period of turnover of finished goods stock	$Period\ of\ turnover\ of\ finished\ goods\ stock = \frac{Average\ Stock\ of\ finished\ goods}{Average\ cost\ of\ goods\ sold\ per\ day}$
Period of credit taken by customers	$Period\ of\ credit\ taken\ by\ customers = \frac{Average\ receivable}{Average\ value\ of\ credit\ sales\ per\ day}$
William J. Baumal Model for Optimal Cash Balance Management	$Formula\ Economic\ lot\ size = \sqrt{\frac{2 \times Tb}{I}}$
Economic Order Quantity	$EOQ = \sqrt{\frac{2AO}{C}}$
Current Ratio	$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities}$
Acid Test Ratio	$Acid\ Test\ Ratio = \frac{Current\ Assets - Inventories}{Current\ Liabilities}$

Inventory Turnover	$Inventory\ Turnover = \frac{Cost\ of\ goods\ sold}{Average\ Inventory}$
Current Asset Turnover	$Current\ Assets\ Turnover = \frac{Annual\ Sales}{Current\ Assets}$
Receivable Turnover	$Receivable\ Turnover = \frac{Sales}{Debtors}$
Debt Equity Ratio	$Debt - equity\ ratio = \frac{Total\ long\ term\ debts}{Shareholder\ funds}$
CHAPTER 8: SECURITY ANALYSIS	
Total Return	Total return = Current return + Capital return
Holding Period Return	Holding Period Return = Income + (End of Period Value – Initial Value)/Initial Value Annualized HPR = {[(Income + (End of Period Value – Initial Value)] / Initial Value+ 1}$^{1/n}$ – 1, where n = number of years.
CHAPTER 9: PORTFOLIO MANAGEMENT	
Return on Portfolio	$R_p = \sum_{i=1}^{N} X_i R_i$ where: Rp = expected return to portfolio Xi = proportion of total portfolio invested in security i Ri = expected return to security i N = total number of securities in portfolio
Covariance	$COV_{xy} = \frac{1}{n}\sum_{i=1}^{n}[X_i - E(X)(Y_i - E(y)]$ Where the probabilities are equal and COVxy = covariance between x and y xi = return on security x yi = return on security y E(X) = expected return to security x E(Y) = expected return to security y n = number of observations
Co-efficient of Correlation	$Cor_{(xy)} = r_{xy} = \frac{COV_{(xy)}}{\sigma x \sigma y}$ where: rxy = coefficient of correlation of x and y COVxy = covariance between x and y sx = standard deviation of x sy = standard deviation of y

Portfolio Risk	$\sigma_p = \sqrt{W_x{}^2.\sigma_x{}^2 + W_y{}^2.\sigma_y{}^2 + 2W_xW_y(r_{xy}\sigma_x\sigma_y)}$ Where: sp = portfolio standard deviation wx = percentage weightage of total portfolio value in stock X wy = percentage weightage of total portfolio value in stock Y sx = standard deviation of stock X sy = standard deviation of stock Y rxy = correlation coefficient of X and Y
Beta	$Beta = \frac{Non - diversifiable\ risk\ of\ asset\ or\ portfolio}{Risk\ of\ market\ portfolio}$
Equation of the capital market line	$R_e = R_F + \frac{R_M - R_F}{\sigma_M}\ \sigma_e$
Single Index Model	$R_l = \propto_i + \beta_i R_m + e_i$ Where Ri = Expected return on a security ai = Alpha Coefficient bi = Beta Coefficient RM = Expected Return in market (an Index) e = Error term with a mean of zero and a constant standard deviation
Multi Index Model	$\overline{Ri} = \alpha_i + \beta_m\beta_m + \beta_1 R_1 + \beta_2\beta_2 + \beta_3\beta_3 + e_i$ The model says that the return of an individual security is a function of four factors – the general market factor Rm and three extra-market factors R1 , R2 , R3. The beta coefficients attached to the four factors have the same meaning as in the single index model.
Simple Sharpe Portfolio	$(R_i - R_F)/\beta_i$ where: Ri = expected return on stock i RF = return on a riskless asset bi = expected change in the rate of return on stock i associated with a 1 percent change in the market return