Formula Sheet – Financial Management

Ratio Analysis

1. Current Ratio $= \frac{Current\ Assets}{Current\ Liabilities}$
2. Quick Ratio $= \frac{Quick\ Assets}{Current\ Liabilities}$
3. Debt Equity Ratio $= \frac{Long\ Term\ Debt}{Shareholder's\ Equity}$
4. Capital Gearing $= \frac{\text{Long Term Debt + Debentures + Preference Share Capital}}{\text{Equity Share Capital + Reserves and Surplus – losses and fictitious assets}}$
5. Proprietary Ratio $= \frac{\text{Proprietary Funds}}{\text{Total Assets}}$
6. Net Working Capital Ratio $= \frac{\text{Net Working Capital}}{Capital\ Employed}$
7. Return on Investment $ROI = \frac{Returns\ or\ Earnings}{Investment} X\ 100$
8. Return on Capital Employed $ROCE = \frac{EBIT}{Capital\ Employed}\ X\ 100$
9. Return on Equity $= \frac{\text{Net Profit}-\text{Pref Dividend}}{\text{Net Worth}}$
10. Return on Assets $= \frac{\text{Net Profit}}{\text{Total Assets}}$
11. Gross Profit Ratio $= \frac{\text{Gross Profit}}{\text{Sales}}$
12. Net Profit Ratio $= \frac{\text{Net Profit}}{\text{Sales}}$
13. Operating Profit Ratio $= \frac{\text{Operating Profit or EBIT}}{\text{Sales}}$
14. Operating Ratio $= \frac{\text{Operating Cost}}{\text{Sales}}$
15. PV Ratio $= \frac{\text{Contribution}}{\text{Sales}}$
16. Price Earnings Ratio $= \frac{\text{Market Price per Share}}{\text{Earnings per Share}}$
17. Debt Service Coverage Ratio $= \frac{\text{Net Profit after Tax+Non Cash Expense+}\frac{\text{Interest on Loans}}{1-t}}{\text{Interest on Term Loans+Principal}}$
18. Interest Service Coverage Ratio $= \frac{\text{EBIT}}{\text{Interest on Term Loans}}$
19. Preference Dividend Coverage ratio $= \frac{\text{Profit after Tax}}{\text{Pref.Dividend+DDT}}$
20. Capital Turnover Ratio $= \frac{\text{Sales}}{\text{Average Capital Employed}}$
21. Fixed Asset Turnover Ratio $= \frac{\text{Sales}}{\text{Fixed Assets}}$
22. Working Capital Turnover Ratio $= \frac{\text{Sales}}{\text{Average Working Capital}}$
23. Inventory Turnover Ratio $= \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$
24. Debtor Turnover Ratio $= \frac{\text{Net Credit Sales}}{\text{Average Debtors}}$
25. Debtor Collection Period $= \frac{\text{Average Debtors}}{\text{Average Daily or Monthly credit } sales}$
26. Creditor Turnover Ratio $= \frac{\text{Net Credit Purchases}}{\text{Average Creditors}}$
27. Creditor Payment Period $= \frac{\text{Average creditors}}{\text{Average Daily or Monthly credit } purchases}$

Formula Sheet – Financial Management

Key Equations

- Cost of goods sold (COGS) = opening stock + purchases + direct expenses – closing stock
- Cost of goods sold = sales – gross profit
- Sales = gross profit / gross profit ratio
- Gross profit = sales x gross profit ratio
- COGS ratio + Gross profit ratio = 100
- Gross profit ratio – operating expenses ratio = operating profit ratio
- Operating expenses ratio + operating profit ratio = 100
- Net profit = net profit ratio x sales
- Working capital (net current assets) = current assets – current liabilities
- Total operating costs = cost of goods sold + other operating expenses
- Raw material consumed = opening stock of raw material + purchases – closing stock of raw material
- Cost of production = opening stock of WIP + Raw material consumed + Direct wages + production expenses – closing stock of WIP
- Average daily cash expenditure = (COGS + Cash operating expenses) / 365 days
- Total of liabilities side = Net worth + long term debt + current liabilities
- Total of assets side = Fixed assets + Investments + Current asset
- Net-worth = total assets – total debts
- Net-worth = fixed assets + working capital – long-term debt
- Capital employed = Net worth + long-term debt – non-trade investments
- Capital employed = fixed assets + net working capital – non-trade investments

Investment Decisions

1. Payback Period (In case of **Even** annual CFAT) = $\frac{Initial\ Investment}{Annual\ CFAT}$
2. ARR = $\frac{Average\ Annual\ Net\ Earnings}{Original\ or\ Average\ Investment}$ x 100
3. Profitability Index = $\frac{PV\ of\ Cash\ Inflow}{PV\ of\ Cash\ Outflow}$
4. IRR = $R1 + \frac{NPV1}{NPV1-NPV2}$ x $(R2 - R1)$ [R1 should be the lower rate]
5. Annualised Net Benefit = $\frac{NPV}{PVAF}$

Leverages

1. Operating Leverage = $\frac{\%\ Change\ in\ EBIT}{\%\ Change\ in\ Sales}$ or $\frac{Contribution}{EBIT}$
2. Operating Break Even = $\frac{Fixed\ Cost}{Contribution\ per\ Unit}$ or $\frac{Fixed\ Cost}{PV\ Ratio}$
3. Financial Leverage = $\frac{\%\ Change\ in\ EPS}{\%\ Change\ in\ EBIT}$ or $\frac{EBIT}{EBT}$
4. Degree of Combined Leverage = OL X FL

Formula Sheet – Financial Management

Proforma P&L

	Sales (net of sales return)	
Less:	Cost of Goods Sold (opening stock + purchases + direct expenses – closing stock)	
Gross profits		
Less:	**Operating expenses**	
	Administration expenses,	
	Selling and distribution expenses	
	Depreciation	
Operating Profits		
Add:	**Non- operating Income**	
	Profit on sale of Fixed Assets	
	Interest/ Dividend on non-trade Investment	
	Rent Income	
Less:	**Non- Operating Expenses**	
	Loss on sale of Fixed Assets	
	Preliminary Expenses written off	
Earnings before Interest and Tax		
Less:	Interest	
Earnings before Tax		
Less:	Tax	
Earnings After Tax		
Less:	**Preference Dividend**	
Earnings available to Equity shareholders		
Less:	Dividend to equity shareholders	
Retained Earnings		

Dividend Decisions

1. Dividend Rate = $\frac{Dividend\ Per\ Share}{Face\ Value}$
2. Dividend Yield = $\frac{Dividend\ Per\ Share}{Market\ Price\ per\ Share}$
3. Dividend Payout = $\frac{Dividend\ Per\ Share}{Earnings\ per\ Share}$
4. $Growth\ (g) = retention\ (b)$ x $return\ on\ equity\ (r)$
5. $K_e = \frac{Dividend+DDT}{P0} + g$

6. Walter's Model $P_0 = \frac{D}{Ke} + \frac{\frac{r}{Ke} x\,(E-D)}{Ke}$
7. Gorden's Model $P_0 = \frac{D1}{Ke-g}$
8. Graham & Dood $P_0 = m(D + \frac{E}{3})$
9. Linter's Model $D1 = D0 + [(EPS\ x\ Target\ Payout) - D0]\ X\ AF$

P_0 = Current Market price per share
P = Market Price per share
P_1 = Market Price of Share after 1 year
E/EPS= Earnings per share
Ke = Cost of Equity
r = Rate of return
D = Dividend per share
D_1 = Dividend per share next year
D_0 = Dividend per share in current year
AF = Adjustment Factor

Cost of Capital

1. Cost of Irredeemable debt = $\frac{Interest(1-t)}{(Net\ Proceeds\ of\ Issue)}$
2. Cost of redeemable debt = $\frac{Interest(1-t)+\frac{RV-Net\ Proceeds}{N}}{\frac{RV+\ Net\ Proceeds\ of\ Issue}{2}}$
3. Cost of Irredeemable Preference Shares = $\frac{Preference\ Dividend}{(Net\ Proceeds\ of\ Issue)}$
4. Cost of redeemable debt = $\frac{Interest+\frac{RV-Net\ Proceeds}{N}}{\frac{RV+\ Net\ Proceeds\ of\ Issue}{2}}$
5. Cost of Equity
    a. Dividend price approach $K_e = \frac{D}{P}$
    b. Dividend growth approach $K_e = \frac{D1}{P0} + g$
    c. Earnings Price approach $K_e = \frac{E}{P}$
    d. Realised yield approach $Y_t = \{D_t + (P_t - P_{t-1})\}/ P_{t-1}$
    e. CAPM model $K_e = R_f + b(R_m - R_f)$

R_f = Rate of return on security
b = Beta coefficient
R_m = Rate of return on market portfolio

Theories of Capital Structure

S or E= Market value of the Equity [earnings available to equity shareholders / cost of equity]
D = Market value of the Debt [interest / rate of interest or cost of debt]
V = Market value of the Firm = E or S +D
I = Total Interest Payments
T = Tax Rate

Propositions: Modigliani and Miller make the following propositions for Levered & Unlevered Structures

$V_U = \frac{EBIT}{K_{e_U}}$ & $V_L = \frac{EBIT-I}{K_{e_L}}$ + D; Here: $K_{e_U} = K_{0_U} = K_{O_L} = K_O$

$K_{e_L} = K_o + [\frac{Debt}{Equity} X (K_o - K_d)]$

When Tax is considered

Value of Unlevered firm (Vu) = $\frac{EBIT\ (I-T)}{Ko}$

Where, EBIT = Earnings before interest and taxes
Ko = Ke of ULF= Overall cost of capital of the Unlevered Firm
t = Tax rate.

Value of levered firm (V_L) = Value of Unlevered firm + Present value of tax shield on interest
Value of levered firm (V_L) = Value of Unlevered firm + (debt x tax rate)

Also, $K_{e_L} = K_o + [\frac{Debt}{Equity} X (1 - tax) (K_o - K_d)]$

(Where Ko is post-tax)

Present value of tax shield on interest = $\frac{tax\ rate \times interest\ rate \times debt\ funds}{interest\ rate}$

Financial Breakeven Point = $I + \frac{PD}{(1- Tax\ Rate)}$

Indifference Point between 2 options is computed by solving the following equation for EBIT.

Alternative 1:	Alternative 2:
$\frac{[EBIT - Int1 - Int2] \times [1 - Tax\ Rate] - Pd1}{Number\ of\ Equity\ Shares1}$	$\frac{[EBIT - Int1\ ] \times [1 - Tax\ Rate] - Pd1 - Pd2}{Number\ of\ Equity\ Shares2}$

Indifference Point between a Debt & a Non-Debt Option is computed by solving the following equation for EBIT.

Alternative 1: With Debt	Alternative 2: Without Debt
$\frac{[EBIT - Interest] \times [1 - Tax\ Rate]}{Number\ of\ Equity\ Shares\ 1}$	$\frac{EBIT \times [1 - Tax\ Rate]}{Number\ of\ Equity\ Shares2}$