

NOTES:**FREQUENTLY ASKED QUESTION****QUESTION: Whether to follow Chalisa or book provided by Sir in Class?****ANS:** The chalisa here is for last time revision, just before exam to know all the concepts of the syllabus. We solely recommend to go through the notes provided in class for 100% coverage.

We request you not to share these notes in any social media. These notes are exclusively for nov 19 students.

TIME VALUE OF MONEY**1. Techniques Of TVM****(i)** Future Value/Compounding Technique **(ii)** Present Value /Discounting Technique**2. Future Value/Compounding Technique :****Future value** = Today's Money or Present Value $\times (1 + r)^n$ **3. Present Value/Discounting Technique****Present Value** = Tomorrow's Value or Future Value $\times \frac{1}{(1+r)^n}$ **4. Present Value Of Cash Flow For More Than One Year-Uneven Cash Flows and Definite Period**

$$\text{Present Value} = \frac{\text{Future Value}_1}{(1+r)^1} + \frac{\text{Future Value}_2}{(1+r)^2} + \frac{\text{Future Value}_3}{(1+r)^3} + \dots + \frac{\text{Future Value}_n}{(1+r)^n}$$
5. Present Value Of Cash Flow For More Than One Year-Equal Cash Flow and Definite Period [Deferred Annuity i.e Cash Flow arising at the end of every year]Present Value = Future Value \times PVAF(r%, n years) , Where PVAF=Present Value Annuity Factor**6. Present Value Of Cash Flow For More Than One Year-Equal Cash Flow and Definite Period [Annuity Due i.e Cash Flow arising at the beginning of every year]**Present Value = Future Value $\times [1 + \text{PVAF}(r\%, n - 1 \text{ years})]$ **7. Present Value Of Cash Flow Upto Perpetuity/Infinity/Forever-Without Growth i.e Equal Cash Flow & Indefinite Period**

$$\text{Present Value} = \frac{\text{Annual Cash Flow}}{\text{Discount Rate}}$$
8. Present Value Of Cash Flow Upto Perpetuity/Infinity/Forever-With Growth i.e Growing Cash Flow & Indefinite Period

$$\text{Present Value} = \frac{\text{Cash Flows Arising At Year End 1}}{\text{Discount Rate} - \text{Growth Rate}} = \frac{CF_1}{\text{Discount Rate} - \text{Growth Rate}}$$

COST OF CAPITAL

1. Introduction :

Cost Of Capital is the discount rate which we used in TVM and VOS Chapter.

2. Cost Of Capital or Weighted Average Cost Of Capital [WACC] or Ko or Composite Cost Of Capital

Alternative 1 : $K_o = K_e \times W_e + K_r \times W_r + K_p \times W_p + K_d \times W_d + K_t \times W_t$ or

Alternative 2 :

<u>Component</u>	<u>Amount</u>	<u>Weight</u>	<u>Individual Cost</u>	<u>Multiplication</u>
Equity Shares	xxx	W1	K_e	$W1 \times K_e$
Retained Earnings	xxx	W2	K_r	$W2 \times K_r$
Debentures	xxx	W3	K_d	$W3 \times K_d$
Preference Shares	xxx	W4	K_p	$W4 \times K_p$
Term Loan	xxx	W5	K_t	$W5 \times K_t$
		<u>1</u>		$K_o = \text{Total Of Above}$

3. Cost Of Redeemable Debenture :

$$K_{d.a} = \frac{\text{Interest} + \left(\frac{\text{Maturity Value} - B_0}{n} \right)}{\frac{\text{Maturity Value} + B_0}{2}}$$

Note: B_0 = Current Market Price [In case of existing debentures]; and

B_0 = Net Proceeds Where Net Proceeds = Face Value + Premium - Discount - Flotation Cost [In case of new debenture]

Note: If Tax Rate is given Interest Amount & Maturity Value should accordingly be adjusted as stated in above concepts.

4. Cost Of Iredeemable/Perpetual Debenture:

$$K_d = \frac{\text{Interest}}{B_0}$$

5. Cost Of Redeemable Preference Shares:

$$K_p = \frac{\text{Dividend} + \left(\frac{\text{Maturity Value} - P_0}{n} \right)}{\frac{\text{Maturity Value} + P_0}{2}}$$

6. Cost Of Iredeemable Preference Shares: 9911442626

$$K_p = \frac{\text{Annual Dividend}}{P_0}$$

7. Cost Of Term Loan :

Interest Rate Paid By Company On Loan Taken [1 - Tax]

8. Cost Of Equity

Dividend Price Approach: $K_e = \frac{DPS}{P_0}$

Cost Of Equity Shares-Earning Price Approach: $K_e = \frac{EPS}{P_0}$

Cost Of Equity Shares-Dividend Price+Growth Approach: $K_e = \frac{DPS}{P_0} + g$

Cost Of Equity Shares-Earning Price+Growth Approach: $K_e = \frac{EPS}{P_0} + g$

Cost Of Equity Shares-CAPM Approach: $K_e = R_f + \text{Beta}_{\text{Security}} \times (R_m - R_f)$

Note :

(i) R_f = Risk Free Return , R_m = Market Return

(ii) (Return From Market - Risk Free Return) is also known as Risk Premium Of Market

9. Cost Of Retained Earning

→ It may be noted that Retained Earning belongs to Equity Shareholders only.

,Hence we always assume $K_r = K_e$

Exception 1 : K_r is not equal to K_e of new equity when new equity K_e is calculated by taking flotation cost into consideration.

Exception 2 : When personal income tax rate and personal brokerage of investors is given in the question then in such case $K_r = K_e (1 - \text{tax rate of investor})(1 - \text{brokerage cost of investor})$

LEVERAGE

1. Types of Leverage

(i) Operating Leverage (ii) Financial Leverage (iii) Combined Leverage

2. Operating Leverage:

DOL or OL =

Alternative 1 : At two level of sales: $\frac{\% \text{ change in EBIT}}{\% \text{ change in Sales Revenue}}$ OR

Alternative 2 : At Existing/Base Level: $\frac{\text{Contribution}}{\text{EBIT}}$

3. Financial Leverage

Alternative 1 : At two level of sales: = $\frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$

Alternative 2 : At Existing/Base Level:

$$\text{Without Preference Share Capital} = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$$

$$\text{With Preference Share Capital} = \left[\frac{\text{EBIT} - \text{Interest} - \frac{\text{Preference Dividend}}{1-t}}{\text{EBIT} - \text{Interest}} \right]$$

4. Combined Leverage

Alternative 1 : At two level of sales

Degree of Combined Leverage or Combined Leverage

$$= \text{DOL} \times \text{DFL} = \frac{\% \text{ Change In EBIT}}{\% \text{ Change In Sales}} \times \frac{\% \text{ Change In EPS}}{\% \text{ Change In EBIT}} = \frac{\% \text{ Change in EPS}}{\% \text{ Change in Sales}}$$

Alternative 2 : At Existing/Base Level

Without Preference Share Capital

$$\text{Combined Leverage} = \text{OL} \times \text{FL} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}} = \frac{\text{Contribution}}{\text{EBIT} - \text{Interest}}$$

With Preference Share Capital

Combined Leverage = OL x FL =

$$\frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBIT} - \text{Interest} - \frac{\text{Preference Dividend}}{(1-\text{tax})}} = \frac{\text{Contribution}}{\text{EBIT} - \text{Interest} - \frac{\text{Preference Dividend}}{(1-\text{tax})}}$$

EBIT /EPS INDIFFERENCE POINT

1. Meaning:

It is the level of EBIT at which the EPS under two different financing plans are same.

2. How To Compute Indifference Point :

Computation of indifference point is as follows:

Assume X to be the EBIT at which the EPS of two financial plans are same.

EPS Of Financial Plan 1 = EPS Of Financial Plan 2

$$\frac{(X - \text{Interest}_1)(1 - \text{Tax}) - \text{Pref Div}_1}{\text{No. Of Equity Share Of Plan 1}} = \frac{(X - \text{Interest}_2)(1 - \text{Tax}) - \text{Pref Div}_2}{\text{No. Of Equity Share Of Plan 2}}$$

Solve the following equations to get the value of X.

Note: There may be a possibility that X may get cancelled from both sides of the equation, then in such case there is no indifference point and question can not be solved.

3. Decision On The Basis Of Indifference Point: Which Plan To Choose :

If Expected EBIT is less than Indifference Point $\frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$

Select that financial plan which is having lower fixed financial cost.

If Expected EBIT is equal to Indifference Point $\frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$: Select Any Plan

If Expected EBIT is more than Indifference Point $\frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$

Select that financial plan which is having higher fixed financial cost.

4. Trading On Equity

In simple terms, trading on equity implies that one borrows at a lower rate and invest the same funds in the

business to earn a higher rate.

Decision:

Case 1: If ROI > Interest Rate : Use More Debt and Less Equity. This situation is also known as Favourable Financial Leverage.

Case 2: If ROI < Interest Rate : Use Less Debt and More Equity. This situation is also known as Unfavourable Financial Leverage.

BREAK EVEN POINT

1. Operating Break even level:

Operating Break Even Point is that Sales Level at which EBIT = 0.

It means at this point Contribution = Fixed Cost

Equation:

$$\text{Operating Break Even Sales (Units)} = \frac{\text{Fixed Cost}}{\text{Contribution Per Unit}}$$

$$\text{Operating Break Even Sales (Rs.)} = \frac{\text{Fixed Cost}}{\text{Contribution Per Unit}} \times \text{SP p.u or}$$

$$\frac{\frac{\text{Fixed Cost}}{\text{Contribution Per Unit}}}{\text{SP p.u}} = \frac{\text{Fixed Cost}}{\text{Contribution Margin(\%)}}$$

Note: At Operating Break Even Level Of Sales : DOL is infinite

Note: Decision: A Finance Manager should try to make policies of the company in a manner that the actual sales level of the company remains much above the Operating BEP.

2. Financial Break Even Level

Financial Break even Point is that level of EBIT at which EPS = 0.

It means at this point EBIT = Fixed Financial Charges

Note:

(i) When debt and preference shares are used in capital structure

$$\text{Financial Break Even Point} = \text{Interest} + \frac{\text{Preference Dividend}}{(1 - \text{Tax})}$$

(ii) When only debt is used in the capital structure

Financial Break Even Point = Interest

Note: At Financial Break Even Level Of EBIT : DFL is infinite

Note: Decision: A Finance Manager should try to make policies of the company in a manner that the actual EBIT level of the company remains much above the Financial BEP level .

3. Overall Break Even Level

Overall Break even Point is that level of Sales at which EPS = 0.

It means at this point contribution earned is equal to the sum of Fixed Operating & Financial Fixed Cost.

Equation:

$$\text{Overall Break Even Sales (Units)} = \frac{\text{Operating Fixed Cost} + \text{Interest} + \frac{\text{Preference Dividend}}{(1 - \text{Tax})}}{\text{Contribution Per Unit}}$$

$$\text{Overall Break Even Sales (Rs.)} = \frac{\text{Operating Fixed Cost} + \text{Interest} + \frac{\text{Preference Dividend}}{(1 - \text{Tax})}}{\text{Contribution Per Unit}} \times \text{SP p.u}$$

$$= \frac{\text{Operating Fixed Cost} + \text{Interest} + \frac{\text{Preference Dividend}}{(1 - \text{Tax})}}{\text{Contribution Per Unit}} \times \text{SP.pu} = \frac{\text{Operating Fixed Cost} + \text{Interest} + \frac{\text{Preference Dividend}}{(1 - \text{Tax})}}{\text{Contribution Margin(\%)}}$$

CAPITAL STRUCTURE

1. General Equation of Capital Structure Theories: (No Tax Assumed)

→ Value Of Firm = Value Of Equity + Value Of Debt

→ Market Value of Equity (E) = $\frac{\text{Earnings Available for Equity Shareholders}}{K_e}$

→ Value Of Firm = $\frac{\text{EBIT}}{K_o}$

Inverse relationship exists between the value of the firm and cost of capital.

→ Value Of Debt = $\frac{\text{Interest}}{K_d}$

→ $K_o = K_e \times W_e + K_d \times W_d$

2. Methods or Theories of Capital Structure

Net Income Approach

→ According to this approach, capital structure is relevant.

→ According to this theory, greater the debt capital employed, lower shall be the overall cost of capital and more shall be the value of the firm.

Net Operating Income Approach

→ This represents another extreme view that capital structure and value of the firm are irrelevant.

Traditional Approach

→ It is a compromise between the two extremes of Net Income Approach and Net Operating Income Approach.

MM Approach-Without Tax

Same As Net Operating Income Approach.

MM Approach-With Tax

Value of a Levered Company = Value of an Unlevered Company + Tax benefit i.e Debenture x Tax Rate

Value Of Unlevered Firm = $\frac{\text{EBIT}(1 - \text{Tax})}{K_o}$



1. Meaning :

A "Ratio" is a way of relating two accounting figures mathematically. It is found by dividing one number into the other.

2.Trading & Profit Loss Account and Balance Sheet For Ratio Analysis :

Trading Account:

Net Sales/Revenue/Turnover XXX
Less: Cost Of Goods Sold [COGS] XXX

Gross Profit XXX

Profit & Loss Account:

Gross Profit XXX

Less:Operating Expenses [Like Salary Paid] XXX

Operating Profit or EBIT(A) XXX

Add:Non Operating Income [Like lottery income] XXX

Less:Non Operating Expenses [Like interest paid] XXX

Profit Before Tax or PBT XXX

Less:Tax XXX

Net Profit As Per Profit & Loss Account or Profit After Tax XXX

Less:Preference Dividend XXX

Earnings For Equity XXX

Less:Equity Dividend XXX

Retained Earning XXX

Balance Sheet:

Liability Side

Equity Share Capital XXX

Reserves & Surplus XXX

Security Premium XXX

Capital Reserve XXX

Other Reserve XXX

Less:Accumulated Losses XXX

Less:Fictitious Assets (Miscellaneous Expenses not written off like preliminary expenses,discount on issue of shares etc) XXX

Equity Shareholders' Funds XXX

Preference Share Capital XXX

Total Shareholders' Fund/Net Worth/Proprietors' Fund/

Equity/Shareholder's Equity(A) XXX

Debentures XXX

Long Term Loan (Secured or Unsecured) XXX

Long Term Debt (B) XXX

Creditors for goods & services XXX

Provision for taxation(net of advance tax) XXX

Proposed Dividend & Unclaimed Dividend XXX

Bills Payable XXX

Outstanding Expenses & Other Provisions XXX

Short Term Borrowings XXX

Bank Overdraft XXX

Cash Credit XXX

Total Current Liability [C] XXX

Total Debt [B+C] XXX

AADITYA JAIN
THE BEST SFM FACULTY OF INDIA
TARGET 100% PLUS CRORE PLUS
SALARY
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Total Capital Employed/Total Fund [A+B]	XXX
Assets Side	
Net Fixed Assets(including Intangible Assets)	XXX
Investments	XXX
Fixed Assets (A)	XXX
Debtors	XXX
Bills Receivable	XXX
Loans & Advances	XXX
Cash	XXX
Bank	XXX
Marketable Securities (at market value)	XXX
Quick Assets (B)	XXX
Stock	XXX
Pre-Paid Expenses	XXX
Non Quick Assets (C)	XXX
Total Current Assets or Gross Working Capital (B+C)	XXX
Total Assets (A+B+C)	XXX

3.Liquidity Ratios [Short Term Solvency Ratio]

1.Current Ratio (Working Capital Rate)

→ **Formula:** Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

2.Acid Test Ratio/Quick Ratio/Liquid Ratio

→ **Formula:** Quick Ratio = $\frac{\text{Quick Assets}}{\text{Current Liabilities}}$

Quick Assets = Current Assets - Inventory(or Stock) - Prepaid Expenses

3.Super Quick Ratios/Absolute Cash Ratio/Cash Ratio/Absolute Liquidity Ratio

→ **Formula:** Cash Ratio = $\frac{\text{Absolute Liquid Asset}}{\text{Current Liabilities}}$

4.Basic Defensive Interval Ratios/Interval Measure

→ **Formula:** Basic Defensive Interval Ratio (in days) =

$$\frac{\text{Cash Reservoir}}{\text{Projected Average Daily Operating Cash Expenses Requirement}}$$

Where Projected/Average Daily Operating Cash Expenses/Requirement

$$= \frac{\text{Total Projected Cash Operating Expenses}}{\text{Number of days in a year (365)}}$$

→ **Note:** Total Projected Cash Operating Expenses = Cost Of Goods Sold - Depreciation + Selling & Distribution + Ordinary Cash Expenses or Total Expenses - Non Cash Expenses like Depreciation and Amortisation

4.Activity /Efficiency /Asset Utilisation/Turnover/Performace Ratios

1.Capital Turnover Ratio/Capital Employed Turnover/Overall Turnover Ratio :

$$\rightarrow \text{Formula: Capital Turnover Ratio} = \frac{\text{Net Sales}}{\text{Capital Employed}} \text{ or } \frac{\text{Cost Of Goods Sold}}{\text{Capital Employed}}$$

2.Total Assets Turnover Ratio :

$$\rightarrow \text{Formula: Total Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Total Assets}} \text{ or } \frac{\text{Cost Of Goods Sold}}{\text{Total Assets}}$$

3.Fixed Assets Turnover Ratio :

$$\rightarrow \text{Formula: Fixed Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Net Fixed Assets}} \text{ or } \frac{\text{Cost Of Goods Sold}}{\text{Net Fixed Assets}}$$

4.Current Assets Turnover Ratio :

$$\rightarrow \text{Formula: Current Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Current Assets}} \text{ or } \frac{\text{Cost Of Goods Sold}}{\text{Current Assets}}$$

5.Working Capital Turnover Ratio/Working Capital Ratio :

$$\rightarrow \text{Formula: Working Capital Turnover Ratio} = \frac{\text{Net Sales}}{\text{Net Working Capital}} \text{ or } \frac{\text{Cost Of Goods Sold}}{\text{Net Working Capital}}$$

6.Inventory/Stock Turnover Ratio

→ This ratio indicates how efficiently the firm is managing its inventory.

$$\rightarrow \text{Formula: Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}};$$

Where Cost Of Good Sold = Sales - Gross Profit

$$\text{and Average Inventory} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

→ If COGS is not given or cannot be determined than Sales Figure can be taken in place of COGS.

7.Debtors'/Account Receivables Turnover Ratio :

$$\rightarrow \text{Formula: Debtors Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Account Receivables}}$$

Where, Net Credit Sales = Credit Sales - Sales Return ; Account Receivable include 'Trade Debtors and Bills Receivables'

→ If Net Credit Sales figure is not given in question we can take Net Total Sales assuming all sales are credit sales.

8.Creditors'/Account Payables Turnover Ratio :

$$\rightarrow \text{Formula: Creditors Turnover Ratio} = \frac{\text{Net Credit Purchase}}{\text{Average Account Payables}}$$

Where, Net Credit Purchases = Gross Credit Purchases - Returns to Suppliers;
Account Payable include 'Trade Creditors and Bills Payables'.

→ If Net credit purchase figure is not given in question we can take Net Total Purchase assuming all purchases

are credit purchase.

5. Long Term Solvency Ratios or Leverage Ratios

Capital Structure Ratio/Structural Ratios:

1. Debt-Equity Ratio

$$\rightarrow \text{Formula: Debt-Equity Ratio} = \frac{\text{Debt}}{\text{Equity}}$$

Note: Debt may be Total Debt or Long Term Debt, as per the requirement of question.

Note: Equity may be Shareholder's Equity or Equity Shareholder's Fund, as per the requirement of question.

2. Debt to Total Capital Ratio or Debt Ratio

$$\rightarrow \text{Formula: Debt Ratio} = \frac{\text{Debt}}{\text{Total Capital Employed}}$$

Note: Debt may be Total Debt or Long Term Debt, as per the requirement of question.

3. Equity Ratio or Equity to Total Funds Ratio

$$\rightarrow \text{Formula: Equity Ratio} = \frac{\text{Shareholders Equity}}{\text{Total Capital Employed}}$$

4. Debt To Total Assets Ratio

$$\rightarrow \text{Formula: Debt Ratio To Total Assets Ratio} = \frac{\text{Debt}}{\text{Total Assets}}$$

Note: Debt may be Total Debt or Long Term Debt, as per the requirement of question.

5. Capital Gearing Ratio

$$\rightarrow \text{Formula: Capital Gearing Ratio} = \frac{\text{Fixed Income Bearing Funds}}{\text{Equity Shareholders' Fund}}$$

Where Fixed Income Bearing Funds = Debenture + Long Term Loan + Preference Share Capital and
Equity Shareholder's Fund = (Equity Share Capital + Reserves & Surplus - Losses)

6. Proprietary Ratio

$$\rightarrow \text{Formula: Proprietary Ratio} = \frac{\text{Shareholder's Equity}}{\text{Total Assets}}$$

Coverage Ratio

1. Interest Coverage Ratio /Times Interest Earned Ratio/Fixed Interest Ratio/Fixed Charges Cover

$$\rightarrow \text{Formula: Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Charges}}$$

2. Debt Service Coverage Ratio

$$\rightarrow \text{Formula: Debt Service Coverage Ratio} = \frac{\text{Earnings Available For Debt Service}}{\text{Interest + Loan Installments}}$$

Earning (Cash) for debt service = Net profit + Non-cash operating expenses like depreciation and other amortizations + Non-operating adjustments like loss on sale of Fixed assets + Interest on Debt Fund.

3. Preference Dividend Coverage Ratio/Fixed Dividend Cover

$$\rightarrow \text{Formula: Preference Dividend Coverage Ratio} = \frac{\text{Profit After Tax}}{\text{Preference Dividend}}$$

4. Equity Dividend Coverage Ratio

$$\rightarrow \text{Formula: Equity Dividend Coverage Ratio} = \frac{\text{Profit After Tax - Preference Dividend}}{\text{Dividend Payable To Equity Shareholder}} \text{ or } \frac{\text{EPS}}{\text{DPS}}$$

6. Profitability Ratios

Profitability Ratio Based on Sales Point Of View

1. Gross Profit Margin Ratio or Gross Profit Ratio

$$\rightarrow \text{Formula: Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}}$$

Where Gross Profit is as per Trading Account.

→ **Note:** Gross profit is calculated before taking into account administration, selling, distribution and financing expenses.

2. Operating Profit Margin Ratio or Operating Profit Ratio

$$\rightarrow \text{Formula: Operating Profit Ratio} = \frac{\text{Operating Profit or EBIT}}{\text{Net Sales}}$$

3. Net Profit Margin Ratio or Net Profit Ratio

$$\rightarrow \text{Formula: Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Net Sales}} \text{ Where Net Profit is as per Profit \& Loss Account.}$$

4. Expense Ratio

(a) Operating Expense Ratio/ Operating Expense to Sales Ratio

$$\rightarrow \text{Formula: Operating Expense Ratio} = \frac{\text{Operating Expenses}}{\text{Net Sales}}$$

Where, Operating Expenses = Depreciation, Administration, Selling & Distribution Expenses, Warehousing, Transportation, Interest paid on short term loans etc. [Interest on Debenture i.e Long Term Loan is not included in Operating Expenses]

(b) Operating Ratio or Operating Cost Ratio or Cost Of Sales Ratio

$$\rightarrow \text{Formula: Operating Ratio} = \frac{(\text{Operating Expenses} + \text{Cost Of Goods sold}) \text{ or Operating Cost or Cost Of Sales}}{\text{Net Sales}}$$

(c) Cost Of Goods Sold Ratio

$$= \frac{\text{Cost Of Goods Sold}}{\text{Net Sales}}$$

$$\text{(d) Financial Expense Ratio} = \frac{\text{Financial Charge}}{\text{Net Sales}}$$

(e) Others**Particular Expense Ratio/Expense Ratio**

$$\text{Direct Material Ratio} = \frac{\text{Direct Material Cost}}{\text{Net Sales}}$$

$$\text{Direct Labour (Wages) Ratio} = \frac{\text{Direct Labour (Wages)}}{\text{Net Sales}}$$

$$\text{Overheads Cost Ratio} = \frac{\text{Overheads}}{\text{Net Sales}}$$

$$\text{Factory Overheads Ratio} = \frac{\text{Factory Overheads}}{\text{Net Sales}}$$

$$\text{Administrative Expense Ratio} = \frac{\text{Administrative Expense}}{\text{Net Sales}}$$

$$\text{Selling \& Distribution Expenses Ratio} = \frac{\text{Selling \& Distribution Expense}}{\text{Net Sales}}$$

$$\text{Material Consumed Ratio} = \frac{\text{Material Consumed Pertaining to Units Sold}}{\text{Net Sales}} \times 100$$

$$\text{Note: Particular Expense Ratio} = \frac{\text{Particular Expense}}{\text{Net Sales}} \times 100$$

Assets/Investments Point Of View**1. Return On Capital Employed (ROCE)/Overall Profitability Ratio/Return On Investment (ROI)**

→ **Formula:** Return On Capital Employed Ratio

$$= \frac{\text{EBIT}}{\text{Capital Employed}} \text{ or } \frac{\text{EBIT}(1 - \text{Tax})}{\text{Capital Employed}} \text{ or } \frac{\text{Net Profit}}{\text{Capital Employed}}$$

2. Return On Assets (ROA)

$$\text{→ Formula: Return On Assets} = \frac{\text{EBIT}}{\text{Assets}} \text{ or } \frac{\text{EBIT}(1 - \text{Tax})}{\text{Assets}} \text{ or } \frac{\text{Net Profit}}{\text{Assets}}$$

Where Asset may be Average Total Assets or Average Tangible Assets or Average Fixed Assets

3. Return On Equity (ROE)/Return On Ordinary Shareholder's Equity

$$\text{→ Formula: Return On Equity} = \frac{\text{Net Profit After Interest, Tax \& Preference Dividend}}{\text{Equity Shareholders' Fund}}$$

$$\text{or } \frac{\text{Net Profit After Interest \& Tax}}{\text{Total Shareholder's Fund}}$$

Owner's Point Of View

1. Earning Per Share (EPS)

$$\rightarrow \text{Formula: Earning Per Share (EPS)} = \frac{\text{Net Profit After Interest, Tax \& Preference Dividend}}{\text{Number Of Equity Shares}}$$

2. Dividend Per Share (DPS)

$$\rightarrow \text{Formula: Dividend Per Share (DPS)} = \frac{\text{Dividend paid to equity shareholders}}{\text{Number Of Equity Shares}}$$

3. Dividend Payout Ratio (D/P Ratio)

$$\rightarrow \text{Formula: Dividend Payout Ratio} = \frac{\text{Dividend Per Share (DPS)}}{\text{Earning Per Share (EPS)}} \text{ or } \frac{\text{Total Dividend}}{\text{Total Earning}}$$

4. Retention Ratio

$$\rightarrow \text{Formula: Retention Ratio} = \frac{\text{Retained Earning Per Share (REPS)}}{\text{Earning Per Share (EPS)}} = \frac{\text{EPS} - \text{DPS}}{\text{Earning Per Share (EPS)}} \text{ or}$$

$$\frac{\text{Total Retained Earning}}{\text{Total Earning For Equity}}$$

Note : Retention Ratio = 1 - Dividend Payout Ratio

Capital Market Information Point Of View

1. Earning Yield

$$\rightarrow \text{Formula: Earning Yield} = \frac{\text{Earning Per Share (EPS)}}{\text{Market Price Per Share (MPS)}} \text{ or } \frac{\text{Total Earning}}{\text{Total Market Value}}$$

→ This is the inverse of P/E Ratio.

2. Dividend Yield

$$\rightarrow \text{Formula: Dividend Yield} = \frac{\text{Dividend Per Share (DPS)}}{\text{Market Price Per Share (MPS)}} \text{ or } \frac{\text{Total Dividend}}{\text{Total Market Value}}$$

3. Book Value Per Share (BVPS)

$$\rightarrow \text{Book Value Per Share (BVPS)} = \frac{\text{Total Equity Shareholder's Fund}}{\text{Total Number Of Equity Share}}$$

4. Market Value To Book Value Per Share (MV/BV Per Share) or Market Response Ratio

$$\rightarrow \text{Formula: Market Value To Book Value Per Share} = \frac{\text{Market Price Per Share (MPS)}}{\text{Book Value Per Share (BVPS)}} \text{ or } \frac{\text{Total Market Value}}{\text{Total Book Value}}$$

5. Price Earning Ratio (P/E Ratio)

→ **Formula:** Price Earning Ratio (P/E Ratio) = $\frac{\text{Market Price Per Share (MPS)}}{\text{Earning Per Share (EPS)}}$ or $\frac{\text{Total Market Value}}{\text{Total Earning}}$

6.Q Ratio

→ It developed by Nobel Laureate James Tobin. → Tobin's Q Ratio = Market Price of the Company / Replacement Cost. → If Tobin's Q ratio is significantly less than 1; it would mean that market value is lesser than the replacement cost which would mean the company is trading undervalued.

7.RELATIONSHIP BETWEEN PROPRIETORY FUND AND WORKING CAPITAL

If Fixed Assets = 75% of Proprietary's Fund, then it means Net Working capital will be 25% of Proprietary Funds.[Assuming Debenture to be Nil]

8.CALCULATION CAPITAL EMPLOYED

→ Capital employed can be calculated in two ways .Let's look at both ways

→ **Liabilities side:** Capital employed = Equity share capital + Preference share capital + Reserves + Debentures + Long term loans - Accumulated Loss - Fictitious assets - Miscellaneous Expenditure

→ **Assets Side:** Capital Employed = Fixed assets + Current assets – Current liabilities

Note: If opening and closing figures are given then Average Capital employed should be used .

9.NET WORKING CAPITAL

→ **Formula:** Net Working Capital = Current Assets - Current Liabilities

10.AVERAGE PAYMENT PERIOD /PAYABLES CONVERSION PERIOD/DEBT PAYMENT PERIOD RATIO/AVERAGE AGE OF PAYABLES/CREDITORS VELOCITY

→ **Formula:** Average Payment Period =

$$\frac{\text{Days in a year (365)}}{\text{Creditors' Turnover Ratio}} \text{ or } \frac{\text{Average Accounts Payables}}{\text{Average Daily Credit Purchases}}$$

Note: In place of days, we can use months as per the requirement of question.

11.AVERAGE COLLECTION PERIOD /RECEIVABLES CONVERSION PERIOD/DEBT COLLECTION PERIOD RATIO/AVERAGE AGE OF RECEIVABLES//DEBTORS' VELOCITY

→ **Formula:** Average Collection Period

$$= \frac{\text{Days in a year (365)}}{\text{Debtors' Turnover Ratio}} \text{ or } \frac{\text{Average Accounts Receivables}}{\text{Average Daily Credit Sales}}$$

Note: In place of days, we can use months as per the requirement of question.

12.INVENTORY HOLDING PERIOD /STOCK VELOCITY

→ **Formula:** Inventory Holding Period = $\frac{\text{Days in a year (365)}}{\text{Inventory Turnover Ratio}}$ or $\frac{\text{Average Inventory}}{\text{COGS per day}}$

Note: In place of days, we can use months as per the requirement of question.

13.TOTAL DEBT

Total Debt will include both Long Term Loan + Current Liabilities

14. RETURN ON CAPITAL EMPLOYED (ROCE) IN A DU-PONT CONTROL CHART FRAMEWORK

→ **Formula:** Return On Capital Employed Ratio = $\frac{\text{EBIT}}{\text{Capital Employed}}$

→ It can further be segregated into the following parts :

$$\text{Return On Capital Employed Ratio} = \frac{\text{EBIT}}{\text{Net Sales}} \times \frac{\text{Net Sales}}{\text{Total Capital Employed}}$$

= Operating Profit Ratio x Capital Employed Turnover Ratio

15. CALCULATION OF RETURN ON EQUITY (ROE) USING RETURN ON INVESTMENT (ROI)

$$\text{ROE} = [\text{ROI} + \{(\text{ROI} - r) \times \text{D/E}\}] (1 - t)$$

16. RETURN ON EQUITY IN A DU-PONT CONTROL CHART FRAMEWORK

→ The Return On Equity (ROE) can be decomposed into three following principal components :

$$\frac{\text{EAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}} \text{ i.e Net Profit Margin Ratio x Asset Turnover x Financial Leverage (Equity Multiplier)}$$

17. RELATIONSHIP BETWEEN GROSS PROFIT RATIO /COGS RATIO/ OPERATING PROFIT & OPERATING COST RATIO

→ **Note:** Total Of Operating Cost + Total Operating Profit = Total Net Sales

→ **Note:** Operating Profit Ratio + Operating Ratio = 100% or 1

Operating Ratio means Operating Cost Ratio

Both Operating Profit Ratio & Operating Ratio are complementary to each other and thus if one such ratios is deducted from 100, another ratio may be obtained. i.e Operating Profit Ratio = 100 - Operating Ratio

Note: COGS Ratio + GP Ratio = 100

If Gross Profit is 15% ,then it means COGS should be 85% of the Sales.

Note: Operating Costs (Cost Of Sales) include Cost of Goods Sold and other Operating Expenses like Administrative, Selling & Distribution Expenses. i.e Direct Material, Direct Labour, Direct Expenses and all overheads are part of Operating Costs.

18. P/V RATIO

$$\text{Contribution Sales Ratio or Profit Volume Ratio or P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} = \frac{\text{Sales} - \text{Variable Cost}}{\text{Sales}}$$

WORKING CAPITAL MANAGEMENT

1. INTRODUCTION

→ Working Capital means Current Assets less Current Liabilities

2. OPERATING CYCLE

→ **Symbolically,** Operating Cycle = R + W + F + D - C

Where, R = Raw Material Storage Period; W = Work-in-Progress Holding Period; F = Finished Goods Storage Period; D = Debtors Collection Period; C = Credit Period Availed

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Raw Material Storage Period	xxx
Add: WIP Holding Period	xxx

Add: Finished Goods Storage Period	xxx
Add: Debtors Collection Period	xxx
Gross Operating Cycle	xxx
Less: Creditors Payment Period	xxx
Net Operating Cycle	xxx

3.COMPUTATION OF VARIOUS COMPONENTS OF OPERATING CYCLE:

→ Raw Material (RM) Storage Period or RM Conversion Period

$$= \frac{\text{Average Stock Of Raw Material}}{\text{Average Cost Of Raw Material Consumed Per Day}} \quad \text{OR} = \frac{1}{\text{Raw Material Turnover Ratio}} \times 365$$

→ WIP Storage Period or WIP Conversion Period

$$\frac{\text{Average Stock Of WIP}}{\text{Average Cost Of Production Per Day}} \quad \text{OR} = \frac{1}{\text{WIP Turnover Ratio}} \times 365$$

→ FG Storage Period or FG Conversion Period

$$= \frac{\text{Average Stock Of FG}}{\text{Average Cost Of Goods Sold or Produced Per Day}} \quad \text{OR} = \frac{1}{\text{Finished Goods Turnover Ratio}} \times 365$$

→ Debtors Collection Period

$$= \frac{\text{Average Debtors}}{\text{Average Cost Of Credit Sales Per Day}} \quad \text{OR} = \frac{1}{\text{Debtors Turnover Ratio}} \times 365$$

→ Trade Creditors Payment Period

$$= \frac{\text{Average Trade Creditors}}{\text{Average Credit Purchases Per Day}} \quad \text{OR} = \frac{1}{\text{Creditors Turnover Ratio}} \times 365$$

4.NUMBER OF OPERATING CYCLE IN A YEAR

$$\text{Net Operating Cycle Period} = \frac{360}{\text{Net Operating Cycle}}$$

5.ESTIMATION OF WORKING CAPITAL

(i) ESTIMATION OF WORKING CAPITAL BASED ON OPERATING CYCLE:

(ii) ESTIMATION OF WORKING CAPITAL BASED ON Individual Current Assets & Current Liabilities

6.ESTIMATION OF WORKING CAPITAL BASED ON OPERATING CYCLE:

→ On the Basis of Operating Cycle Period

$$\text{Net Working Capital} = \frac{\text{Total Yearly Operating Expenses}}{12 \text{ Months or } 365 \text{ Days}} \times \text{Operating Cycle Period}$$

7.ESTIMATION OF WORKING CAPITAL BASED ON INDIVIDUAL CURRENT ASSETS & CURRENT LIABILITIES

Net Working Capital = Current Assets - Current Liabilities + Margin For Contingency

ESTIMATION OF CURRENT ASSETS

→ Stock of Raw Material

$$\frac{\text{Estimated Yearly Inputs(In Units)} \times \text{Estimated Cost Of RM(per unit)}}{12 \text{ months or } 365 \text{ days}} \times \text{Average RM Storage Period in months or days}$$

→ Stock of WIP

$$\frac{\text{Estimated Yearly Inputs(In Units)} \times \text{Estimated Cost Of WIP (per unit)}}{12 \text{ months or } 365 \text{ days}} \times \text{Avg. WIP Storage Period in months or days}$$

Note: Estimated WIP Cost = Raw Materials + 50% of (Direct Labour + Direct Expenses + Overheads) or Raw Materials + 50% of Conversion Cost

→ Stock of Finished Goods

$$\frac{\text{Estimated Yearly Inputs(In Units)} \times \text{Estimated Cost Of Goods Sold (per unit)}}{12 \text{ months or } 365 \text{ days}} \times \text{XFG Storage Period in months or days}$$

→ Debtors =
$$\frac{\text{Estimated Yearly Credit Sales(In Units)} \times \text{Estimated Selling Price (per unit)}}{12 \text{ months or } 365 \text{ days}} \times$$

Avg Debtors Collection Period in months or days

→ **Cash & Bank Balance:** Minimum as desired By the Firm.

ESTIMATION OF CURRENT LIABILITIES

→ Trade Creditors =
$$\frac{\text{Estimated Yearly Credit Purchase(In Units)} \times \text{Estimated Cost Of RM(per unit)}}{12 \text{ months or } 365 \text{ days}} \times$$

Credit Period Granted By Suppliers (in months or days)

→ Direct Wages Outstanding =
$$\frac{\text{Estimated Yearly Production(In Units)} \times \text{Estimated Direct Labour Cost (per unit)}}{12 \text{ months or } 365 \text{ days}} \times$$

Avg Time Lag In Payment Of Wages (in months or days)

→ Overheads Outstanding =
$$\frac{\text{Estimated Yearly Production(In Units)} \times \text{Estimated Overhead Cost (per unit)}}{12 \text{ months or } 365 \text{ days}} \times$$

Avg Time Lag In Payment Of Overheads (in months or days)

→ Stock of Raw Material =

$$\frac{\text{Estimated Annual Raw Material Consumed Cost}}{12 \text{ months or } 365 \text{ days}} \times \text{Average RM Storage Period in months or days}$$

→ Stock of WIP

Raw Material : RM Consumed During The Year x WIP Holding Period/12 or 365 x Degree Of Completion

Labour : Labour Cost During The Year x WIP Holding Period/12 or 365 x Degree Of Completion

Overhead : Overhead Cost During The Year x WIP Holding Period/12 or 365 x Degree Of Completion

In case Degree Of Completion is not known then assume it to be :

Raw Material = 100% ; Labour & Overhead i.e Conversion Cost = 50%

→ **Stock of Finished Goods** = $\frac{\text{Estimated Cost Of Goods Sold}}{12 \text{ months or } 365 \text{ days}} \times \text{FG Storage Period in months or days}$

→ **Debtors** = $\frac{\text{Estimated Net Credit Sales}}{12 \text{ months or } 365 \text{ days}} \times \text{Avg Debtors Collection Period in months or days}$

→ **Cash & Bank Balance**: Minimum as desired By the Firm.

ESTIMATION OF CURRENT LIABILITIES

→ **Trade Creditors** = $\frac{\text{Estimated Net Credit Purchase}}{12 \text{ months or } 365 \text{ days}} \times \text{Credit Period Granted By Suppliers (in months or days)}$

Direct Wages Outstanding

$\frac{\text{Estimated Annual Wages Payable For The Year}}{12 \text{ months or } 365 \text{ days}} \times \text{Avg Time Lag In Payment Of Wages (in months or days)}$

Overheads Outstanding

$\frac{\text{Estimated Overheads Cost For The Year}}{12 \text{ months or } 365 \text{ days}} \times \text{Avg Time Lag In Payment Of Overheads (in months or days)}$

8. FORMAT-ESTIMATION OF WORKING CAPITAL REQUIREMENTS

Current Assets

Minimum Cash Balance		****
Inventories :		
Raw Materials		****
Work-in-progress		****
Finished Goods	****	****
Receivables :		
Debtors		****
Bills	****	****
Gross Working Capital (CA)	****	****

Current Liabilities :

Creditors for Purchases		****
Creditors for Wages		****
Creditors for Overheads	****	****
Total Current Liabilities (CL)	****	****
Excess of CA over CL		****
+ Safety Margin		****
Net Working Capital		****

9. FORMAT : COST SHEET

Note: There is no fixed prescribed format as such.

Opening stock of Raw Materials	XX
+ Purchases	XX
- Closing stock	(XX)
Raw Material Consumed	XX
+ Direct wages	XX
+ Direct expenses	XX
Prime cost	XX

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+ Factory overheads	XX
Gross Works cost	XX
+ Opening work in progress	XX
- Closing work in progress	(XX)
Net Work Cost/Cost of Prodn	XX
+ Opening finished goods	XX
- Closing finished goods	XX
Cost of goods sold	XX
+ Administration overheads	XX
+ Selling & Distribution overheads	XX
Cost of Sales	XX
+ Profit	XX
Sales	XX

Note: In most of the cases COP & COGS & COS is assumed to be same if no information between them is given.

Note: In most of the cases COP & COGS are assumed to be same if no information between them is given.

Note: In most of the cases Raw Material Consumed & Purchases are same if no information between them is given.

10. TOTAL & CASH COST APPROACH OF WORKING CAPITAL ESTIMATION

TOTAL APPROACH-ALL DEPRECIATION EXPENSES AND PROFIT MARGIN ARE INCLUDED

CASH COST APPROACH-ALL DEPRECIATION EXPENSES AND PROFIT MARGIN ARE NOT INCLUDED

Note: If question is silent regarding Total Cost or Cash Cost, we can use any method by given a note for the assumption taken.

11. DOUBLE SHIFT WORKING CAPITAL REQUIREMENT

If the firm which is presently running in single shift, plans to go for working in double shift the following factors should be considered while assessing the working capital requirements of the firm:

1. Raw material stock/Sales/Production/Finished Goods etc:

Working in double shift means requirement will be doubled.

2. Work-in-progress stock:

The shift working will not increase the level of work-in-progress stock, since the WIP generated in one shift will be converted into finished units in next shift and so on.

3. The variable cost per unit will remain same. In Total it will be doubled.

4. Fixed cost per unit will reduce but in total it will be same.

12. SAFETY MARGIN

Example No. 1:

Current Assets: 6,06,250

Current liabilities: 2,02,500

The company wants to adopt a 10% safety margin in the maintenance of working capital.

Calculate Working Capital?

Solution: The company wants to adopt a 10% safety margin in the maintenance of working capital.

Current Assets: 6,06,250

Current liabilities 2,02,500

Net working capital 4,03,750

Add: Safety margin 10% 40,375

Working Capital Required 4,44,125

Example No. 2:

CA=40,91,800; CL=11,17,000

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Provision for contingencies is required @ 4% of working capital requirement including that provision. Calculate Working capital requirement ?

Solution:

Net working capital = 40,91,800-11,17,000	29,74,800
Add: Provision for Contingencies @ 4 Percent (Rs.29,74,800x1/24)	<u>1,23,950</u>
Working capital requirement including provision	<u>30,98,750</u>

13. FORMAT OF STATEMENT SHOWING PROFIT & LOSS

Sales Revenue	XXX
Less: Cost Of Sales	<u>XXX</u>
Profit	<u>XXX</u>

Note: Cost Of Sales :

Direct Material Cost	XXX
Direct Labour Cost	XXX
Direct Expenses	<u>XXX</u>

Prime Cost

Variable Manufacturing (Factory) Expenses	XXX
Fixed Manufacturing (Factory) Expenses (Excluding Depreciation)	XXX
Depreciation	<u>XXX</u>

Work Cost

Variable Administrative Expenses	XXX
Fixed Administrative Expenses	<u>XXX</u>
Total Cost Of Goods Produced/Total Cost Of Production	XXX

Add: Opening Stock Of Finished Goods XXX

Total Cost Of Goods Available For Sale XXX

Less: Closing Stock of Finished Goods XXX

Total Cost Of Goods Sold XXX

Add: Variable Selling & Distribution Expenses XXX

Add: Fixed Selling & Distribution Expenses XXX

Total Cost Of Sales XXX

OR

Sales revenue (A) XXX

Cost of production:

Materials XXX

Direct labour XXX

Manufacturing expenses XXX

Depreciation XXX

Administration expenses XXX

Total costs of production XXX

Add: Opening stock of finished goods XXX

Cost of goods available XXX

Less: Closing stock of finished goods XXX

Cost of goods sold XXX

Add: Selling expenses XXX

Cost of Sales : (B) XXX

Profit (+) / Loss (-): (A-B) XXX

Note: Deduct Depreciation While calculating Profit.

Note: Always use Total Cost Approach while calculating Working Capital Estimation under this case.

14. TANDON COMMITTEE

Given : 1. Current Assets Rs. 20,000 2. Current Liabilities other than borrowings Rs. 15,000 3. Core Current Assets Rs. 2,000 .Then the permissible bank borrowings under the three methods is as follows:

Method I = 0.75 (Current Assets – Current Liabilities) = 0.75 (20,000 – 5,000) = Rs.11,250

Method II = 0.75 (Current Assets) – Current Liabilities = (0.75 x 20,000) – 5,000 = Rs.10,000

Method III = 0.75 (Current Assets – Core Current Assets) – Current Liabilities
= 0.75 (20,000 – 2,000) – 5,000 = Rs.8,500

15. DIFFERENT TYPES OF CURRENT ASSET FINANCING POLICY

(a) A conservative current Asset financing policy :

It relies less on short term bank financing and more on long term sources for current asset investment.; Amount Of Current Asset Is High ; A conservative policy implies greater liquidity and lower risk; Profitability-Low

(b) An aggressive current Asset Financing Policy: It relies heavily on short term bank finance and seeks to reduce dependence on long term financing for current asset investment.; Amount Of Current Asset Is Low ; It indicates higher risk and poor liquidity.; Profitability-High ;

Moderate current assets policy will fall in the middle of conservative and aggressive policies.

16. TRADE OFF BETWEEN LIQUIDITY AND PROFITABILITY:

In determining the optimum level of current assets, the firm should balance the profitability – Solvency tangle by minimizing total costs of cost of liquidity and cost of illiquidity.

17. Some Important Points Relating To This Chapter:

1. When there is no reference of depreciation, assumed it to be Nil.

2. Conversion Cost : This is the amount of direct labor and overhead costs that are required to turn raw materials into an actual product.

3. When there is no WIP reference in question, assume it to be Nil.

4. Manufacturing Expenses are part of COP.

5. Administration & Selling Expenses are part of COS. It is not assumed to be a part of COP/COGS.

Exception:

(i) When question itself ask us to consider it as a part of COP/COGS.

(ii) When we are asked to prepare "Profitability Statement as per Cost Sheet.

(iii) When word Office & Administration is used.

(iv) When word Manufacturing & Administration is used.

6. For a new project, there will be no opening stock balance.

7. RM Consumed = OS + Purchases - CS

If there is no OS & CS , Purchases = RM Consumed

RM Consumed is used in calculating Raw Material Stock

Purchases is used in calculation of Creditors.

8. Longer the operating cycle higher the investment in current assets

9. Assume All Sales to be Credit Sales, if question is silent.

CASH MANAGEMENT

1. CASH MANAGEMENT MODELS: WILLIAM J. BAUMOL'S EOQ MODEL FOR OPTIMUM CASH BALANCE

→ The algebraic representation of the model is: $Q = \sqrt{\frac{2AT}{H}}$

Where, Q = Optimum level of cash /Optimum cash balance/Optimum Cash Transaction size/Value of Short term securities sold at each replenishment ;A= Annual (or monthly) cash disbursement/Requirement ; T = Fixed cost per transaction/Total Transaction cost per conversion of short term securities/Average fixed cost of securing cash from the market (transaction cost) ;H = Opportunity cost of one rupee p.a. /Cost of carrying cash, i.e., interest rate on marketable securities for the period involved.

➔ According to this model optimal level of cash balance is one at which carrying and transaction costs of cash is minimum.

DEBTORS MANAGEMENT

1.DIFFERENT WAYS OF CALCULATING AVERAGE COLLECTION PERIOD

Average Collection Period refers to the period within which the payment is actually made by the customers. It is the average credit period actually enjoyed by the customers. It may be calculated as follows:

$$1. \text{Average Collection Period} = \frac{\text{Average Accounts Receivables}}{\text{Average Monthly or Daily Credit Sales}}$$

$$\text{Where Average Daily or Monthly Credit Sales} = \frac{\text{Credit Sales}}{365 \text{ or } 12}$$

$$2. \text{Average Collection Period} = \frac{\text{Months(12) or Days in a year(365)}}{\text{Debtors' Turnover Ratio}}$$

$$3. \text{Average Collection Period} = (\text{Credit Period With Cash Discount} \times \% \text{ Of Customers availing Cash Discount}) + (\text{Credit Period Without Cash Discount} \times \% \text{ Of Customers not availing Cash Discount})$$

FACTORING

1.MEANING OF FACTORING

➔ Factoring is a new concept in financing of accounts receivables. This refers to sale of accounts receivables to a factor or a financial agency.

2.BENEFIT OF FACTORING

(i) Reduction In Administration Cost (ii) Bad Debt Saved/Reduced (iii) Opportunity Cost Of Interest Earned on Account Of Reduction In Debtors Collection Period

3.COST OF FACTORING

(i) Commission: This is charged for the services provided by the factor (ii) Interest On Advance: This is charged for 'advance payment'.

4.NET BENEFIT UNDER FACTORING

➔ Net Benefit can be calculated in the following manner:

Benefit Of Factoring xxx [Concept No. 2]

Cost Of Factoring xxx [Concept No. 3]

Net Benefit xxx

➔ Decision: If it is positive, factoring should be accepted otherwise not

5.CALCULATION OF NET ADVANCE PAYABLE BY FACTOR OR RECEIVED BY COMPANY

Debtors Amount Paid As Advance	xxx
(-) Reserve Requirement	xxx
(-) Commission Charge	xxx

Amount Of Advance	XXX
(-)Interest To Be Received On Advance	XXX
Net Advance Paid By Factor / Net Advance Received By Company	XXX

6.EFFECTIVE COST OF INTEREST UNDER FACTORING

$$\text{Effective Cost Of Factoring p.a} = \frac{\text{Net Cost Under Factoring}}{\text{Net Advance Received Under Factoring}}$$

7. NON RECOURSE FACTORING & RECOURSE FACTORING

(a) Non Recourse Factoring: Normally, factoring is the arrangement on a non-recourse basis where in the event of default the loss is borne by the factor. i.e if there are bad debts, it will be borne by the factor.

(b) Recourse Factoring: In this type of factoring, the risk of bad debt is borne by the client and not factor.

→ When question is silent always assume Non Recourse Factoring.

COST OF CASH DISCOUNT

1.INTRODUCTION

→ A cash discount is a reduction in the price paid for a product or service if you pay with cash immediately or within a certain specified period of time.

2.COMPUTATION OF IMPLIED INTEREST RATE OF CASH DISCOUNT

→ The annual opportunity cost of foregoing cash discount can be calculated as follows

$$= \frac{\text{Amount Of Cash Discount On Rs.100}}{\text{Rs.100 - Amount Of Cash Discount on Rs.100}} \times \frac{365 \text{ days or 12 months}}{\text{Period Of Prepayment}} \times 100 \text{ or}$$

$$= \frac{\text{Amount Of Cash Discount On Rs.100}}{\text{Rs.100 - Amount Of Cash Discount on Rs.100}} \times \frac{365 \text{ days or 12 months}}{\text{Credit Period - Discount Period}} \times 100$$

Note: Period Of Prepayment = Net Period or Period Availed By Customer Without Discount - Period Within Which Cash Discount Can Be Availed

INVENTORY MANAGEMENT

1.INTRODUCTION

→ The objective of inventory management is to provide uninterrupted production and sales at the minimum cost.

2.ABC ANALYSIS OF INVENTORIES

→ According to this approach to inventory control high value items are more closely controlled than low value items.

3.ECONOMY ORDER QUANTITY

→ The EOQ refers to the order size that will result in the lowest total of order and carrying costs for an item of inventory.

→ Now from the formula for Economic Order Quantity (EOQ)

$$= \sqrt{\frac{2 \times \text{Total Consumption p.a} \times \text{Ordering Cost Per Order}}{\text{Carrying Cost Per Unit}}}$$

4. CALCULATION OF INVENTORY STORAGE PERIOD**Raw Material (RM) Storage Period or RM Conversion Period**

$$= \frac{\text{Average Stock Of Raw Material}}{\text{Average Cost Of Raw Material Consumed Per Day}} \text{ OR } = \frac{1}{\text{Raw Material Turnover Ratio}} \times 365$$

→ WIP Storage Period or WIP Conversion Period

$$\frac{\text{Average Stock Of WIP}}{\text{Average Cost Of Production Per Day}} \text{ OR } = \frac{1}{\text{WIP Turnover Ratio}} \times 365$$

→ FG Storage Period or FG Conversion Period

$$= \frac{\text{Average Stock Of FG}}{\text{Average Cost Of Goods Sold or Produced Per Day}} \text{ OR } = \frac{1}{\text{Finished Goods Turnover Ratio}} \times 365$$

CAPITAL BUDGETING-PART 1**1. INTRODUCTION**

One of the important aspects of Financial Management is proper decision making in respect of investment of funds.

2. TECHNIQUES OF EVALUATION

1. Traditional or Non-discounted cash flows: (i) Payback Period Method (ii) Average rate of return

2. Modern or Discounted Cash Flow Techniques: (i) Net Present Value Method (ii) Profitability Index (iii) Internal Rate of Return (iv) Discounted Payback Period Method (v) Net Present Value Index Method (vi) Modified NPV/ IRR

3. ACCOUNTING RATE OF RETURN (ARR)

$$\text{→ Formula : } \text{ARR} = \frac{\text{Average Annual Profit After Tax}}{\text{Average Investment}} \text{ or } \frac{\text{Average Annual Profit After Tax}}{\text{Initial Investment}}$$

Where, Average Annual Profit After Tax = $\frac{\text{Total Expected After Tax Profits}}{\text{Number Of Years}}$;

$$\text{Average Investment} = \frac{\text{Initial Investment} + \text{Salvage Value}}{2}$$

→ **Accept/Reject Criterion/Decision:** Higher the ARR better the project .

4. PAY BACK PERIOD / PAY OFF PERIOD / CAPITAL RECOVERY PERIOD

→ **Decision :** The project with the lower payback period will be preferred.

→ **How to Calculate Payback Period :**

IN CASE OF EVEN CASH FLOWS

$$\text{→ Formula : Payback Period} = \frac{\text{Initial Investment}}{\text{Annual Cash Inflows}}$$

IN CASE OF UNEVEN CASH FLOWS

$$\text{→ Formula : Payback Period} = \text{Completed Years} + \frac{\text{Remaining Amount}}{\text{Available Amount}}$$

5. NPV TECHNIQUE

→ NPV = Present Value of Inflows - Present Value of Outflows

→ **Decision** : NPV > 0 Accept the proposal; NPV = 0 Indifference point; NPV < 0 Reject the proposal

6. PROFITABILITY INDEX

→ **Profitability Index (PI)** = $\frac{\text{Present Value of Inflows}}{\text{Present Value of Outflows}}$

→ **Decision** : Where PI > 0 Accept the proposal; PI = 0 Indifference point; PI < 0 Reject the proposal

7. INTERNAL RATE OF RETURN

→ IRR is the discount rate at which NPV of the project is zero.

→ Formula: $\text{Lower Rate} + \frac{\text{Lower Rate NPV}}{\text{Lower Rate NPV} - \text{Higher Rate NPV}} \times (\text{Higher Rate} - \text{Lower Rate})$

→ **Decision** : IRR > Cost Of Capital **Accept the proposal**; IRR = Cost Of Capital **Indifferent**; IRR < Cost Of Capital **Reject the proposal**

8. DISCOUNTED PAYBACK PERIOD

→ The discounted payback period is calculated in the same way as the payback period except that the future cash inflows are first discounted and then payback is calculated

→ **Decision** : The lower the Discounted Payback Period better the project .

→ It is superior to Payback period as under this time value of money is also considered

9. REPLACEMENT DECISION

→ Under Replacement Decision we will decide:

Whether to Replace the existing machine & Buy new machine

10. TREATMENT OF WORKING CAPITAL

→ In the absence of information the students are advised to assume :

Introduction Of Working Capital at the beginning: This should be treated as Outflow.

Release Of Working Capital at the end : This should be treated as Inflow

→ **Note** : Changes in items such as Working Capital do not affect taxes.

→ **Note** : Any Increase in Working Capital should be treated as Outflow.

→ **Note** : Any Decrease in Working Capital should be treated as Inflow

→ **Note** : Working Capital is not subject to depreciation.

11. TYPES OF CAPITAL BUDGETING PROPOSAL

If more than one proposals are under considerations, then these proposals can be categorised as follows :

1. Mutually Exclusive Proposals : Two or more proposals are said to be **Mutually Exclusive Proposals** when the acceptance of one proposal implies the automatic rejection of other proposals, mutually exclusive to it.

2. Complementary Proposals: Two or more proposals are said to be **Complementary Proposals** when the acceptance of one proposal implies the acceptance of other proposal complementary to it, rejection of one implies rejection of all complementary proposals.

3. Independent Proposals: Two or more proposals are said to be **Independent Proposals** when the acceptance/rejection of one proposal does not affect the acceptance/rejection of other proposals.

12. MODIFIED NPV / MODIFIED IRR

Computation Of MNPV:

→ Find the Future Value of cash inflows at the given rate of investment for the remaining years. So if the project is for 5 years, the cash inflow generated in first year end shall be compounded for 4 years. Similarly the cash inflow

generated in second year end shall be compounded for 3 years and so on .

→ Take the total of future values which may be termed as Future Value or Terminal Value

→ Find the Present Value Of Cash Inflows in the following manner : $\frac{\text{Terminal Value}}{(1 + \text{Cost Of Capital})^n}$

→ Modified Net Present Value = Present Value Of Cash Inflows – Initial Cash Outflow

→ Modified IRR is the rate at which Modified NPV is zero.

13. CAPITAL RATIONING

→ Capital rationing refers to a situation where a company cannot undertake all positive NPV projects it has identified because of shortage of capital.

CAPITAL RATIONING TYPES: DIVISIBLE PROJECTS

Step 1 : Identify projects with positive NPV

Step 2 : Identify that Capital Rationing exists.

Step 3 : Rank projects in the order of PI or Net PI

Where $PI = \frac{PV \text{ Of Cash Inflow}}{PV \text{ Of Cash Outflow}}$

Step 4 : Assign money to projects on the basis of Rank. If money is not adequate to fully cover a project, part of the project would be undertaken .

Step 5 : Aggregate the NPV of selected projects .

CAPITAL RATIONING TYPES: INDIVISIBLE PROJECTS

Step 1 : Identify projects with positive NPV

Step 2 : Identify that Capital Rationing exists.

Step 3 : Identify various feasible combinations. If money is available but cannot be allocated to any project, it will be dealt with surplus cash if stated in question.

Step 4 : Compute NPV of the feasible combinations and select the one with the highest aggregate NPV .

Note: If question is silent always assume project to be indivisible.

14. CONFUSION REGARDING FIXED COST AND FIXED ASSET

Fixed Cost

1. Shown In Profit & Loss Account
2. Example- Rent, Salary etc
3. Annual Cost
4. Taken Net Of Tax
5. Not Subject To Depreciation

Fixed Assets

1. Shown in Balance Sheet
2. Example- Land, Buildings etc
3. One Time Cost normally in Year 0
4. Not Taken Net Of Tax
5. Subject To Depreciation

15. TREATMENT OF DEPRECIATION

→ Depreciation is not an item of Cash Outflow, hence it should not be considered for our analysis.

→ **However** Tax Saving on depreciation is an item of inflow and hence must be recognized .

→ Tax Saving On Depreciation = Amount Of Depreciation x Tax Rate

16. COMPARISON IN CASE OF UNEQUAL LIFE / EQUATED ANNUAL VALUE

→ If two projects have unequal life , then the two projects are not comparable . To make them comparable we will use Equivalent Annual Value Concept for each project by applying the following formula :

→ Equation: $\frac{\text{NPV or Present Value Of Cash Outflow or Present Value Of Cash Inflow}}{PVAF(K\%, n \text{ years})}$

Where $K\%$ = Discount Rate and n = Total Life of the project

17. ADJUSTMENT OF TAX SAVING IN RELATION TO SET OFF & CARRIED FORWARD OF LOSS

→ Tax Saved (Inflow) = Loss \times Tax Rate

→ There are two options before us for setting off the losses :

(i) The losses may be set off in the same year in which loss has incurred .It is assumed here that firm has sufficient profit from other sources .

(ii) The loss may be carried forward for adjustment in the subsequent year . It is assumed here that the firm has insufficient profit in the current year .

Note: Any one Option can be preferred in exam.

18. SALVAGE VALUE

TREATMENT OF SALVAGE VALUE-WDV -IN CASE OF PROFIT

Adjusted Salvage Value = Salvage Value - Profit On Sale \times Tax Rate

TREATMENT OF SALVAGE VALUE-WDV -IN CASE OF LOSS

→ Adjusted Salvage Value = Salvage Value + Loss On Sale \times Tax Rate

TREATMENT OF SALVAGE VALUE-SLM

→ Salvage Value is not adjusted for tax under SLM unless otherwise stated.

19. PAYBACK PERIOD RECIPROCAL

→ **Meaning** : It is the reciprocal of payback period. → **Formula** : Payback Reciprocal = $\frac{1}{\text{Payback Period}}$

→ **Decision** : The higher the Payback Period Reciprocal (and hence lower the payback period) the more worthwhile the project becomes .

CAPITAL BUDGETING-PART 2

1. RISK ADJUSTED DISCOUNT RATE (RADR)

→ The Net Present Value computed by using Risk Adjusted Discount Rate is known as Risk Adjusted Net Present Value .

Note : Higher Risk should be discounted by higher rate.

2. CERTAINTY EQUIVALENT APPROACH (CEC)

→ Certainty Equivalent Approach involves discounting of Certain Cash Flows instead of the Total Cash Flows.

Steps In Certainty Equivalent Approach

Step 1 : Estimate the total future cash flows from the proposal. These cash flows have some degree of risk involved.

Step 2 : Calculate the Certainty Equivalent Coefficient (CEC) factors for different years .The value of CEC can vary between 1 indicating no risk and 0 indicating the extreme risk. This means higher the risk, lower is the value of CEC. (This value is generally given in question)

Step 3 : Multiply Total Cash Flows (Step 1) \times CEC (Step 2) = Certainty Equivalent Cash Flows

Step 4 : Certainty Equivalent Cash Flows are discounted at Risk Free Rate to find out the NPV of the proposal.

3. EXPECTED NET PRESENT VALUE OR EXPECTED CASH FLOWS OR EXPECTED VALUE

Expected NPV or Expected CF or Expected Value

= \sum Each possible outcome of an event \times Probability of that outcome occurring

Example :

<u>Estimated Value</u>	<u>Probability</u>	<u>Estimated Value</u> × <u>Probability</u>
1000	.1	100
2000	.3	600
4000	.3	1200
3000	.2	600
5000	.1	500
	<u>1</u>	<u>3000</u>

Expected Value/NPV/Cash Flow =

Note: Probability Of All Outcomes will always be equal to 1

4. PROFITABILITY INDEX (PI) / BENEFIT COST RATIO / PRESENT VALUE INDEX / DESIRABILITY FACTOR

→ **Formula :** Profitability Index (PI) = $\frac{\text{Present Value Of Inflows}}{\text{Present Value Of Outflows}}$

→ **Accept/Reject Criterion :** Where PI > 1 Accept the proposal ; PI = 1 Indifference point ; PI < 1 Reject the proposal

5. EFFECT ON CASH FLOW DUE TO INFLATION

→ The future cash flows can be either expressed as

- (i) inclusive of inflation which are referred as Money Cash Flows
- (ii) exclusive of Inflation which are referred as Real Cash flows

→ Conversion of Real Cash Flows into Money Cash Flows and Vice -versa :

$$\text{Money Cash flows} = \text{Real Cash Flows} (1 + \text{Inflation Rate}) \quad \text{or} \quad \text{Real Cash Flows} = \frac{\text{Money Cash Flows}}{(1 + \text{Inflation Rate})}$$

6. EFFECT OF INFLATION ON DISCOUNT RATE

→ Discount Rate can be expressed either as

- (i) inclusive of future inflation which is referred to as Money Discount Rate
- (ii) exclusive of future inflation which is referred to as Real Discount Rate

→ Conversion of Money Discount Rate into Real Discount Rate and vice versa :

$$(1 + \text{Money Discount Rate}) = (1 + \text{Real Discount Rate}) (1 + \text{Inflation Rate})$$

7. CALCULATION OF NPV WHEN INFLATION RATE IS GIVEN

→ Present Value may be found either by

- (i) Discounting the Real Cash Flows at the Real Discount Rate or
- (ii) Discounting the Money Cash Flows at the Money Discount Rate

→ In both cases resultant NPV would be same .

8. SENSITIVITY ANALYSIS / SCENARIO ANALYSIS - KEEPING NPV = 0

→ **Decision :** If NPV were to become 0 with 2 % change in Initial Investment relative to 10 % change in Cash Inflows , Project is said to be more sensitive to Initial Investment than to Cash Inflows .

→ **Symbolically :** Sensitivity (%) = $\frac{\text{Change}}{\text{Base}} \times 100$ %

→ Some factors to be used under Sensitivity Analysis are Size of the project, Cash flows, Life of the project, Discount rate.

→ Under this analysis adverse effect of each input variable (parameters) is considered separately and all other variables are held constant.

→ **Factor** **Adverse Effect**

Inflow	Decrease
Discount Rate	Increase
Outflow	Increase
Life	Decrease

9. SENSITIVITY ANALYSIS USING % ADVERSE VARIATION IN FACTORS

→ Under this method Sensitivity is calculated by taking adverse changes by a specific % which will be indicated in question

→ The adverse factor for which % Fall In NPV is maximum is considered to be most sensitive.

→ % Fall In NPV = $\frac{\text{Revised NPV} - \text{Original NPV}}{\text{Original NPV}} \times 100$

10. PROBABILITY OF OCCURRENCE IF THE CASH FLOWS ARE (A) PERFECTLY DEPENDENT OVERTIME (B) INDEPENDENT OVERTIME

→ The probability of occurrence of the worst or best case if the cash flows are

(a) Perfectly Dependent Overtime is Required Probability (b) Independent Overtime is (Required Probability)ⁿ

Where n = Life Of The Project

11. HILLER'S MODEL

Standard Deviation of the Project as a whole : $\sqrt{(SD_1 \times PVF_1)^2 + (SD_2 \times PVF_2)^2 + \dots + (SD_n \times PVF_n)^2}$

DIVIDEND:

1. DIVIDEND RATE

→ Dividend Rate = $\frac{\text{Dividend Per Share}}{\text{Face Value}} \times 100$

2. WALTER'S MODEL

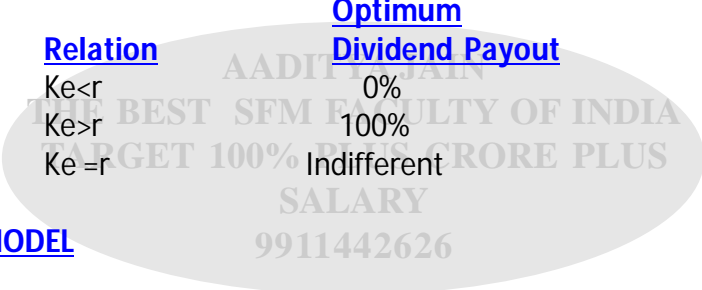
→ Symbolically : $P_0 = \frac{DPS}{K_e} + \frac{\frac{r}{K_e} (EPS - DPS)}{K_e}$

3. OPTIMUM DIVIDEND PAYOUT OR OPTIMUM RETENTION RATIO

→ Walter suggested that optimum dividend payout ratio or optimum retention ratio depends on the relationship of Ke & r

<u>Nature of Firm</u>	<u>Relation</u>	<u>Optimum Dividend Payout</u>	<u>Retention Ratio</u>
Growth Company	Ke < r	0%	100%
Declining Company	Ke > r	100%	0%
Normal Company	Ke = r	Indifferent	Indifferent

4. GORDON'S GROWTH MODEL



$$\rightarrow \text{Symbolically : } P_0 = \frac{DPS_1}{K_e - g} \text{ or } P_0 = \frac{DPS_0 (1+g)}{K_e - g} \text{ or } P_0 = \frac{EPS(1-b)}{K_e - g}$$

5. RELATIONSHIP BETWEEN GROWTH RATE ; RETURN ON EQUITY ; RETENTION RATIO

$$g = b \times r$$

6. ZERO GROWTH RATE

$$\rightarrow \text{In such case growth model will become : } P_0 = \frac{EPS}{K_e}$$

7. VALUE OF DECLINING FIRM/NEGATIVE GROWTH FIRM

→ Market Price Per Share of a firm whose dividend is declining at a constant rate p.a forever is given by

$$P_0 = \frac{D_0(1-g)}{K_e + g}$$

8. UNEQUAL GROWTH RATE/VARIABLE GROWTH RATE CONCEPT

P_0 [Assuming Dividend is growing constantly from year 4 onwards]

$$= \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{D_4}{(1+K_e)^4} + \left(\frac{D_5}{K_e - g} \right) \times \frac{1}{(1+K_e)^4}$$

9. RELATIONSHIP BETWEEN KE & PE RATIO

$$K_e = \frac{1}{P/E \text{ Ratio}}$$

10. RETURN ON EQUITY (ROE)

$$\text{Return On Equity (ROE) (r)} = \frac{\text{Total Earnings Available For Equity Shareholder}}{\text{Total Equity Shareholder's Fund}} \times 100$$

11. BOOK VALUE PER SHARE (BVPS)

$$\text{Book Value Per Share (BVPS)} = \frac{\text{Total Equity Shareholder's Fund}}{\text{Total Number Of Equity Share}}$$

12. RELATIONSHIP BETWEEN ROE, BVPS & EPS

$$EPS = \text{Book Value Per Share} \times \text{Return on Equity}$$

13. CALCULATION OF HOLDING PERIOD RETURN (HPR)

$$\rightarrow \text{Holding Period Return or Total Yield} = \frac{D_1 + (P_1 - P_0)}{P_0} = \frac{D_1}{P_0} + \frac{P_1 - P_0}{P_0} = \text{Dividend Yield} + \text{Capital Gain Yield}$$

14. CAPITAL GAIN YIELD

$$\text{Capital Gain Yield} = \frac{P_1 - P_0}{P_0} \times 100$$

15. PRICE AT THE END OF YEAR 1

P1 is normally calculated by using this equation $\frac{P_1 - P_0}{P_0} \times 100$

16. E/P RATIO OR EARNING PRICE OR YIELD RATIO

$$\rightarrow \text{E/P Ratio} = \frac{\text{Earnings Per Share}}{\text{Market Price Per Share}}$$

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