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CA IPC & CS Executive

Cost and Management Accounting

FORMULA SHEET

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COST SHEET

ABSORPTION COSTING:

Opening Stock
Add: Purchases
Less: Closing Stock
DIRECT MATERIAL CONSUMED
Add: Direct Labour
Add: Direct Expenses
PRIME COST
Add: Factory Overheads
GROSS FACTORY COST
Add: Opening WIP
Less: Closing WIP
NET FACTORY COST
Add: Administration Expenses
COST OF PRODUCTION
Add: Opening FG
Less: Closing FG
COST OF GOODS SOLD
Add: Selling and Distribution Expenses
COST OF SALES
Add/Less: Profit/Loss
SALES

MARGINAL COSTING:

SALES
Less: Variable Cost
CONTRIBUTION
Less: Fixed Cost
PROFIT

MATERIAL COST:

EOQ (Economic Order Quantity - Wilson's Formula) = $\sqrt{2AO/C}$

Where:

A = Annual usage units

O = Ordering cost per unit

C = Annual carrying cost of one unit i.e. Carrying cast % * Carrying cost of unit

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Reorder level = Maximum usage * Maximum lead time

        (Or) Minimum level + (Average usage * Average Lead time)

Minimum level = Reorder level – (Average usage * Average lead time)

Maximum level = Reorder level + Reorder quantity – (Minimum usage * Minimum lead time)

Average level = $\dfrac{\text{Minimum level} + \text{Maximum level}}{2}$

Danger level (or) safety stock level

      =Minimum usage * Minimum lead time (preferred)

Average Stock Level = $\dfrac{\text{Min Level} + \text{Max Level}}{2}$

LABOUR COST

Time Wage = Hours worked * Rate/Hour

Piece Wages = Units produced * Rate/Piece

Rate/piece = Rate per hour /time taken for one piece

Taylor's differential piece rate system:

No minimum rate is guaranteed. The standard output is determined on the basis of time and motion studies. Those attaining or exceeding the standard get a higher piece rate and those not attaining it get a lower rate.

The lower rate is based on 83% of the day wage rate. This rate is applicable to those who don't attain the standard. The higher rate is based on 125% of the day rate. The efficiency of the worker can be determined either by comparing standard time and actual time taken or by comparing actual output and standard output. Hence, this method penalizes the slow worker and rewards the efficient one. This principle is based on the fact that slow production increases the cost of production.

Merrick's differential rate scheme:

This is a modification of the Taylor's scheme. This system smoothens the sharp differences in Talyor's scheme by determining 3 gruadual rates. It does not guarantee time rate but each one is paid according to efficiency. The performance below standard is not penalized.

Efficiency Level	Piece Rate
Upto 83%	Normal Rate
83% to 100%	110% of Normal Rate
Above 100%	120% of the Normal Rate

Efficiency %= Standard time/Time taken *100

Emerson's Efficiency System:

Though minimum daily wages is guaranteed, efficiency is also rewarded. Standard is set

based on the time and motion study.

Efficiency	Piece Rate
66 2/3rd %	Guaranteed Time Rate
90%	Time Rate + 10% Bonus
100%	Time Rate + 20% bonus
Above 100%	Time Rate + 20% Bonus + 1% for every increase of 1% beyond 100%.

Efficiency %= Standard time/Time taken *100

Bedauxe Point System:

Time wages is guaranteed, earnings increase after the worker attains 100% efficiency level. Standard time and standard work is measured in terms of bedauxe points, which is also known as B's. one B unit represents the amount of work which an average worker can do under normal conditions in one minute allowing for the relaxation needed. Workers get a bonus which is equal to 75% of B's saved.

Wages = Basic wages + 75% of Bedauxe points * hourly rate /60

Halsey Plan:

Under this plan, time rate is guaranteed. The bonus is 50% of the standard time saved.

Total wages = (time taken * Hourly rate) + 50% (time SAVED * hourly rate)

Rowan Plan:

The time rate is guaranteed. The % of bonus to the wages earned is that which the time saved beards to the standard time.

Total wages = (time taken * hourly rate) + [(time saved/standard time)*(time taken * hourly rate)]

Measurement of Labour Turnover:

1) Separation rate method = Separation during the period
                       Average No. of worker's during the period

2) Replacement method =   Number of replacements
                       Average No. of worker's during the period

3) Labour flux rate = No. of separation + No. of New employees + No. of replacements
                       Average No. of worker's during the period

OVERHEADS

Basis	Expense items
Area or cubic measurement of department Direct labour hours or, where wage rates are more or less uniform, total direct wages of department.	Rent, rates, lighting and building maintenance Supervision
Number of employees in departments	Supervision
Cost of material used by departments	Material handling charges
Value of assets	Depreciation and insurance
Horse power of machines	Power

Service department cost	Basis of apportionment
Maintenance Department	Hours worked for each department
Employment department	Rate of labour turnover or number of employees in each department
Payroll Department	Direct labour hours, machine hours number of employees
Stores keeping department	No. of requisitions, quantity or value of materials
Welfare department	No. of employees
Internal transport department	Truck hours, truck mileage
Building service department	Relative area of each department
Power house	Floor area, Cubic contents

CONTRACT COSTING

Profit of Incomplete contract:-

1) When % of completion is less than or equal to 25% then full Notional profit is transferred to **reserve**.

2) When % of completion is above 25% but less than 50% following amount should be credited to profit & loss a/c =

1/3 * Notional Profit * {Cash received / Work certified}

3) When % of completion is more than or equal to 50% then the amount transferred to profit is =

2/3 * Notional Profit * {Cash received / Work certified}

4) When the contract is almost complete the amount credited to profit & loss a/c is

   a) Estimated total profit * {Work certified / Contract price}

   b) Estimated total profit * {Cash received / Contract price}

   c) Estimated total profit * {Cost of work done / Estimated total profit}

   d) Estimated total profit*{Cost of work done*Cash received/Estimated total cost * Work certified}

MARGINAL COSTING:

Contribution = Sales – variable Cost = fixed cost + profit
Profit Volume Ratio = Contribution/sales (or)   Change in contribution/change in sales

Break Even Point = Fixed Cost/Contribution   (or)
             Fixed Cost/PV Ratio   (or)
             Fixed Cost/ Contribution at 1% Capacity

Contribution = Sales * PV Ratio

Margin of Safety = Actual Sale – Break even sales   (or)
             Profit/Contribution per unit   (or)
             Profit/PV Ratio

Sale Value at Desired Profit = Fixed Cost + Desired Profit

PV Ratio
Variable Cost Ratio = Change in total cost
Change in total Sales
Variable Cost per unit = Change in total cost
Change in output
Contribution per unit = Change in Profit
Change in output
Net profit = MOS * PV Ratio

STANDARD COSTING:

Material Cost Variance: (Std Qty for AO * SP) - (AQ * AP)
Material Price Variance: AQ consumed (SP – AP)
Material Usage Variance: SP (Std Qty for AO – AQ)
Labour Cost Variance: SH for AO – (AH * AR)
Labour Rate Variance: AH (SR-AR)
Labour Efficiency Variance: SR(SR for AO – AH)
Variable OH Cost Variance: (AO * SRR/Unit) – Actual OH
Variable OH Expenditure Variance: (AH * SRR/Hr) – Actual OH
Variable OH Efficiency Variance: SRR/hr (SH – AH)
SRR/Unit = Budgeted OH/Budgeted Output
SRR/Hr = Budgeted OH/Budgeted Hours
Fixed OH Cost Variance: (AO * SRR/Unit) – Actual OH
Fixed OH Expenditure Variance : Budgeted OH – Actual OH
Fixed OH Volume Variance: SRR/Unit(BO – AO)
Fixed OH Calendar Variance: SRR/day(Budgeted working days – actual working days)
Fixed OH Capacity Variance: SRR/Hr(BH - AH)
Fixed OH Efficiency Variance: SRR/Hr(SH - AH)
Sales Variance : (BQ * SSP) – (AQ * ASP)
Sales price Variance: AQS(SSP - ASP)
Sales Volume Variance: SSP(BQ - AQ)
Efficiency Ratio = Standard Hours for AO
Actual Hours
Activity Ratio= Output in Standard Hours
Budgeted Output in Standard hours
Calendar Ratio = Actual working days
No. of working days in budgeted period

Current Ratio : $\dfrac{\text{Current Assets}}{\text{Current Liabilities}}$

Where,

Current Assets= Inventories + Sundry Debtors + Cash & Bank Balances + Loans & Advances + Disposable Investments

Current Liabilities= Sundry Creditors + Short term loans + Bank Overdraft + Cash Credit + Outstanding Expenses + Proposed Dividends + Provision for Taxation + Unclaimed Dividend

The main question the ratio addresses is "does your business have enough current assets to meet the payment schedule of its current debts with a margin of safety for possible loss in current assets?"

Standard Current Ratio is 1.33 but whether or not a specific ratio is satisfactory depends upon the nature of business and characteristics of its current assets and liabilities.

Quick Ratio = $\dfrac{\text{Quick Assets}}{\text{Quick Liabilities}}$

Quick Assets= Current Assets – Inventories
Quick Liabilities= Current Liabilities – Bank Overdraft – Cash Credit

The Quick Ratio is a much more exacting measure than the Current Ratio. By excluding inventories, it concentrates on the really liquid assets, with value that is fairly certain. It helps answer the question: "If all sales revenues should disappear, could my business meet its current obligations with the readily convertible `quick' funds on hand?"

Debt Equity Ratio = $\dfrac{\text{Total Debt}}{\text{Shareholder's Equity}}$

A high ratio here means less protection for creditors. A low ratio, on the other hand, indicates a wider safety cushion (i.e., creditors feel the owner's funds can help absorb possible losses of income and capital).

This ratio indicates the proportion of debt fund in relation to equity. This ratio is very often referred in capital structure decision as well as in the legislation dealing with the capital structure decisions (i.e. issue of shares and debentures). Lenders are also very keen to know this ratio since it shows relative weights of debt and equity.

Debt Service Coverage Ratio = $\dfrac{\text{Earnings Available for Debt Service}}{\text{Interest + Installment}}$

Earnings Available 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.

This ratio is the vital indicator to the lender to assess the extent of ability of the borrower to service the loan in regard to timely payment of interest and repayment of principal amount.

It shows whether a business is earning sufficient profits to pay not only the interest charges but also the installment due of the principal amount.

Interest Coverage Ratio = $\dfrac{\text{EBIT}}{\text{Interest}}$

This ratio also known as "times interest earned ratio" indicates the firm's ability to meet interest (and other fixed-charges) obligations. Earnings before interest and taxes are used in the numerator of this ratio because the ability to pay interest is not affected by tax burden as interest on debt funds is deductible expense. This ratio indicates the extent to which earnings may fall without causing any embarrassment to the firm regarding the payment of interest charges. A high interest coverage ratio means that an enterprise can easily meet its interest obligations even if earnings before interest and taxes suffer a considerable decline. A lower ratio indicates excessive use of debt or inefficient operations.

Preference Dividend Coverage Ratio = $\dfrac{\text{EAT}}{\text{Preference Dividend}}$

This ratio measures the ability of a firm to pay dividend on preference shares which carry a stated rate of return. Earnings after tax is considered because unlike debt on which interest is charged on the profit of the firm, the preference dividend is treated as appropriation of profit. This ratio indicates margin of safety available to the preference shareholders. A higher ratio is desirable from preference shareholders point of view.

Capital Gearing Ratio

Formula = $\dfrac{\text{(Preference Share Capital + Debentures + Long term Loan)}}{\text{(Equity Share Capital + Reserves \& Surplus – Losses)}}$

In addition to debt-equity ratio, sometimes capital gearing ratio is also calculated to show the proportion of fixed interest (dividend) bearing capital to funds belonging to equity shareholders.

Inventory Turnover Ratio: This ratio also known as stock turnover ratio establishes the relationship between the cost of goods sold during the year and average inventory held during the year. It is calculated as follows:

Formula = $\dfrac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$

*Average Inventory = $\dfrac{\text{(Opening Stock + Closing Stock)}}{2}$

This ratio indicates that how fast inventory is used/sold. A high ratio is good from the view point of liquidity and vice versa. A low ratio would indicate that inventory is not used/ sold/ lost and stays in a shelf or in the warehouse for a long time.

Debtor's Turnover Ratio: In case firm sells goods on credit, the realization of sales revenue is delayed and the receivables are created. The cash is realised from these receivables later on. The speed with which these receivables are collected affects the liquidity position of the firm. The debtors turnover ratio throws light on the collection and credit policies of the firm.

Formula = $\dfrac{\text{Credit Sales}}{\text{Average Account Receivables}}$

Creditor's Turnover Ratio: This ratio is calculated on the same lines as receivable turnover ratio is calculated. This ratio shows the velocity of debt payment by the firm.

Formula = $\dfrac{\text{Credit Purchase}}{\text{Average Account Payables}}$

A low creditor's turnover ratio reflects liberal credit terms granted by supplies. While a high ratio shows that accounts are settled rapidly.

Return on Equity = $\dfrac{\text{Profit after Tax}}{\text{Net worth}}$

Return on equity is one of the most important indicators of a firm's profitability and potential growth. Companies that boast a high return on equity with little or no debt are able to grow without large capital expenditures, allowing the owners of the business to withdraw cash and reinvest it elsewhere. Many investors fail to realize, however, that two companies can have the same return on equity, yet one can be a much better business.

For that reason, a finance executive at E.I. Du Pont de Nemours and Co., created the DuPont system of financial analysis in 1919. That system is used around the world today and serves as the basis of components that make up return on equity.

Earnings Per Share (EPS): $\dfrac{\text{Net profit available for equity shareholders}}{\text{Number of ordinary shares outstanding}}$

The profitability of a firm from the point of view of ordinary shareholders can be measured in terms of number of equity shares. This is known as Earnings per share

Dividend Per share: $\dfrac{\text{Total Profits distributed to equity shareholders}}{\text{Number of Equity Shares}}$

Earnings per share as stated above reflects the profitability of a firm per share; it does not reflect how much profit is paid as dividend and how much is retained by the business. Dividend per share ratio indicates the amount of profit distributed to shareholders per share.

Price Earnings Ratio (PE): $\dfrac{\text{Market price per share}}{\text{Earnings per share}}$

The price earning ratio indicates the expectation of equity investors about the earnings of the firm. It relates earnings to market price and is generally taken as a summary measure of growth potential of an investment, risk characteristics, shareholders orientation, corporate image and degree of liquidity.

Return on Investment (ROI): $\dfrac{\text{Return}}{\text{Capital Employed}}$ * 100

Where,

Return = Profit after Tax
+   Interest on long term debts + Provision for Tax
-   Interest/Dividend from non trade investments

Capital Employed = Equity Share Capital
+ Reserves and Surplus
+ Preference Share Capital
+ Debenture and long term loan
- Misc Expenditure and Losses
- Non Trade Investments

Market value to book value: Average Share Price

Net Worth/Number of Equity Shares
This ratio indicates market response of the shareholders' investment. Undoubtedly, higher the ratios better is the shareholders' position in terms of return and capital gains

WORKING CAPITAL CYCLE

A useful tool for managing working capital is the operating cycle. The operating cycle analyzes the accounts receivable, inventory and accounts payable cycles in terms of number of days. In other words, accounts receivable are analyzed by the average number of days it takes to collect an account. Inventory is analyzed by the average number of days it takes to turn over the sale of a product (from the point it comes in the store to the point it is converted to cash or an account receivable). Accounts payable are analyzed by the average number of days it takes to pay a supplier invoice.

Working capital cycle indicates the length of time between a company's paying for materials, entering into stock and receiving the cash from sales of finished goods. It can be determined by adding the number of days required for each stage in the cycle. For example, a company holds raw materials on an average for 60 days, it gets credit from the supplier for 15 days, production process needs 15 days, finished goods are held for 30 days and 30 days credit is extended to debtors. The total of all these, 120 days, i.e., 60 – 15 + 15 + 30 + 30 days is the total working capital cycle.

The determination of working capital cycle helps in the forecast, control and management of working capital. It indicates the total time lag and the relative significance of its constituent parts. The duration of working capital cycle may vary depending on the nature of the business.

In the form of an equation, the operating cycle process can be expressed as follows:

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

Raw Material Storage Period =   Average Stock of Raw Material

                     Average Cost of Raw Material Consumption per day

WIP Holding period =   Average WIP Inventory

                     Average Cost of Production per day

Finished Goods storage period =   Average Stock of Finished Goods

                     Average Cost of Goods Sold per day

Debtors Collection Period = $\dfrac{\text{Average Book Debts}}{\text{Average Credit Sales per day}}$

Credit period availed = $\dfrac{\text{Average Trade Creditors}}{\text{Average Credit Purchases per day}}$

MAXIMUM PERMISSIBLE BANK FINANCE (MPBF)

For determining the maximum permissible bank finance (MPBF), the methods suggested were :
Method I : 0.75 (CA - CL)
Method II : 0.75 CA - CL
Method III : 0.75 (CA - CCA) - CL

COST OF CAPITAL

Cost of Debt:

Cost of irredeemable debt:

$K_d = \dfrac{I\,(1-t)}{NP}$

Where,
K_d = Cost of debt after tax
I = Annual Interest Rate
NP = Net Proceeds of debt
T = Tax Rate

Cost of redeemable debt:

$K_d = \dfrac{I(1-t) + (RV - NP)/N}{\dfrac{RV+NP}{2}}$

Where,
I = Annual Interest Rate
T = Tax Rate
RV = Redemption value
NP = Net Proceeds of debt
N = life of debt

Cost of Preference Shares:

Cost of irredeemable preference shares:

$K_p = \dfrac{PD}{PO}$

Where,

PD = Preference dividend

PO = Net proceeds in issue of preference shares

Cost of redeemable preference shares:

$K_p = \dfrac{PD + (RV - NP)/N}{\dfrac{RV + NP}{2}}$

Where,

PD = Preference Dividend

RV = Redemption value of preference shares

NP = Net proceeds on issue of preference shares

N = Life of preference shares

However, since dividend of preference shares is not allowed as deduction from income for income tax purposes, there is no question of tax advantage in the case of cost of preference shares.

Cost of Equity:

1. **Dividend price approach**: Here, cost of equity capital is computed by dividing the current dividend by average market price per share. This dividend price ratio expresses the cost of equity capital in relation to what yield the company should pay to attract investors. This model assumes that dividends are paid at a constant rate to perpetuity. It ignores taxation. However, this method cannot be used to calculate cost of equity of units suffering losses.

   $K_e = \dfrac{D_1}{P_0}$

   Where,

   K_e = Cost of Equity

   D1 = Annual Dividend

   P0 = Market value of Equity

2. **Earning Price Approach**: The advocates of this approach co-relate the earnings of the company with the market price of its share. Accordingly, the cost of ordinary share capital would be based upon the expected rate of earnings of a company. The argument is that each investor expects a certain amount of earnings, whether distributed or not from the company in whose shares he invests. This approach also does not seem to be a complete answer to the problem of determining the cost of ordinary share since it ignores the factor of capital appreciation or depreciation in the market value of shares.

   $K_e = \dfrac{EPS}{P_0}$

   Where,

   K_e = Cost of Equity

   EPS = Earnings per share

P_0 = Market value of Equity

3. **Dividend plus Growth Model**: Earnings and dividends do not remain constant and the price of equity shares is also directly influenced by the growth rate in dividends. Where earnings, dividends and equity share price all grow at the same rate, the cost of equity capital may be computed as follows:

$K_e = (D/P) + G$

Where,
D = Current dividend per share
P = Market price per share
G = Annual growth rate of earnings of dividend

4. **Earning Price plus Growth**: This approach is an improvement over the earlier methods. But even this method assumes that dividend will increase at the same rate as earnings, and the equity share price is the regulator of this growth as deemed by the investor. However, in actual practice, rate of dividend is recommended by the Board of Directors and shareholders cannot change it. Thus, rate of growth of dividend subsequently depends on director's attitude. The dividend method should, therefore, be modified by substituting earnings for dividends. So, cost of equity will be given by:

$K_e = (E/P) + G$

Where,
E = Current earnings per share
P = Market share price
G = Annual growth rate of earnings.

The calculation of 'G' (the growth rate) is an important factor in calculating cost of equity capital. The past trend in earnings and dividends may be used as an approximation to predict the future growth rate if the growth rate of dividend is fairly stable in the past.

5. **Realized Yield Approach:** According to this approach, the average rate of return realized in the past few years is historically regarded as 'expected return' in the future. The yield of equity for the year is:

$$Y_t = \frac{D_t + P_{t-1}}{P_{t-1}}$$

Where,
Y_t = Yield for the year t
D_t = Dividend for share for end of the year t
P_t = Price per share at the end of the year t
P_{t-1} = Price per share at the beginning and at the end of the year t

Though, this approach provides a single mechanism of calculating cost of equity, it has unrealistic assumptions. If the earnings do not remain stable, this method is not practical.

6. **Capital Asset Pricing Model**: This model describes the linear relationship between risk and return for securities. The risk a security is exposed to are diversifiable and non-diversifiable. The diversifiable risk can be eliminated through a portfolio consisting of large number of well diversified securities. The non-diversifiable risk is assessed in terms of beta coefficient (b or β) through fitting regression equation between return of a security and the return on a market portfolio.

Thus, the cost of equity capital can be calculated under this approach as:

$K_e = R_f + b (R_m - R_f)$

Where,

K_e = Cost of equity capital

R_f = Rate of return on security

b = Beta coefficient

R_m = Rate of return on market portfolio

Therefore, required rate of return = risk free rate + risk premium

Weighted Average Cost of Capital (WACC)

WACC, in other words, represents the investors' opportunity cost of taking on the risk of putting money into a company. Since every company has a capital structure i.e. what percentage of debt comes from retained earnings, equity shares, preference shares, and bonds, so by taking a weighted average, it can be seen how much interest the company has to pay for every rupee it borrows. This is the weighted average cost of capital.

The weighted average cost of capital for a firm is of use in two major areas: in consideration of the firm's position and in evaluation of proposed changes necessitating a change in the firm's capital. Thus, a weighted average technique may be used in a quasi-marginal way to evaluate a proposed investment project, such as the construction of a new building.

Thus, weighted average cost of capital is the weighted average after tax costs of the individual components of firm's capital structure. That is, the after tax cost of each debt and equity is calculated separately and added together to a single overall cost of capital.

K_0 = % D(mkt) (K_i) (1 – t) + (% Psmkt) K_p + (C_s mkt) Ke

Where,

K_0 = Overall cost of capital

K_i = Before tax cost of debt

1 – t = 1 – Corporate tax rate

K_p = Cost of preference capital

Ke = Cost of equity

% Dmkt = % of debt in capital structure

%Psmkt = % of preference share in capital structure

% Cs = % of equity share in capital structure.

Concept of Debt Equity or EBIT EPS indifference point:

The determination of optimal level of debt in the capital structure of a company is a formidable task and is a major policy decision. It ensures that the firm is able to service its debt as well as contain its interest cost. Determination of optimal level of debt involves equalizing between return and risk.

EBIT EPS analysis is a widely used tool to determine the level of debt in a firm. Through this analysis, comparison can be drawn for various methods of financing by obtaining the indifference point. It is point to the EBIT level at which EPS remain unchanged irrespective of debt equity level. For example, indifference point for the capital mix can be determined as below:

$$\frac{(EBIT - I_1)(1-t)}{E_1} = \frac{(EBIT - I_2)(1-t)}{E_2}$$

Where,
EBIT = indifference point
E_1 = No. of equity shares in alternative 1
E_2 = No. of equity shares in alternative 2
I_1 = Interest charged in alternative 1
I_2 = Interest charged in alternative 2
T = Tax Rate
Alternative 1 = All Equity Finance
Alternative 2 = Debt equity finance

LEVERAGE

I. **Operating Leverage**: It is defined as the firm's ability to use fixed operating costs to magnify effects of changes in sales on its EBIT.

When sales changes, variable costs will change in proportion to sales while fixed costs will remain constant. So, a change in sales will lead to a more than proportional change in EBIT. The effect of change in sales on EBIT is measured by operating leverage.

When sales increases, Fixed costs will remain same irrespective of level of output, and so the percentage increase in EBIT will be higher than increase in Sales. This is favorable effect of operating leverage.

$$OL = \frac{Contribution}{EBIT} \quad or \quad \frac{\% \text{ change in EBIT}}{\% \text{ change in Sales}}$$

II. **Financial Leverage**: it is defined as the ability of a firm to use fixed financial charges to magnify the effects of change in EBIT on firm's EPS.

Financial leverage occurs when a company has debt content in its capital structure and fixed financial charges. These fixed financial charges do not vary with EBIT. They are fixed and are to be paid irrespective of the level of EBIT.

When EBIT increases, the interest payable on debt remains constant, and hence residual earnings available to shareholders will also increase more than proportionately.

Hence an increase in EBIT will lead to a higher percentage increase in EPS. This is measured by financial leverage.

$$FL = \frac{EBIT}{EBT} \quad or \quad \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$$

III. **Combined Leverage**: Combined leverage is used to measure the total risk of a Firm i.e Operating Risk and Financial Risk.

$$CL = \frac{Contribution}{EBT} \quad or \quad \frac{\% \text{ change in EPS}}{\% \text{ change in Sales}} \quad or \quad OL * FL$$

CAPITAL BUDGETING

$$\text{Payback Period} = \frac{\text{Total initial capital investment}}{\text{Annual expected after tax net cash flow}}$$

$$\text{Accounting Rate of Return} = \frac{\text{Average Annual net income}}{\text{Investment}}$$

$$\text{PI} = \frac{\text{Sum of Discounted Cash inflows}}{\text{Total Discounted Cash outflow}}$$

Net present value = Present value of net cash flow - Total net initial investment