

2. Ratio Analysis

All companies registered under Companies Act, 1956, are required to compile Profit & Loss Account and Balance Sheet. Both these statements are compiled at annual intervals and in exceptional cases, the time gap between two statements could be 15 months.

As per Income Tax Act, all companies are required to finalize their annual financial statements on a common date- March 31. P&L account indicates the working results of the business during an accounting period of one year. Balance Sheet is the most important financial statement – it indicates the financial condition or state of affairs of a business at a particular moment of time. It contains information about resources (assets) and obligations (liabilities) of a business entity at a particular point of time. *It spells out the financial position of business at the close of firm's accounting period.* The various items of the balance sheet are grouped into two broad categories i.e. Liabilities and Assets. Liabilities are the obligations of the business to others. These are the sources of funds. As the business is a distinct entity to shareholders or owners, the capital invested by them is also a liability for the business enterprise. **Assets are property of the business.**

As per accounting principles, certain other items are also treated as assets, which may not be called property. Such items are intangible assets such as goodwill, patents and trademarks, preliminary and pre-operative expenses and losses. The rationale behind including losses and expenses as assets is that they use-up the property of the business enterprise for which the enterprise had to incur liabilities. Thus, in accounting parlance, all debit balances are assets and all credit balances, liabilities.

RATIO ANALYSIS

Ratios can be classified into four main groups:

- Liquidity Ratios
- Capital Structure Ratios (Leverage Ratios)
- Profitability Ratios
- Activity Ratios

Liquidity Ratios

These ratios analyze the short-term solvency or liquidity of the company and indicate the ability of the firm to meet its short-term commitments (Current liabilities) out of its short-term resources (current assets). These ratios are also termed as **solvency ratios**.

1. Current Ratio

This is an important measure of liquidity of a concern. This ratio is most widely used. This is worked-out as follows-

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Current assets include inventory of raw material, finished stock and WIP, debtors, bills receivables, stores & spares, short-term loans and advances, cash in hand and bank, prepaid expenses, income receivable and short term investments. *Current Liabilities*

include creditors, bills payable, outstanding expenses, unclaimed dividend, advances received from suppliers, provision for tax, proposed dividend, loan installment payable within 1 year.

If it falls below 1, the enterprise would be on the verge of sickness. The current ratio refers to the ability of the business enterprise to meet its obligations within a time span of one year. However, it does not indicate competence or otherwise in meeting the immediate liabilities. The quality of current assets is also an important factor. If with a current ratio of 4, the entire current assets are blocked in raw material / WIP and the entire current liabilities are maturing within next 15 days, then the enterprise would definitely face liquidity problem. On the contrary, with current ratio of 1, if the entire current assets are highly liquid and the current liabilities mature after six months, the enterprise will be in a quite comfortable liquidity position. It is also to be mentioned here that the seasonality, peak and non-peak season etc. also affect the current ratio in some industry.

2. Acid Test/ Quick Ratio

This is calculated as ratio between quick current assets and quick current liabilities. It spells out the immediate solvency of the company by determining the composition or quality of current assets and liabilities.

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Prepaid Expenses} - \text{Inventory}}{\text{Current Liabilities} - \text{Bank O/D} - \text{Advance Incomes}}$$

Capital Structure Ratios (Leverage Ratios)

These ratios indicate long-term solvency and indicate the ability of the company to meet its long-term commitment with respect to repayment of principal on maturity or installments and interest during the loan repayment schedule.

1. Debt Equity Ratio

This ratio indicates the relative proportion of debt and equity in financing pattern of the company. The ratio is worked out as follows: -

$$\text{Debt Equity Ratio} = \frac{\text{Long Term Debt}}{\text{Shareholders Funds}}$$

Long term debts are long-term loans like debentures, bonds, loans from banks and financial institutions, long term notes. Shareholders funds are equity shares, preference capital, reserves & surplus less fictitious assets. Fictitious assets include preliminary expenses, accumulated losses, discount on issue of shares.

The purpose of this ratio is to ascertain the relative financial stakes of the creditors vis-à-vis the owners of an enterprise. Owner would like to raise as large a sum as possible from creditors so that his stake is at minimum. Creditors would also like to invest only when the earning capacity of the enterprise is good. As the interests of both the persons

i.e. creditor and the owner are different, it is difficult to arrive at an ideal debt / equity ratio. Further, this ratio differs from industry to industry. Thus, if the industry average is as high as 6, a debt-equity ratio of 6 would not be considered high. If the industry average is low, then the ratio should not even go up to 2. If the ratio is better than the industry average, then it may be presumed that the company is less dependent on outside funds.

2. Debt to Total Capital Ratio

In this ratio, outside liabilities are related to total capital of the company and not just shareholders' funds. Total capital implies owned funds (equity + preference+ reserves- fictitious assets). It merely indicates what proportion of capital is in the form of long term debt.

$$\text{Debt to Total Capital Ratio} = \frac{\text{Long-term debt .}}{\text{Shareholders' funds+ Long-term debt}}$$

3. Interest Coverage

Measures overall debt servicing capacity of the firm so far as fixed interest on long term is concerned. Higher the ratio, greater is the ability of company to meet interest costs out of profits earned.

$$\text{Interest coverage ratio} = \frac{\text{Profit Before Interest And Tax (PBIT)}}{\text{Interest}}$$

4. Debt Service Coverage

This is more comprehensive measure to study the debt servicing capacity of the firm Measures the ability to meet debt obligations out of actual operating funds or cash profits and not just book profits.

$$\text{Debt Service Coverage Ratio} = \frac{\text{PAT+ Interest +Depreciation+ Amortization + other non-cash exp}}{\text{Interest +Principal installment}}$$

5. Capital Gearing Ratio- This ratio shows the relationship between two types of capital ie equity capital (including reserves) on one hand and preference capital & long term debt on the other hand.

$$\text{Capital Gearing Ratio} = \frac{\text{Capital Entitled to fixed rate of dividend or interest}}{\text{capital not so entitled to fixed rate of dividend or interest.}}$$

Capital Entitled to fixed rate of dividend or interest includes preference share capital, long term loans and debentures. Capital not so entitled to fixed rate of dividend or interest includes equity capital and reserves. Note that fictitious assets and P&L A/c Debit balance figures are to be deducted from above figure of equity and reserves.

Profitability Ratios

Profitability ratios primarily measure the degree of operating efficiency of the firm and its ability to measure adequate returns to its shareholders. Profitability of the company can be judged in relation to sales and in relation to investments.

In relation to sales

Net Profit Margin

- Indicates the company's ability to generate returns or leave a margin of reasonable reward or compensation to the owners for their capital investments, after meeting various expenses.
- Expenses are mainly cost of production, cost of borrowings and operating expenses.
- Expressed in terms of percentage.
- Must be compared with peers in the same industry.
- Higher the ratio, greater is the operating efficiency. It also implies the ability of the firm to tide over recession.

$$\text{Net Profit Margin (\%)} = \frac{\text{Net Profit After Tax}}{\text{Net Sales}} \times 100$$

Gross Profit Margin

- Company must generate adequate gross profits in order to cover its operating costs.
- Must be compared with firms in same industry.
- Higher ratio means greater profitability attained by increasing selling prices, cost savings and over-valuation of inventory.

$$\text{Gross Profit Margin (\%)} = (\text{Gross Profit} / \text{Net Sales}) \times 100$$

****Gross Profit = Net Sales - Cost Of Goods Sold**

An analyst while studying the profitability of the company must look at both gross profit margins and net profit margins. A rise in GPM with no rise in NPM implies that operating cost as a percentage of sales are increasing. This warrants productivity improvements and cost reduction on the part of the company.

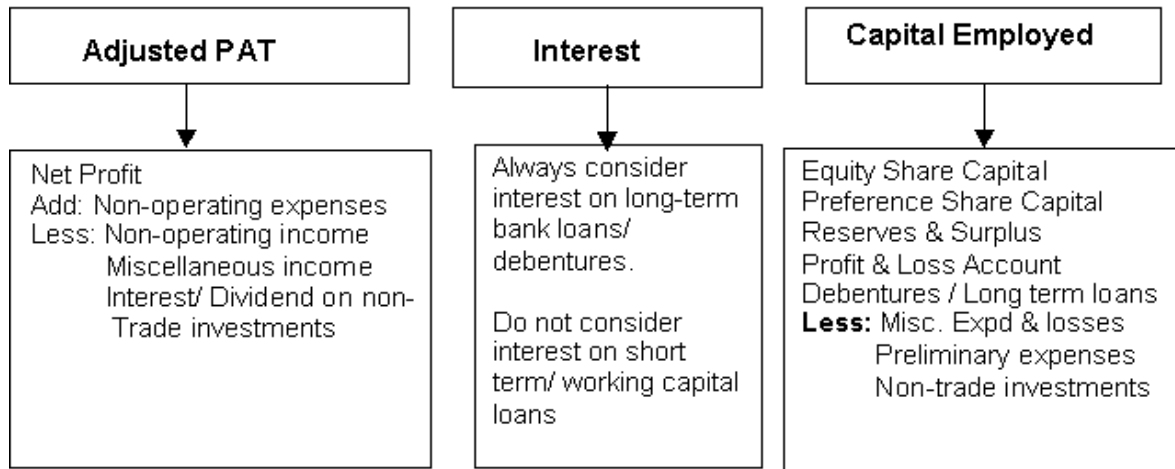
Particulars			
Cash Sales			
Credit Sales			
Gross Sales			
Less: Sales Returns			
<u>Net Sales</u>			
Less: Cost Of goods Sold			
Opening Stock			
Add: Net Purchases			
Direct Expenses			
Depreciation on factory bldgs, Machinery etc.			
Less: Closing Stock			
<u>Gross Profit</u>			
Add: Operating Income			
<u>Less: Operating Expenses</u>			
Office & Admin Expenses			
Selling & Distribution Expenses			
Financial Expenses			
<u>Operating Profit</u>			
Add: Non-Operating Income			
Less: Non-Operating Expenses			
<u>Net Profit Before Tax</u>			
Less: Provision for Taxation			
Net Profit After Tax			

Profitability in relation to investment

Return on Capital Employed (ROCE) Return on Capital employed essentially measures the operating efficiency of the company from shareholders` point of view. It indicates the ability of the company to utilize its resources in an optimal manner. A company might be profitable (ie high profit margins), but its ROCE might be lower compared to the other firms in same industry.

$$\text{Return on Capital Employed (ROCE)} = \frac{\text{Adjusted PAT} + \text{Interest}}{\text{Capital Employed}} \times 100$$

The reason being different companies have different cost structure and capital mix. **ROCE indicates the returns generated for every Rs 100 invested in the business. Capital employed means owned plus borrowed funds.**



Other important points-

- ❖ Goodwill, patents, trademarks although are intangible assets, should be taken in ROCE calculation
- ❖ No fictitious assets must be considered since they are not assets in real sense.
- ❖ Non-operating expenses include loss on sale of fixed assets & investments. Non-operating income includes profit on sale of fixed assets & investments, interest or dividend received from non-trade investments.
- ❖ Add back **provision for tax** to the adjusted profit, while calculating **pre-tax ROCE**.

Earning Per Share (EPS)

- Measures profit available to **equity shareholders** on per share basis
- Indicates firm's earning capacity on per share basis.
- Does not reveal how much earnings are distributed as dividends and how much is retained.
- Profit available to equity shareholders means what ever is left after paying taxes and preference dividend.

$$\text{Earning Per Share} = \frac{\text{PAT} - \text{Preference Dividend}}{\text{No of shares outstanding}}$$

	Rs
Net Profit after tax	225,000
8% Preference Share capital	200,000
Paid up equity capital	10,00,000
Face value of equity shares	10

Price Earning Ratio (PE Ratio)

- Indicates the relationship between market price of shares of the company and the earnings per share.
- It is essentially shows the price paid by investors for each rupee of EPS.
- Higher PE ratio indicates increasing trend share price and investors' interest or willingness to pay for the required scrip.

- PE ratio reflects investors' expectations about growth in the company's earnings.
- PE ratio differs across different sectors. Different industries have varying growth prospects, so also PE ratios.

$$\text{PE Ratio} = \frac{\text{Market Price Per share}}{\text{Earning Per Share}}$$

Dividend Yield: Dividend or interest is always paid as a percentage of share or debenture's face value. But when the dividend received is calculated as a percentage of the current market value of the shares, then it is termed as dividend yield. By keeping a track of dividend yield of the shares over a time period, one would be able to determine whether the growth in the dividend payout is proportionate to the increase in the market value of the shares. Also, the dividend yield indicates what percentage of an investor's purchase price of the stock is returned to him through dividends per share. It essentially specifies how much an investor is willing to pay for the expected or historic dividend stream generated by single share.

A high dividend yield need not necessarily indicate a good investment, as dividend yield could be wiped out by losses incurred on falling share prices. Each investor must bear in mind that dividend yield figure will differ for each of them depending upon the cost price. One has to be especially careful while calculating dividend yields in terms of the total dividend figure especially where interim dividends are concerned.

PEG Ratio: PEG (price/ earnings to growth) ratio will help investors find undervalued stocks. When used in conjunction with P/E ratio and P/B ratio, it gives investors a perspective of how the market views a stock growth potential in relation with EPS growth. Let's look at two hypothetical stocks to see how the PEG ratio is calculated-

a) ABC Corp has a P/E of 20 times earnings. The consensus of all the analysts covering the stock is that ABC has an anticipated earnings growth of 12% over the next five years.

$$\text{PEG ratio for ABC Corp} = 20 (\text{x times earnings}) / 12 (\text{n\% anticipated earnings growth}) \\ = 20/12 = 1.66$$

b) XYZ Micro is a young company with a P/E of 30 times earnings. Analysts conclude that the company has an anticipated earnings growth of 40% over the next five years.

$$\text{PEG ratio for XYZ Micro} = 30 (\text{x times earnings}) / 40 (\text{n\% anticipated earnings growth}) \\ = 30/40 = 0.75$$

Taking above illustrations, the PEG ratio indicates that ABC Corp stock price is higher than its earnings growth, implying that if the company doesn't grow at a faster rate, the stock price will decrease. On the other hand, XYZ Micro's PEG ratio of 0.75 tells us that the company's stock is undervalued, which means it's trading in line with the growth rate and the stock price will increase.

The PEG ratio compares price earnings ratio to its expected EPS growth rate. If the PEG ratio is equal to one, it means that the market is pricing the stock to fully reflect the

stock's EPS growth. This is normal in theory because in rational and efficient market, the PE ratio is supposed to reflect the stock's future earnings growth. Capital market theory suggests that the stock market should assign a PEG ratio of 1 to every stock. This would represent theoretical equilibrium between the market value of a stock and anticipated earnings growth. For example, a stock with an earnings multiple of 20 and 20% anticipated earnings growth would have a PEG ratio of 1.

A great advantage of the PEG ratio is that by taking into account the future growth expectations, we can compare the relative valuations of different industries that may have very different prevailing P/E ratios. This makes it easier to compare different industries, which tend to each have their own historical P/E ranges. For example, let's compare the relative valuation of a biotech stock to an integrated oil company:

<p>Biocon Ltd Current P/E: 35 times earnings Five-year projected growth rate: 25% PEG: 35/25, or 1.40</p>
<p>Indian Oil Corporation Current P/E: 16 times earnings Five-year projected growth rate: 15% PEG: 16/15, or 1.07</p>

Even though these two companies have very different valuations and growth rates, the PEG ratio allows us to make an apples-to-apples comparison of their relative valuations. Relative valuation is basically a mathematical way of saying whether a specific stock or a broad industry is more or less expensive than a broad market index, such as the BSE Sensex or Nifty.

So, if the BSE Sensex or Nifty has a current P/E ratio of 16 times trailing earnings and the average analyst estimate for future earnings growth in the Sensex is 12% over the next five years, the PEG ratio of the BSE Sensex 500 would be (16/12), or 1.25.

Thorough and detailed stock research should involve a solid understanding of the business operations and financials of the company. This includes knowing what factors the analysts are using to come up with their growth rate estimates, and even the type of risks that exist regarding future growth and the company's own forecasts for long-term shareholder returns.

Activity Ratios

Activity ratios form an important part of the ratio analysis model. This is because they indicate the ability of the company to manage its assets in most economical and efficient manner. They are also termed as efficiency ratios or performance ratios. These assets are essentially fixed assets and working capital. **Activity ratios primarily relate sales to these variables like working capital or fixed assets.** Alternatively, cost of goods sold can also be used while calculating these ratios.

Inventory Turnover Ratio

- Indicates efficiency of the firm in producing and selling its products.
- The ratio indicates how rapidly the inventory is turning into receivables and thereafter receivables into sales.
- High inventory turnover implies good inventory management. A low inventory turnover implies excessive inventory than required.

- If the company's funds are blocked in inventory that is sluggish or slow moving, it signals adverse effect on working capital/ short-term solvency.

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost Of Goods Sold}}{\text{Average Inventory}^{**}}$$

$$** \text{ Average inventory} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

$$\text{Days of Inventory Holding} = \frac{\text{Average Inventory} \times 360 \text{ days}}{\text{Cost Of Goods Sold}}$$

Debtors Turnover Ratio

- The ratio basically pinpoints the velocity with which receivables get translated or converted into actual cash sales.
- It shows the ability to generate adequate liquidity through credit sales.
- One needs to however look at two important parameters to judge the efficacy of company's credit management system. These are namely the *collection period* and *aging schedule of debtors*.
- In absence of opening and closing balance of debtors, the year-end ie closing balance of debtors can be considered.

$$\text{Debtors Turnover Ratio} = \frac{\text{Credit Sales}}{\text{Average Debtors} + \text{Bills Receivables}}$$

$$\text{Collection Period} = 360 / \text{Debtors Turnover}$$

High turnover ratio and shorter collection period indicates prompt payments by debtors. Shorter the average collection period better is the availability of cash for working capital requirements. On the other hand, if the collection period implies very liberal and inefficient credit and collection system. Collection period essentially measures the quality of debtors. However, to have a better idea about the quality of debtors one needs to study the *aging schedule* of debtors. *Aging schedule classifies debtors on the basis of length of time for which they have been outstanding.*

Example of Debtors Aging Schedule

Outstanding Period (Days)	Debtors Rs	% Of Total Debtors
0-25	200,000	50
26-35	100,000	25
36-45	50,000	13
46-60	30,000	8
Over 60	20,000	5
	400,000	100

Slow -paying debtors



Asset Turnover Ratio

- Asset turnover measures the efficiency with which the company utilizes its assets for maximizing revenues and profits. Assets generate sales and therefore companies must measure the performance of their assets in terms of ability to generate sales
- It essentially measures how much sales in rupees are generated when one rupee of capital employed is invested in net assets Low ratio would imply inefficient or under-utilization of assets.

$$\text{Assets Turnover Ratio} = \text{Sales} / \text{Net Assets}$$

Alternatively, instead of net assets in the above formula, we can consider total assets also. A better way is to separate both fixed assets and current assets and evaluate them separately.

Creditors Turnover Ratio

- Indicates time taken by company for making payments to creditors against credit purchases. It essentially calculates the credit period enjoyed by the firm.

$$\text{Creditors Turnover Ratio} = \frac{\text{Credit Purchases}}{\text{Average Creditors} + \text{Bills payable}}$$

$$\text{Credit Period} = 360 / \text{Creditors Turnover Ratio}$$

Problem 3

With the help of financial statements for Polywell Ltd for the year ended March 31, 2007 and certain significant ratios for 2006 and 2007. You are required to calculate ratios for the year 2007 and advise the company in light of its future plans mentioned below--

	2006	2007	Industry Avg.
Current Ratio	2.54	2.1	2.3
Acid Test Ratio	1.1	0.96	1.2
Debtors Turnover	6	4.8	7
Inventory Turnover	3.8	3.05	3.85
Debt to Total Capital Ratio	37%	42%	34%
GP Margin	38%	41%	40%
NP Margin	18%	16%	15%
Asset Turnover	0.80	0.70	1.00
Interest Coverage	10	9	10

Balance Sheet as on March 31, 2007			
Equity Share Capital	140,000	Fixed Assets	1,050,000
Preference Share Capital	280,000	Goodwill	140,000
Reserves And Surplus	280,000	Cash	70,000
Long Term Debt	840,000	Debtors	350,000
Creditors	280,000	Stock	490,000

Bills Payable	140,000		
Outstanding Expenses	40,000		
Provision Tax	100,000		
	2,100,000		2,100,000

Income Statement for the year ended March 31, 2007

Sales: Cash		280,000
Credit		1,120,000
		1,400,000
<u>Less: Expenses</u>		
Cost Of Goods Sold	840,000	
Marketing & General expenses	140,000	
Depreciation	98,000	
Interest on long term debt	42,000	1,120,000
Profit Before Tax		280,000
Less: Taxes		140,000
Profit After Tax		140,000
Less: Preference Dividend		17,000
Profit available for equity shareholders		123,000
Add: Profit brought forward from previous yr		182,000
		305,000
Less: Dividend Paid to equity shareholders		25,000
Profit carried forward to next year.		280,000

b) Using relevant ratios, guide the company in following plans -

1. Company wants to buy material of Rs 70,000 on 3-month credit from Shyam Lal Co..
2. The company offers to sell 70,000 additional shares for Rs 112 per share to a financial institution.
3. The company intends to issue 16% debentures of Rs 3,00,000 with 10-year maturity.

Problem 4 Total sales (all credit sales) of a company are Rs 6,40,000. It has gross margin of 15% and current ratio of 2.5:1. Current liabilities are Rs 96,000, inventories Rs 48,000 and cash Rs 16,000. Determine the average inventory to be carried by the firm if an inventory turnover of 5 times is expected. Determine the average collection period if the opening balance of debtors is Rs 80,000. (Assume 360 days for calculation)

Problem 5: Towards the end of 2001, the directors of Wholesale Merchants Ltd decided to expand their operations. Following are the financial details of the company. As a Business Analyst, you are required to submit Financial Report to indicate the efficiency and profitability of the company.

	2001		2002	
<u>Sales</u>				
Cash	42,000		44,800	
Credit	<u>378,000</u>	420,000	<u>478,800</u>	523,600

Cost of Goods Sold		<u>330,400</u>		<u>417,200</u>
Gross Profit.....		89,600		106,400
Expenses:				
Warehousing		18,200		19,600
Transport		8,400		14,000
Administration		26,600		26,600
Selling		15,400		19,600
Interest on Debentures		-		<u>2,800</u>
		<u>68,600</u>		<u>82,600</u>
Net Profit.....		21,000		23,800

	As on Dec 31, 2001		As on Dec 31, 2002	
Fixed Assets (Net)		42,000		56,000
<u>Current Assets</u>				
Stock	84,000		131,600	
Debtors	70,000		114,800	
Cash	14,000	168,000	9,800	256,200
Less: Current Liabilities		<u>70,000</u>		<u>106,400</u>
Net Current Assets		98,000		149,800
Net Assets		140,000		205,800
Share Capital		105,000		105,000
Reserves & Surplus		35,000		58,000
Debentures		-		42,000
Capital Employed		140,000		205,800

You are informed that (a) all sales were from stocks in the company's warehouse. (b) Range of merchandise was not changed and buying prices remained steady throughout the two years. (c) Budgeted sales for 2002 were Rs 3,90,000 (d) Debenture loan was received on 1st Jan 2002 and additional fixed assets were purchased on that date. Ignore taxation.

Problem 6- Following is Balance Sheet of Thermax Ltd as on March 31, 2007

Balance Sheet as on March 31, 2007			
Equity Share Capital	300,000	Goodwill	80,000
Reserves And Surplus	150,000	Land & Bldg	150,000
10% Mortgage Debentures	215,000	Plant & Machinery	200,000
Creditors	130,000	Patents	21,500
Bank Overdraft	40,000	Inventory	143,500
Provision Tax	35,000	Debtors	240,000
		Cash	15,000
		Preliminary exp.	20,000
	870,000		870,000

Inventory as on 31.3.2006	156,500
Sales for the year ended 31.3.07	1,095,000
GP Margin	33.33%
NPBT	99,500
NPAT	43,000

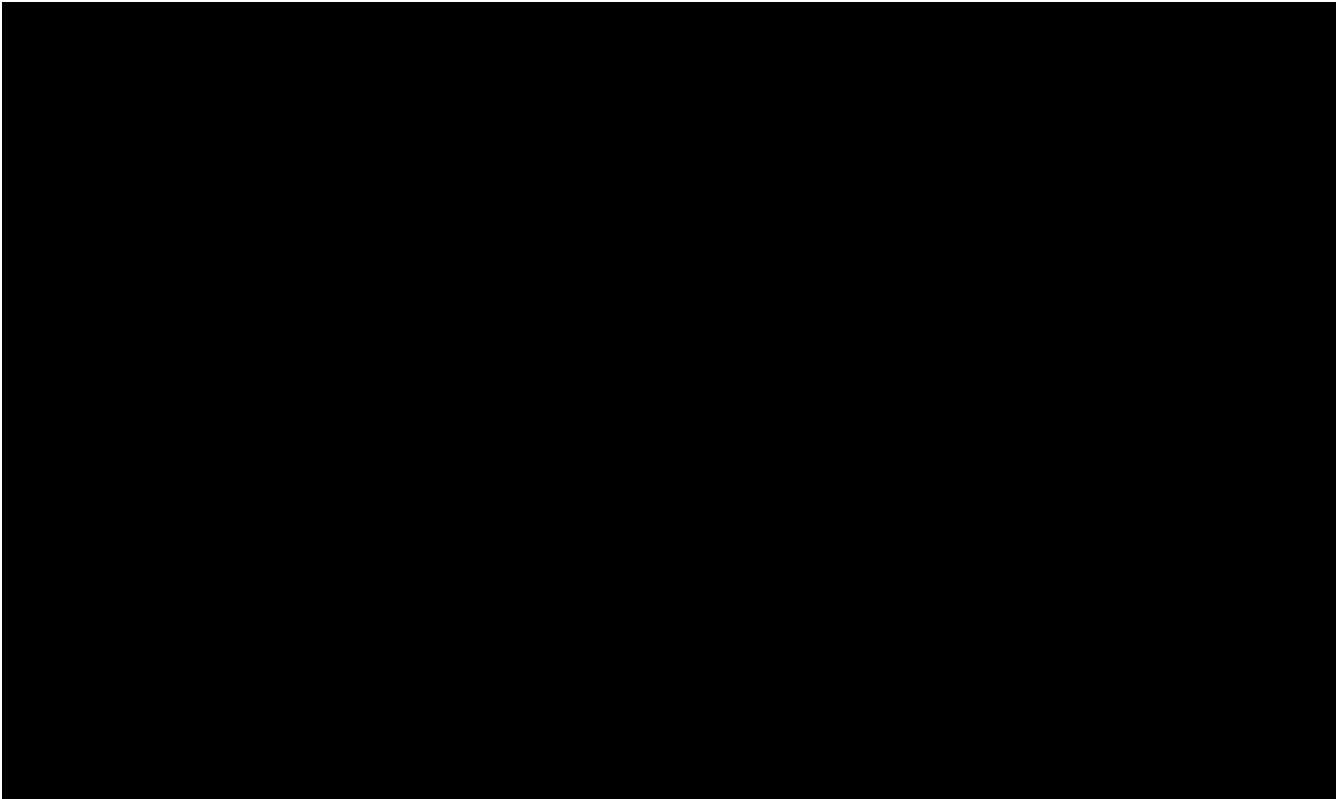
Prepare - Vertical Balance Sheet and calculate following ratios - Capital Gearing ratio, Inventory Turnover ratio, ROCE, Average Collection Period and NP margin.

Problem 7 : From the Balance Sheet of ABC Ltd, compute following ratios-

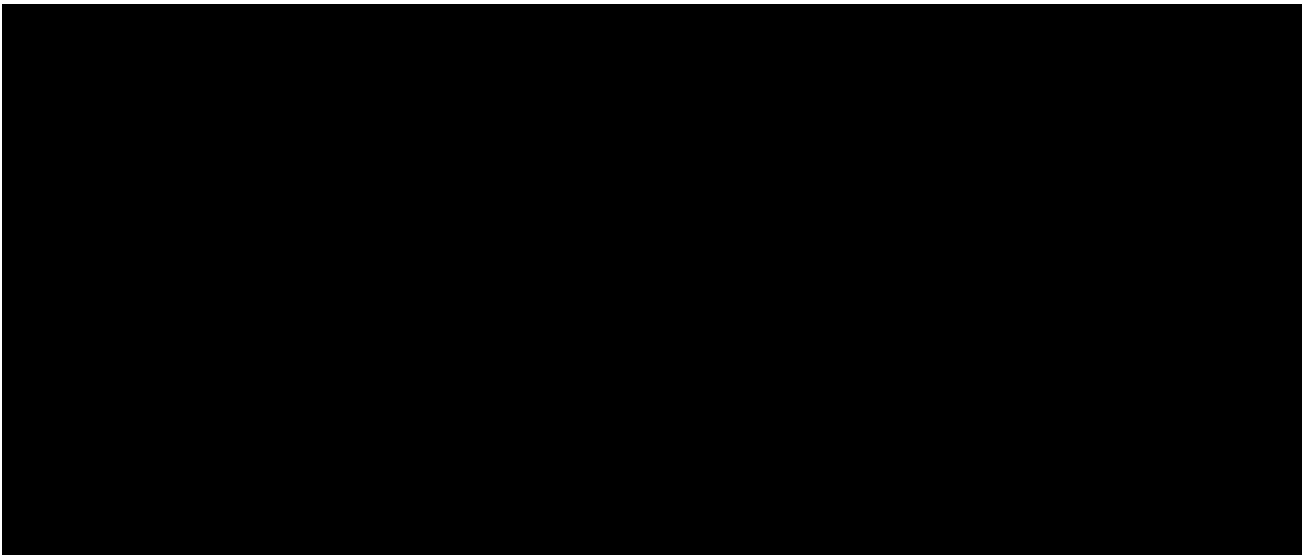
Liabilities	Rs	Assets	Rs
Share Capital	2,00,000	Land & Building	1,40,000
P&L Account	30,000	Plant & Machinery	3,50,000
General Reserve	40,000	Inventory	2,00,000
12% Debentures	4,20,000	Debtors	1,00,000
Sundry Creditors	1,00,000	Bills Receivable	10,000
Bills Payable	50,000	Cash at Bank	40,000
	8,40,000		8,40,000

Compute following ratios-Current Ratio, Quick Ratio, Debt Equity Ratio, Debt to Total Capital Ratio. Also comment on the short term and long term solvency of the company.

Problem 1



Problem 2 -



You are required to find out profitability ratios and compare the result with the following industry average--ROI 40%, GP Margin 37.42%, NP margin 26.52%