Govt. Degree College for Men
Srikakulam

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RATIO ANALYSIS

Topics to be Enlightened…

- Introduction and Meaning
- Interpretation of Ratio
- Usefulness of Ratio Analysis
- Limitations of Ratio Analysis
- Classification of Ratio Analysis
    - Traditional Classification
    - Functional Classification
        - Profitability Ratio
        - Turnover Ratio
        - Liquidity Ratio
        - Ownership/Solvency Ratio
    - Classification by Users

Introduction & Meaning

- It is one of the tools of measuring financial performance of the organization
- It is a comparative analysis between two factors
- Business performance can be measured by the use of ratios
- It must be interpreted against some standards
- Apart from the absolute profit figures, the management might find a need of relative data/information about the variables, thus, at this time, ratio analysis assists the management.
- It evaluates the financial conditions and the purpose of a firm through various yardsticks
- This tool is useful for all the various stakeholders of the company like, shareholders, bankers, creditors, lenders, investors, government, etc.
- The following are four ways to analyze ratio:

Four Ways to Analyse Ratio

- It helps you analyse the movement of the variables compared

  across years

- This helps to make comparisons of two companies of

  the same industry

- It helps you look into the persistent record of a particular

  variable for detailed analysis

- It helps the firm to determine the group of ratios of

  variable in various forms, e.g. gross profit, net profit, operating profit, etc.

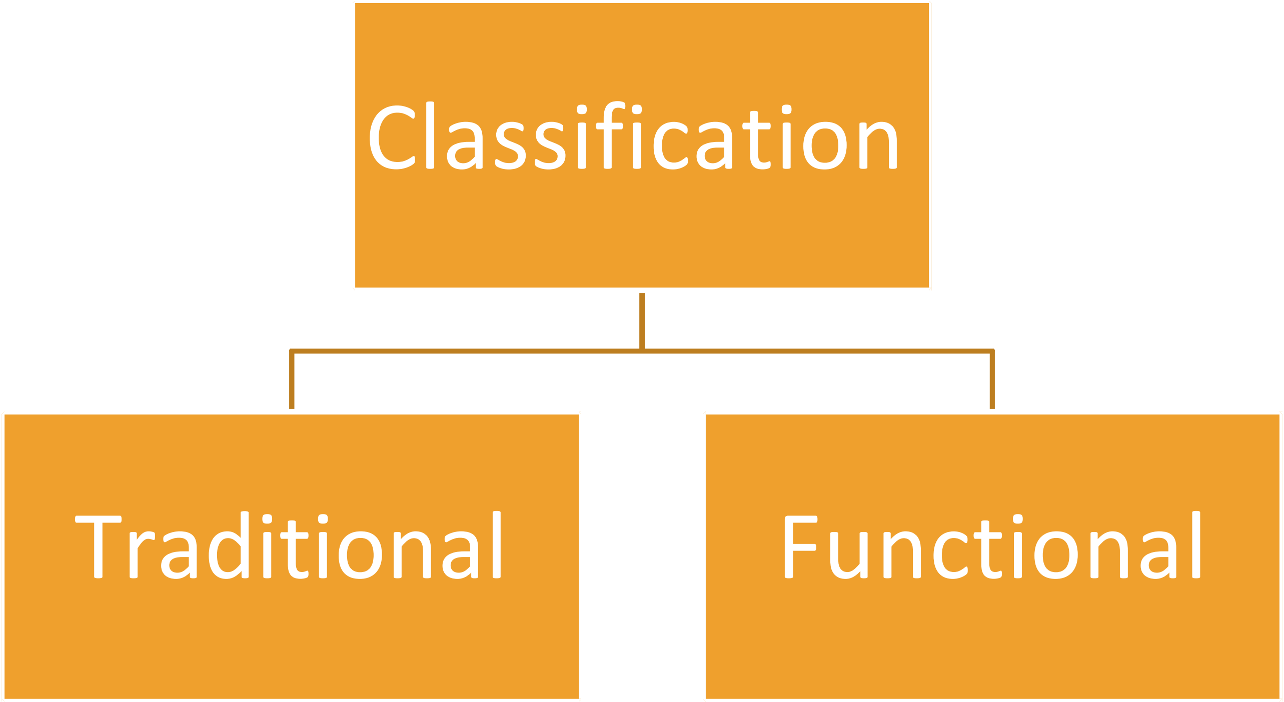
Usefulness of Ratio Analysis

- Simplification of data
- Helps in disclosing operational efficiency
- Benchmark for comparison
- Planning
- Managerial tool
- Analyzing financial statement
- Scanning Device

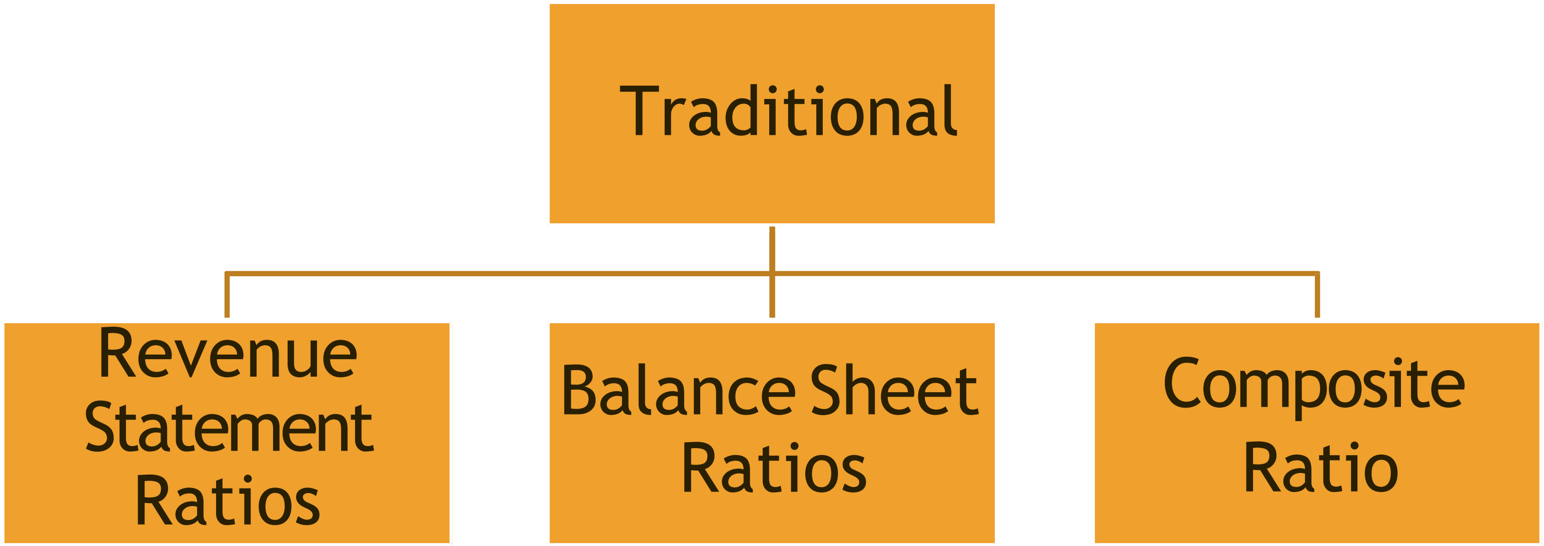
Limitations of Ratio Analysis

- It depends on the past data which in itself serves as a limiting factor.
- It may not represent the correct picture of the business.
- Only accounting information is used while analyzing and interpreting the results of ratio analysis.
- In taking corrective actions, the management might concentrate more on improving the ratio over the years rather than solving the major reason behind such an adverse condition.
- At times, when the two items are compared, it is not necessary that due to the items in questions leads to the changes in the output. There could be other reasons as well which lead to the adverse ratio.

Classification of Ratio Analysis



Traditional Classification



Functional Classification

Classification by Users

Management

- Operating ratio
- Debtors turnover
- Stock turnover
- Solvency ratio
- Return on capital

Creditors

- Current ratio
- Solvency ratio
- Fixed asset ratio
- Creditors turnover

Shareholders

- Yield rate
- Proprietary ratio
- Dividend rate
- Capital gearing
- Return on capital fund

Profitability Ratio

- In relation to sales
  - Gross profit ratio
  - Operating ratio
  - Expense ratio
  - Operating profit ratio
  - Net profit ratio
- In relation to investment
  - Return on capital employed
  - Return on shareholders fund
  - Return on equity shareholders fund

In Terms of Sales

- Gross profit ratio – It measures the gross margin of profit over the total sales of a unit:

$$\text{Gross Profit Margin} = \frac{\text{Gross profit}}{\text{Sales}} \times 100$$

- Operating ratio –Operating ratio is measured to find out proportion of cost of goods sold and operating expenses to sales:

$$\text{Operating ratio} = \frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Net Sales}} \times 100$$

Cont…

- Expense Ratio
  - Operating expense ratio
  - Material cost ratio
  - Labor cost ratio
  - Conversion cost ratio
  - Administration cost ratio
  - Selling & distribution cost ratio

Cont...

- Operating Profit Ratio - It is calculated by reducing administration, selling and distribution expenses from Gross Profits:

$$\text{Operating Profit ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$$

- Net Profit Ratio - It measures the margin of revenues available to the owners of the business after satisfying all costs, expense, and losses:

$$\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

In Terms of Investments

- **Return on Capital Employed** - The return on the investment is measured by dividing the net profit or the income by total capital invested:

$$ROI = \frac{\text{Net Profit (EBIT)}}{\text{Capital Employed}} \times 100$$

- **Return on Shareholders Fund** - This ratio indicates the margin available for the shareholders after satisfying all other obligations and taxes as well:

$$ROSF = \frac{\text{Net Profit (PAT)}}{\text{Shareholders Fund}} \times 100$$

Cont…

- **Return on Equity Shareholders Fund** - This measures returns available for equity shareholders, but it excludes preference share capital:

$$ROESF = \frac{\text{Net Profit (PAT)} - \text{preference Dividend}}{\text{Equity Shareholders Fund}} \times 100$$

Du-Pont Chart

Return on investment (%)

Net profit margin

Total assets

Net profit

Net Sales

Net Sales

Total Assets

Net Sales + Non operating surplus

Net Fixed Assets

Total Costs

Current Assets

Cost of Goods Sold

Cash & Bank Balances

Operating Expenses

Receivables

Interest

Inventories

Tax

Other Current assets

Liquidity Ratio

- Current Ratio - This ratio measures the liquidity position of the concern for a short period:

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

- Quick Ratio - It is designed to show how the amount of cash is made available to meet immediate payments:

$$\text{Quick Ratio} = \frac{\text{Liquid Assets}}{\text{Liquid Liabilities}}$$

- Acid Test Ratio - The actual liquidity is measured by comparing the cash and bank balance as well as the marketable securities with liquid liabilities:

$$\text{Acid-test Ratio} = \frac{\text{Quick Assets}}{\text{Liquid Liabilities}}$$

Turnover Ratio

- Inventory turnover ratio –

$$\text{Inventory turnover Ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

- Debtorsturnoverratio–

$$\text{Debtors Ratio} = \frac{\text{Debtors + Bills Receivable}}{\text{Average Daily Credit Sales}}$$

$$\text{Credit Sales} = \frac{\text{Credit Sales}}{\text{365 / 360 days}}$$

Cont…

- Creditors turnover ratio –

$$\text{Creditor Turnover Ratio} = \frac{\text{Creditors + Bills Payable}}{\text{Average Credit Purchase per day}}$$

$$\text{Credit Purchase Per day} = \frac{\text{Credit Purchases}}{\text{365 / 360 days}}$$

- Fixed assets turnover ratio

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Fixed Assets}}$$

- Total assets turnover ratio

$$\text{Total Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Total Assets}}$$

Ownership Ratio

- Debt – Equity Ratio

$$\text{Debt-equity Ratio} = \frac{\text{Long Term Liabilities}}{\text{Shareholders' funds}}$$

- Shareholders equity ratio

$$\text{Shareholders Equity Ratio} = \frac{\text{Shareholders Funds}}{\text{Total assets (tangible)}}$$

- Capital gearing ratio

$$\text{Capital Gearing Ratio} = \frac{\text{Fixed Int. or Dividend Securities}}{\text{Eq. S. H. Fund/ Net worth}}$$

- Long term funds to fixed assets ratio

$$\text{Fixed Assets Ratio} = \frac{\text{Long term Funds}}{\text{Fixed Assets}}$$

Practical Problems

- Problem – I Revenue Ratios
- Problem – II Balance Sheet Ratios
- Problem – III Composite Ratios

Problem - I

The following Trading and Profit and Loss Account of Fantasy Ltd. for the year 31-3-2000 is given below. Calculate: Gross Profit Ratio, Expenses Ratio, Operating Ratio, Net Profit Ratio, Operating Ratio, Stock Turnover Ratio.

Particular	Rs.	Particular	Rs.
To Opening Stock	76,250	By Sales	5,00,000
" Purchases	3,15,250	" Closing stock	98,500
" Carriage and Freight	2,000		
" Wages	5,000		
" Gross Profit b/d	2,00,000		
	5,98,500		5,98,500
To Administration expenses	1,01,000	By Gross Profit b/d	2,00,000
" Selling and Dist. expenses	12,000	" Non-operating incomes:	
" Non-operating expenses	2,000	" Interest on Securities	1,500
" Financial Expenses	7,000	" Dividend on shares	3,750
Net Profit c/d	84,000	" Profit on sale of shares	750
	2,06,000		2,06,000

SOLUTION – I

1. Gross Profit Margin = $\frac{\text{Gross profit}}{\text{Sales}} \times 100$

$$\frac{2,00,000}{5,00,000} \times 100$$

$= 40\%$

2. Expenses Ratio = $\frac{\text{Op. Expenses}}{\text{Net Sales}} \times 100$

$$\frac{1,13,000}{5,00,000} \times 100$$

$= 22.60\%$

3. Operating Ratio = $\frac{\text{Cost of goods sold + Op. Expenses}}{\text{Net Sales}} \times 100$

$$\frac{3,00,000 + 1,13,000}{5,00,000} \times 100$$

$= 82.60\%$

Cost of Goods Sold = Op. stock + purchases + carriage and Freight + wages – Closing Stock

= 76250 + 315250 + 2000 + 5000 + - 98500

= 3,00,000 Rs.

Cont…

4. Net Profit Ratio $= \dfrac{\text{Net Profit}}{\text{Net Sales}} \times 100$

$$\frac{84{,}000}{5{,}00{,}000} \times 100$$

$= 16.8\%$

5. Operating Profit Ratio $= \dfrac{\text{Op. Profit}}{\text{Net Sales}} \times 100$

Operating Profit = Sales – (COGS + Op. Exp.)

$$\frac{87{,}000}{5{,}00{,}000} \times 100$$

$= 17.40\%$

6. Stock Turnover Ratio $= \dfrac{\text{Cost of goods sold}}{\text{Avg. Stock}}$

$$\frac{3{,}00{,}000}{87{,}375}$$

$= 3.43$ times

Problem - II

THE BALANCE SHEET OF PUNJAB AUTO LIMITED AS ON 31-12-2002 WAS AS FOLLOWS:

FROM THE BELOW, COMPUTE (A) THE CURRENT RATIO, (B) QUICK RATIO, (C) DEBT-EQUITY RATIO, AND (D) PROPRIETARY RATIO

Particular	Rs.	Particular	Rs.
Equity Share Capital	40,000	Plant and Machinery	24,000
Capital Reserve	8,000	Land and Buildings	40,000
8% Loan on Mortgage	32,000	Furniture & Fixtures	16,000
Creditors	16,000	Stock	12,000
Bank overdraft	4,000	Debtors	12,000
Taxation:		Investments (Short-term)	4,000
Current	4,000	Cash in hand	12,000
Future	4,000		
Profit and Loss A/c	12,000		
	1,20,000		1,20,000

SOLUTION - II

1. Current Ratio = $\frac{\text{Current Assets}}{\text{Current liabilities}}$

Current Assets = Stock + debtors + Investments (short term) + Cash In hand

Current Liabilities = Creditors + bank overdraft + Provision for Taxation (current & Future)

CA = 12000 + 12000 + 4000 + 12000

= 40,000

CL = 16000 + 4000 + 4000 + 4000

= 28,000

$= \frac{40,000}{28,000}$

= 1.43 : 1

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2. Quick Ratio = $\frac{\text{Quick Assets}}{\text{Quick Liabilities}}$

Quick Assets = Current Assets - Stock

Quick Liabilities = Current Liabilities – (BOD + PFT future)

QA = 40,000 – 12,000

= 28,000

QL = 28,000 – (4,000 + 4,000)

= 20,000

$= \frac{28,000}{20,000}$

= 1.40 : 1

CONTINUE…

3. Debt – Equity Ratio = $\frac{\text{Long Term Debt (Liabilities)}}{\text{Shareholders Fund}}$

LTL = Debentures + long term loans

SHF = Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap. – Fictitious Assets

LTL = 32,000

SHF = 40,000 + 8,000 + 12,000

= 60,000

= $\frac{32,000}{60,000}$

= 0.53 : 1

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4. Proprietary Ratio = $\frac{\text{Shareholders' Funds}}{\text{Total Assets}}$

SHF = Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap. – Fictitious Assets

Total Assets = Total Assets – Fictitious Assets

SHF = 40,000 + 8,000 + 12,000

= 60,000

TA = 1,20,000

= $\frac{60,000}{1,20,000}$

= 0.5 : 1

PROBLEM – III

The details of Shreenath company are as under:

Beside the details mentioned above, the opening stock was of Rs. 3,25,000. Taking 360 days of the year, calculate the following ratios; also discuss the position of the company: (1) Gross profit ratio. (2) Stock turnover ratio. (3) Operating ratio. (4) Current ratio. (5) Liquid ratio. (6) Debtors ratio. (7) Creditors ratio. (8) Proprietary ratio. (9) Rate of return on net capital employed. (10) Rate of return on equity shares.

Particular	Rs.	Particular	Rs.
Equity share capital	20,00,000	Fixed Assets	55,00,000
10% Preference share capital	20,00,000	Stock	1,75,000
Reserves	11,00,000	Debtors	3,50,000
10% Debentures	10,00,000	Bills receivable	50,000
Creditors	1,00,000	Cash	2,25,000
Bank-overdraft	1,50,000	Fictitious Assets	1,00,000
Bills payable	45,000		
Outstanding expenses	5,000		
	64,00,000		64,00,000

Sales (40% cash sales)		15,00,000	
Less: Costof sales		7,50,000	
Gross Profit:		7,50,000	
Less: Office Exp. (including int. on debentures)	1,25,000		
Selling Exp.	1,25,000		2,50,000
Profit before Taxes:		5,00,000	
Less: Taxes		2,50,000	
Net Profit:		2,50,000	

SOLUTION – III

1. Gross Profit Margin = $\frac{\text{Gross profit}}{\text{Sales}}$ X 100

$\frac{7,50,000}{15,00,000}$ X 100

= 50%

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2. Stock Turnover Ratio = $\frac{\text{Cost of goods sold}}{\text{Avg. Stock}}$

Avg. stock = $\frac{\text{Opening Stock + Closing Stock}}{2}$

COGS = Sales – GP

$\frac{3,25,000 + 1,75,000}{2}$

AS = 2,50,000

COGS = 15,00,000 – 7,50,000

7,50,000

= $\frac{7,50,000}{2,50,000}$

= 3 times

Cont…

3. Operating Profit Ratio = $\frac{\text{Op. Profit}}{\text{Net Sales}}$ X 100

Operating Profit = Sales – (Op. Exp. + COGS.)

OP = 15,00,000 – (7,50,000 + 1,25,000 + 25,000)

= 6,00,000

(excluding Interest on Debentures)

= $\frac{6,00,000}{15,00,000}$ X 100

= 40%

4. Current Ratio = $\frac{\text{Current Assets}}{\text{Current liabilities}}$

Current Assets = Stock + debtors + Bills receivable + Cash

Current Liabilities = Creditors + bank overdraft + Bills payable + Outstanding expenses

CA = 1,75,000 + 3,50,000 + 50,000 + 2,25,000

= 8,00,000

CL = 1,00,000 + 1,50,000 + 45,000 + 5,000

= 3,00,000

= $\frac{8,00,000}{3,00,000}$

= 2.67 : 1

Cont…

5. Quick Ratio / Liquid Ratio = $\frac{\text{Liquid Assets}}{\text{Liquid Liabilities}}$

(Liquid) Quick Assets = Current Assets - Stock

(Liquid) Quick Liabilities = Current Liabilities – BOD

QA = 8,00,000 – 1,75,000

= 6,25,000

QL = 3,00,000 – 1,50,000

= 1,50,000

= $\frac{6,25,000}{1,50,000}$

= 4.17 : 1

6. Debtors Ratio = $\frac{\text{Debtors + Bills receivable}}{\text{Credit sales}}$ X 365 / 360 days

= $\frac{3,50,000 + 50,000}{9,00,000}$ X 360 days

(60% of 15,00,000)

= 0.444 X 360 days

= 160 days

7. Creditors Ratio = $\frac{\text{Creditors + Bills payable}}{\text{Credit Purchase}}$ X 365 / 360 days

= $\frac{1,00,000 + 45,000}{7,50,000}$ X 360 days

Notes: If credit purchase could not find out at that point Cost of Goods sold consider Credit purchase

= 0.193 X 360 days

= 69 days

8. Proprietary Ratio = $\dfrac{\text{Shareholders' Funds}}{\text{Total Assets}}$

SHF = Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap. – Fictitious Assets

Total Assets = Total Assets – Fictitious Assets

SHF = 20,00,000 + 20,00,000 + 11,00,000 – 1,00,000

= 50,00,000

TA = 64,00,000 – 1,00,000

= 63,00,000

$= \dfrac{50,00,000}{63,00,000}$

= 0.79 : 1

Cont…

Rate of Return on Capital Employed		Rate of Return on Share holders Fund		Rate of return on Equity Shareholders Fund	
$= \frac{\text{EBIT}}{\text{Capital employed}}$	X 100	$= \frac{\text{PAT}}{\text{SHF}}$	X 100	$= \frac{\text{PAT – Pref. Div.}}{\text{ESHF}}$	X 100
CE = Eq Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus + Debenture + Long Term Loan – Fictitious Assets		SHF = Eq. Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus – Fictitious Assets		ESHF = Eq. Sh. Cap. + Reserves & Surplus – Fictitious Assets	

Sales	15,00,000
Less: Cost of goods sold	7,50,000
Gross profit	7,50,000
Less: Operating expenses (including Depreciation)	1,50,000
Earnings before Interest & Tax (EBIT)	6,00,000
Less: Interest Cost	1,00,000
Earnings before Tax (EBT)	5,00,000
Less: Tax liability	2,50,000
Earnings after Tax (EAT/ PAT)	2,50,000
Less: Preference share dividend	2,00,000
Distributional Profit	50,000

Cont…

9.		10.		11.	
Rate of Return on Capital Employed		Rate of Return on Share holders Fund		Rate of return on Equity Shareholders Fund	
$= \frac{\text{EBIT}}{\text{Capital employed}}$	X 100	$= \frac{\text{PAT}}{\text{SHF}}$	X 100	$= \frac{\text{PAT} - \text{Pref. Div.}}{\text{ESHF}}$	X 100
CE = Eq Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus + Debenture + Long Term Loan – Fictitious Assets		SHF = Eq. Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus – Fictitious Assets		ESHF = Eq. Sh. Cap. + Reserves & Surplus – Fictitious Assets	
CE = 20,00,000 + 20,00,000 11,00,000 +10,00,000 – 1,00,000 = 60,00,000		SHF = 20,00,000 + 20,00,000 11,00,000 – 1,00,000 = 50,00,000		ESHF = 20,00,000 + 11,00,000 – 1,00,000 = 30,00,000	
$= \frac{6,00,000}{60,00,000}$	X 100	$= \frac{2,50,000}{50,00,000}$	X 100	$= \frac{50,000}{30,00,000}$	X 100
= 10%		= 5%		= 1.67 %	

THANKYOU