FINANCIAL MANAGEMENT– REVISION BOOK

How to effectively use this book:

- Revision book covers past 11 RTP and exams
- Past experience indicates that minimum 70 percent of marks are asked from the past RTP and exam questions
- Please refer to this video to get a better perspective on how to use this revision material - https://youtu.be/eHgxVUCI5QI
- **Stage One:** Please read the theory for every chapter. Theory coverage would be sufficient to cover all practical theory questions and the same can help in answering problems
- **Stage two:** Start solving problems from individual chapters after completing theory. Try solving the question and in case you are stuck then please refer the summary of adjustments section. Summary of adjustments section has the guidance to solve a question
- **Stage three:** In case you are still not able to solve the question then please refer institute RTP and suggested answer to understand the question
- **Revision day before exam:** Please revise theory and summary of adjustments day before exam as the same can help in answering wide variety of questions. Also you can effectively work on various adjustments by quickly revising summary of adjustments section.

Solutions to questions:

- Below link has the compilation of past 11 RTP and exams. You can search for the question in the attachment and then look at the detailed solution for the same
- The link for the answer book is given below
  https://drive.google.com/open?id=1G9zg2p7UEDnb3098xv0JPxrNHYPNUqVd

TABLE OF CONTENTS

CHAPTER-WISE MARK BREAK UP

❖ Scope and objectives of financial management (Chapter 1) ❖ Financial analysis and planning – Ratio Analysis (Chapter 3)	10% to 15%
❖ Types of financing (Chapter 2) ❖ Cost of capital (Chapter 4) ❖ Financing decisions – capital structure (Chapter 5) ❖ Financing decisions – Leverages (Chapter 6) ❖ Lease Financing (Chapter 9)	40% to 45%
❖ Investment decisions (Chapter 7) ❖ Risk Analysis in Capital Budgeting (Chapter 8) ❖ Dividend decisions (Chapter 10)	30% to 35%
❖ Management of working capital (Chapter 11)	10% to 15%

KEY FORMULAE

Chapter 3: Financial Analysis and Planning – Ratio Analysis

Liquidity ratios – Short term solvency:

	Ratio	Formula	Numerator	Denominator
1	Current Ratio	Current Assets / Current Liabilities	Inventories / stocks (+) Debtors & B/R (+) Cash & Bank (+) Receivables / Accruals (+) Short term loans (Dr) (+) Marketable investment /short term securities	Sundry creditors (for goods) (+) Outstanding expenses (+) Short term loans and advances (Cr) (+) Bank overdraft/cash credit (+) Provision for taxation (+) Proposed dividend (+) Unclaimed divided
2	Quick ratio / liquid ratio / acid test ratio	Quick assets / Current liabilities	Current assets (-) Inventories	As above
3	Cash ratio/absolute liquidity ratio	(Cash + Marketable securities) / Current liabilities	Cash in hand (+) Cash at Bank (+) Marketable securities /short term investments	As above
4	Basic Defense Interval Measure (in days)	(Cash + Marketable securities) Daily operating expenses	As above	Cost of goods sold + Selling, admin and other general expenses – Depreciation and non-cash expenditure / No of days in a year
5	Net working capital ratio	Current assets – Current liabilities (excluding short term bank borrowing)		

CAPITAL STRUCTURE RATIOS – INDICATOR OF LONG TERM SOLVENCY

For the capital structure ratios, the following terms are used –

a) Long term debt = Long term borrowed funds = Debentures + Long term loans from financial institutions
b) Equity = Owner's funds = Equity capital + Preference capital + Reserves & Surplus Less Accumulated losses
c) Equity shareholders' funds = Equity less preference share capital (or) Equity capital + Reserves & surplus less accumulated losses
d) Total funds / capital employed = Long term debt + Equity = (a) + (b) ……. This is called liability route computation

= Fixed assets + Net working capital …….. This is called asset route computation

e) Total debt = Long term debt + Short term debt

	Ratio	Formula	Numerator	Denominator
1	Debt ratio	Total Debt / Total debt + Equity	See (e) above	See (e) above + See (b) above
2	Equity ratio	Shareholders Equity / Capital employed	See (b) above	See (d) above
3	Debt to Equity ratio	Total outside liabilities / Shareholders' equity	Total liabilities – shareholders' equity	See (b) above
		Total debt / Shareholders' equity	See (e) above	See (b) above
		Long term debt / Shareholders' equity	See (a) above	See (b) above
4	Debt to total assets ratio	Total outside liabilities / Total assets	Total liabilities – shareholders' equity	All assets – fictitious assets
		Total debt / Total assets	See (e) above	All assets – fictitious assets
5	Capital gearing ratio	Fixed charge bearing capital / Equity shareholders' funds	Preference share capital + Total debt	See (c) above
6	Proprietary ratio	Proprietary funds / Total assets	See (b) above	All assets – fictitious assets

COVERAGE RATIOS – ABILITY TO SERVE FIXED LIABILITIES

	Ratio	Formula	Numerator	Denominator
1	Debt service coverage ratio	Earnings for debt service / Interest + Installments	Profit after tax (+) Interest on debt funds (+) Non-cash operating expenses (e.g. deprecation) (+) Non-operating adjustments (e.g. loss on sale of fixed assets)	Interest on debt (+) Installment of debt
2	Interest coverage ratio	EBIT / Interest	Earnings before interest and taxes	Interest on debt
3	Preference dividend coverage ratio	EAT / Preference	Earnings after tax	Preference dividend

		dividend		
4	Equity dividend coverage ratio	EAES / Equity dividend	Earnings available to equity shareholders	Equity dividend
5	Fixed charges coverage ratio	EBIT + Depreciation / Interest + (Principal / (1-tax rate))	EBIT + Depreciation	Interest + (Principal divided by 1- tax rate)

ACTIVITY RATIO / EFFICIENCY RATIO / PERFORMANCE RATIO / TURNOVER RATIO

	Ratio	Formula	Numerator	Denominator
1	Total assets turnover ratio	Sales / cost of goods sold / Total assets	Sales / COGS	Total assets
2	Fixed assets turnover ratio	Sales / cost of goods sold / Fixed assets	Sales/ COGS	Fixed assets net of accumulated depreciation
3	Capital/net asset turnover ratio	Sales/ cost of goods sold / Capital employed	Sales/COGS	Net fixed assets plus net current assets (current assets – current liabilities)
4	Current assets turnover ratio	Sales/ cost of goods sold / Current assets	Sales/COGS	Current assets
5	Working capital turnover ratio	Sales/ cost of goods sold / Working capital	Sales/COGS	Current assets (-) current liabilities
6	Inventory / stock turnover ratio	Cost of goods sold / sales / Average inventory	COGS = Sales – Gross Profit	Opening stock + Closing stock / 2
7	Raw material turnover ratio	Raw material consumed / Average RM stock	Opening stock + Purchases – Closing stock	Opening stock + Closing stock / 2
8	Debtors turnover ratio	Credit sales / Average accounts receivable	Credit sales net of returns	Opening receivables + Closing receivables . / 2
9	Payables turnover ratio	Credit purchases / Average accounts	Credit purchases net of returns	Opening payables + Closing payables . / 2

	Ratio	Formula	Numerator	Denominator
		payables		

Note: T/O ratios can also be expressed in terms of days as 365 / T/O ratio. e.g. average collection period = 365 / Debtors turnover ratio

PROFITABILITY RATIOS RELATED TO SALES

	Ratio	Formula	Numerator	Denominator
1	Gross profit ratio	Gross profit / Sales	Gross profit as per trading account	Sales net of returns
2	Net profit ratio	Net profit / Sales	Net profit as per P&L A/c	Sales net of returns
3	Pre-tax profit ratio	Earnings before tax / Sales	Earnings before tax	Sales net of returns
4	Operating profit ratio	Operating profit (or) EBIT / Sales	Sales – cost of sales (or) Net Profit (+) Non-operating expenses (-) Non-operating incomes	Sales net of returns
5	COGS ratio	Cost of goods sold / Sales	Cost of goods sold	Sales net of returns
6	Operating expenses ratio	Operating expenses / Sales	Admin expense + Selling & Distribution expense	Sales net of returns
7	Operating ratio	COGS + Operating expenses / Sales	COGS + Operating expenses	Sales net of returns
8	Financial expense ratio	Financial expenses / Sales	Interest expenses	Sales net of returns

PROFITABILITY RELATED TO OVERALL RETURN ON ASSETS /INVESTMENTS

	Ratio	Formula	Numerator	Denominator
1	Return on investment (ROI) or Return on capital employed (ROCE)	EBIT / Capital employed	Earnings after tax (+) Income Tax (+) Interest on debt funds (+) Non-operating adjustments	Fixed assets + Net current assets (or) Equity + Long term debt
2	Return on Equity (ROE) or Return on networth (RONW)	EAES / Equity shareholders' funds	Earnings after tax (-) preference dividend	Equity capital + Reserves & surplus – fictitious assets
3	Return on assets (ROA)	Net profit after taxes / Average total assets	Earnings after tax	Average of opening total assets & closing total assets

PROFITABILITY RATIOS FROM OWNERS POINT OF VIEW

	Ratio	Formula	Numerator	Denominator
1	Earnings per share (EPS)	EAES / No of equity shares	Earnings after tax (-) preference dividend	No of equity shares
2	Dividend per share (DPS)	Total equity dividend / No of equity shares	Total dividend	No of equity shares
3	Dividend payout ratio	DPS / EPS	DPS	EPS

PROFITABILITY RATIOS RELATED TO MARKET / VALUATION / INVESTORS

	Ratio	Formula	Numerator	Denominator
1	Price Earnings ratio	MPS / EPS	Market price per share	Earnings per share
2	Dividend yield	DPS / MPS	Dividend per share	Market price per share
3	Earnings yield	EPS / MPS	Earnings per share	Market price per share
4	Market value to book value	Market price per share / Book value per share	Market price per share	Networth/ No of equity shares

Explain the computation of Return on Equity (ROE) using the Dupont model?

1. Under Dupont model, Return on Equity (ROE) = Net Profit Margin * Asset Turnover * Equity multiplier
2. Net profit margin = Net profit / Total turnover; Asset turnover = Total turnover / total assets; Equity multiplier = Total assets / Equity shareholders' funds

Example:

Net Profit = 500; Total turnover = 5000; Total assets = 1000; Equity shareholders' funds = 800. ROE as per Dupont model would be calculated as under:

Net Profit Margin = Net Profit / Total turnover = 500/5000 = 10%

Asset turnover = Total turnover / total assets = 5000/1000= 5 times

Equity multiplier = Total assets / Equity shareholders' funds = 1000/800 = 1.25 times

Hence, ROE = 10% * 5 * 1.25 = 62.5 percent

Analysis:

- ROE of 62.5 percent is based on 10 percent net profit,5 times asset turnover and equity multiplier of 1.25
- If the equity multiplier were excluded (to determine how much the company would earn if it were completely debt free), the ROE would be 0.10 * 5 = 50 percent. This means that the balance 12.5 percent is attributable to the debt employed in the business

Chapter 4: Cost of Capital:

Cost of irredeemable debt:

Cost of irredeemable debt = Interest after tax / Net Proceeds

Interest after tax = Interest * (1 – Tax Rate); Interest = Interest rate * Face value
Net proceeds: ❖ New issue = Issue Price – Floatation cost ❖ Existing issue = Current Market Price

Cost of redeemable debt using approximation method:

Cost of redeemable debt = [(Interest after tax + Average other costs)] / Average funds employed
Average other costs = (Redeemable value – Net proceeds) /Balance life
Average funds employed = (Redeemable value + Net proceeds)/2

Cost of redeemable debt using Yield to Maturity (YTM) method:

Step 1: Calculate cash flows associated with the debt instrument Step 2: Discount the cash flows at an initial guess rate and calculate NPV Step 3: Increase the rate in case NPV is Positive and decrease the rate in case NPV is Negative. Step 4: Repeat step 3 till we get one positive and one negative NPV Step 5: Calculate IRR. The calculated IRR is the cost of debt

Cost of convertible debt:

Cost of convertible debt = (Interest after tax + Average other costs)Average funds employed
Redeemable value = Higher of debt redemption value or fair value of equity post conversion

Cost of irredeemable preference share:

Cost of irredeemable preference share = Preference Dividend / Net Proceeds
Preference Dividend = Preference Dividend (%) * Face value
Net proceeds: ❖ New issue = Issue Price – Floatation cost ❖ Existing issue = Current Market Price

Cost of redeemable preference share capital:

Cost of redeemable preference share = [(Preference Dividend + Average other costs)] / Average funds employed
Average other costs = (Redeemable value – Net proceeds) /Balance life
Average funds employed = (Redeemable value + Net proceeds)/2

Cost of Equity:

Dividend Price Approach with no growth in dividend	Under this situation the amount of dividend remains constant. The cost of equity is calculated with the help of formula for PV for Perpetuity. **Cost of Equity = Dividend / [(Current Market Price – Floatation cost)]**
Dividend Price Approach with constant growth in dividend	Under this approach the rate of dividend growth remains constant. The cost of equity is calculated with the help of formula for PV for growing Perpetuity Cost of equity = $\frac{D1}{P0 - F}$ + Growth rate Where D1 = Dividend of next year; P0 = Current market price; F = Floatation cost

Earnings/Price Approach with constant earnings	Cost of Equity = [Earnings / Price]
Earnings/Price Approach with growth in earnings	Cost of equity = $\frac{E1}{P0 - F}$ + Growth rate Where E1 = Earnings of next year; P0 = Current market price; F = Floatation cost
Realized yield approach	Under this method the cost of equity is calculated on the basis of past dividend and capital appreciation. We need to find out the cash flows and compute the IRR. The computed IRR is the cost of equity as per realized approach
CAPM Approach	Cost of Equity = Rf + Beta * (Rm – Rf) Where Rf = Risk-free rate of return and Rm = Market return

Calculation of growth rate:

Point to Point Method	Under this method the dividend of intervening years is ignored and the growth rate is ascertained. The dividend of first year is taken as present value and the dividend of last year is taken as future value. Compute the present value factor using present value and future value. Identify the rate of interest corresponding to the computed PVAF. The identified rate of interest is the growth rate
Using retention ratio	Growth rate = Retention ratio * Return on Equity Where Retention ratio = Retained earning / Total earnings

Cost of retained earnings:

Cost of retained earnings can sometimes be lower than cost of equity due to savings in floatation cost and existence of personal tax

Existence of floatation costs: P0 – F is replaced with P0 in the formula for cost of equity

Personal taxes and floatation costs: Cost of retained earnings (Kr) = Cost of Equity (Ke) * [1- floatation costs (%)] – [1 – Personal tax rate (%)]

Calculation of WACC:

- Weighted average cost of capital (WACC) is the single cost for the company's entire capital structure
- Cost of capital is the rate of return which providers of money expect. Cost of capital is the benchmark rate and the discounting rate used in capital budgeting.

Steps in computation of WACC:

- **Step 1:** Compute the cost of individual components of capital
- **Step 2:** Assign weights and compute WACC using the following format

Source	Cost	Weight		Product	
		Book Value	Market Value	Book value	Market Value
External equity					
Debt					
Preference					
Retained earnings					
Term Loan					

Total					

WACC = Sum of products/ Sum of weights

Chapter 5: Financing Decisions – Capital Structure

Format for calculation of value of firm:

Particulars	Amount
EBIT	XXX
Less: Interest	(XXX)
EBT / EAT	**XXX**
Cost of debt	XXX
Cost of Equity	XXX
Cost of capital	XXX
Value of debt	XXX
Add: Value of equity	XXX
Value of firm	**XXX**

Formulae:

- Value of debt = Interest / Cost of debt
- Value of equity = EBT / Cost of equity
- Value of firm = EBIT / Cost of capital

MM Approach with tax:

MM approach with tax (1963):

Conclusion	Value of the firm will increase or cost of capital will decrease where corporate taxes exist. As a result, there will be some difference in the earnings of equity and debt-holders in levered and unlevered firm and value of levered firm will be greater than the value of unlevered firm by an amount equal to amount of debt multiplied by corporate tax rate.
Value of levered firm with no personal taxes	Value of un-levered firm + (Amount of debt * Tax rate)
Value of levered firm with personal taxes	Value of un-levered firm + $\{\frac{[1 - (1- CT)* (1 - ET)]}{(1-DT)} * \text{Amount of debt}\}$ Where CT = Corporate tax; ET = Equity tax rate; DT =Debt tax rate

Format for calculating value of firm with taxes:

Particulars	Amount
EBIT	XXX
Less: Interest	(XXX)
EBT	**XXX**
Less: Tax	(XXX)
EAT	**XXX**
Cost of debt	XXX
Cost of Equity	XXX
Cost of capital	XXX
Value of debt	XXX

Add: Value of equity	XXX
Value of firm	**XXX**

Formulae:

- Value of debt = [Interest * (1- Tax rate)] / Cost of debt
- Value of equity = [EBT* (1- Tax rate)] / Cost of equity
- Value of firm = [EBIT* (1- Tax rate)] / Cost of capital

Optimum capital structure:

Step 1	Identify the various alternatives for raising money
Step 2	Calculate Preference Dividend, Interest and Number of Equity shares for various alternatives
Step 3	Calculate EPS/Market value of Firm and select the alternative which maximizes EPS/ Market value of Firm

Format for calculation of EPS/ Market Value of Firm:

Particulars	**Amount**
Earnings before interest and tax (EBIT)	XXX
Less: Interest	(XXX)
Earnings before Tax (EBT)	**XXX**
Less: Tax	(XXX)
Earnings after Tax (EAT)	**XXX**
Less: Preference Dividend	(XXX)
Earnings available to equity shareholders (EAES)	**XXX**
No of equity shares	XXX
Earnings Per share (EPS) [EAES / No of shares]	**XXX**
Price/earning multiple	XXX
Market price per share [EPS * PE Multiple]	**XXX**
No of shares	XXX
Market value of shares (MPS * No of shares)	**XXX**
Add: Market value of debt	XXX
Add: Market value of preference	XXX
Market value of Firm	**XXX**

Financial BEP and Indifference Point:

Financial break-even point	Financial BEP refers to the level of EBIT at which firm has a EPS of Zero. Financial BEP = Interest cost + [Preference dividend/ (1 – Tax rate)]
Indifference point	Indifference point refers to the level of EBIT at which 2 different financial plans gives the same amount of EPS. Following are the steps for computing indifference point: ❖ **Step 1:** Identify the various financial plans ❖ **Step 2:** Calculate interest, preference dividend and number of equity shares for various plans ❖ **Step 3:** Assume EBIT as X and get EPS in terms of X. Equate EPS of two alternatives to get the indifference point between them

Chapter 6: Financing Decisions – Leverages

Format for calculation of leverages:

Particulars	Amount
Sales	XXX
Less: Variable costs	(XXX)
Contribution	**XXX**
Less: Fixed Costs	(XXX)
Earnings before interest and tax (EBIT)	**XXX**
Less: Interest	(XXX)
Earnings before Tax (EBT)	**XXX**
Less: Tax	(XXX)
Earnings after Tax (EAT)	**XXX**
Less: Preference Dividend	(XXX)
Earnings available to equity shareholders (EAES)	**XXX**
No of equity shares	XXX
Earnings Per share (EPS) [EAES / No of shares]	**XXX**

Formulae:

Type of Leverage	Formula
Operating Leverage	Contribution / EBIT (or) % change in EBIT / % change in sales
Financial Leverage	EBIT / EBT – (PD/1-T) (or) % change in EPS / % change in EBIT
Combined Leverage	Contribution / EBT – (PD/1-T) (or) % change in EPS / % change in Sales (or) OL * FL

Chapter 7: Investment Decisions

Time value of money:

Present value = Future value * Present value factor
Future value = Present value * Future value factor
Present value of annuity = Annuity amount * Present value annuity factor
Future value of annuity = Annuity amount * Future value annuity factor
Present value of Perpetuity = Perpetuity amount / TVM
Present value of Growing Perpetuity = Perpetuity amount / TVM – Growth rate

Investment decisions:

Technique	Explanation	Formula
Payback	Payback refer to the time period in which initial investment in the project will be recovered	Base year + (Unrecovered cash flow of base year / Cash flow of nest year) **Note:** Base year refer to the last year in which cumulative cash flow is negative
ARR	ARR refer to the ratio of average PAT over the initial or average investment	ARR = Average PAT / (Initial or average investment) Initial investment = Initial outflow Average investment = Average of initial outflow and salvage

		value
Discounted payback	Discounted payback refer to the time period in which initial investment in the project will be recovered considering time value of money	Base year + (Unrecovered discounted cash flow of base year / Discounted cash flow of nest year) **Note:** Base year refer to the last year in which cumulative cash flow is negative
NPV	NPV refer to the difference between the PV of cash inflows and PV of cash outflows	PV of cash inflows – PV of cash outflows
IRR	IRR refer to the rate of return at which NPV of the project is zero	L1 + (NPV at L1) * .(L2-L1) (NPV at L1 – NPV at L2) L1 = Lower rate with + NPV L2 = Higher rate with - NPV
Profitability index or Benefit cost ratio	This measure the ratio of benefits (PV of cash inflows) to costs (PV of cash outflows)	PV of cash inflows PV of cash outflows

Consolidated format for calculation of all techniques:

Year	Cash Flow	Cumulative cash flow	PVF @ 10%	DCF	CDCF	Depreciation	PAT
0	(1,00,000)						
1	40,000						
2	60,000						
3	40,000						
4	50,000						
	Total						

Steps in capital budgeting:

Step 1: Initial outflow

Particulars	Amount
Capital expenditure	(XXX)
Working capital	(XXX)
Total outflow	(XXX)

Step 2: In-between flows:

Particulars	Amount
Sales	XXX
Less: All costs other than depreciation	(XXX)
Profit before depreciation and tax (PBDT)	**XXX**
Less: Depreciation	(XXX)
Profit before tax (PBT)	**XXX**
Less: Tax	(XXX)
Profit after tax (PAT)	**XXX**
Add: Depreciation	XXX
Cash flow after tax (CFAT)	**XXX**
Less: Purchase of additional machine	(XXX)
Less: Payment for original machine	(XXX)
Add/Less: Increase/decrease in working capital (Note)	XXX

Revised CFAT	**XXX**

Note:

- ❖ Increase in working capital will be treated as outflow of money as additional money is blocked in working capital
- ❖ Decrease in working capital will be treated as inflow of money as money has been released from working capital

Step3: Terminal flow:

Particulars	**Amount**
NSV of asset (Note 1)	XXX
Recapture of working capital	XXX
Total terminal flow	XXX

Step 4: Consolidation of cash flows and calculation of NPV:

Year	**Cash flow**	**PVF**	**DCF**
0	Step 1		
1	Step 2		
2	Step 2		
3	Step 2		
4	Step 2		
5	Step 2 + Step 3		
Total			

Note 1: Calculation of NSV

Particulars	**Amount**
Sale Value	XXX
Less: Book value	(XXX)
Gain / Loss on sale	**XXX**
Tax Paid / Tax Saved	XXX
Net salvage value (Sale value + Tax saved – Tax Paid)	**XXX**

How to decide on abandonment of an asset?

Step 1: Initial outflow

Particulars	**Amount**
NSV of existing asset at year 0	(XXX)
Working capital	(XXX)
Total outflow	(XXX)

Step 2: In-between flows – No change

Step3: Terminal flow:

Particulars	**Amount**
NSV of existing asset at the end of life	XXX
Recapture of working capital	XXX
Total terminal flow	XXX

Step 4: Consolidation of cash flows and calculation of NPV – No change

Conclusion: If the NPV of the project is positive then we should continue with the asset. However if the same is negative then we have to abandon the asset

How to decide on replacement?

Method 1 : Total Approach:

- Step 1: Compute NPV of continuation option
- Step 2: Compute NPV of purchase option
- Step 3: Decide by comparing step 1 & step 2
  - If step 1 is greater than we should continue with existing asset
  - If step 2 is greater than we should replace the asset

Method 2: Incremental approach:

- Step 1: Compute incremental initial outflow
- Step 2: Compute incremental in between cash flows
- Step 3: Compute incremental terminal flow
- Step 4: If the NPV is positive then we should go ahead with replacement.

Special issues in capital budgeting:

Issue No.1: NPV versus IRR conflict

- In case of a single project that involves accept/reject decision, NPV and IRR will give the same decision.
- However whenever a choice is to be made between two mutually exclusive projects, IRR and NPV may give opposite ranking
- NPV assumes that cash flows are reinvested at cost of capital whereas IRR assumes that cash flows are reinvested at IRR.
- NPV versus IRR conflict arise due to
  - Life disparity
  - Cash flow disparity

Life Disparity:

- If the life of the two alternatives being analysed is not same, then decision cannot be done on the basis of NPV / Present value of outflow
- We need to calculate EAB/EAC to make the decision on selection of project
  - EAB = NPV / PVAF (r, life)
  - EAC = Present value of outflow / PVAF (r, life)

Chapter 8: Risk Analysis in Capital Budgeting

Concept 1: Expected value:

- Expected value is the weighted average value with probability of occurrence being the assigned weight
- Expected value is a measure of return

$$\text{Expected Value} = \sum P * R$$

P = Probability of occurrence ; R = Return

- Other things remaining same, the alternative with higher expected value is to be selected

Concept 2: Standard Deviation:

- Standard deviation is the deviation from the mean
- It is a measure of risk

$$SD = \sqrt{(p\ \underline{d}^{2})}$$

$$d = X - \bar{X}$$

- Other things remaining same the alternative with lower standard deviation should be selected

Concept 3: Co-efficient of variation:

- Co-efficient of variation measures risk per unit of return

CV = Standard Deviation / Expected value

- The project with lower CV should be selected
- CV forces every decision maker. Aggressive investor would like to select a project with higher return and conservative investor will like to select a project with lower risk

Concept 4: Risk Adjusted Discount Rate (RADR):

- The project with a higher risk will be discounted at a higher rate (RADR). Select the project with higher risk adjusted NPV
- RADR = Risk free rate + Risk Premium
- Even for a single project the company can discount the different types of cash flows at different rate. For instance certain cash flows like depreciation tax shield, guaranteed salvage value can be discounted at normal cost of capital and uncertain cash flows like sales, cost structure, salvage value can be discounted at RADR

Concept 5: Certainty equivalent factor (CEF):

- CEF is ratio of certain cash flows to uncertain cash flows
- Less the certainty, lower the value of CEF. Hence risk is considered to be more when CEF is less
- We should select a project with higher NPV

Steps:

- Convert uncertain cash flows into certain cash flows
  - CCF = UCF * CEF
- The appropriate discount rate is risk free rate of return
- Compute NPV

RADR or CEF Principle:

- RADR adjusts the discount rate whereas CEF adjusts the cash flow
- It is easier to adjust the discount rate than cash flow and hence RADR is popular

Concept 6: Sensitivity Analysis:

- It measures the percentage change in input parameters that would lead to a reversal in investment decision

$$\text{Sensitivity \%} = \frac{\text{Change}}{\text{Base}} * 100$$

- The input parameters and the direction of change leading to sensitivity are as under

Parameter	Direction
Size	↑
Cash Flows	↓
Discount Rate	↑
Life	↓

- A project is more sensitive to that input parameter whose sensitivity percent is least. This is because a small change would lead to a reversal of investment decision

Sensitivity Analysis – Uneven cash flows:

- Compute PV of uneven cash flows

- The above value has to change by the amount of NPV for the project to become unviable

$$\text{Sensitivity \%} = \frac{\textbf{NPV}}{\text{PV of uneven cash flows}} * 100$$

Concept 7: Scenario Analysis:

- Sensitivity analysis is probably the most widely used risk analysis technique, it does have limitations. Therefore, we need to extend sensitivity analysis to deal with the probability distributions of the inputs.
- In addition, it would be useful to vary more than one variable at a time so we could see the combined effects of changes in the variables. Scenario analysis provides answer to these situations of extensions.
- This analysis brings in the probabilities of changes in key variables and also allows us to change more than one variable at a time.
- This analysis begins with base case or most likely set of values for the input variables. Then, go for worst case scenario (low unit sales, low sale price, high variable cost and so on) and best case scenario. So, in a nutshell Scenario analysis examine the risk of investment, so as to analyse the impact of alternative combinations of variables, on the project's NPV (or IRR).

Concept 8: Simulation:

- Simulation involve creating a model of project in respect of which various outcomes are possible
- In doing a simulation exercise we must identify the parameters and variables
- Parameters are those which do not change during a project period
- Variables are those which change during a project period
- Parameters do not have probability whereas variables have probability

Steps:

- **Step 1:** Identify parameters and variables
- **Step 2a:** For each variable, arrange the values in ascending order and calculate cumulative probability at the end of each value
- **Step 2b:** Construct random number class interval for each variable
- **Step 3:** Based on random number and class interval, select the values of various variables
- **Step 4:** Compute NPV of each set
- **Step 5:** The simple average of the computed NPV is the final NPV

Concept 9: Decision Tree:

- A decision tree is a diagrammatic representation of the various alternative courses of action leading to an investment decision

Rules:

- **Rule 1:** A decision tree begins with a decision point. A decision point is represented by a rectangle
- **Rule 2:** An outcome point (also known as chance note) is denoted by a circle
- **Rule 3:** A decision tree is drawn from left to right whereas the evaluation is done from right to left
- **Rule 4:** The value of a chance node is the sum of expected values of the various branches emanating from the chance note

- **Rule 5:** The value of a decision node is the highest amongst the values of the various branches which arise from the decision node

Chapter 9: Lease Financing

Evaluation from Lessor's angle:

- For the lessor this is an investment decision. All principles of capital budgeting will apply
- Lease if NPV is positive
- Lease if IRR > cost of capital

Evaluation from Lessee's angle:

- The lessee has the following two choices
  - Take the asset on lease
  - Buy the machine
- In the case of lessee the decision to have the asset is already made. The only remaining decision is how to finance the asset namely
  - Buy the asset by taking a loan
  - Take the asset on lease
- The lessee should choose the alternative which has lower PV of outflow

Steps:

- **Step 1:** Compute PV of Borrow & Buy Option

Purchase Price	XXX
Less: PV of tax saved on depreciation	(XXX)
Less: PV of net salvage value	(XXX)
PV of borrow and buy option	**XXX**

Note:

- The interest rate is irrelevant because the borrowing rate and the discount rate are same
- The appropriate discount rate to be used is **after tax cost of debt.** However if the problem specifies different discount rate then in-between outflows are to be calculated by considering the interest and instalment payment.

- **Step 2:** Compute PV of after tax lease rental
- **Step 3:** Compare step 1 and step 2 and select the option with lower present value

Chapter 10: Dividend Decisions

Dividend Ratios:

Ratio	Meaning	Formula
Dividend Rate	DPS as a percentage of Face Value	$\frac{DPS}{FV} * 100$
Dividend Yield	DPS as a percentage of MPS	$\frac{DPS}{MPS} * 100$
Payout Ratio	DPS as a percentage of EPS	$\frac{DPS}{EPS} * 100$

Dividend dates:

Date	What happens
Declaration date	Dividend is announced

Last cum dividend date	Shares can be bought inclusive of dividends
First ex-dividend date	Shares can be bought without being eligible for dividends
Record date	Register of members is closed
Payment date	Dividend is credited to the members

Basic approach to dividend - Common Sense approach (ALL OR NOTHING APPROACH)

Nature of Firm	Equation	Payout
Growth	K<R	0%
Decline	K>R	100%
Normal	K = R	Indifferent

Note:

- K equal to cost of capital and refer to **rate of return which the investors want to earn**
- R equal to the rate of return **actually being earned by the company**

Dividend Relevance Theory:

- The market price of a share is the **present value of expected future dividends** discounted at the time value of money
- The answer to the question **"DOES DIVIDEND AFFECT MARKET PRICE"** determines the nature of the models:
  - If "YES" then dividend relevance model applies
  - If "NO" then dividend irrelevance model applies

1. WALTER'S MODEL:

- The market price of a share is the present value of infinite cash flows of
  - Constant dividend
  - Capital gain

$$P_0 = \frac{(D)}{K_e} + \frac{\frac{r}{K_e} * (E-D)}{K_e}$$

Where:
P_0 = Current Market Price; D = Dividend per share
E = Earnings per share; r = Rate of return ; K_e = Cost of equity

THE COST OF EQUITY AT TIMES IS EXPRESSED AS THE INVERSE OF PE RATIO AND THIS WOULD MEAN THAT ALL EARNINGS ARE DISTRIBUTED AND THAT THERE IS NO GROWTH IN DIVIDEND

$$K_e = \frac{D_1}{P_0} + G \quad ; \quad K_e = \frac{EPS}{MPS}$$

2. GORDON'S MODEL

- The MP of a share is the Present Value of a stream of constantly growing dividend. This is similar to PV of growing perpetuity

$$P_0 = \frac{D_1}{Ke - G}$$

Where
P_0 = Current Market Price; D_1 = Dividend of next year
K_e = Cost of equity; G = Growth rate in dividend

Growth rate = Retention ratio * Return on equity

Fair Market Price and Investment Decision:

Relationship	Valuation	Action
AMP < FMP	Undervalued	Buy
AMP > FMP	Overvalued	Sell
AMP = FMP	Correctly valued	Hold

Note:

- FMP under Walter's and Gordon's model is ex-dividend price. D_0 refers to nearby dividend and D_1 refers to distant dividend
- If shares are **trading cum-dividend** then we must add the **nearby dividend** to the ex-dividend FMP to get the fair market price.

3. GRAHAM & DODD MODEL (TRADITIONAL POSITION):

- Dividends are the weighted average of past earnings
- Investors discount " DISTANT DIVIDENDS" (CG) at a higher rate than "NEARBY DIVIDEND"

$$P = M * \left(D + \frac{E}{3} \right)$$

Where P = FMP ; D = DPS; E = EPS ; M = Multiplier

Note:

- The multiplier could be a historical multiplier and be based on the relationship between MPS, DPS and EPS

4. LINTNER'S MODEL

- Firms have a long term target dividend payout ratio (DPO)
- CFO's are more worried about changes in dividend rather than dividend per share
- CFO's are reluctant to change dividends which may have to be subsequently reversed
- Dividend changes follow LT sustained earnings

$$D_1 = D_0 + [(EPS * \text{Target Payout}) - D_0] * AF$$

Steps:

- Step 1: Find tentative DPS using CY EPS and target DPO
- Step 2: Find tentative increase in EPS
- Step 3: Actual increase = Step 2 * Adjustment Factor
- Step 4: Current year dividend = Last year dividend + Step 3

5. MODIGILANI MILLER MODEL:

Assumptions:

- **Perfect Markets:** There are large number of buyers & sellers so that the action of neither single buyer nor single seller can influence the market. The transaction costs are negligible. There is free flow of information and all investors are rational and equally knowledgeable
- **No taxes:** This would now mean that the tax on dividend and tax on capital gain are identical and that as such the investor is indifferent as to the form the rewards will flow in
- **Fixed investment policy:** Companies invest every year in capital expenditure plans and the same are assumed to take place at the end of the year
- **No risk of uncertainty:** Businesses have risks (quantifiable) but they do not have uncertainty
- No external funds

$nP_0 = \frac{(n + m) * P_1 - I_1 + X_1}{1 + K_e}$
Where: P_0 = CMP; n = Present no. of shares; P_1 = Year end MP m = Additional shares issues at year end market price to finance capex I_1 = Investment made at year end; X_1 = Earnings of year 1 K_e = Cost of equity

Note: The market capitalization is not affected whereas market price does change

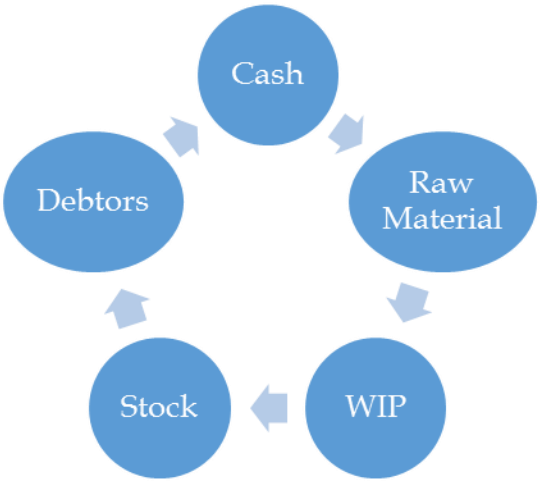
Steps:

Description	Formula
Step 1: Compute year-end MP	$P_1 = P_0 * (1 + K_e) - D_1$
Step 2: Compute money available as retained earnings	Retained earnings = PAT – Equity dividend
Step 3: Compute money to be raised at year end	Fresh equity = Investment in Y_1 – Step 2
Step 4: Compute shares to be raised at year end	Step 3 / Step 1
Step 5: Compare LHS and RHS of MM equation	

Chapter 11: Management of Working Capital

Operating Cycle:

- 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.
- **Working capital cycle = RM days + WIP days + FG days + Debtors days – Creditors days**



- The various components of working capital is calculated with the help of the following formulae:

Raw Material Storage Period	$\frac{\text{Average stock of Raw Material} * 365}{\text{Raw material consumed}}$
Work-in-progress Period	$\frac{\text{Average stock of Work-in-process} * 365}{}$

	Cost of Production
FG Period	Average stock of Finished Goods * 365 Cost of goods sold
Receivables Period	Average Receivables * 365 Credit Sales
Payables Period	Average Payables * 365 Credit Purchases

Steps for existing entity:

Step 1: Preparation of Cost Sheet

Particulars	**Total Approach**	**Cash Cost Approach**
Direct Material	XXX	XXX
Direct Wages	XXX	XXX
Overheads other than depreciation	XXX	XXX
Depreciation	XXX	NA
Gross Works Cost/ Net Works cost/ Cost of Production/ Cost of Goods Sold	**XXX**	**XXX**
Add: Other overheads	XXX	XXX
Cost of sales	**XXX**	**XXX**
Profit	XXX	NA
Sales	**XXX**	**XXX**

Step 2: Working capital forecast statement:

Particulars	**Total Approach**	**Cash Cost Approach**
Current Assets		
Stock of RM		
Stock of WIP		
Stock of FG		
Debtors		
Cash		
Other Current Assets		
Total Current Assets (A)		
Current Liabilities:		
Creditors		
Outstanding expenses		
Other Current Liabilities		
Total Current Liabilities (B)		
Working Capital (A-B)		
Add: Safety Margin		
Final Working capital forecast		

Steps for new entity:

Step 1: Preparation of Cost Sheet

Particulars	**Total Approach**	**Cash Cost Approach**
Opening stock of Raw Material	0	0
Add: Purchases of Raw Material	XXX	XXX
Less: Closing stock of Raw Material	(XXX)	(XXX)
Raw Material Consumed	XXX	XXX

Direct Wages	XXX	XXX
Overheads other than depreciation	XXX	XXX
Depreciation	XXX	NA
Gross Works Cost	**XXX**	**XXX**
Add: Opening WIP	XXX	XXX
Less: Closing WIP	(XXX)	(XXX)
Net Works Cost/ Cost of Production	**XXX**	**XXX**
Add: Opening FG	XXX	XXX
Less: Closing FG	(XXX)	(XXX)
Cost of Goods Sold	**XXX**	**XXX**
Add: Other overheads	XXX	XXX
Cost of sales	**XXX**	**XXX**
Profit	XXX	NA
Sales	**XXX**	**XXX**

Step 2: Working capital forecast statement:

Particulars	Total Approach	Cash Cost Approach
Current Assets		
Stock of RM		
Stock of WIP		
Stock of FG		
Debtors		
Cash		
Other Current Assets		
Total Current Assets (A)		
Current Liabilities:		
Creditors		
Outstanding expenses		
Other Current Liabilities		
Total Current Liabilities (B)		
Working Capital (A-B)		
Add: Safety Margin		
Final Working capital forecast		

Optimum cash balance:

Baumol Model (Similar to EOQ Model)	❖ Optimum cash level is that level of cash where the carrying costs and transactions costs are the minimum. ❖ Carrying costs refer to the cost of holding cash, namely, the interest foregone on marketable securities. The transaction costs refer to the cost involved in getting the marketable securities converted into cash **Optimum cash = Square root (2 * Annual demand * Transaction cost / Opportunity Costs**
Miller-Orr cash management model	❖ This model determines the time and size of transfers between an investment account and cash account ❖ This model sets control limit for cash balances by setting up a lower limit and upper limit ❖ When the cash balances reach the upper limit the company will transfer cash to marketable securities ❖ When the cash balances reach the lower limit a transfer will

	happen from marketable securities to cash account ❖ When the cash balance is between upper and lower limit then no transactions between cash and marketable securities is made

Effective cost of factoring:

Step 1: Compute the amount lent by factor:

Particulars	Calculation	Amount
Credit Sales		XXX
Credit Period		XXX
Average receivables	**Credit sales * credit period / 365**	**XXX**
Less: Reserve	XX % of receivables	(XXX)
Less: Commission	XX % of receivables	(XXX)
Amount eligible to be lent		**XXX**
Less: Interest	Eligible amount * Interest rate (%) * Credit period/365	(XXX)
Amount actually lent		**XXX**

Step 2: Calculation of effective cost of factoring:

Particulars	Calculation	Amount
Costs of factoring:		
Commission	Commission expense as per WN 1 * 365/Credit period	XXX
Interest	Interest expense as per WN 1 * 365/Credit period	XXX
Total costs (A)		**XXX**
Benefits of factoring:		
Savings in administration charges		XXX
Savings in bad debt		XXX
Total Savings (B)		**XXX**
Net Cost of factoring (A-B)		**XXX**
Amount lent by factor	WN 1	XXX
Effective cost of factoring	**Net cost / Amount actually lent**	**XXX**

Calculation of MPBF:

Bank funding is an important source for funding working capital. Following are the three methods of ascertaining MPBF:

Method I	75% of (Current Assets – Current Liabilities)
Method II	75% of current assets – 100% of current liabilities
Method III	75% of non-core current assets – 100% of current liabilities

Note:

- ❖ Core current assets is permanent component of current assets which are required throughout the year for a company to run continuously and to stay viable
- ❖ The term "Core Current Assets" was framed by Tandon Committee while explaining the amount of stock a company can hold in its current assets. Generally, such assets are financed by long term funds. Sometimes core current assets are also referred to as "Hardcore Working Capital".
- ❖ Examples of Core Current Assets are Raw materials, Work in Progress, Finished Goods, Cash in Hand and at Bank etc.
- ❖ Examples of Non-Core Assets are natural resources, bonds, options and so on.

SUMMARY OF ADJUSTMENTS

Qn	Summary of adjustment
	Chapter 3 – Financial Analysis and Planning
1	❖ Compute COGS with the help of GP ratio and sales ❖ Use fixed assets turnover ratio and stock turnover ratio to get the amount of fixed assets and stock ❖ **Use inventory, quick ratio and current ratio to get the amount of current assets and current liabilities** ❖ Calculate debtors with the help of debtors collection period and amount of sales ❖ Calculate networth with fixed assets and split the same into capital and reserves and surplus ❖ **Capital gearing ratio = (Debt + Preference capital)/ Networth. This can be used to find the amount of fixed charge bearing capital** ❖ Prepare balance-sheet
2	❖ Fixed assets is given in the question and with the help of that we can compute current assets and capital ❖ Capital to total liabilities ratio can be used to compute total liabilities ❖ Net profit to capital and net profit ratio can be used to compute amount of net profit and sales ❖ Gross profit ratio can be used to compute GP. We can also calculate average stock with stock turnover ratio and then accordingly get opening and closing stock
3	❖ Debt equity ratio and amount of debt can be used to calculate the amount of equity ❖ Capital turnover ratio can be used to calculate the amount of sales. **Capital = Debt + Equity** ❖ GP ratio can be used to get the amount of GP ❖ Return on equity can be used to compute the amount of net profit ❖ Closing stock is 8% of sales and opening stock is available ❖ We can then prepare trading and Profit and loss account
4	❖ Liquidity, capital structure/leverage, profitability and activity
5	❖ **Get average inventory with the help of sales, GP margin and inventory turnover ratio** ❖ **COGS = Purchases + opening stock – closing stock** ❖ Average debtors can be computed with the help of credit sales and debtors turnover ratio ❖ Average creditors can be computed with the help of credit purchases and creditor turnover ratio ❖ Average payment period = 365/Creditors turnover ratio ❖ Average collection period = 365/Debtors turnover ratio ❖ **Current assets and current liabilities are computed with the help of working capital and current ratio**
6	❖ It is given that there is no debt capital and hence proprietor fund = Fixed assets + net working capital ❖ Net working capital is given in the question and fixed assets to proprietor fund is available. We can compute proprietor funds and fixed assets with this information ❖ ROE can be used to compute net profit and based on that net profit ratio can be calculated
7	❖ Current ratio and working capital can be used to calculate current assets and current liabilities ❖ **Liquid ratio can be used for calculating quick assets and based on that we can compute inventory** ❖ Inventory turnover ratio can be used to compute COGS and based on GP ratio we

Qn	Summary of adjustment
	can compute sales ❖ Debtors can be calculated with the help of sales and average collection period ❖ **Bank and cash can be a balancing figure in current assets and based on that reserves and surplus can be calculated**
8	❖ Net profit/capital can be used to calculate net profit ❖ Net profit/sale can be used to compute sales ❖ GP ratio can be used to calculate amount of GP and COGS ❖ Average stock can be computed with COGS and the same can be split as opening and closing stock ❖ Prepare trading and profit & loss account in the normal manner
9	❖ Net working capital and current ratio can be used to calculate current assets and current liabilities ❖ Liquid ratio can be used to compute the amount of inventory ❖ Inventory and stock turnover ratio can be used to compute COGS ❖ COGS and GP ratio can be used to compute sales ❖ Debtors turnover ratio can be used to compute debtors ❖ Sales/fixed assets can be used to compute the amount of fixed assets
10	❖ Simple problem with no special adjustment
11	❖ Improve, decline, no change, no change and improve
12	❖ Gross profit and GP ratio can be used to calculate the amount of sales ❖ Fixed assets turnover ratio will give the amount of fixed assets ❖ Capital turnover ratio, inventory turnover ratio, receivable turnover ratio, payable turnover ratio will give the appropriate asset/liability
13	❖ Sales and GP margin can be used to calculate COGS ❖ Average inventory can be computed with the help of COGS and inventory turnover ratio ❖ Use current ratio and get the amount of current assets. Closing debtors will be balancing figure ❖ Average collection period can be calculated with the help of average debtors and credit sales
14	❖ Net profit can be computed with the help of sales. The same can be converted into PBT with the help of tax rate ❖ COGS and sales can be used to get gross profit and thereafter operating expenses will be balancing figure ❖ Balance-sheet can be prepared in the given format with the available ratios
15	❖ Gross profit and GP ratio can be used to get amount of sales and COGS ❖ Sundry debtors can be computed with debtors velocity and sales ❖ Sundry creditors can be computed with creditors velocity and purchases ❖ COGS = opening stock + Purchases – Closing stock; Purchases can be calculated as a balancing figure ❖ Average stock can be calculated with the help of stock turnover ratio and COGS ❖ Fixed assets can be computed with the help of fixed assets to turnover ratio
16	❖ Liquidity ratio – Higher liquidity ratio is preferable ❖ Operating profits – Higher operating profits is preferable ❖ Financing – Lower debt ratio is preferable ❖ Return to shareholders – Higher ROE is preferable
17	❖ Similar to question no.14
18	❖ Similar to question no.8
Chapter 4 – Cost of capital	
1	❖ Ke = (D1/Po) + Growth rate

Qn	Summary of adjustment
	❖ Part two: Use the above formula with growth rate of 8%, same Ke and get P0 as balancing figure ❖ Kd = (Interest after tax + Average other costs)/Average funds employed ❖ Average funds employed = (Redemption value + Net proceeds)/2 ❖ Average other costs = (Redemption value – Net proceeds)/Balance life
2	❖ Ke = (D1/Po) + Growth rate ❖ Cost of retained earnings = Ke * (1-Personal tax rate) * (1- Floatation cost%) ❖ Cost of preference is the PD rate and cost of debt is interest rate * (1-Tax rate) ❖ Calculate WACC using both book value and market value weights. Market value of equity to be split between equity and reserves and surplus in the ratio of book value
3	❖ Kd = (Interest after tax + Average other costs)/Average funds employed ❖ Average funds employed = (Redemption value + Net proceeds)/2 ❖ Average other costs = (Redemption value – Net proceeds)/Balance life
4	❖ Cost of preference = (Preference dividend + Average other costs)/Average funds employed
5	❖ WACC calculation with no special adjustment
6	❖ Cost of equity = DPS/MPS. There will be no growth as entire dividend is paid out ❖ Cost of equity = (D1/P0) + Growth rate
7	❖ We need to compute WMCC for every level and then get the discount rate for 6 lacs and 14.5 lacs capex ❖ Project giving a return of 10 percent will be acceptable only if the cost of capital would be 10%
8	❖ Calculate cost of individual components of capital with additional information ❖ Calculate WACC based on both book value and market value weights. Market value weights can be calculated with the help of information on current market price
9	❖ Similar to question no.2 of chapter 5
Chapter 5 – Financing Decisions – Capital Structure	
1	❖ Step 1: Identify the various alternatives ❖ Step 2: Calculate amount of interest, preference dividend and number of equity shares for various options ❖ Step 3: Calculate EPS and decide the best form of financing
2	❖ Cost of debt = Interest * (1-Tax) / Net proceeds ❖ Cost of preference = Preference dividend/Net proceeds ❖ Cost of equity = (D1/P0) + Growth rate ❖ Marginal cost of capital is the WACC as the money would be raised in the current mix ❖ Money for capex =Amount of retained earnings / Weight of equity in capital structure ❖ Calculate new cost of equity and consider the same for WACC calculation
3	❖ We need to use the format for valuation of firm to get the answer ❖ There will be three segments. Segment one on EBIT, Interest and EBT. Segment two on cost of debt, equity and capital. Segment three on value of debt, equity and firm
4	❖ Value the company before restructuring using valuation format ❖ Value of company post restructuring = Value of unlevered company + (Amount of debt * Tax rate) ❖ Cost of equity and WACC will flow from the format
5	❖ Assume EBIT as 2,40,000 and get EPS of alternative 1

Qn	Summary of adjustment
	❖ Alternative 2 will also have same EPS and get the amount of preference dividend as balancing figure ❖ Rate of preference dividend = Amount of dividend/Preference capital
6	❖ Step 1: Identification of alternatives ❖ Step 2: Calculate no of equity shares and interest for the alternatives ❖ Step 3: Assume EBIT as X and get EPS in terms of X. Equate EPS of two alternatives and get indifference point
7	❖ Post tax cost of debt will be the weighted average of two debt ❖ Ke = (D1/P0)+G ❖ Kr = Ke * (1- Personal tax rate) * (1-Floatation cost %) ❖ WACC can be computed with the WACC format
8	❖ EBIT/EPS analysis format is to be used for calculating EPS ❖ Assumed EBIT as X and get EPS in terms of X. Equate two EPS and get the indifference point
9	❖ Calculate EPS for both alternatives ❖ MPS = EPS * PE Multiple ❖ Same ROCE is maintained and hence the EBIT will increase due to the new project ❖ **Interest on existing debt will not be impacted and only the new debt will be at higher rate**
10	❖ Similar to question no.7
11	❖ Use the normal valuation format to value company as per Net income approach ❖ Net operating income approach: Value the unlevered company first. Value of levered company = value of unlevered company + (amount of debt * tax rate)
12	❖ Use EBIT-EPS analysis format to calculate EPS ❖ No special adjustment
13	❖ Value unlevered company using the firm valuation format ❖ Value of levered company = value of unlevered company + (Amount of debt * Tax rate)
14	❖ Problem on EPS and indifference point – No special adjustment
15	❖ EPS = EAES/No of equity shares ❖ Cost of debt = Interest after tax/Amount of debt ❖ Cost of equity = EPS/MPS (assuming entire EPS is distributed)
16	❖ Problem on indifference point – no special adjustment
17	❖ Similar to question no.7
18	❖ Value unlevered company as per the valuation format ❖ Levered company = Unlevered company + (amount of debt * Tax rate)
19	❖ Similar to question no.9
Chapter 6 – Financing Decisions – Leverages	
1	❖ Use the EBIT-EPS analysis format to calculate leverages ❖ OL = Contribution/EBIT ❖ FL = EBIT/(EBT- (PD/1-T)) ❖ CL = OL * FL ❖ EPS = EAES / No of equity shares
2	❖ Similar to question no.1
3	❖ Financial leverage and interest can be used to calculate EBIT and EBT ❖ OL can be used to calculate contribution ❖ Get sales with the help of variable cost ratio and prepare income statement
4	❖ PD coverage = EAT/Preference dividend ❖ Equity dividend coverage = EAES/Amount of dividend

Qn	Summary of adjustment
	❖ Earnings yield = EPS/MPS ❖ Price earning ratio = MPS/EPS ❖ Net fund flow = PAT + Depreciation – Equity dividend – Preference dividend
5	❖ BEP and contribution per unit can be used to calculate amount of fixed cost ❖ OL = Contribution/EBIT
6	❖ Similar to question no.1
7	❖ Prepare leverage format and get OL/FL
8	❖ Similar to question no.1
9	❖ Similar to question no.4
10	❖ Leverages – no special adjustment
11	❖ Leverages problem – No special adjustment ❖ There will be total of 4 alternatives – Two plans combined with two fixed cost structure
12	❖ Problem on leverages with no special adjustment
13	❖ Leverages – no special adjustment ❖ ROI = EBIT/Amount of investment (equity + debt) ❖ A firm has favorable financial leverage if ROI is higher than cost of debt
14	❖ Similar to question no.13
15	❖ Simple problem on leverages – no special adjustment
16	❖ Similar to question no.13
Chapter 7 – Investment decisions	
1	❖ Profitability index and cost of project can be used to calculate present value of cash flow ❖ IRR is the rate of return at which NPV is zero. At this stage PV of inflow will be equal to PV of outflow and based on this annual cash flow can be calculated ❖ NPV = PV of inflow – PV of outflow ❖ Cost of capital can be calculated using NPV ❖ Discounted payback = Base year + (unrecovered cash flow of base year/discounted cash flow of next year)
2	❖ Payback = Amount of investment/annual cash flow ❖ Consider the cost saving as inflow and proceed to calculate CFAT
3	❖ No special adjustment
4	❖ Calculate EAC = PV of outflow/PVAF
5	❖ Calculate incremental cash flow. Incremental cash flow = Cash flow from new machine – Loss of commission income ❖ Calculate NPV and PI in the normal manner
6	❖ No special adjustment
7	❖ Consider additional equipment purchase as an outflow in year 2. Beginning of year 3 is similar to end of year 2 ❖ No other special adjustment
8	❖ The company has an accounting book value of Rs.1,00,000 and it has been fully depreciated for tax purpose. Hence no additional depreciation can be charged ❖ Use incremental approach and get incremental cash flow ❖ Allocated corporate OH are to be ignored
9	❖ Tax rate is not given in the question and hence impact of depreciation can be ignored ❖ The company has three options: Option 1 – Purchase of XYZ, Option 2 – Purchase of ABC, Option 3 – Lease of ABC ❖ Calculate EAC = PV of outflow/PVAF

Qn	Summary of adjustment
	❖ We need to compute the cash flow for a period of 5 years and calculate EAC for various options. This is to be done for part two to find the most economical option
10	❖ Calculate EAB to make decision as the life of the projects are different
11	❖ No special adjustment
12	❖ Similar to question no.4
13	❖ Use incremental approach and calculate NPV to decide on the improvement
14	❖ Calculate incremental cash flow ❖ Incremental cash flow = Post tax cost saving + Tax benefit of incremental depreciation ❖ Decide on replacement with the help of NPV on incremental cash flow
15	❖ Calculate PV of outflow and decide on the better machine
16	❖ Income statement given in the question will not impact the choice and hence has to be ignored ❖ Consider the cost saving and depreciation impact of new machine and decide on replacement of machine
17	❖ No special adjustment
18	❖ Calculate CFAT and calculate NPV at hurdle rate of 10% to decide on purchase of machine
19	❖ Amount to be deposited = Money required/FVAF
20	❖ Future value = Amount deposited * (1+r)^n ❖ R will be taken as 10 percent and n is to be taken as 3 years if compounding is done annually ❖ R will be taken as 5 percent and n is to be taken as 6 periods if compounding is done semi-annually
21	❖ EMI = (Purchase price – Down-payment)/PVAF (24 months, (14%/12)) ❖ Amount of interest = (EMI * 24 periods) – Loan taken
22	❖ Annual payment = Money required/FVAF ❖ Lump sum payment = Money required/FVF (15 years, 9%) ❖ Annual payment at beginning = Money required/ (FVAF * (1+r)
23	❖ Similar to question no.2
24	❖ Money to be deposited today = Money required / Future value factor ❖ Money to be deposited every year = Money required / Future value annuity factor
25	❖ Rs.3 has become Rs.4.02 in 9 year period. Compute future value factor and determine the rate of interest which would correspond to compute FVF
26	❖ Sinking fund investment = Money required/ FVAF
27	❖ Amount of installment = Loan amount/PVAF ❖ Prepare loan amortization table with opening balance, interest, installment and closing balance
28	❖ Pre-tax cash flows have been given in the question and the question has indicated to ignore tax. These cash flows need to be adjusted for sales promotion expense ❖ We will have to calculate the various techniques based on these cash flows
Chapter 8: Risk Analysis in Capital Budgeting	
1	❖ Expected NPV is the weighted average of the NPV with probability being the assigned weights ❖ SD = SQRT (Pd^2) where d = X – expected NPV
2	❖ Calculate the expected cash flow of each year and based on that calculate the NPV of the project ❖ Calculate the standard deviation of every year cash flow ❖ Cash flows are dependent in nature. Discount the standard deviation and then add

<table>
<tr><th>Qn</th><th>Summary of adjustment</th></tr>
<tr><td></td><td>the same. Use the below format:
<table>
<tr><td>Year</td><td>SD</td><td>PVF</td><td>Disc SD</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>3</td><td>❖ Calculate the expected cash flow of each year and based on that calculate the NPV of the project
❖ Calculate the standard deviation of every year cash flow
❖ Cash flows are independent in nature. Discount the standard deviation and then again square it. Use the below format:
<table>
<tr><td>Year</td><td>SD</td><td>PVF</td><td>Disc SD</td><td>Disc SD ^2</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>
❖ Take a square root of the last column to get the SD of cash flow</td></tr>
<tr><td>4</td><td>❖ We should calculate 3 NPV for three different cash flows
❖ Highest NPV will be best case and lowest will be worst case
❖ Probable NPV is weighted average of NPV with probability being the assigned weights
❖ NPV of the worst case with perfect co-relation = Probability of the worst cash flow</td></tr>
<tr><td>5</td><td>❖ Discount rate = Rf + Risk Index * (Rm-Rf)
❖ Use the appropriate discount rate and calculate NPV and decide on project</td></tr>
<tr><td>6</td><td>❖ Certain cash flows = Uncertain cash flows * Certainty equivalent factor
❖ Use the above cash flows and discount the same at risk free rate to arrive at NPV</td></tr>
<tr><td>7</td><td>❖ IRR of the project is 16% and hence the PV of inflow will be same as PV of outflow and with this we can calculate the initial investment
❖ IRR is 16% and discount rate sensitivity is 16%. This will help us in getting the cost of capital. Based on the cost of capital we need to calculate NPV
❖ Use the fixed cost sensitivity and then get the fixed cost amount
❖ Get the annual units sold with the help of fixed cost amount
❖ Break even units can be calculated as fixed cost/contribution per unit. It can also be interpreted as the level of units at which NPV is zero</td></tr>
<tr><td>8</td><td>❖ Calculate the NPV of the project as = PV of savings – PV of recurring cost – PV of cost of the plant
❖ Find out the value of the various parameters at which the project will generate zero NPV
❖ Sensitivity = (Change/Base) * 100</td></tr>
<tr><td>9</td><td>❖ Decision tree will reflect the various possible options
❖ If the project is successful then the company can invest additional amount as the present value of cash flow (4 lacs/10%) is more than the investment amount
❖ If the project is failure then the company need not invest additional amount as the present value of cash flow (1 lac/10%) is lower than the investment amount
❖ Present value of perpetuity = Perpetuity amount / Rate of return</td></tr>
<tr><td>10</td><td>❖ Similar to question no.8</td></tr>
<tr><td colspan="2">Chapter 9: Lease Financing</td></tr>
<tr><td>1</td><td>❖ Basic problem on calculation of lease rentals
❖ Assume lease rentals as X and calculate the rental to be charged for the various scenarios
❖ The company needs IRR of 20 percent and hence we should calculate the lease rentals in such a way that the NPV of the cash flows is zero</td></tr>
<tr><td>2</td><td>❖ Company follows WDV method and hence the cash flow will vary every year
❖ We need to assume lease rent as X and calculate cash flow of every year
❖ Cash flow = Post tax Lease rental + Tax benefit on depreciation</td></tr>
</table>

Qn	Summary of adjustment
	❖ Discount the cash flow and equate the NPV to zero. This would provide the amount of lease rent to be charged
3	❖ Assume the lease rental as X and hence the same will be taken as 3X for year 1, 2X for year 2 and X for year 3 ❖ Calculate the tax saved on depreciation and net salvage value ❖ Consider these cash flows at IRR of 10 percent and equate the NPV as zero. Compute the lease rental based on this
4	❖ Cost of capital is different from after tax cost of debt and hence detailed cash flow is to be calculated for loan option ❖ Equate PV of loan option with PV of lease option and get the lease rental to be charged
5	❖ Initial lease rent will be paid in year 0 but the tax benefit for the same will be considered at the end of year 1 ❖ EAC is to be calculated as the life of the lease terms are different
6	❖ Loan versus lease option with discount rate not same as after tax cost of debt ❖ Loan instalment amount = Loan amount / (1+ PVAF (r,(n-1))
7	❖ Lease payment will be done at the beginning of the year but the tax benefit for the same is to be taken by end of the year
8	❖ The discount rate is different from past tax cost of debt and hence we need to calculate the detailed cash flows showing interest, principal and depreciation benefit is to be done for loan option ❖ PV of lease rentals can be calculated by multiplying the post tax lease rental with PVAF ❖ Select the option which has lower PVAF
9	❖ Discount rate is different from after tax cost of debt and hence detailed calculation of cash flows is to be done ❖ Calculate the cash flows of both options and select the option with lower PV of outflow
10	❖ Simple problem on loan versus lease option
11	❖ Cost of capital is different from cost of debt. We have to calculate detailed cash flows for lease option and calculate the PV of loan option ❖ Equate PV of loan option with PV of lease option. Assume lease rental as X and calculate the maximum lease rental
Chapter 10: Dividend Decisions	
1	❖ Price at end of year = Price at beginning * (1 + Ke) – Amount of dividend ❖ Number of shares to be issued = (Investment budget – Retained earnings) / P1
2	❖ Walter's model = [(D/ke) + (r/ke* [E-D])/Ke] ❖ Optimum payout ratio under walter model will be 0% as IRR is higher than cost of equity
3	❖ Price = Dividend/(Ke-G) ❖ Ke will be 10 percent before budget announcement and Ke post budget announcement will be 7% as the investor was only earning 7% post tax return. Divided is tax-exempt in second scenario and hence the we should calculate the price based on discount rate of 7 percent
4	❖ Ke will be taken as inverse of PE multiple ❖ Compare Ke and r and decide on the optimal dividend payout
5	❖ Gordon model = D1/(Ke-G) ❖ Growth rate = IRR * Retention ratio
6	❖ Walter's model = [(D/ke) + (r/ke* [E-D])/Ke]

Qn	Summary of adjustment
	❖ Ke is 8% whereas R is 10% and hence optimum payout ratio is 0%
7	❖ Price at end of year = Price at beginning * (1 + Ke) – Amount of dividend ❖ Number of shares to be issued = (Investment budget – Retained earnings) / P1
8	❖ Price at end of year = Price at beginning * (1 + Ke) – Amount of dividend ❖ Number of shares to be issued = (Investment budget – Retained earnings) / P1
9	❖ Walter's model = [(D/ke) + (r/ke* [E-D])/Ke]
10	❖ Rate of return = Cost of equity = (D1/P0) + G ❖ Growth changes to 6% and hence Ke will change
11	❖ EPS is Rs.5 per share based on payout ratio of 36% and dividend payment of Rs.1.8 per share ❖ Price earning multiple is 7.25 and based on that share price is calculated ❖ Use walter's formula and calculate ke by assuming the same as X ❖ Limiting value will be the one where the company pays the payout ratio which is opposite of the optimum payout ratio
12	❖ Calculate the EPS for the share ❖ Assume dividend as x and use walter's model formula to arrive at the dividend payout ratio
13	❖ Similar to question no.8

Question No.1 – November 2016

The following figures and ratios pertain to ABG Company Limited for the year ending 31st March, 2016:

Annual Sales (credit)	*₹ 50,00,000*
Gross Profit Ratio	*28%*
Fixed assets turnover ratio (based on cost of goods sold)	*1.5*
Stock turnover ratio (based on cost of goods sold)	*6*
Quick ratio	*1 : 1*
Current ratio	*1.5*
Debtors collection period	*45 days*
Reserves and surplus to Share Capital	*0.60 : 1*
Capital gearing ratio	*0.5*
Fixed Assets to net worth	*1.2 : 1*

You are required to prepare the Balance Sheet as at 31st March, 2016 based on the above information. Assume 360 days in a year. ***(8 Marks)***

Question No.2 – May 2016

With the following ratios and further information given below prepare a Trading Account, Profit and Loss Account and Balance Sheet of ABC Company.

Fixed Assets	*₹40,00,000*
Closing Stock	*₹4,00,000*
Stock turnover ratio	*10*
Gross profit ratio	*25 percent*
Net profit ratio	*20 percent*
Net profit to capital	*1/5*
Capital to total liabilities	*1/2*
Fixed assets to capital	*5/4*
Fixed assets/Total current assets	*5/7*

Question no.3 – November 2015

VRA Limited has provided the following information for the year ending 31st March, 2015.

Debt Equity Ratio	*2: 1*
14% long term debt	*₹ 50,00,000*
Gross Profit Ratio	*30%*
Return on equity	*50%*
Income Tax Rate	*35%*
Capital Turnover Ratio	*1.2 times*
Opening Stock	*₹ 4,50,000*
Closing Stock	*8% of sales*

You are required to prepare Trading and Profit and Loss Account for the year ending 31st March, 2015. *(8 Marks)*

Question No.: 4 (May 2012 exam – 4 Marks)

Explain the important ratios that would be used in each of the following situations:

(i) A bank is approached by a company for a loan of ₹ 50 lakh for working capital purposes.

(ii) A long term creditor interested in determining whether his claim is adequately secured.

(iii) A shareholder who is examining his portfolio and who is to decide whether he should hold or sell his holding in the company.

(iv) A finance manager interested to know the effectiveness with which a firm uses its available resources.

Question No.: 5 (November 2012 exam – 8 Marks)

The following accounting information and financial ratios of M Limited relate to the year ended 31st March, 2012 :

Inventory Turnover Ratio	*6 Times*
Creditors Turnover Ratio	*10 Times*
Debtors Turnover Ratio	*8 Times*
Current Ratio	2.4
Gross Profit Ratio	*25%*

Total sales ₹ 30,00,000; cash sales 25% of credit sales; cash purchases ₹ 2,30,000; working capital ₹ 2,80,000; closing inventory is ₹ 80,000 more than opening inventory.

You are required to calculate:

(i) Average Inventory

(ii) Purchases

(iii) Average Debtors

(iv) Average Creditors

(v) Average Payment Period

(vi) Average Collection Period

(vii) Current Assets

(viii) Current Liabilities. (8 Marks)

Question No.: 6 (May 2013 exam – 5 Marks)

The following information relates to Beta Ltd. for the year ended 31st March 2013:

Net Working Capital	₹ 12,00,000
Fixed Assets to Proprietor's Fund Ratio	0.75
Working Capital Turnover Ratio	5 Times
Return on Equity (ROE)	15%

There is no debt capital.

You are required to calculate:

You are required to calculate:

(i) Proprietor's Fund

(ii) Fixed Assets

(iii) Net Profit Ratio.

Question No.: 7 (November 2013 exam – 8 Marks)

The assets of SONA Ltd. consist of fixed assets and current assets, while its current liabilities comprise bank credit in the ratio of 2 : 1. You are required to prepare the Balance Sheet of the company as on 31st March 2013 with the help of following information:

Share Capital	₹ 5,75,000	
Working Capital (CA-CL)	₹ 1,50,000	
Gross Margin	25%	
Inventory Turnover	5 times	
Average Collection Period	1.5 months	
Current Ratio	1.5:1	
Quick Ratio	0.8: 1	
Reserves & Surplus to Bank & Cash	4 times	(8 Marks)

Question No.: 8 (May 2014 exam – 5 Marks)

NOOR Limited provides the following information for the year ending 31st March, 2014:

Equity Share Capital	*₹25,00,000*
Closing Stock	*₹6,00,000*
Stock Turnover Ratio	*5 times*
Gross Profit Ratio	*25%*
Net Profit / Sale	*20%*
Net Profit / Capital	$\frac{1}{4}$

You are required to prepare:

Trading and Profit & Loss Account for the year ending 31st March, 2014.

Question No.: 9 – November 2014 exam

From the following information, prepare Balance Sheet of a firm:

Stock Turnover Ratio (based on cost of goods sold) - 7 times

Rate of Gross Profit to Sales - 25%

Sales to Fixed Assets - 2 times

Average debt collection period - 1.5 months

Current Ratio - 2

Liquidity Ratio - 1.25

Net Working Capital - ₹ 8,00,000

Net Worth to Fixed Assets - 0.9 times

Reserve and Surplus to Capital - 0.25 times

Long Term Debts - Nil

All Sales are on credit basis. *(8 Marks)*

Question No.10 – May 2017 RTP

From the following information, prepare a summarised Balance Sheet as at 31st March, 2016:

Working Capital	₹2,40,000
Bank overdraft	₹40,000
Fixed Assets to Proprietary ratio	0.75
Reserves and Surplus	₹1,60,000
Current ratio	2.5
Liquid ratio	1.5

Question No.11 – November 2016 RTP

Assuming the current ratio of a Company is 2, state in each of the following cases whether the ratio will improve or decline or will have no change:

(i) Payment of current liability

(ii) Purchase of fixed assets by cash

(iii) Cash collected from Customers

(iv) Bills receivable dishonoured

(v) Issue of new shares.

Question No.12 – November 2015 RTP, May 2018 RTP

Based on the following particulars show various assets and liabilities of Tirupati Ltd.

Fixed assets turnover ratio	8 times
Capital turnover ratio	2 times
Inventory Turnover	8 times
Receivable turnover	4 times
Payable turnover	6 times
GP Ratio	25%

Gross profit during the year amounts to ₹ 8,00,000. There is no long-term loan or overdraft. Reserve and surplus amount to ₹ 2,00,000. Ending inventory of the year is ₹ 20,000 above the beginning inventory.

Question No.: 13 (November 2012 RTP)

The total sales (all credit) of Celloplast Limited are ₹ 6,40,000. It has a gross profit margin of 15 per cent and a current ratio of 2:5. It's current liabilities are ₹ 96,000; inventories ₹ 48, 000 and cash ₹ 16,000.

You are required to determine:

(a) The average inventory to be carried by Celloplast Limited, if an inventory turnover of 5 times is expected? (Assume a 360-day year),

(b) The average collection period if the opening balance of debtors is intended to be ₹ 80,000? (Assume a 360-day year).

Question No.: 14 (May 2013 RTP)

Gauravi Limited has furnished the following ratios and information relating to the year ended 31st March, 2012.

Sales	₹ 60,00,000
Return on net worth	25%
Rate of income tax	50%
Share capital to reserves	7:3
Current ratio	2
Net profit to sales	6.25%
Inventory turnover (based on cost of goods sold)	12
Cost of goods sold	₹ 18,00,000
Interest on debentures	₹ 60,000
Sundry debtors	₹ 2,00,000
Sundry creditors	₹ 2,00,000

You are required to:

(a) Calculate the operating expenses for the year ended 31st March, 2012.

(b) Prepare a balance sheet as on 31st March in the following format:

Liabilities	₹	Assets	₹
Share Capital		Fixed Assets	
Reserve and Surplus		Current Assets	
15% Debentures		Stock	
Sundry Creditors		Debtors	
		Cash	

Question No.15 – May 2017

Following information relate to a concern:

Debtors Velocity	*3 months*
Credits Velocity	*2 months*
Stock Turnover Ratio	*1.5*
Gross Profit Ratio	*25%*
Bills Receivables	*₹ 25,000*
Bills Payables	*₹ 10,000*
Gross Profit	*₹ 4,00,000*
Fixed Assets to turnover Ratio	*4*

Closing stock of the period is ₹ 10,000 above the opening stock.

Find out:

(i) Sales and cost of goods sold

(ii) Sundry Debtors

(iii) Sundry Creditors

(iv) Closing Stock

(v) Fixed Assets *(8 Marks)*

Question No.16 – November 2017 RTP

From the following table of financial ratios of R. Textiles Limited, comment on various ratios given at the end:

Ratios	2016	2017	Average of Textile Industry
Liquidity Ratios			
Current ratio	2.2	2.5	2.5
Quick ratio	1.5	2	1.5
Receivable turnover ratio	6	6	6
Inventory turnover	9	10	6
Receivables collection period	87 days	86 days	85 days
Operating profitability			
Operating income -ROI	25%	22%	15%
Operating profit margin	19%	19%	10%
Financing decisions			
Debt ratio	49.00%	48.00%	57%
Return			
Return on equity	24%	25%	15%

Comment on the following aspect of R. Textiles Limited

(i) Liquidity

(ii) Operating profits

(iii) Financing

(iv) Return to the shareholders

Question No.:17 – May 2015 exam

SSR Ltd. has furnished the following ratios and information relating to the year ended 31st March, 2015.

Sales	*₹ 60 Lacs*
Return on Net worth	*25%*
Rate of Income tax	*50%*
Share Capital to reserves	*7:3*
Current Ratio	*2*
Net-Profit to Sales (after tax)	*6.25%*
Inventory Turnover	*12*
(Based on cost of goods sold and closing stock)	
Cost of goods sold	*₹ 18 Lacs*
Interest on Debentures (@ 15%)	*₹ 60,000*
Sundry Debtors	*₹ 2 Lacs*
Sundry Creditors	*₹ 2 Lacs*

You are required to :

(i) Calculate the operating expenses for the year ended 31st March, 2015.

(ii) Prepare a Balance Sheet as on 31st March, 2015. *(8 Marks)*

Question No.18 – November 2017

XY Ltd. provides the following information for the year ending 31st March, 2017:

Equity Share Capital	*₹ 8,00,000*
Closing Stock	*₹ 1,50,000*
Stock Turnover Ratio	*5 times*
Gross profit ratio	*20%*
Net profit/Sales	*16%*
Net profit/Capital	*25%*
Equity Share Capital	*₹ 8,00,000*

You are required to prepare:

Trading and Profit & Loss Account for the year ending 31st March, 2017. ***(8 Marks)***

Question No.1 (November 2016)

ABC Company's equity share is quoted in the market at ₹ 25 per share currently. The company pays a dividend of ₹ 2 per share and the investor's market expects a growth rate of 6% per year.

You are required to:

(i) Calculate the company's cost of equity capital.

(ii) If the anticipated growth rate is 8% per annum, calculate the indicated market price per share.

(iii) If the company issues 10% debentures of face value of ₹ 100 each and realises ₹ 96 per debenture while the debentures are redeemable after 12 years at a premium of 12%, what will be the cost of debenture?

Assume Tax Rate to be 50%.

Question No.2 – November 2016

Following is the capital structure of RBT Limited as on 31st March 2016:

Particulars	Book Value (₹)	Market Value (₹)
Equity Shares of ₹ 10 each	50,00,000	1,05,00,000
Retained earnings	13,00,000	-
11% Preference shares of ₹ 100 each	7,00,000	9,00,000
14% debentures of ₹ 100 each.	30,00,000	36,00,000

Market price of equity shares is ₹ 40 per share and it is expected that a dividend of ₹ 4 per share would be declared. The dividend per share is expected to grow at the rate of 8% every year. Income tax rate applicable to the company is 40% and shareholder's personal income tax rate is 20%.

You are required to calculate:

(i) Cost of capital for each source of capital,

(ii) Weighted average cost of capital on the basis of book value weights,

(iii) Weighted average cost of capital on the basis of market value weights. ***(8 Marks)***

Question no.3 – November 2015

A company issues 25,000, 14% debentures of ₹ 1,000 each. The debentures are redeemable after the expiry period of 5 years. Tax rate applicable to the company is 35% (including surcharge and education cess).

Calculate the cost of debt after tax if debentures are issued at 5% discount with 2% flotation cost. *(4 × 5 = 20 Marks)*

Question No.: 4 (May 2013 exam – 5 Marks)

A company issued 40,000, 12% Redeemable Preference Share of ₹ 100 each at a premium of ₹ 5 each, redeemable after 10 years at a premium of ₹ 10 each. The floatation cost of each share is ₹ 2.

You are required to calculate cost of preference share capital ignoring dividend tax.

Question No.: 5 (May 2014 exam – 5 Marks)

The following details are provided by the GPS Limited :

	₹
Equity Share Capital	*65,00,000*
12% Preference Share Capital	*12,00,000*
15% Redeemable Debentures	*20,00,000*
10% Convertible Debentures	*8,00,000*

The cost of equity capital for the company is 16.30% and Income Tax rate for the company is 30%.

You are required to calculate the Weighted Average Cost of Capital (WACC) of the company.

Question No.6 – May 2017 RTP

XYZ Ltd. is currently earning a profit after tax of ₹25,00,000 and its shares are quoted in the market at ₹450 per share. The company has 1,00,000 shares outstanding and has not debt in its capital structure. It is expected that the same level of earnings will be maintained for future years also. The company has 100 per cent pay-out policy.

Required:

(i) Calculated the Cost of equity

(ii) If the company's pay-out ratio is assumed to be 70% and it earns 20% rate of return on its investment, then what would be the firm's cost of equity?

Question No.7 – November 2016 RTP

M/s. Sensation Corporation has a capital structure of 40% debt and 60% equity. The company is presently considering several alternative investment proposals costing less than ₹ 20 lakhs. The corporation always raises the required funds without disturbing its present debt equity ratio.

The cost of raising the debt and equity are as under:

Project cost	Cost of debt	Cost of equity
Upto ₹ 2 lakhs	10%	12%
Above ₹ 2 lakhs & upto to ₹ 5 lakhs	11%	13%

Above ₹ 5 lakhs & upto ₹10 lakhs	12%	14%
Above ₹10 lakhs & upto ₹ 20 lakhs	13%	14.5%

Assuming the tax rate at 50% calculate:-

(i) Cost of capital of two projects X and Y whose fund requirements are ₹ 6.5 lakhs and ₹ 14 lakhs respectively.

(ii) If a project is expected to give after tax return of 10% determine under what conditions it would be acceptable?

Question No.8 – May 2016 RTP

As a financial analyst of a large electronics company, you are required to determine the weighted average cost of capital of the company using (a) book value weights and (b) market value weights. The following information is available for your perusal.

The Company's present book value capital structure is:

	(₹)
Debentures (₹ 100 per debenture)	8,00,000
Preference shares (₹ 100 per share)	2,00,000
Equity shares (₹ 10 per share)	10,00,000
	20,00,000

All these securities are traded in the capital markets. Recent prices are:

Debentures, ₹110 per debenture, Preference shares, ₹120 per share, and Equity shares, ₹ 22 per share

Anticipated external financing opportunities are:

(i) ₹ 100 per debenture redeemable at par; 10 year maturity, 11 per cent coupon rate, 4 per cent flotation costs, sale price, ₹ 100

(ii) ₹ 100 preference share redeemable at par; 10 year maturity, 12 per cent dividend rate, 5 per cent flotation costs, sale price, ₹100.

(iii) Equity shares: ₹ 2 per share flotation costs, sale price = ₹ 22.

In addition, the dividend expected on the equity share at the end of the year is ₹ 2 per share, the anticipated growth rate in dividends is 7 per cent and the firm has the practice of paying all its earnings in the form of dividends. The corporate tax rate is 35 per cent.

Question No.: 9 (November 2014 RTP)

Gamma Limited has the following capital structure which is considered to be optimum as on 31st March, 2014.

	₹
14% Debentures	30,000
11% Preference shares	10,000
Equity (10,000 shares)	1,60,000
	2,00,000

The company share has a market price of ₹ 23.60. Next year dividend per share is 50% of year 2014 EPS. The following is the trend of EPS for the preceding 10 years which is expected to continue in future.

Year	*EPS (₹)*	*Year*	*EPS ₹)*
2005	1.00	2010	1.61
2006	1.10	2011	1.77
2007	1.21	2012	1.95
2008	1.33	2013	2.15
2009	1.46	2014	2.36

The company issued new debentures carrying 16% rate of interest and the current market price of debenture is ₹ 96.

Preference shares ₹ 9.20 (with annual dividend of ₹ 1.1 per share) were also issued. The company is in 50% tax bracket.

(a) Calculate after tax:

(i) Cost of new debt

(ii) Cost of new preference shares

(iii) New equity share (consuming new equity from retained earnings)

(b) Calculate marginal cost of capital when no new shares are issued.

(c) How much needs to be spent for capital investment before issuing new shares? 50% of the 2014 earnings are available as retained earnings for the purpose of capital investment.

(d) What will the marginal cost of capital when the funds exceed the amount calculated in (c), assuming new equity is issued at ₹ 20 per share?

Question No.1 – November 2016

India Limited requires ₹ 50,00,000 for a new plant. This Plant is expected to yield earnings before interest and taxes of ₹ 10,00,000. While deciding about the financial plan, the company considers the objective of maximising earnings per share. It has three alternatives to finance the project- by raising debt of ₹ 5,00,000 or ₹ 20,00,000 or ₹ 30,00,000 and the balance, in each case, by issuing equity shares. The company's share is currently selling at ₹ 150, but is expected to decline to ₹ 125 in case the funds are borrowed in excess of ₹ 20,00,000. The funds can be borrowed at the rate of 9 percent upto ₹ 5,00,000, at 14 percent over ₹ 5,00,000 and upto ₹ 20,00,000 and at 19 percent over ₹ 20,00,000. The tax rate applicable to the company is 40 percent. Which form of financing should company choose? Show EPS Amount upto two decimal points.

Question No.2 – May 2016

The X Company has following capital structure at 31st March, 2015 which is considered to be optimum.

	₹
14% Debentures	3,00,000
11% Preference Shares	1,00,000
Equity (1,00,000 shares)	16,00,000
	20,00,000

The company's share has a current market price of ₹23.60 per share. The expected dividend per share next year is 50% of 2015 EPS. The following are the earning per share figure for the company during proceeding ten years. The past trends are expected to continue.

Year	EPS (₹)	Year	EPS (₹)
2006	1.00	2011	1.61
2007	1.10	2012	1.82

2008	1.21	2013	1.95
2009	1.33	2014	2.15
2010	1.46	2015	2.36

The company issued new debentures carrying 16% rate of interest and the current market price of debenture is ₹ 96.

Preference shares ₹ 9.20 (with dividend of ₹ 1.1 per share) were also issued. The company is in 50% tax bracket.

(i) Calculate after tax cost of (a) New debt (b) New Preference share (c) New equity share (consuming new equity from retained earnings).

(ii) Calculate marginal cost of capital when no new shares was issued.

(iii) How much can be spent for capital investment before new ordinary shares must be sold? Assuming the retained earning for next year's investment are 50% of 2015.

(iv) What will be the marginal cost of capital when the funds exceeds the amount calculated in (iii), assuming new equity is issued at ₹ 20 per share? (8 Marks)

Question No.3 – November 2015

RST Ltd. is expecting an EBIT of ₹ 4 lakhs for F.Y. 2015-16. Presently the company is financed entirely by equity share capital of ₹ 20 lakhs with equity capitalization rate of 16%. The company is contemplating to redeem part of the capital by introducing debt financing. The company has two options to raise debt to the extent of 30% or 50% of the total fund.

It is expected that for debt financing upto 30%, the rate of interest will be 10% and equity capitalization rate will increase to 17%. If the company opts for 50% debt, then the interest rate will be 12% and equity capitalization rate will be 20%.

You are required to compute value of the company; its overall cost of capital under different options and also state which is the best option. (8 Marks)

Question No.: 4 (May 2012 exam – 5 Marks)

RES Ltd. is an all equity financed company with a market value of ₹ 25,00,000 and cost of equity K_e = 21%. The company wants to buyback equity shares worth ₹ 5,00,000 by issuing and raising 15% perpetual debt of the same amount. Rate of tax may be taken as 30%. After the capital restructuring and applying MM Model (with taxes), you are required to calculate:

(i) Market value of RES Ltd.

(ii) Cost of Equity K_e

(iii) Weighted average cost of capital and comment on it.

Question No.: 5 (November 2013 exam – 5 Marks)

X Ltd. is considering the following two alternative financing plans:

	Plan - I	Plan - II
	₹	₹
Equity shares of ₹ 10 each	4,00,000	4,00,000
12% Debentures	2,00,000	-
Preference Shares of ₹ 100 each	-	2,00,000
₹	6,00,000	6,00,000

The indifference point between the plans is ₹ 2,40,000. Corporate tax rate is 30%. Calculate the rate of dividend on preference shares.

Question No.:6 – November 2014 exam

Alpha Limited requires funds amounting to ₹ 80 lakhs for its new project. To raise the funds, the company has following two alternatives:

(i) to issue Equity Shares (at par) amounting to ₹ 60 lakhs and borrow the balance amount at the interest of 12% p.a.; or

(ii) to issue Equity Shares (at par) and 12% Debentures in equal proportion.

The Income-tax rate is 30%.

Find out the point of indifference between the available two modes of financing and state which option will be beneficial in different situations.

Question No.:7 – May 2015 exam

A Ltd. wishes to raise additional finance of ₹ 30 lakhs for meeting its investment plans. The company has ₹ 6,00,000 in the form of retained earnings available for investment purposes.

The following are the further details:

- *Debt equity ratio - 30 : 70*
- *Cost of debt - at the rate of 11 % (before tax) upto ₹ 3,00,000 and 14% (before tax) beyond that.*
- *Earnings per share - ₹ 15.*
- *Dividend payout - 70% of earnings.*
- *Expected growth rate in dividend - 10%.*
- *Current market price per share - ₹ 90.*
- *Company's tax rate is 30% and shareholder's Personal tax rate is 20%.*

You are required to :

(i) Calculate the post tax average cost of additional debt.

(ii) Calculate the cost of retained earnings and cost of equity.

(iii) Calculate the overall weighted average (after tax) cost of additional finance.

Question No.8 – May 2017 RTP

A Company needs ₹31,25,000 for the construction of a new plant. The following three plans are feasible:

I The Company may issue 3,12,500 equity shares at ₹10 per share.

II The Company may issue 1,56,250 equity shares at ₹10 per share and 15,625 debentures of ₹100 denomination bearing an 8% rate of interest.

III The Company may issue 1,56,250 equity shares at ₹10 per share and 15,625 preference shares at ₹ 100 per share bearing an 8% rate of dividend.

(i) If the Company's earnings before interest and taxes are ₹ 62,500, ₹1,25,000, ₹ 2,50,000, ₹3,75,000 and ₹ 6,25,000, what are the earnings per share under each of three financial plans? Assume a Corporate Income tax rate of 40%.

(ii) Which alternative would you recommend and why?

(iii) Determine the EBIT-EPS indifference points by formulae between Financing Plan I and Plan II and Plan I and Plan III.

Question No.9 – May 2016 RTP

Akash Limited provides you the following information:

	(₹)
Profit (EBIT)	2,80,000
Less: Interest on Debenture @ 10%	40,000
EBT	2,40,000
Less Income Tax @ 50%	1,20,000
	1,20,000
No. of Equity Shares (₹ 10 each)	30,000
Earnings per share (EPS)	4
Price /EPS (PE) Ratio	10

The company has reserves and surplus of ₹ 7,00,000 and required ₹ 4,00,000 further for modernisation. Return on Capital Employed (ROCE) is constant. Debt (Debt/ Debt + Equity) Ratio higher than 40% will bring the P/E Ratio down to 8 and increase the interest rate on additional debts to 12%. You are required to ascertain the probable price of the share.

(i) If the additional capital are raised as debt; and

(ii) If the amount is raised by issuing equity shares at ruling market price.

Question No.10 – November 2015 RTP

Navya Limited wishes to raise additional capital of ₹10 lakhs for meeting its modernisation plans. It has ₹ 3,00,000 in the form of retained earnings available for investments purposes. The following are the further details:

Debt/equity mix	40%/60%
Cost of debt (before tax)	
Upto ₹ 1,80,000	10%
Beyond ₹ 1,80,000	16%
Earnings per share	₹ 4
Dividend pay out	₹ 2
Expected growth rate in dividend	10%
Current market price per share	₹ 44
Tax rate	50%

You are required:

(a) To ascertain the pattern for raising the additional finance.

(b) To calculate the post-tax average cost of additional debt.

(c) To calculate the cost of retained earnings and cost of equity, and

(d) Find out the overall weighted average cost of capital (after tax).

Question No.11 – November 2015 RTP

Company P and Q are identical in all respects including risk factors except for debt/equity, company P having issued 10% debentures of ₹ 18 lakhs while company Q is unlevered. Both the companies earn 20% before interest and taxes on their total assets of ₹ 30 lakhs.

Assuming a tax rate of 50% and capitalization rate of 15% from an all-equity company. Compute the value of companies P and Q using (i) Net Income Approach and (ii) Net Operating Income Approach.

Question No.: 12 (November 2012 RTP)

Kalyani Steels Limited requires ₹ 5,00,000 for construction of a new plant. It is considering three financial plans:

(i) The company may issue 50,000 ordinary shares at ₹ 10 per share;

(ii) The company may issue 25,000 ordinary shares at ₹ 10 per share and 2,500 debentures of ₹ 100 denominations bearing a 8 per cent rate of interest; and

(iii) The company may issue 25,000 ordinary shares at ₹ 10 per share and 2,500 preference shares at ₹ 100 per share bearing a 8 per cent rate of dividend.

If Kalyani Steels Limited's earnings before interest and taxes are ₹ 10,000; ₹ 20,000; ₹ 40,000; ₹ 60,000 and ₹ 1,00,000, you are required to compute the earnings per share under each of the three financial plans? Which alternative would you recommend for Kalyani Steels and why?

Question No.:13 (November 2013 RTP)

Company XYZ is unlevered and has a cost of equity of 20 percent and a total market value of ₹10,00,00,000. Company ABC is identical to XYZ in all respects except that it uses debt finance in its capital structure with a market value of ₹4,00,00,000 and a cost of 10 percent. Find the market value of equity, weighted average cost of capital and cost of equity of ABC if the tax advantage of debt is 25 percent.

Question No.: 14 (November 2013 RTP)

The following current data are available concerning Theta Limited:

Share issued	10,000
Market price per share	₹20
Interest rate	12%
Tax Rate	46%
Expected EBIT	₹15,000

The company requires an additional ₹50,000 for the coming year.

You are required to determine:

(i) Which financing option (debt or equity issue) will give higher EPS for the expected EBIT?

(ii) What is indifference level of EBIT for the two alternatives?

(iii) What is EPS for that EBIT?

Question No.: 15 (May 2014 RTP)

The following is an extract from the financial statements of Zeta Limited:

	Amount (₹ lakhs)
Operating Profit	105.0
Less: Interest on Debentures	33.0
Earnings before Taxes	72.0
Less: Income Tax (35%)	25.2
Earnings after Taxes	46.8
Equity Share Capital (shares of ₹ 10 each)	200.0
Reserves and Surplus	100.0
15% Non-Convertible Debentures (of ₹ 100 each)	220.0
	520.0

The market price per equity share is ₹ 12 and per debenture is ₹ 93.75.

You are required to calculate:

(a) The earnings per share.

(b) The percentage cost of capital to the company for debentures and the equity.

Question No.:16 – November 2014 RTP

Theta Limited has a total capitalization of ₹ 10 Lakhs consisting entirely of equity shares of ₹ 50 each. It wishes to raise another ₹ 5 lakhs for expansion through one of its two possible financial plans.

(1) All equity shares of ₹ 50 each.

(2) All debentures carrying 9% interest.

The present level of EBIT is ₹ 1,40,000 and Income tax rate is 50%.

Calculate EBIT level at which earnings per share would remain the same irrespective of raising funds through equity shares or debentures.

Question No.: 17 – May 2015 RTP, November 2017 RTP

Meta Limited wishes to raise additional finance of ₹ 10 lakhs for meeting its investment plans. It has ₹ 2,10,000 in the form of retained earnings available for investment purposes. Further details are as following:

(1)	Debt / Equity mix	30%/70%
(2)	Cost of Debt	
	Upto ₹ 1,80,000	10% (before tax)
	Beyond ₹ 1,80,000	16% (before tax)
(3)	Earnings per Share	₹ 4
(4)	Dividend Pay out	50% of Earnings
(5)	Expected Growth Rate in Dividend	10%
(6)	Current Market Price per share	₹ 44
(7)	Tax Rate	50%

You are required:

(a) To determine the pattern for raising the additional finance.

(b) To determine the post-tax average cost of additional debt.

(c) To determine the cost of retained earnings and cost of equity, and

(d) Compute the overall weighted average after tax cost of additional finance.

Question No.18 – May 2017

PNR Limited and PXR Limited are identical in every respect except capital structure. PNR limited does not employ debts in its capital structure whereas PXR Limited employs 12% Debentures amounting to ₹ 20,00,000. The following additional information are given to you:

(i) Income tax rate is 30%

(ii) EBIT is ₹ 5,00,000

(iii) The equity capitalization rate of PNR Limited is 20% and

(iv) All assumptions of Modigliani - Miller Approach are met.

Calculate:

(i) Value of both the companies,

(ii) Weighted average cost of capital for both the companies. *(8 Marks)*

Question No.19 – November 2017 RTP

Akash Limited provides you the following information:

	(₹)
Profit (EBIT)	2,80,000
Less: Interest on Debenture @ 10%	40,000
EBT	2,40,000
Less Income Tax @ 50%	1,20,000
	1,20,000
No. of Equity Shares (₹ 10 each)	30,000
Earnings per share (EPS)	4
Price /EPS (PE) Ratio	10

The company has reserves and surplus of ₹ 7,00,000 and required ₹ 4,00,000 further for modernisation. Return on Capital Employed (ROCE) is constant. Debt (Debt/ Debt + Equity) Ratio higher than 40% will bring the P/E Ratio down to 8 and increase the interest rate on additional debts to 12%. You are required to ascertain the probable price of the share.

(i) If the additional capital is raised as debt; and

(ii) If the amount is raised by issuing equity shares at ruling market price.

Question No.1 – November 2016

The following information is related to YZ Company Ltd. for the year ended 31st March, 2016:

Equity share capital (of ₹ 10 each)	*₹ 50 lakhs*
12% Bonds of ₹ 1,000 each	*₹ 37 lakhs*
Sales	*₹ 84 lakhs*
Fixed cost (excluding interest)	*₹ 6.96 lakhs*
Financial leverage	*1.49*
Profit-volume Ratio	*27.55%*
Income Tax Applicable	*40%*

You are required to calculate:

(i) Operating Leverage;

(ii) Combined leverage; and

(iii) Earnings per share.

Show calculations upto two decimal points. ***(5 × 4 = 20 Marks)***

Question No.2 – May 2016

A company had the following balance sheet as on 31st March, 2015

Liabilities	*Amount (₹)*	*Assets*	*Amount (₹)*
Equity share capital of ₹ 10 each	*40,00,000*	*Fixed Assets (Net)*	*1,28,00,000*
Reserve & Surplus	*8,00,000*	*Current Assets*	*32,00,000*
15% Debentures	*80,00,000*		
Current Liabilities	*32,00,000*		
	1,60,00,000		*1,60,00,000*

The additional information given is as under:

Fixed cost per annum (excluding interest)	*₹ 32,00,000*
Variable operating cost ratio	*70%*
Total assets turnover ratio	*2.5*
Income tax rate	*30%*

Calculate the following:

(i) Operating Leverage

(ii) Financial Leverage

(iii) Combined Leverage

(iv) Earning per share

Question no.3 – November 2015

From the following details of X Ltd., prepare the Income Statement for the year ended 31st December, 2014:

Financial Leverage	*2*
Interest	*₹ 2,000*
Operating Leverage	*3*
Variable cost as a percentage of sales	*75%*
Income tax rate	*30%*

Question No.: 4 (May 2012 exam – 8 Marks)

The capital structure of JCPL Ltd. is as follows:

	₹
Equity share capital of ₹ 10 each	*8,00,000*
8% Preferences share capital of ₹ 10 each	*6,25,000*
10% Debenture of ₹ 100 each	*4,00,000*
	18,25,000

Additional Information:

Profit after tax (tax rate 30%) ₹ 1,82,000

Operating expenses (including depreciation ₹ 90,000) being 1.50 times of EBIT

Equity share dividend paid 15%.

Market price per equity share ₹ 20.

Require to calculate:

(i) Operating and financial leverage.

(ii) Cover for the preference and equity share of dividends.

(iii) The earning yield and price earnings ratio.

(iv) The net fund flow. *(8 Marks)*

Question No.: 5 (November 2012 exam – 5 Marks)

X Limited has estimated that for a new product its break-even point is 20,000 units if the item is sold for 14 per unit and variable cost ₹ 9 per unit. Calculate the degree of operating leverage for sales volume 25,000 units and 30,000 units.

Question No.: 6 (May 2013 exam – 6 Marks)

The following information related to XL Company Ltd. for the year ended 31st March, 2013 are available to you:

Equity share capital of ₹ 10 each *₹ 25 lakh*

11% Bonds of ₹ 1000 each	*₹ 18.5 lakh*
Sales	*₹ 42 lakh*
Fixed cost (Excluding Interest)	*₹ 3.48 lakh*
Financial leverage	*1.39*
Profit-Volume Ratio	*25.55%*
Income Tax Rate Applicable	*35%*

You are required to calculate:

(i) Operating Leverage;

(ii) Combined Leverage; and

(iii) Earning per Share. *(6 Marks)*

Question No.: 7 (November 2013 exam – 5 Marks)

Calculate the degree of operating leverage, degree of financial leverage and the degree of combined leverage for the following firms :

		N	S	D
Production (in units)		*17,500*	*6,700*	*31,800*
Fixed costs	₹	*4,00,000*	*3,50,000*	*2,50,000*
Interest on loan	₹	*1,25,000*	*75,000*	*Nil*
Selling price per unit	₹	*85*	*130*	*37*
Variable cost per unit	₹	*38.00*	*42.50*	*12.00*

Question No.: 8 (May 2014 exam – 8 Marks)

A company had the following Balance Sheet as on 31st March, 2014:

Liabilities	*₹ (In crores)*	*Assets*	*(₹ In crores)*
Equity Share Capital (50 lakhs shares of ₹ 10 each)	*5*		
Reserves and Surplus	*1*	*Fixed Assets (Net)*	*12.5*
15% Debentures	*10*	*Current Assets*	*7.5*
Current Liabilities	*4*		
	20		*20*

The additional information given is as under:

Fixed cost per annum (excluding interest)	*₹ 4 crores*
Variable operating cost ratio	*65%*
Total assets turnover ratio	*2.5*
Income Tax rate	*30%*

Required:

Calculate the following and comment:

(i) Earnings Per Share

(ii) Operating Leverage

(iii) Financial Leverage

(iv) Combined Leverage *(8 Marks)*

Question No.: 9 – November 2014 exam

The Capital structure of RST Ltd. is as follows:

	₹
Equity Share of ₹ 10 each	*8,00,000*
10% Preference Share of ₹ 100 each	*5,00,000*
12% Debentures of ₹ 100 each	*7,00,000*
	20,00,000

Additional Information:

- *Profit after tax (Tax Rate 30%) are ₹ 2,80,000*
- *Operating Expenses (including Depreciation ₹ 96,800) are 1.5 times of EBIT*
- *Equity Dividend paid is 15%*
- *Market price of Equity Share is ₹ 23*

Calculate:

(i) Operating and Financial Leverage

(ii) Cover for preference and equity dividend

(iii) The Earning Yield Ratio and Price Earning Ratio

(iv) The Net Fund Flow

Note: All operating expenses (excluding depreciation) are variable. *(8 Marks)*

Question No.: 10 – May 2015 exam

Following information are related to four firms of the same industry :

FIRM	*Change in Revenue*	*Change in Operating Income*	*Change in Earning per Share*
P	*27%*	*25%*	*30%*
Q	*25%*	*32%*	*24%*
R	*23%*	*36%*	*21%*
S	*21%*	*40%*	*23%*

Find out:

(i) degree of operating leverage, and

(ii) degree of combined leverage for all the firms.

Question No.11 – May 2017 RTP

Calculate the operating leverage, financial leverage and combined leverage from the following data under Situation I and II and Financial Plan A and B:

Installed Capacity	4,000 units
Actual Production and Sales	75% of the Capacity
Selling Price	₹30 per unit
Variable Cost	₹15 per unit

Fixed Cost:

Under Situation I	₹15,000
Under Situation-II	₹20,000

Capital Structure:

	Financial Plan	
	A (₹)	B (₹)
Equity	10,000	15,000
Debt (Rate of Interest at 20%)	10,000	5,000
	20,000	20,000

Question No.12 – November 2016 RTP

The capital structure of the Shiva Ltd. consists of equity share capital of ₹ 10,00,000 (shares of ₹ 100 per value) and ₹ 10,00,000 of 10% Debentures, sales increased by 20% from 1,00,000 units to 1,20,000 units, the selling price is ₹ 10 per unit: variable costs amount to ₹ 6 per unit and fixed expenses amount to ₹ 2,00,000. The income-tax rate is assumed to be 50%.

(a) You are required to calculate the following:

(i) The percentage increase in earnings per share;

(ii) Financial leverage at 1,00,000 units and 1,20,000 units.

(iii) Operating leverage at 1,00,000 units and 1,20,000 units.

(b) Comment on the behaviour of Operating and Financial leverages in relation to increase in production from 1,00,000 units to 1,20,000 units.

Question No.13 – November 2015 RTP

A firm has sales of ₹ 75,00,000 variable cost is 56% and fixed cost is ₹ 6,00,000. It has a debt of ₹ 45,00,000 at 9% and equity of ₹ 55,00,000.

(i) What is the firm's ROI?

(ii) Does it have favourable financial leverage?

(iii) If the firm belongs to an industry whose capital turnover is 3, does it have a high or low capital turnover?

(iv) What are the operating, financial and combined leverages of the firm?

(v) If the sales is increased by 10% by what percentage EBIT will increase?

(vi) At what level of sales the EBT of the firm will be equal to zero?

(vii) If EBIT increases by 20%, by what percentage EBT will increase?

Question No.: 14 – May 2015 RTP, November 2017 RTP

Sohna Limited's sales, variable costs and fixed cost amount to ₹ 75,00,000, ₹ 42,00,000 and ₹ 6,00,000 respectively. It has borrowed ₹ 45,00,000 at 9 per cent and its equity capital totals ₹ 55,00,000.

(a) What is Sohna Limited's ROI?

(b) Does it have favourable financial leverage?

(c) If Sohna Limited belongs to an industry whose asset turnover is 3, does it have a high or low asset leverage?

(d) What are the operating, financial and combined leverages of Sohna Limited?

(e) If the sales drops to ₹ 50,00,000, what will the new EBIT be?

Question No.15 – May 2017

You are given the following information of 5 firms of the same industry:

Name of the Firm	*Change in Revenue*	*Change in Operating Income*	*Change in Earning per share*
M	*28%*	*26%*	*32%*
N	*27%*	*34%*	*26%*
P	*25%*	*38%*	*23%*
Q	*23%*	*43%*	*27%*
R	*25%*	*40%*	*28%*

You are required to calculate:

(i) Degree of operating leverage and

(ii) Degree of combined leverage for all firms. *(5 Marks)*

Question No.16 – November 2017

The following details of a company for the year ended 31st March, 2017 are given below:

Operating leverage	*2:1*
Combined leverage	*2.5:1*
Fixed Cost excluding interest	*₹ 3.4 lakhs*
Sales	*₹ 50 lakhs*
8% Debentures of ₹ 100 each	*₹ 30.25 lakhs*
Equity Share Capital of ₹ 10 each	*34 lakhs*
Income Tax Rate	*30%*

Required:

(i) Calculate Financial Leverage

(ii) Calculate P/V ratio and Earning per Share (EPS)

(iii) If the company belongs to an industry, whose assets turnover is 1.5, does it have a high or low assets turnover?

(iv) At what level of sales, the Earning before Tax (EBT) of the company will be equal to zero? ***(8 Marks)***

Question No.1 – May 2016

Given below are the data on a capital project 'C':

Cost of the project	*₹ 2,28,400*
Useful life	*4 years*
Profitability index	*1.0417*
Internal rate of return	*15%*
Salvage value	*0*

You are required to calculate:

(i) Annual cash flow

(ii) Cost of capital

(iii) Net present value (NPV)

(iv) Discounted payback period

Given the following table of discount factors:

Discount Factor	15%	14%	13%	12%
1 years	0.869	0.877	0.885	0.893
2 years	0.756	0.769	0.783	0.797
3 years	0.658	0.675	0.693	0.712
4 years	0.572	0.592	0.613	0.636

Question No.: 2 (November 2012 exam – 10 Marks)

SS Limited is considering the purchase of a new automatic machine which will carry out some operations which are at present performed by manual labour. NM-A_1 and NM-A_2, two alternative models are available in the market. The following details are collected :

(10 Marks)

		Machine	
		NM-A_1	NM-A_2
Cost of Machine	(₹)	20,00,000	25,00,000
Estimated working life		5 Years	5 Years
Estimated saving in direct wages per annum	(₹)	7,00,000	9,00,000
Estimated saving in scrap per annum	(₹)	60,000	1,00,000

Estimated additional cost of indirect material per annum	(₹)	30,000	90,000
Estimated additional cost of indirect labour per annum	(₹)	40,000	50,000
Estimated additional cost of repairs and maintenance per annum	(₹)	45,000	85,000

Depreciation will be charged on a straight line method. Corporate tax rate is 30 percent and expected rate of return may be 12 percent.

You are required to evaluate the alternatives by calculating the:

(i) Pay-back Period

(ii) Accounting (Average) Rate of Return; and

(iii) Profitability Index or P.V. Index (P.V. factor for ₹ 1 @ 12% 0.893; 0.797; 0.712; 0.636; 0.567; 0.507)

Question No.: 3 (May 2013 exam – 9 Marks)

PQR Company Ltd. Is considering to select a machine out of two mutually exclusive machines. The company's cost of capital is 12 per cent and corporate tax rate is 30 per cent. Other information relating to both machines is as follows:

	Machine – I	Machine – II
Cost of Machine	₹ 15,00,000	₹ 20,00,000
Expected Life	5 Yrs.	5 Yrs.
Annual Income (Before Tax and Depreciation)	₹ 6,25,000	₹ 8,75,000

Depreciation is to be charged on straight line basis:

You are required to calculate:

(i) Discounted Pay Back Period

(ii) Net Present Value

(iii) Profitability Index

The present value factors of ₹ 1 @ 12% are as follows:

Year	01	02	03	04	05	
PV factor @ 12%	0.893	0.797	0.712	0.636	0.567	(9 Marks)

Question No.: 4 (November 2013 exam – 8 Marks)

APZ Limited is considering to select a machine between two machines 'A' and 'B'. The two machines have identical capacity, do exactly the same job, but designed differently.

Machine 'A' costs ₹ 8,00,000, having useful life of three years. It costs ₹ 1,30,000 per year to run.

Machine 'B' is an economy model costing ₹ 6,00,000, having useful life of two years. It costs ₹ 2,50,000 per year to run.

The cash flows of machine 'A' and 'B' are real cash flows. The costs are forecasted in rupees of constant purchasing power. Ignore taxes.

The opportunity cost of capital is 10%.
The present value factors at 10% are :

Year	t_1	t_2	t_3
$PVIF_{0.10,t}$	0.9091	0.8264	0.7513
$PVIFA_{0\text{-}10,2}$ = 1.7355			
$PVIFA_{0.10,3}$ = 2.4868			

Which machine would you recommend the company to buy? *(8 Marks)*

Question No.: 5 (May 2014 exam – 8 Marks)

FH Hospital is considering to purchase a CT-Scan machine. Presently the hospital is outsourcing the CT -Scan Machine and is earning commission of ₹15,000 per month (net of tax). The following details are given regarding the machine:

	₹
Cost of CT -Scan machine	15,00,000
Operating cost per annum (excluding Depreciation)	2,25,000
Expected revenue per annum	7,90,000
Salvage value of the machine (after 5 years)	3,00,000
Expected life of the machine	5 years

Assuming tax rate @ 30%, whether it would be profitable for the hospital to purchase the machine?

Give your recommendation under:

(i) Net Present Value Method, and

(ii) Profitability Index Method.

PV factors at 12% are given below:

Year	1	2	3	4	5
PV factor	0.893	0.797	0.712	0.636	0.567

Question no.6 – May 2017 RTP

A company has to make a choice between two projects namely A and B. The initial capital outlay of two Projects is ₹1,35,000 and ₹2,40,000 respectively for A and B. There will be no scrap value at the end of the life of both the projects. The opportunity cost of capital of the company is 16%. The annual incomes are as under:

Year	Project A	Project B	Discounting factor @ 16%
1	–	60,000	0.862
2	30,000	84,000	0.743
3	1,32,000	96,000	0.641
4	84,000	1,02,000	0.552
5	84,000	90,000	0.476

You are required to calculate for each project:

(i) Discounted payback period

(ii) Profitability index

(iii) Net present value

Question No.7 – November 2016 RTP

A Ltd. an existing profit-making company, is planning to introduce a new product with a projected life of 8 years. Initial equipment cost will be ₹ 150 lakhs and additional equipment costing ₹ 10 lakhs will be needed at the beginning of third year. At the end of the 8 years, the original equipment will have resale value equivalent to the cost of removal, but the additional equipment would be sold for ₹ 1 lakh. Working capital of ₹ 25 lakhs will be needed. The 100% capacity of the plant is of 4,00,000 units per annum, but the production and sales-volume expected are as under:

Year	Capacity in percentage
1	20
2	30
3 - 5	75
6 - 8	50

A sale price of ₹100 per unit with a profit volume ratio of 60% is likely to be obtained. Fixed Operating Cash Costs are likely to be ₹16 lakhs per annum. In addition to this the advertisement expenditure will have to be incurred as under:

Year	1	2	3 - 5	6 - 8
Expenditure each year (₹ in lakhs)	30	15	10	4

The company is subjected to 50% tax, straight-line method of depreciation, (permissible for tax purposes also) and taking 12% as appropriate after tax cost of Capital, should the project be accepted?

Question No.8 – May 2016 RTP

Navya Limited is thinking of replacing its existing machine by a new machine which would cost ₹ 60 lakhs. The company's current production is 80,000 units, and is expected to increase to 1,00,000 units, if the new machine is bought. The selling price of the product would remain unchanged at ₹ 200 per unit. The following is the cost of producing one unit of product using both the existing and new machine:

(Unit Cost in ₹)

	Existing Machine (80,000 units)	New Machine (1,00,000 units)	Difference
Materials	75.00	63.75	(11.25)
Wages & Salaries	51.25	37.50	(13.75)
Supervision	20.00	25.00	5.00
Repairs and Maintenance	11.25	7.50	(3.75)
Power and Fuel	15.50	14.25	(1.25)
Depreciation	0.25	5.00	4.75
Allocated Corporate Overheads	10.00	12.50	2.50
	183.25	165.50	(17.75)

The existing machine has an accounting book value of ₹ 1,00,000, and it has been fully depreciated for tax purpose. It is estimated that machine will be useful for 5 years. The supplier of the new machine has offered to accept the old machine for ₹ 2,50,000. However, the market price of old machine today is ₹ 1,50,000 and it is expected to be ₹ 35,000 after 5 years. The new machine has a life of 5 years and a salvage value of ₹ 2,50,000 at the end of its economic life. Assume corporate Income tax rate at 40%, and depreciation is charged on straight line basis for Income-tax purposes. Further assume that book profit is treated as ordinary income for tax purpose. The opportunity cost of capital of the Company is 15%.

Required:

(i) Estimate net present value of the replacement decision.

(ii) Estimate the internal rate of return of the replacement decision.

(iii) Should Company go ahead with the replacement decision? Suggest.

Year (t)	1	2	3	4	5
$PVIF_{0.15,t}$	0.8696	0.7561	0.6575	0.5718	0.4972
$PVIF_{0.20,t}$	0.8333	0.6944	0.5787	0.4823	0.4019
$PVIF_{0.25,t}$	0.8000	0.6400	0.5120	0.4096	0.3277
$PVIF_{0.30,t}$	0.7692	0.5917	0.4552	0.3501	0.2693
$PVIF_{0.35,t}$	0.7407	0.5487	0.4064	0.3011	0.2230

Question No.9 – November 2015 RTP

BT Pathology Lab Ltd. is using a X-ray machines which reached at the end of their useful lives. Following new X-ray machines of two different brands with same features are available for the purchase.

Brand	Cost of Machine	Life of Machine	Maintenance Cost			Rate of Depreciation
			Year 1-5	Year 6-10	Year 11-15	
XYZ	₹6,00,000	15 years	₹ 20,000	₹ 28,000	₹ 39,000	4%
ABC	₹4,50,000	10 years	₹ 31,000	₹ 53,000	--	6%

Residual Value of both of above machines shall be dropped by 1/3 of Purchase price in the first year and thereafter shall be depreciated at the rate mentioned above.

Alternatively, the machine of Brand ABC can also be taken on rent to be returned back to the owner after use on the following terms and conditions:

- Annual Rent shall be paid in the beginning of each year and for first year it shall be ₹ 1,02,000.
- Annual Rent for the subsequent 4 years shall be ₹ 1,02,500.
- Annual Rent for the final 5 years shall be ₹ 1,09,950.
- The Rent Agreement can be terminated by BT Labs by making a payment of ₹ 1,00,000 as penalty. This penalty would be reduced by ₹ 10,000 each year of the period of rental agreement.

You are required to:

(a) Advise which brand of X-ray machine should be acquired assuming that the use of machine shall be continued for a period of 20 years.

(b) Which of the option is most economical if machine is likely to be used for a period of 5 years?

The cost of capital of BT Labs is 12%.

Question No.: 10 (November 2012 RTP)

Ganpati Limited is considering the following investment projects:

	Cash Flows (₹)			
Projects	C_0	C_1	C_2	C_3
A	-10,000	+10,000		
B	-10,000	+17,500	+7,500	
C	-10,000	+12,000	+4,000	+12,000
D	-10,000	+10,000	+3,000	+13,000

Rank the projects according to each of the following methods: (i) Payback, (ii) ARR, (iii) IRR and (iv) NPV; assuming discount rates of 10 and 30 per cent.

Assuming the projects are independent, which one should be accepted?

Question No.:11 (November 2012 RTP)

Carlson Limited wants to replace its old machine with a new automatic machine. Two models A and B are available at the same cost of ₹ 5 lakhs each. Salvage value of the old machine is ₹ 1 lakh. The utilities of the existing machine can be used if Carlson purchases machine A. Additional cost of utilities to be purchased in that case are ₹ 1 lakh. If it purchases machine B then all the existing utilities will have to be replaced with new utilities costing ₹ 2 lakhs. The salvage value of the old utilities will be ₹ 0.20 lakhs. The earnings after taxation are expected to be:

Year	(Cash inflows)		
	A ₹	*B* ₹	*P.V. Factor @ 15%*
1.	1,00,000	2,00,000	0.87
2.	1,50,000	2,10,000	0.76
3.	1,80,000	1,80,000	0.66
4.	2,00,000	1,70,000	0.57
5.	1,70,000	40,000	0.50
Salvage Value at the end of Year 5	50,000	60,000	

The targeted return on capital is 15%. You are required to:

(i) Compute the net present value, discounted payback period and desirability factor for the two machines; and

(ii) Advice which of the machines is to be selected?

Question No.: 12 (May 2013 RTP)

Viceroy Limited has to choose between two machines A and B. The two machines are designed differently, but have identical capacity and do exactly the same job. Machine A costs ₹ 1,50,000 and will last for 3 years. It costs ₹ 40,000 per year to run. Machine B is an economy model costing only ₹ 1,00,000, but will last only for 2 years, and costs ₹ 60,000 per year to run. These are real cash flows. The costs are forecasted in rupees of constant purchasing power. Ignore tax. Opportunity cost of capital is 10 per cent. Which machine Viceroy Limited should buy?

Question No.:13 (November 2013 RTP)

Beta Limited receives ₹ 15,00,000 a year after taxes from an investment in an automatic plant that has 12 more years of service life. The company's required rate is 12%. Beta Limited can make improvements to the plant to raise its service life to 20 years and its annual after tax cash flow to ₹ 48,00,000 per year. These investments would cost ₹ 2,10,00,000. With the improvements, the plant's value at the end of 12 years would rise from ₹7,50,000 to ₹75,00,000. Would the improvements produce a return satisfactory to Beta Limited?

Question No.:14 (November 2013 RTP)

A machine purchased six years back for ₹1,50,000 has been depreciated to a book value of ₹90,000. It originally had a projected life of fifteen years and zero salvage value. A new machine will cost ₹2,50,000 and result in a reduced operating cost of ₹30,000 per year for the next nine years. The older machine could be sold for ₹50,000. The new machine shall also be depreciated on a straight-line method on nine-year life with salvage value of ₹25,000. The company's tax rate is 50% and cost of capital is 10%.

Determine whether the old machine should be replaced.

Given: Present Value of Re. 1 at 10% on 9th year = 0.424; and Present Value of an annuity of Re. 1 at 10% for 8 years = 5.335.

Question No.: 15 (May 2014 RTP)

Gamma Limited is considering building an assembly plant and the company has two options, out of which it wishes to choose the best plant. The projected output is 10,000 units per month. The following data is available:

			₹
		Plant A	*Plant B*
Initial Cost		60,00,000	44,00,000
Direct Labour Cost p.a.	(1st Shift)	30,00,000	15,00,000
	(Second Shift)	-	19,00,000
Overhead	(per year)	5,00,000	4,20,000

Both the plants have an expected life of 10 years after which there will be no salvage value. The cost of capital is 10 percent. The present value of an ordinary annuity of Re. 1 for 10 years @ 10 percent is 6.1446. Ignore effect of taxation.

You are required to determine:

(a) What would be the desirable choice?

(b) What other important elements are to be considered before the final decision is taken?

Question No.:16 (May 2014 RTP)

Fibroplast Limited, a toy manufacturing company, is considering replacing an older machine which was fully depreciated for tax purposes with a new machine costing ₹ 40,000. The new machine will be depreciated over its eight-year life. It is estimated that the new machine will reduce labour costs by ₹ 8,000 per year. The management believes that there will be no change in other expenses and revenues of the firm due to the machine. The company requires an after-tax return on investment of 10 per cent. Its rate of tax is 35 per cent. The company's income statement for the current year is given for other information.

Income statement for the current year:

,

		₹
Sales		5,00,000
Costs:		
Materials	1,50,000	
Labour	2,00,000	
Factory and Administrative	40,000	
Depreciation	40,000	4,30,000

Net Income before Taxes		70,000
Taxes (0.35)		24,500
Earnings after Taxes		45,500

Should the Fibroplast Limited buy the new machine? You may assume the company follows straight-line method of depreciation and the same is allowed for tax purposes.

Question No.17 – May 2017

X Limited is considering to purchase of new plant worth ₹ 80,00,000. The expected net cash flows after taxes and before depreciation are as follows:

Year	Net Cash Flows (₹)
1	14,00,000
2	14,00,000
3	14,00,000
4	14,00,000
5	14,00,000
6	16,00,000
7	20,00,000
8	30,00,000
9	20,00,000
10	8,00,000

The rate of cost of capital is 10%.

You are required to calculate:

(i) Pay-back period

(ii) Net present value at 10 discount factor

(iii) Profitability index at 10 discount factor

(iv) Internal rate of return with the help of 10% and 15% discount factor

Question No.18 – November 2017 RTP

Rounak Ltd. is thinking to purchase a Lathe machine costing ₹ 220 crore. It has estimated that after a life of 10 years the salvage value of the machine will be ₹ 20 Crore. Rounak Ltd. expects a profit before tax (PBT) of ₹ 30 crore every year for the entire life of the machine. It pays a tax of 35% and charges depreciation on straight line basis. Find out whether Rounak Ltd. should buy the lathe machine if the hurdle rate is 10%.

Question No.19 – May 2016

(ii) A company has purchased a plant for ₹ 10,00,000 with a useful life of 6 years. It expects that ₹ 15,00,000 will be required to replace the plant after 6 years. To ensure that money is available at the time of replacement, the company has created a sinking fund.

You are required to determine the amount to be deposited annually, if the fund earns interest at 8% per annum. Given $CVFA_{0.08,6} = 7.336$.

Question No.: 20 (November 2012 exam – 5 Marks)

X is invested ₹ 2,40,000 at annual rate of interest of 10 percent. What is the amount after 3 years if the compounding is done?

(i) Annually

(ii) Semi-annually.

Question No.21 – May 2017 RTP

Ms. A has purchased a smart phone from a shop for ₹25,000. She has paid ₹5,000 as down payment and the rest will be paid in equated monthly instalments (EMI) for 2 years. The interest rate charged by the bank is 14% p.a.

Required:

(i) Calculate the amount of EMI

(ii) Calculate the total amount of interest payable to the bank.

Question No.22 – November 2016 RTP

Mr. X wish to get her daughter admitted into a medical college after 15 years from now. He will be required total ₹ 25,00,000 to get admission into the college. For this he has identified a fund, which pays interest @ 9% p.a. In this regard he wanted to know the amount to be invested in each of the following situations:

(a) If he decides to make annual payment into the fund at the end of each year;

(b) If he decides to invest a lump sum in the fund at the end of the year;

(c) If he decides to make annual payment into the fund at the beginning of each year.

(FVIF/ $CVF_{(15, 0.09)} = 3.642$, FVIFA/ $CVFA_{(15, 0.09)} = 29.361$, PVIF/ $PVF_{(15, 0.09)} = 0.275$ and PVIFA/ $PVFA_{(15, 0.09)} = 8.061$).

Question No.23 – May 2016 RTP

Calculate if ₹10,000 is invested at interest rate of 12% per annum, what is the amount after 3 years if the compounding of interest is done?

(i) Annually

(ii) Semi-annually

(iii) Quarterly

Question No.24 – November 2015 RTP, November 2017 RTP

You need a sum of ₹ 1,00,000 at the end of 10 years. You know that the best you can do is to deposit some lump sum amount today at 6% rate of interest or to make equal payments into a bank account, starting a year from now on which you can earn 6% interest. Find out

(i) What amount to be deposited today or

(ii) What amount must be deposited annually?

Question No.: 25 (May 2014 RTP)

The earnings of Alpha Limited were ₹ 3 per share in year 1. They increased over a 10 year period to ₹ 4.02. You are required to compute the rate of growth or compound annual rate of growth of the earnings per share.

Question No.: 26 – November 2014 RTP

Alpha Limited has ₹ 10 crores bonds outstanding. Bank deposits earn 10 per cent per annum. The bonds will be redeemed after 15 years for which purpose Alpha Limited wishes to create a sinking fund. How much amount should be deposited to the sinking fund each year so that Alpha Limited would have in the sinking fund ₹ 10 crores to retire its entire issue of bonds?

Question No.:27 – May 2015 RTP

Alpha Limited has borrowed ₹ 1,000 to be repaid in equal installments at the end of each of the next 3 years. The interest rate is 15 per cent. You are required to prepare an amortisation schedule for Alpha Limited.

Question No.28 – November 2017

A firm can make investment in either of the following two projects. The firm anticipates its cost of capital to be 10. The pre-tax cash flows of the projects for five years are as follows:

Year	*0*	*1*	*2*	*3*	*4*	*5*
Project A (₹)	*(2,00,000)*	*35,000*	*80,000*	*90,000*	*75,000*	*20,000*
Project 8 (₹)	*(2,00,000)*	*21,8000*	*10,000*	*10,000*	*4000*	*3000*

Ignore Taxation.

An amount of ₹35000 will be spent on account of sales promotion in year 3 in case of Project A. This has not been taken into account in calculation of pre-tax cash flows.

The discount factors are as under:

Year	0	1	2	3	4	5
PVF (10%)	1	0.91	0.83	0.75	0.68	0.62

You are required to calculate for each project:

(i) The payback period

(ii) The discounted payback period

(iii) Desirability factor

(iv) Net Present Value ***(8 Marks)***

1. Calculation of NPV and Standard Deviation

Shivam Ltd. is considering two mutually exclusive projects A and B. Project A costs Rs. 36,000 and project B Rs. 30,000. You have been given below the net present value probability distribution for each project.

Project A		Project B	
NPV estimate	Probability	NPV estimate	Probability
15,000	0.2	15,000	0.1
12,000	0.3	12,000	0.4
6,000	0.3	6,000	0.4
3,000	0.2	3,000	0.1

- Compute the expected net present values of projects A and B.
- Compute the risk attached to each project i.e. standard deviation of each probability distribution.
- Compute the profitability index of each project.
- Which project do you recommend? State with reasons.

2. Hillier's model – May 2018 RTP

Project X and Project Y are under the evaluation of XY Co. The estimated cash flows and their probabilities are as below:

Project X: Investment (year 0) ₹ 70 lakhs

Probability weights	**0.30**	**0.40**	**0.30**
Years	**₹ lakhs**	**₹ lakhs**	**₹ lakhs**
1	30	50	65
2	30	40	55
3	30	40	45

Project Y: Investment (year 0) ₹ 80 lakhs.

Probability weighted	**Annual cash flows through life**
	₹ lakhs
0.20	40
0.50	45
0.30	50

(i) Which project is better based on NPV, criterion with a discount rate of 10%?

(ii) Using Hiller's Model compute the standard deviation of the present value distribution and analyze the inherent risk of the projects.

3. Hillier's model – November 2016 RTP

Jet Airways is planning to acquire a light commercial aircraft for flying class clients at an investment of Rs.50, 00,000. The expected cash flow after tax for the next three years is as follows:

Year 1		Year 2		Year 3	
CFAT	Probability	CFAT	Probability	CFAT	Probability
14,00,000	0.1	15,00,000	0.1	18,00,000	0.2

18,00,000	0.2	20,00,000	0.3	25,00,000	0.5
25,00,000	0.4	32,00,000	0.4	35,00,000	0.2
40,00,000	0.3	45,00,000	0.2	48,00,000	0.1

The Company wishes to take into consideration all possible risk factor relating to an airline operations. The company wants to know:

1. The expected NPV assuming with 6 % risk free rate of interest.
2. The possible deviation in the expected value
   a) If the cash flows are independent
   b) If the cash flows are dependent

4. Best-case and worst-case NPV – November 2015 RTP

XY Ltd. has under its consideration a project with an initial investment of ₹ 1,00,000. Three probable cash inflow scenarios with their probabilities of occurrence have been estimated as below:

Annual cash inflow (₹)	20,000	30,000	40,000
Probability	0.1	0.7	0.2

The project life is 5 years and the desired rate of return is 20%. The estimated terminal values for the project assets under the three probability alternatives, respectively, are ₹ 0, 20,000 and 30,000.

You are required to:

(i) Find the probable NPV;

(ii) Find the worst-case NPV and the best-case NPV; and

(iii) State the probability occurrence of the worst case, if the cash flows are perfectly positively correlated over time.

5. Risk Adjusted Discount Rate – May 2016

ABC Limited is evaluating 3 projects, P-l, P-ll, P-lll. Following information is available in respect of these projects:

Particulars	P-I	P-II	P-III
Cost	Rs. 15,00,000	Rs. 11,00,000	Rs. 19,00,000
Inflows-Year1	Rs. 6,00,000	Rs. 6,00,000	Rs. 4,00,000
Year 2	Rs. 6,00,000	Rs. 4,00,000	Rs. 6,00,000
Year 3	Rs. 6,00,000	Rs. 5,00,000	Rs. 8,00,000
Year 4	Rs. 6,00,000	Rs. 2,00,000	Rs. 12,00,000
Risk Index	1.80	1.00	0.60

Minimum required rate of return of the firm is 15% and applicable tax rate is 40%. The risk free interest rate is 10%.

Required:

(i) Find out the risk-adjusted discount rate (RADR) for these projects.

(ii) Which project is the best?

6. Certainty equivalent approach:

Oil country tubular Ltd. is considering an investment in one of the two mutually exclusive proposals – Projects X and Y, which require cash outlays of Rs.3, 40,000 and Rs.3, 30,000

respectively. The certainty-equivalent (C.E.) approach is used in incorporating risk in capital budgeting decisions. The current yield on government bond is 8% and this be used as the risk free rate. The expected net cash flows and their certainty-equivalents are as follows:

	Project X		Project Y	
Year-end	Cash flow	C.E.F	Cash flow	C.E.F
1	180000	0.8	180000	0.9
2	200000	0.7	200000	0.8
3	200000	0.5	200000	0.7

Required:

(i) Which project should be accepted?

(ii) If risk adjusted discount rate method is used, which project would be analyzed with a higher rate?

7. Sensitivity analysis – November 2013

Easygoing Company Limited is considering a new project with initial investment, for a product "Survival". It is estimated that IRR of the project is 16% having an estimated life of 5 years. Financial Manager has studied the project with sensitivity analysis and informed that annual fixed cost sensitivity is 7.8416%, whereas cost of capital (discount rate) sensitivity is 60%.

Other information available are:

- Profit Volume Ratio (P/V) is 70%,
- Variable cost Rs. 60/- per unit
- Annual Cash Flow Rs. 57,500/-

Ignore Depreciation on initial investment and impact of taxation.

Calculate

- Initial Investment of the Project
- Net Present value of the Project
- Annual Fixed Cost
- Estimated annual unit of sales
- Break Even Units

8. Sensitivity analysis – May 2018 RTP

Indian Newsprint Ltd. (INL) a leading manufacturer of newsprint in the country, is planning to start manufacturing card board unit. Planning & Strategy division of the company has placed before the board of directors the "Dental Project Repot" of the card board unit. The report inter alia, includes the following cash flow:

(Fig. in ₹ lacks)

Year	*Cost of the plant*	*Recurring cost*	*Savings*
0	*1000*		
1		*400*	*1200*
2		*500*	*1400*

The cost of the capital is 9%.

You are required to measure the sensitivity of the project to changes in the levels of plant value, recurring cost and savings (considering each factor at a time) such that the NPV becomes zero. The present value factor at 9% are given below:

Year	PVF 9%
0	1
1	0.917
2	0.842

Advise the board of directors which factor is the most sensitive to affect the acceptability of the project? ***(8 Marks)***

9. Decision tree (May 2016 RTP)

L&R Limited wishes to develop new virus-cleaner software. The cost of the pilot project would be Rs. 2,40,000. Presently, the chances of the product being successfully launched on a commercial scale are rated at 50%. In case it does succeed L&R can further invest a sum of Rs. 20 lacs to market the product. Such an effort can generate perpetually, an annual net after tax cash income of Rs. 4 lacs. Even if the commercial launch fails, they can make an investment of a smaller amount of Rs. 12 lacs with the hope of gaining perpetually a sum of Rs. 1 lac. Evaluate the proposal, adopting decision tree approach. The applicable discount rate is 10%.

10. Sensitivity analysis (May 2018 RTP)

From the following details relating to a project, analyse the sensitivity of the project to changes in initial project cost, annual cash inflow and cost of capital:

Initial Project Cost (₹)	1,20,000
Annual Cash Inflow (₹)	45,000
Project Life (Years)	4
Cost of Capital	10%

Required:

EXAMINE which of the three factors, the project is most sensitive? (Use annuity factors: for 10% 3.169 and 11% 3.103).

CHAPTER 9: LEASE FINANCING

1. Fixing lease rental (May 2012 RTP)

Armada Leasing Company is considering a proposal to lease out a school bus. The bus can be purchased for Rs. 4, 00,000 and, in turn, be leased out at Rs. 1, 50,000 per year for 4 years with payments occurring at the end of each year:

(i) Estimate the internal rate of return for the company assuming tax ignored

(ii) What should be the yearly lease payment charged by the company in order to earn 20% annual compound rate of return before expenses and taxes in the following scenarios:

a) Equated lease rentals
b) Stepped up lease rental (annual increase of 10 percent)
c) Ballooned (annual payment of Rs.1, 00,000 for year 1 to 2 & rent of year 4 will have an increase of 10 percent)
d) Deferred (2 year deferment period)

(iii) Calculate the annual lease rent to be charged so as to amount to 20% after tax annual compound rate of return, based on the following assumptions:

(a) Tax rate 40%,
(b) Straight line depreciation
(c) annual expenses of Rs. 50,000 and
(d) resale value of Rs. 1, 00,000 after the term.

2. Fixing break-even lease rental – May 2016 RTP

With the following data available compute the Break Even Lease Rental (BELR) that ABC Ltd. should charge from lessee.

Cost of Machine	₹ 150 Lakh
Expected Useful Life	5 year
Salvage Value of Machine at the end of 5 years	₹ 10 lakh
Rate of Depreciation (WDV)	25%
K_o	14%
Applicable Tax Rate	35%

Machine will constitute a separate block for depreciation purpose.

3. Calculation of lease rental – November 2017 RTP

ABC Computers Ltd. is desiring to install a "Software Developing Unit" costing ₹ 60 lacs. In order to leverage its tax position, it has requested the vendor to quote for a three year lease with rentals payable at the end of each year but in a diminishing manner such that they are in the ratio of 3:2:1. Depreciation can be assumed to be on WDV basis @25% and the vendor's marginal tax rate is 35%. The target rate of return for the vendor is 10%. You are required to find out the year wise rental the vendor is required to quote to ABC Computer Limited. ***(8 Marks)***

4. Fixing of break-even rental – May 2014 RTP

A Company is planning to acquire a machine costing Rs. 5, 00,000. Effective life of the machine is 5 years. The Company is considering two options. One is to purchase the machine by lease and the other is to borrow Rs.5,00,000 from its bankers at 10% interest p.a. The Principal amount of loan will be paid in 5 equal instalments to be paid annually. The

machine will be sold at Rs. 50,000 at the end of 5th year. Following further information is given:

- Principal, interest, lease rentals are payable on the last day of each year.
- The machine will be fully depreciated over its effective life.
- Tax rate is 30% and after tax Cost of Capital is 8%.

Compute

- Lease rentals payable which will make the firm indifferent to the loan option.

5. Choice of lease – May 2017 RTP

P Ltd. has decided to acquire a machine costing Rs. 50 lakhs through leasing. Quotations from 2 leasing companies have been obtained which are summarized below:

	Quote A	Quote B
Lease term	3 years	4 years
Initial lease rent (Rs. Lakhs)	5.00	1.00
Annual lease rent (payable in arrears) [Rs. Lakhs]	21.06	19.66

P Ltd. evaluates investment proposals at 10% cost of capital and its effective tax rate is 30%. Terminal payment in both cases is negligible and may be ignored. Make calculations and show which quote is beneficial to P Ltd. Present value factors at 10% rate for years 1-4 are respectively 0.91, 0.83, 0.75 and 0.68. Calculations may be rounded off to 2 decimals in lakhs.

6. Lease Versus Buy – Discounting rate same as after tax cost of debt – November 2013

ABC Ltd. is contemplating have an access to a machine for a period of 5 years. The company can have use of the machine for the stipulated period through leasing arrangement or the requisite amount can be borrowed to buy the machine. In case of leasing, the company received a proposal to pay annual end of year rent of ₹ 2.4 lakhs for a period of 5 years.

In case of purchase (which costs ₹10,00,000/-) the company would have a 12%, 5 years loan to be paid in equated installments, each installment becoming due to the beginning of each years. It is estimated that the machine can be sold for ₹2,00,000/- at the end of 5th year. The company uses straight line method of depreciation. Corporate tax rate is 30%. Post tax cost of capital of ABC Ltd. is 10%.

You are required to advice

(i) Whether the machine should be bought or taken on lease.

(ii) Analyse the financial viability from the point of view of the lessor assuming 12% post tax cost of capital.

	PV of ₹ 1@10% for 5 years	PV of ₹ 1 @ 12% for 5 years
1	.909	.893
2	.826	.797
3	.751	.712
4	.683	.636
5	.621	.567

(10 Marks)

7. Lease versus buy – November 2012 RTP

ABC Company has decided to acquire a ₹ 5,00,000 pulp control device that has a useful life of ten years. A subsidy of ₹ 50,000 is available at the time the device is acquired and placed into service. The device would be depreciated on straight-line basis and no salvage value is expected. The company is in the 50% tax bracket. If the acquisition is financed with a lease, lease payments of ₹ 55,000 would be required at the beginning of each year. The company can also borrow at 10% repayable in equal instalments. Debt payments would be due at the beginning of each year:

(i) What is the present value of cash outflow for each of these financing alternatives, using the after-tax cost of debt?

(ii) Which of the two alternatives is preferable?

8. Lease versus buy – May 2017

SD Ltd. wants to purchase a machine worth ₹ 25,00,000. It has two options:

Either (i) to acquire the Asset by taking a Bank Loan @ 12% p.a. repayable in 5 yearly instalments of ₹ 5,00,000 each plus interest or, (ii) to lease the Asset at yearly rental of ₹ 7,00,000 for five years.

In both the cases, the instalment is payable at the end of the year.

The Company discounts its Cash Flows @ 14% (after tax).

Depreciation is to be taken at 20% on Written Down Value method (WDV).

The Company's tax rate is 34%.

You are required to advise which of the financing options is to be exercised and reason thereof.

Year	*1*	*2*	*3*	*4*	*5*	
Present Value Factor (PVF) 14%	*0.877*	*0.769*	*0.675*	*0.592*	*0.519*	*(Total 3.432)*

9. Lease versus buy – November 2013 RTP

Sundaram Ltd. discounts its cash flows at 16% and is in the tax bracket of 35%. For the acquisition of a machinery worth ₹10,00,000, it has two options – either to acquire the asset by taking a bank loan @ 15% p.a. repayable in 5 yearly installments of ₹2,00,000 each plus interest or to lease the asset at yearly rentals of ₹3,34,000 for five (5) years. In both the cases, the instalment is payable at the end of the year. Depreciation is to be applied at the rate of 15% using 'written down value' (WDV) method. You are required to advise which of the financing options is to be exercised and why.

Year	1	2	3	4	5
P.V factor @16%	0.862	0.743	0.641	0.552	0.476

10. Lease versus buy – November 2015

The Finance manager of ABC Corporation is analyzing firms policy regarding computers which are now being leased on yearly basis on rental amounting to ₹ 1,00,000 per year. The computers can be bought for ₹ 5,00,000. The purchase would be financed by 16% and the loan is repayable in 4 equal annual installments.

On account of rapid technological progress in the computer industry, it is suggested that a 4-year economic life should be used instead of a 10-year physical life. It is estimated that the computers would be sold for ₹ 2,00,000 at the end of 4 years.

The company uses the straight line method of depreciation. Corporate tax rate is 35%.

(i) Whether the equipment be bought or be taken on lease?

(ii) Analyze the financial viability from the point of view of the lessor, assuming 14% cost of capital.

(iii) Determine the minimum lease rent at which lessor would break even. (8 Marks)

11. Lease versus Buy – May 2018 RTP

M/s ABC Ltd. is to acquire a personal computer with modem and a printer. Its price is ₹ 60,000. ABC Ltd. can borrow ₹ 60,000 from a commercial bank at 12% interest per annum to finance the purchase. The principal sum is to be repaid in 5 equal year-end instalments.

ABC Ltd. can also have the computer on lease for 5 years.

The firm seeks your advice to know the maximum lease rent payable at each year end. Consider the following additional information:

(i) Interest on bank loan is payable at each year end.

(ii) The full cost of the computer will be written off over the effective life of computer on a straight-line basis. This is allowed for tax purposes.

(iii) At the end of year 5, the computer may be sold for ₹ 1,500 through a second -hand dealer, who will charge 8% commission on the sale proceeds.

(iv) The company's effective tax rate is 30%.

(v) The cost of capital is 11%.

Suggest the maximum annual lease rental for ABC Ltd. :

PV Factor at 11%

Year	PVF
1	0.901
2	0.812
3	0.731
4	0.659
5	0.593

CHAPTER 10: DIVIDEND DECISIONS

Question No.1 (May 2017 RTP, November 2013 RTP)

X Ltd., has 8 lakhs equity shares outstanding at the beginning of the year. The current market price per share is ₹ 120. The Board of Directors of the company is contemplating ₹ 6.4 per share as dividend. The rate of capitalization, appropriate to the risk-class to which the company belongs, is 9.6%:

(i) Based on M-M Approach, calculate the market price of the share of the company, when the dividend is – (a) declared; and (b) not declared.

(ii) How many new shares are to be issued by the company, if the company desires to fund an investment budget of ₹ 3.20 crores by the end of the year assuming net income for the year will be ₹ 1.60 crores?

Question No.2 (May 2016 RTP, November 2014 RTP, May 2013 RTP)

The following information pertains to M/s XY Ltd.

Earnings of the Company	₹ 5,00,000
Dividend Payout ratio	60%
No. of shares outstanding	1,00,000
Equity capitalization rate	12%
Rate of return on investment	15%

(i) What would be the market value per share as per Walter's model?

(ii) What is the optimum dividend payout ratio according to Walter's model and the market value of Company's share at that payout ratio?

Question No.3 (May 2014 RTP)

Mr. A is contemplating purchase of 1,000 equity shares of a Company. His expectation of return is 10% before tax by way of dividend with an annual growth of 5%. The Company's last dividend was ₹ 2 per share. Even as he is contemplating, Mr. A suddenly finds, due to a Budget announcement Dividends have been exempted from Tax in the hands of the recipients. But the imposition of Dividend Distribution Tax on the Company is likely to lead to a fall in dividend of 20 paise per share. A's marginal tax rate is 30%.

Required:

Calculate what should be Mr. A's estimates of the price per share before and after the Budget announcement?

Question No.4 (November 2012 RTP)

The following information is supplied to you:

	₹
Total Earnings	2,00,000
No. of equity shares (of ₹100 each)	20,000
Dividend paid	1,50,000
Price/Earning ratio	12.5

(i) Ascertain whether the company is the following an optimal dividend policy.

(ii) Find out what should be the P/E ratio at which the dividend policy will have no effect on the value of the share.

(iii) Will your decision change, if the P/E ratio is 8 instead of 12.5?

Question No.5 (May 2015)

The following information is collected from the annual reports of J Ltd:

Profit before tax	*₹ 2.50 crore*
Tax rate	*40 percent*
Retention ratio	*40 percent*
Number of outstanding shares	*50,00,000*
Equity capitalization rate	*12 percent*
Rate of return on investment	*15 percent*

What should be the market price per share according to Gordon's model of dividend policy?

Question No.6 (November 2014)

Goldilocks Ltd. was started a year back with equity capital of ₹ 40 lakhs. The other details are as under:

Earnings of the company	*₹ 4,00,000*
Price Earnings ratio	*12.5*
Dividend paid	*₹ 3,20,000*
Number of Shares	*40,000*

Find the current market price of the share. Use Walter's Model.

Find whether the company's D/P ratio is optimal, use Walter's formula. *(5 Marks)*

Question No.7 (November 2014)

Buenos Aires Limited has 10 lakh equity shares outstanding at the beginning of the year 2013. The current market price per share is ₹ 150. The current market price per share is ₹ 150. The company is contemplating a dividend of ₹ 9 per share. The rate of capitalization, appropriate to its risk class, is 10%.

(i) Based on MM approach, calculate the market price of the share of the company when:

(1) Dividend is declared

(2) Dividend is not declared

(ii) How many new shares are to be issued by the company, under both the above options, if the Company is planning to invest ₹ 500 lakhs assuming a net income of ₹ 200 lakhs by the end of the year? (8 Marks)

Question No.8 (May 2013)

ABC Limited has a capital of ₹ 10 lakhs in equity shares of ₹ 100 each. The shares are currently quoted at par. The company proposes to declare a dividend of ₹ 15 per share at the end of the current financial year. The capitalisation rate for the risk class of which the company belongs is 10%.

What will be the market price of share at the end of the year, if

(i) a dividend is declared ?

(ii) a dividend is not declared ?

(iii) assuming that the company pays the dividend and has net profits of ₹ 6,00,000 and makes new investment of ₹ 12,00,000 during the period, how many new shares should be issued? Use the MM model. (6 Marks)

Question No.9 (November 2012)

X Ltd. earns ₹ 6 per share having a capitalization rate of 10 percent and has a return on investment of 20%. According to Walter's model, what should be the price of the share at 25% dividend payout?

Question No.10 (May 2012)

In December, 2011 AB Co.'s share was sold for ₹ 146 per share. A long term earnings growth rate of 7.5% is anticipated. AB Co. is expected to pay dividend of ₹ 3.36 per share.

(i) What rate of return an investor can expect to earn assumng that dividends are expected to grow along with earnings at 7.5% per year in perpetuity?

(ii) It is expected that AB Co. will earn about 10% on book Equity and shall retain 60% of earnings. In this case, whether, there would be any change in growth rate and cost of Equity? (6 Marks)

Question No.11 (May 2012)

X Ltd has an internal rate of return @ 20%. It has declared dividend @ 18% on its equity shares, having face value of ₹ 10 each. The payout ratio is 36% and Price Earning Ratio is 7.25. Find the cost of equity according to Walter's Model and hence determine the limiting value of its shares in case the payout ratio is varied as per the said model.

Question No.12 (May 2017)

You are requested to find out the approximate dividend payment ratio as to have the Share Price at ₹ 56 by using Walter Model, based on following information available for a Company.

	Amount ₹
Net Profit	*50 lakhs*
Outstanding 10% Preference Shares	*80 lakhs*
Number of Equity Shares	*5 lakhs*
Return on Investment	*15%*
Cost of Capital (after Tax) (K_e)	*12%*

(5 Marks)

Question No.13 (May 2018 RTP)

ABC Ltd. has 50,000 outstanding shares. The current market price per share is ₹ 100 each. It hopes to make a net income of ₹ 5,00,000 at the end of current year. The Company's Board is considering a dividend of ₹ 5 per share at the end of current financial year. The company needs to raise ₹ 10,00,000 for an approved investment expenditure. The company belongs to a risk class for which the capitalization rate is 10%. Show, how the M-M approach affects the value of firm if the dividends are paid or not paid.

Question No.1 – November 2016

Following information relates to ABC company for the year 2016:

(i) Projected sales: *(₹ in lakhs)*

Month	August	September	October	November	December
Sale	35	40	40	45	46

(ii) Gross profit margin will be 20% on sale.

(iii) 10% of projected sale will be cash sale. Out of credit sale of each month, 50% will be collected in the next month and the balance will be collected during the second month following the month of sale.

(iv) Creditors will be paid in the first month following credit purchase. There will be credit purchase only.

(v) Wages and salaries will be paid on the first day of the next month. The amount will be ₹ 3 lakhs each month.

(vi) Interim dividend of ₹ 2 lakhs will be paid in December 2016.

(vii) Machinery costing ₹ 10 lakhs will be purchased in September 2016. Repayment by instalment of ₹ 50,000 p.m. will start from October 2016.

(viii) Administrative expenses of ₹ 1,00,000 per month will be paid in the month of their incurrence.

(ix) Assume no minimum cash balance is required. Opening cash balance as on 01-10-2016 is estimated at ₹ 10 lakhs.

You are required to prepare the monthly cash budget for the 3 month period (October 2016 to December 2016). ***(8 Marks)***

Question No.2 – May 2016

A trader whose current sales are ₹ 4,20,000 per annum and an average collection period of 30 days, wants to pursue a more liberal policy to improve sales. A study made by a management consultant reveals the following information:

Credit Policy	**Increase in Collection Period**	**Increase in Sales**	**Present default anticipated**
I	10 days	₹ 21,000	1.5%
II	30 days	₹52,500	3%
III	45 days	₹63,000	4%

The selling price per unit is ₹ 3. Average cost per unit is ₹2.25 and variable cost per unit is ₹ 2. The current bad-debts loss is 1%. Required return on additional investment is 20%. Assume a 360 days year.

Which of the above policies would you recommend for adoption? *(8 Marks)*

Question No.3 – November 2015

A firm has a total sales of ₹ 200 lakhs of which 80% is on credit. It is offering credit terms of 2/40, net 120. Of the total, 50% of customers avail of discount and the balance pay in 120 days. Past experience indicates that bad debt losses are around 1% of credit sales. The firm spends about ₹ 2,40,000 per annum to administer its credit sales. These are avoidable as a factor is prepared to buy the firm's receivables. He will charge 2% commission. He will pay advance against receivables to the firm at an interest rate of 18% after withholding 10% as reserve.

(i) What is the effective cost of factoring? Consider year as 360 days.

(ii) If bank finance for working capital is available at 14% interest, should the firm avail of factoring service? (8 Marks)

Question No.: 4 (May 2012 exam – 8 Marks)

A company is presently having credit sales of ₹ 12 lakh. The existing credit terms are 1/10, net 45 days and average collection period is 30 days. The current bad debts loss is 1.5%. In order to accelerate the collection process further as also to increase sales, the company is contemplating liberalization of its existing credit terms to 2/10, net 45 days. It is expected that sales are likely to increase by 1/3 of existing sales, bad debts increase to 2% of sales and average collection period to decline to 20 days. The contribution to sales ratio of the company is 22% and opportunity cost of investment in receivables is 15 percent (pre-tax). 50 per cent and 80 percent of customers in terms of sales revenue are expected to avail cash discount under existing and liberalization scheme respectively. The tax rate is 30%.

Should the company change its credit terms? (Assume 360 days in a year).

Question No.: 5 (May 2012 exam – 8 Marks)

STN Ltd. is a readymade garment manufacturing company. Its production cycle indicates that materials are introduced in the beginning of the production phase; wages and overhead accrue evenly throughout the period of cycle. The following figures for the 12 months ending 31st December 2011 are given.

Production of shirts	*54,000 units*
Selling price per unit	*₹ 200*
Duration of the production cycle	*1 month*
Raw material inventory held	*2 month's consumption*
Finished goods stock held for	*1 month*

Credit allowed to debtors is 1.5 months and credit allowed by creditors is 1 month.

Wages are paid in the next month following the month of accrual.

In the work-in-progress 50% of wages and overheads are supposed to be conversion costs.

The ratios of cost to sales price are-raw materials 60% direct wages 10% and overheads 20%. Cash is to be held to the extent of 40% of current liabilities and safety margin of 15% will be maintained.

Calculate amount of working capital required for the company on a cash cost basis.

Question No.: 6 (May 2013 exam – 8 Marks)

The following information is provided by the DPS Limited for the year ending 31st March, 2013.

Raw material storage period	*55 days*
Work-in-progress conversion period	*18 days*
Finished Goods storage period	*22 days*
Debt collection period	*45 days*
Creditors' payment period	*60 days*
Annual Operating cost	*₹ 21,00,000*
(Including depreciation of ₹ 2,10,000)	

[1 year = 360 days]

You are required to calculate:

(i) Operating Cycle period.

(ii) Number of Operating Cycle in a year.

(iii) Amount of working capital required for the company on a cash cost basis.

(iv) The company is a market leader in its product, there is virtually no competitor in the market. Based on a market research it is planning to discontinue sales on credit and deliver products based on pre-payments. Thereby, it can reduce its working capital requirement substantially.

What would be the reduction in working capital requirement due to such decision?

Question No.: 7 (November 2013 exam – 8 Marks)

PTX Limited is considering a change in its present credit policy. Currently it is evaluating two policies. The company is required to give a return of 20% on the investment in new accounts receivables. The company's variable costs are 70% of the selling price. Information regarding present and proposed policies is as follows:

	Present Policy	Policy Option 1	Policy Option 2
Annual Credit Sales (₹)	*30,00,000*	*42,00,000*	*45,00,000*
Debtors turnover ratio	*4 times*	*3 times*	*2.4 times*
Loss due to bad debts	*3% of sales*	*5% of sales*	*6% of sales*

Note: *Return on investment in new accounts receivable is based on cost of investment in debtors.*

Which option would you recommend? *(8 Marks)*

Question No.: 8 (May 2014 exam – 8 Marks)

Black Limited has furnished the following cost sheet:

	₹ / Per Unit
Raw Material	98
Direct Labour	53
Factory Overhead (Includes depreciation of ₹ 15 per unit at budgeted level of activity)	88
Total Cost	239
Profit	43
Selling Price	282

Additional Information:

(i)	Average raw material in stock	3 weeks
(ii)	Average work-in-progress (% of completion with respect to Material- 75% Labour & Overhead - 70%)	2 weeks
(iii)	Finished goods in stock	4 weeks
(iv)	Credit allowed to debtors	2½ weeks
(v)	Credit allowed by creditors	3½ weeks
(vi)	Time lag in payments of labour	2 weeks
(vii)	Time lag in payments of factory overheads	1½ weeks
(viii)	Company sells, 25% of the output against cash	
(ix)	Cash in hand and bank is desired to be maintained	₹ 2,25,000
(x)	Provision for contingencies is required @ 4% of working capital requirement including that provision.	

You may assume that production is carried on evenly throughout the year and labour and factory overheads accrue similarly.

You are required to prepare a statement showing estimate of working capital needed to finance a budgeted activity level of 1,04,000 units of production. Finished stock, debtors and overhead are taken at cash cost. *(8 Marks)*

Question No.:9 – November 2014 exam

PQR Ltd. having an annual sales of ₹ 30 lakhs, is re-considering its present collection policy. At present, the average collection period is 50 days and the bad debt losses are 5% of sales. The company is incurring an expenditure of ₹ 30,000 on account of collection of receivables.

The alternative policies are as under:

	Alternative I	Alternative II
Average Collection Period	40 days	30 days
Bad Debt Losses	4% of sales	3% of sales
Collection Expenses	₹ 60,000	₹ 95,000

Evaluate the alternatives on the basis of incremental approach and state which alternative is more beneficial. *(8 Marks)*

Question No.: 10 – May 2015 exam

A new customer has approached a firm to establish new business connection. The customer require 1.5 month of credit. If the proposal is accepted, the sales of the firm will go up by ₹ 2,40,000 per annum. The new customer is being considered as a member of 10% risk of non-payment group.

The cost of sales amounts to 80% of sales. The tax rate is 30% and the desired rate of return is 40% (after tax).

Should the firm accept the offer? Give your opinion on the basis of calculations.

Question No.11 (May 2017 RTP, November 2017 RTP)

The following information has been extracted from the records of a company:

Product cost sheet	₹ per unit
Raw materials	45
Direct labour	20
Overheads	40
Total	105
Profit	15
Selling price	120

- Raw materials are in stock on an average of two months.
- The materials are in process on an average for 4 weeks. The degree of completion is 50%.
- Finished goods stock on an average is for one month.
- Time lag in payment of wages and overheads is 1½ weeks.
- Time lag in receipt of proceeds from debtors is 2 months.
- Credit allowed by suppliers is one month.
- 20% of the output is sold against cash.
- The company expects to keep a cash balance of ₹1,00,000.
- Take 52 weeks per annum.

The company is poised to manufacture and sell 1,44,000 units in the year.

You are required to prepare a statement showing the Working Capital requirements of the company.

Question No.12 – May 2017 RTP

A Ltd. has a total sale of ₹ 3.2 crores and its average collection period is 90 days. The past experience indicates that bad-debt losses are 1.5% on sales. The expenditure

incurred by the firm in administering its receivable collection efforts are ₹5,00,000. A factor is prepared to buy the firm's receivables by charging 2% commission. The factor will pay advance on receivables to the firm at an interest rate of 18% p.a. after withholding 10% as reserve.

Calculate the effective cost of factoring to the Firm.

Question No.13 – November 2015 RTP

Following information is forecasted by the Puja Limited for the year ending 31st March, 2015:

	Balance as at 1st April, 2014 (₹)	Balance as at 31st March, 2015 (₹)
Raw Material	45,000	65,356
Work-in-progress	35,000	51,300
Finished goods	60,181	70,175
Debtors	1,12,123	1,35,000
Creditors	50,079	70,469
Annual purchases of raw material (all credit)		4,00,000
Annual cost of production		7,50,000
Annual cost of goods sold		9,15,000
Annual operating cost		9,50,000
Annual sales (all credit)		11,00,000

You may take one year as equal to 365 days.

You are required to calculate:

(i) Net operating cycle period.

(ii) Number of operating cycles in the year.

(iii) Amount of working capital requirement using operating cycles.

Question No.: 14 (May 2013 RTP)

Sonachandi Limited has present annual sales of 10,000 units at ₹ 300 per unit. The variable cost is ₹ 200 per unit and the fixed costs amount to ₹ 3,00,000 per annum. The present credit period allowed by the company is 1 month. The company is considering a proposal to increase the credit period to 2 months and 3 months and has made the following estimates:

	Existing	*Proposed*	
Credit Policy	1 month	2 months	3 months
Increase in sales	-	15%	30%
% of Bad Debts	1%	3%	5%

There will be increase in fixed cost by ₹ 50,000 on account of increase of sales beyond 25% of present level. The company plans on a pre-tax return of 20% on investment in receivables. You are required to calculate the most paying credit policy for the company.

Question No.: 15 (November 2013 RTP)

Alpha Limited sells its products on a gross profit of 20 percent on sales. The following information is extracted from its annual accounts for the current year ended March 31.

Sales at 3 months' credit	40,00,000
Raw Material	12,00,000
Wages paid-average time lag 15 days	9,60,000
Manufacturing expenses paid-one month in arrears	12,00,000
Administrative expenses paid-one month in arrears	4,80,000
Sales promotion expenses-payable half-yearly in advance	2,00,000

The company enjoys one month's credit from the suppliers of raw materials and maintains 2 months' stock of raw materials and one and a half month's stock of finished goods. The cash balance is maintained at ₹1,00,000 as a precautionary measure. Assuming a 10 percent margin, you are required to estimate the working capital requirements of Alpha Limited.

Question No.: 16 (November 2013 RTP)

Delta Limited currently makes all sales on credit and offers no cash discounts. It is considering a 2 percent discount for payments within 10 days (terms offered '2/10 net 30'). The firm's current average collection period is 30 days, sales are 10,000 units, selling price is ₹ 100 per unit and variable cost per unit is ₹ 50; its existing total fixed costs are ₹ 2,00,000 which are likely to remain unchanged with production/ sales volume of 12,000 units.

It is expected that the offer of cash discount will result in an increase in sales to 11,000 units and the average collection period will be 20 days as a result. However, due to increased sales, increased working capital required will be for ₹ 20,000 (without taking into account the effect of debtors).

Assuming that 50 percent of the total sales will be on cash discount and 20 percent is the required return on investment, should the proposed discount be offered?

Question No.:17 (May 2014 RTP)

The trade terms "2/15, net 30" indicate that a 2 percent discount is offered if payment is made within 30 days. Comment.

Question No.:18 (May 2014 RTP)

The present credit terms of Beta Limited are 1/10 net 30. Its annual sales are ₹ 80 lakhs, its average collection period is 20 days. Its variable costs and average total costs to sales are 0.85 and 0.95 respectively and its cost of capital is 10 per cent. The proportion of sales on which customers currently take discount is 0.5. Beta Limited is considering relaxing its discount terms to 2/10 net 30. Such relaxation is expected to increase sales by ₹ 5 lakhs, reduce the average collection period to 14 days and increase the proportion of discount sales to 0.8. What will be the effect of relaxing the discount policy on Beta Limited's profit? Take year as 360 days.

Question No.: 19 (November 2014 RTP)

Beta Limited faces an interest rate of 0.5 per cent per day and its broker charges ₹ 75 for each transaction in short-term securities. The managing director has stated that the minimum cash balance that is acceptable is ₹ 2,000 and that the variance of cash flows on a daily basis is ₹ 16,000. You are required to determine the maximum level of cash Beta Limited should hold and at what point should it start to purchase or sell securities?

Question No.: 20 (November 2014 RTP)

Lola Limited has a present annual sales turnover of ₹ 40,00,000. The unit sale price is ₹ 20. The variable cost are ₹ 12 per unit and fixed costs amount to ₹ 5,00,000 per annum. The present credit period of one month is proposed to be extended to either 2 or 3 months whichever will be more profitable. The following additional information is available:

	On the basis of Credit Period of		
	1 month	*2 months*	*3 months*
Increase in sales by	–	10%	30%

The company requires a pre-tax return on investment at 20%.

Evaluate the profitability of the proposals and recommended best credit period for Lola Limited.

Question No.21 – May 2017

VK Co. Ltd. has total cash disbursement amounting ₹ 22,50,000 in the year 2017 and maintains a separate account for cash disbursements. Company has an administrative and transaction cost on transferring cash to disbursement account ₹ 15 per transfer. The yield rate on marketable securities is 12% per annum.

You are required to determine optimum cash balance according to William J Baumol Model. (5 Marks)

Question No.22 – May 2017

PQ Limited wants to expand its business and has applied for a loan from a commercial bank for its growing financial requirements.

The records of the company reveals that the company sells goods in the domestic market at a gross profit of 25% not counting depreciation as part of the cost of goods sold.

The following additional information is also available for you:

	₹
Sales-Home at one month's credit	1,20,00,000
Sales-Export at three months' credit (sales price 10% below home price)	54,00,000
Material used (supplied extends two months' credit)	45,00,000
Wages paid ½ month in arrear	36,00,000
Manufacturing Expenses (Cash) paid (one month in arrear)	54,00,000
Adm. Expenses paid one month in arrear	12,00,000
Income tax payable in four installments of which one falls in the next financial year	15,00,000

The company keeps one month's stock of each of raw materials and finished goods and believes in keeping ₹ 10,00,000 available to it including the overdraft limit of ₹ 5,00,000 not yet utilized by the company. Assumes a 15% margin for contingencies. Ignore the work-in-progress.

You are required to ascertain the requirement of the working capital of the company.

Question No.23 – November 2017

The current credit sales of a firm is ₹ 15 lakhs and the firm still has an unutilized capacity. In order to boost its sales, the firm is willing to relax its credit policy.

The firm proposes a new credit policy of 2/10 net 60 days as against the present policy of 1/10 net 45 days. The firm expects an increase in the sales by 12%. However, it is also expected that bad debts will go upto 2% of sales from 1.5%.

The contribution to sales ratio of the firm is 28%. The firm's tax rate is 30% and firm requires an after tax return of 15% on its investment.

Should the firm change the credit policy? ***(8 Marks)***

Question No.24 – May 2018 RTP

A Ltd. is in the manufacturing business and it acquires raw material from X Ltd. on a regular basis. As per the terms of agreement the payment must be made within 40 days of purchase. However, A Ltd. has a choice of paying ₹ 98.50 per ₹ 100 it owes to X Ltd. on or before 10th day of purchase. Examine Whether A Ltd. should accept the offer of discount assuming average billing of A Ltd. with X Ltd. is ₹ 10,00,000 and an alternative investment yield a return of 15% and company pays the invoice.