

Q1 (a) AK Limited produces and sells a single product. Sales budget for calendar year 2012 by Quarters is as under:

Quarter	1	2	3	4
No of Units Sold	18,000	22,000	25,000	27,000

The year is expected to open with an inventory of 6000 units of finished products. And close with 8000 units. Production is customarily scheduled to provide for 70% of the current Quarter's sales demand plus 30% of the following quarter demand. The budgeted selling price per unit is Rs 40. The Standard cost details for one unit of product are as follows:

Variable Cost Rs 34.50 per unit.

Fixed Overheads 2 Hours 30 Minutes @ Rs 2 per Hour based on a budgeted production volume of 110000 direct labour hours for the year. Fixed Overheads are evenly distributed throughout the year.

You are required to:

- Prepare Quarterly Production Budget for the Year.
- In which Quarter of the years, Company expected to achieve break even point.

Solution (a)

Production Budget				
Opening Stock (a)	6000 Units (Given)	7200 units	8100 units	8700 units
Production				
Current Quarter Sales 70%	18,000 *70% =12600 units	22,000*70% =15400 units	25,000*70% =17500 units	26300 (B/f) Sales + Closing -Opening
Next Quarter Sales 30%	22,000 *30% =6600 units	25,000*30%= 7500 units	27,000*30%= 8100 units	
Total Production (b)	19200 units	22900 Units	25600 units	
No of Units Sold (Sales) (c)	18,000	22,000	25,000	27,000
Closing Stock Opening + production-sales (a+b-c)	7200 units	8100 units	8700 units	8000 units (Given)

Selling Price Per Unit (SPPU) Rs 40.00

Less

Variable Cost Per Unit (VCRU) Rs 34.50

Contribution Per Unit (CPU) Rs 5.50

Fixed Cost = 110000 Labour Hours * 2 Rs /h = Rs 220000

BEP (in units) = Fixed Cost / CPU
= Rs 220000 / 5.5
= 40000 units

Company is expected to achieve BEP in 2nd Quarter (18000+22000 units)

Q 1(b) A Machine costing Rs 10 lacs was purchased on 1-4-2011. The expected life of the machine is 10 years. At the end of this period its scrap value is likely to be Rs 10000. The total cost of all the machines including new one was Rs 90 lacs. The other information is given as follows:

- (i) Working hours for the machine for the year was 4200 including 200 non-productive hours.
- (ii) Repair & Maintenance for the new machine during the year was Rs 5000
- (iii) Insurance Premium paid for all the machine Rs 9000
- (iv) New Machine consumes 8 units of electricity per hour, the rate per unit being Rs 3.75
- (v) The new Machine occupies 1/10 area of the department. Rent of the department is Rs 2400 per month.
- (vi) Depreciation is Charged on Straight Line Basis.

Compute Machine hour rate for the new Machine.

Solution:

Particulars	Amount Rs P.a.	Machine hour Rate
Standing /Fixed Charges		
Depreciation (Rs 10,00,000-10000)/10	99000	
Repair & Maintenance	5000	
Rent (Rs 2400*12)*1/10	2880	
Insurance Premium Rs 9000 *(10lac /90 lac)	1000	
Total Standing Charges (a)	107880	
Standing charges per Hour (total Standing Charges/ productive hours) Rs 107880/4000 Hours		26.97
Running Expenses		
Electricity (Rs 3.75 *8)		30
Machine Hour Rate		56.97 Rs per hour

Assumption:

It is assumed that no power is consumed during non-productive hours.

Q 1 (c) RES Ltd. Is all equity financed company with a market value of Rs 25,00,000 and cost of equity, $K_e = 21\%$. The company wants to buyback equity shares worth Rs 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. WACC and comment on it

Ans: According to MM Approach

Value of unlevered firm (V_u) = EBIT (1-Tax Rate)/ K_o

Value of unlevered firm (V_u) = Rs 25, 00,000 (Given)

Value of levered firm (V_l) = $V_u + (\text{Debt} * \text{Tax Rate})$

Value of levered firm (V_l) = Rs 25,00,000 + (Rs 5,00,000 *30%)

Value of levered firm (V_l) = Rs 26,50,000

- (i) $K_e = K_o + (K_o - K_d (1 - \text{tax})) * \text{Debt/Equity}$
 $K_e = 21\% + (21\% - 15\%(1 - 30\%)) * 5 \text{ lac}/20 \text{ lac}$

$$K_e = 21\% + 2.625\%$$

$$K_e = 23.625\%$$

The use of debt in the capital structure increases the risk of the shareholders and thus results in the increase in the cost of equity capital i.e. K_e

(ii) For Unlevered firm $K_e = K_o$

As per MM approach Assumption, K_o Remain Constant. There is no optimal capital structure. Instead every capital structure is an optimal one.

So for K_o for levered firm will remain same i.e. 21%

Q 1 (d) A company is presently having credit sales of Rs 12 Lakh. The present credit terms of Company are 1/10 net 45 days and its average collection period is 30 days. The current bad debt loss is 1.5%. In order to accelerate the collection process further as also to increase sales, the company is contemplating liberalisation of its existing credit terms to 2/10 net 45 days. It is expected that sales are likely to increase 1/3 of existing sales, bad debts increase to 2% of sales average collection period to decline to 20 days. The contribution to sales ratio of the company is 22% and opportunity cost of investment in receivable is 15% pre tax. 50% and 80% of customers in terms of sales revenue are expected to avail cash discount under existing and liberalisation scheme respectively. The tax rate is 30%. Should company change its credit terms (Assume 360 days in a year)?

Solution;

Particulars	Existing Conditions	Proposed Conditions
Sales	12,00,000	16,00,000
Less : Variable Cost (78%)	9,36,000	12,48,000
Contribution	2,64,000	3,52,000
Less: Bad Debts	$12,00,000 \times 1.5\% = 18000$	$16,00,000 \times 2\% = 32000$
Less: Cash Discount	$12,00,000 \times 50\% \times 1\% = 6000$	$16,00,000 \times 80\% \times 2\% = 25600$
Less : Interest Cost	$12,00,000 \times 15\% \times \frac{30}{360} = 15000$	$16,00,000 \times 15\% \times \frac{20}{360} = 13333$
Net Profit Before Tax	2,25,000	2,81,067
Less: Tax 30%	67500	84320
PAT	157500	196747
Incremental Gain		39247

Yes, the Company should change the credit terms

Q2 (a) A contractor commenced a contract on 1-7-2011. The costing records concerning the said contract reveal the following information as on 31-03-2012

Particulars	Amount Rs
Material Sent to Site	7,74,300
Labour Paid	10,79,000
Labour Outstanding as on 31-03-2012	1,02,500
Salary to Engineer	Rs 20500 per month
Cost of Plant Sent on Site (1-7-2011)	7,71,000
Salary to Supervisor (3/4 time devoted to contract)	Rs 9000 per month
Administration & other Expenses	4,60,600
Prepaid Administration Expenses	10,000
Material in hand at site as on 31-03-2012	75,800

Plant used for the contract has an estimated life of 7 years with residual value at the end of life Rs 50000. Some of the material costing Rs 13,500 was found unsuitable and sold for Rs

10000. Contract Price was Rs 45,00,000. On 31-03-2012 2/3rd of the contract was completed. The architect issued certificate covering 50% of the contract price and contractor has been paid Rs 20,00,000 on account. Depreciation on plant is charged on SLM. Prepare contract Account.

Solution 2(a)

Dr		Contract A/c		Cr	
Particulars	Amount Rs	Particulars	Amount Rs		
To Material Sent to Site	7,74,300	By WIP			
		Work Certified	22,50,000		
		Work Uncertified	6,59,900		
To Labour Paid 10,79,000		By Bank (Sale of	10000		
Add O/s Labour 1,02,500	11,81,500	Unsuitable Material)			
To Depreciation on Plant (771000-50000)/7 = 103000*9/12	77250	By P & L A/c (loss on sale of Material	3500		
To Salary to Engineer (20500X 9)	184500	Material in hand at site as on 31-03-2012	75,800		
To Administration Exp. 4,60,600	4,50,600				
Less: Prepaid (10,000)					
To Salary to Supervisor (9000*9*3/4)	60750				
To Notional Profit (c/d)	2,70,300				
	29,99,200			29,99,200	
To P & L A/c	160178	By Notional Profit (b/d)	2,70,300		
To WIP Reserve	110122				
	2,70,300			2,70,300	

Cost of 2/3rd of the Contract is Rs. 26,39,600

Hence the Cost of the Contract is Rs. $26,39,600 \times \frac{3}{2} = \text{Rs. } 39,59,400$.

The cost of 50% of the Contract, which has been completed and certified by the Architect is Rs.19,79,700 (Rs. 39,59,400 ÷ 2).

The Cost of 1/6th of the contract, which has been completed but not certified by the Architect is Rs 6,59,900 (Rs. 26,39,600 – Rs. 19,79,700).

$$\begin{aligned} \text{Profit transferred to P \& L A/c} &= \frac{2}{3} \times \text{Notional Profit} \times \text{Cash received / Work Certified} \\ &= \frac{2}{3} \times \text{Rs. } 2,70,300 \times \text{Rs. } 20,00,000 / \text{Rs. } 22,50,000 \\ &= \text{Rs. } 160178 \end{aligned}$$

Q2 (b) the Balance Sheet of X Ltd as on 31-03-2011 and 31-03-2012 are as under:

Liabilities	2011	2012	Assets	2011	2012
Equity Share Capital (Rs 10 each)	18,00,000	22,00,000	Fixed Assets (including Machineries)	20,50,000	18,75,000
General Reserve	7,50,000	6,00,000	Stock	7,10,000	8,95,000
Securities Premium	50,000	45,000	Debtors	7,25,000	9,80,000

Profit & Loss A/c	4,50,000	5,30,000	Cash Balance	1,25,000	1,80,000
7% Debentures	3,00,000	2,00,000	Preliminary Expenses	35,000	25,000
Creditors	1,50,000	2,15,000			
Provision for Tax	1,45,000	1,65,000			
	36,45,000	39,55,000		36,45,000	39,55,000

Additional Information

- (i) Depreciation Charged on Fixed Assets during the year was Rs 205000. An old Machine costing Rs 200000 (WDV Rs 80000) was sold for Rs 65000 during the year.
- (ii) Provision for tax made during the year for Rs 178000
- (iii) On 1-4-2011 company redeemed debenture of Rs 1,00,000 at a premium of 5%.
- (iv) Company has issued fully paid bonus shares of Rs 2,00,000 by capitalisation of profit.

Prepare Cash flow Statement

Solution 2(b)

Cash Flow Statement of Company X Ltd.
for the year ending March 31, 2006
Cash flows from Operating Activities

Net Profits	Rs 1,30,000
Add: Depreciation	2,05,000
Add : Loss on Sale of Machinery	15,000
Add: Provision for Tax	1,78,000
Add: Preliminary Expenses	10,000
Operating Profits before Working Capital Changes	5,38,000
Increase in Stock	(185,000)
Increase in Debtors	(2,55,000)
Decrease in creditors	65,000
Cash Generated from Operations	1,63,000
Less Tax Paid	(1,58,000)
Net Cash from Operations	<u>5,000</u>

Cash flows from Investment Activities

	Rs.
Purchase of Plant & Machinery	(1,10,000)
Less Sale of Equipment	65,000
Net Cash used in Investment Activities	<u>(45,000)</u>

Cash flows from Financing Activities

Issue of Share Capital	2,00,000	
Repayment of Debentures	<u>(1,05,000)</u>	<u>95,000</u>
Net Cash from Financing Activities		<u>95,000</u>
Net increase in Cash and Cash Equivalents		55,000
Cash and Cash Equivalents at the beginning		<u>1,25,000</u>
Cash and Cash Equivalents at the end		<u>1,80,000</u>

Dr. Plant & Machinery A/c

Cr.

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To Balance B/d	20,50,000	By Bank (sale of Asset)	65,000
To Bank (Purchase of New Plant) (bal. Fig.)	1,10,000	By P & L (Loss on Sale of Asset)	15,000
		By P & L (Current Year Depreciation)	2,05,000
		By Balance c/d	18,75,000
	21,60,000		21,60,000

Dr. Provision For Taxation

Cr.

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To Bank (Bal. Fig.)	1,58,000	By Balance b/d	1,45,000
To Balance c/d	1,65,000	By P & L A/c (Current Year Prov)	1,78,000
	3,23,000		3,23,000

Dr. 7% Debentures A/c

Cr.

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To Bank	1,00,000	By Balance b/d	3,00,000
To Balance c/d	2,00,000		3,00,000
	3,00,000		3,00,000

Dr. Securities Premium A/c

Cr.

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To Premium On Redemption of Debentures	5,000	By Balance b/d	50,000
To Balance c/d	45,000		
	50,000		50,000

Dr. General Reserve A/c

Cr.

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To Equity Share Capital	2,00,000	By Balance b/d	7,50,000
To Balance c/d	6,00,000	By P & L A/c (Current Year Profit Transferred)	50,000
	8,00,000		8,00,000

Dr. P & L A/c

Cr.

Particulars	Amount (Rs)	Particulars	Amount (Rs)
To General Reserve	50,000	By Balance b/d	4,50,000
To Balance c/d	5,30,000	By Profit of current year (B/f)	1,30,000
	5,80,000		5,80,000

Dr. Equity Share Capital

Cr.

Particulars	Amount (Rs)	Particulars	Amount (Rs)
		By Balance b/d	18,00,000
To Balance c/d	22,00,000	By General Reserve (Bonus Shares Issued)	2,00,000
		By Bank (fresh	2,00,000

		issue)	
	22,00,000		22,00,000

Q 3(a) The Management of a company wants to formulate an incentive plan for the workers with a view to increase productivity. The following particulars have been extracted from the books of company.

Piece wage rate Rs 10
 Weekly working hours 40
 Hourly wages rate Rs 40 (Guaranteed)
 Standard / normal time taken per unit 15 Minutes.
 Actual Output for a week:
 Worker A 176 pieces
 Worker B 140 Pieces

Differential piece rate 80% of Piece rate when output below normal and 120% of piece rate when output above normal.

Under Halsey Scheme, worker get a bonus equal to 50% of wages of Time Saved.
 Calculate:

- Earning of Workers under Halsey's and Rowan's premium Scheme.
 - Earning of workers under Taylor's differential piece rate system and emmerson's efficiency plan.
- Solution

Solution 3(a):

Particulars	Worker A	Worker B
Standard / normal time taken per unit	15 Minutes	15 Minutes
Hourly Rate (HR)	Rs 40	Rs 40
Actual Output	176 Pieces	140 Pieces
Actual Hours (AH)	40 Hours	40 Hours
Standard Hours for Actual Output (SH)	$176 \times 15/60 = 44$ Hours	$140 \times 15/60 = 35$ Hours
Time Saved (TS = SH - AH)	4 Hours	0 Hours
Wages Under Halsey Plan $AH \times HR + 50\% \text{ of } TS \times HR$	$40 H \times 40 Rs + 50\% \times 4 H \times Rs 40 = Rs 1680$	$40 H \times 40 Rs + 0 = 1600$
Wages Under Rowan Plan $AH \times HR + ((AH / SH) \times TS \times HR)$	$40 H \times 40 Rs + (40 H / 44 H) \times 4 H \times Rs 40 = Rs 1745$	$40 H \times 40 Rs + 0 = 1600$
Standard output for Actual Hours	$40 \text{ Hours} \times 4 \text{ units per hour} = 160 \text{ units}$	$40 \text{ Hours} \times 4 \text{ units per hour} = 160 \text{ units}$
Efficiency on output basis = $(\text{Actual production} / \text{Standard production}) \times 100$	$(176 \text{ units} / 160 \text{ Units}) \times 100 = 110\%$	$(140 \text{ units} / 160 \text{ Units}) \times 100 = 87.5\%$
Taylor Differential piece Rate	Higher piece Rate = 120% of Piece Rate $120\% \text{ of Rs } 10 = Rs 12 \text{ p.u.}$ Wage = Higher piece rate* Unit Produced $Rs 12 \times 176 \text{ Units} = Rs 2112$	Lower piece Rate = 80% of Piece Rate $80\% \text{ of Rs } 10 = Rs 8 \text{ p.u.}$ Wages = Lower piece Rate* Unit Produced $Rs 8 \times 140 = Rs 1120$
Emerson' Efficiency Plan	For performance above	For performance from

	100%-120% of wage rate plus additional Bonus of 1% for each 1% increase in efficiency. Wage rate = 120 + 10% = 130% of Time rate So, Rs 40 * 130% = Rs 52 P.H. Wages = Rs 52 per Hour X 40 Hours = Rs 2080	66⅔ % to 100%-Time rate wages for hours worked + increased bonus between 1% to 20% according to the degree of efficiency on the basis of step Bonus rate. Efficiency % More Than 66⅔ % = 87.5% - 66⅔ % = 20.83% Eligible Bonus % = (20% / 33.33%) * 20.83% = 12.5% Wage rate = 112.5% of Time rate So, Rs 40 * 112.5% = Rs 45 P.H. Wages = Rs 45 per Hour X 40 Hours = Rs 1800
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Q 3 (b) STN Ltd is a readymade garment manufacturing company. Its production cycle indicates that materials are introduced in the beginning of the production phase; Wages & OH accrue evenly throughout the period of cycle. The following figures for the 12 month ending 31st December 2100 are given:

Production of Shirts	54000 units
Selling Price per unit	Rs 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 WIP 50% of wages and OH are supposed to be conversion costs.

The Ratio of cost to sale price are Raw Material 60%, Direct Wages 10% and Overheads 20%. Cash 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 Cash cost basis.

Solution

Statement showing Working Capital Requirement

A – Current Assets	
(i) Raw material inventory – (2 months)- 54,000 Units × 120 × 2/12	10,80,000
(ii) – Work in Progress – Production cycle 1 month	

Raw material (added in the beginning) $54,000 \times 120 \times 1/12 =$ Rs 540000	
Wages $(54000 \times 20 \times 1/12) \times 50\% = 45000$	
Overheads $(54000 \times 40 \times 1/12) \times 50\% = 90000$	
Total	6,75,000
(iii) Finished goods (inventory held for 1 month)	
Total Cost	
Material 120.00	
Labour 20.00	
Overheads $40.00 = 180 \times 54,000 \times 1/12$	8,10,000
(iv) Debtors for 1.5 months $54,000 \times \text{Rs } 180 \times 1.5/12$	12,15,000
Cash (40 % of Current Liabilities) (40% of 6,30,000)	2,52,000
Total current assets	40,32,000
B – Current liabilities	5,40,000
(v) Creditors for Raw material – 01 month $54000 \times 120 \times 1/12$	
(vi) Creditors for wages $54,000 \times 20 \times \frac{1}{12}$	90,000
Total current liabilities	6,30,000
Net working capital	34,02,000
Add Safety Margin (15% of Net Working Capital) (15% of 34,02,000)	5,10,300
Total Working capital Required	39,12,300

Q 4 (a) S Ltd has furnished the following information:

Standard OH absorption rate per unit	Rs 20
Standard rate per Hour	Rs 4
Budgeted Production	15000 units
Actual Production	15560 units
Actual Overheads were Rs 295000 out of which Rs 62500 fixed.	
Actual Hours	74000

Overheads are based on the following Flexible Budget:

Production (Units)	8000	10000	14000
Total Overheads (Rs)	1,80,000	2,10,000	2,70,000

You are required to calculate the following Overhead variance (on hour's basis) with Appropriate workings:

- Variable Overhead Efficiency and Expenditure Variance
- Fixed Overhead Efficiency and Capacity Variance

Solution 4(a)

Standard Hours per unit of Output = Rs 20 per unit / 4 Rs per hour = 5 Hours per unit

Variable OH rate per Unit = $\frac{\text{Change in Budgeted Total OH}}{\text{Change in Budgeted Units}}$
 $\frac{\text{Rs } 210000 - \text{Rs } 180000}{10000 - 8000}$
 $\frac{\text{Rs } 30000}{2000}$
 $= \text{Rs } 15 \text{ per unit}$

Variable OH Per Hour = $\text{Rs } 15 \text{ per Unit} / 5 \text{ Hours per unit} = \text{Rs } 3 \text{ per Hour}$

Computation of Fixed Overheads

Production (Units)	8000	10000	14000
Total Overheads (Rs)	1,80,000	2,10,000	2,70,000
Variable OH @ Rs 15 per Unit	$8000 \times 15 = 120000$	$10000 \times 15 = 150000$	$14000 \times 15 = 210000$
Fixed OH	60,000	60,000	60,000

Standard Hours per unit of Output = $\text{Rs } 20 \text{ per unit} / 4 \text{ Rs per hour} = 5 \text{ Hours per unit}$

Particulars	Budgeted	Standard	Actual
Output (units)	15,000		15,600
Hours	$15000 \text{ units} \times 5 \text{ Hours} = 75,000 \text{ Hours}$	$15600 \times 5 = 78000 \text{ Hours}$	74000
Fixed OH	Rs 60,000		Rs 62500
Fixed OH absorption rate	$\text{Rs } 60,000 / 75000 = 0.8$	$\text{Rs } 60,000 / 75000 = 0.8$	$\text{Rs } 62500 / 74000 = 0.8446$
Variable OH Per Unit	Rs 3	Rs 3	$\text{Rs } 232500 / 74000 \text{ hours} = 3.141892 \text{ Rs}$

Variable Overhead Cost Variance (VOHCV)

$$\text{VOHCV} = (\text{SH} \times \text{SR}) - (\text{AH} \times \text{AR})$$

$$\text{VOHCV} = (77800 \times 3) - (74000 \times 3.1418)$$

$$= 233400 - 232500$$

$$= 900 \text{ (F)}$$

Variable Overhead Expenditure/spending/
Budget Variance (VOHBV)

$$\text{VOHBV} = (\text{SR} - \text{AR}) \times \text{AH} \quad \text{OR}$$

$$= (3 - 3.1418) \times 74000$$

$$= 10500 \text{ (A)}$$

Variable Overhead Efficiency Variance
(VOHEV)

$$\text{VOHEV} = (\text{SH} - \text{AH}) \times \text{SR} \quad \text{OR}$$

$$= (77800 - 74000) \times 3$$

$$= 11400 \text{ (F)}$$

Fixed Overhead Cost Variance (FOHCV)

$$\begin{aligned}\text{FOHCV} &= (\text{SH} \times \text{SR}) - (\text{AH} \times \text{AR}) \\ &= (77800 \times 0.8) - (74000 \times 0.8446) \\ &= 260(\text{A})\end{aligned}$$

**Fixed Overhead Expenditure/spending/
Variance /Budget Variance (FOHBV)**

$$\begin{aligned}\text{FOHBV} &= \text{Budgeted fixed OH} - \text{Actual Fixed OH} \\ 60000 - 62500 &= 2500 (\text{A})\end{aligned}$$

**Fixed Overhead Volume
(FOHVV)**

$$\begin{aligned}\text{FOHVV} &= (\text{SH} - \text{BH}) \times \text{SR} \\ &= (77800 - 75000) \times 0.8 \\ &= 2240 (\text{F})\end{aligned}$$

**Fixed Overhead Efficiency Variance(FOHEV)
(FOHCAVP)**

$$\begin{aligned}\text{FOHEV} &= (\text{SH} - \text{AH}) \times \text{SR} \\ &= (77800 - 74000) \times 0.8 \\ &= 3040 (\text{F})\end{aligned}$$

Fixed Overhead Capacity Variance

$$\begin{aligned}\text{FOHCV} &= (\text{AH} - \text{BH}) \times \text{SR} \\ &= (74000 - 75000) \times 0.8 \\ &= 800 (\text{A})\end{aligned}$$

Q 4 (b)

ANP Ltd. Is providing the following information:

Annual Cost Saving

₹ 96,000

Useful Life

5 years

Salvage Value

Zero

Internal Rate of Return

15%

Profitability Index

1.05

Table of Discount Factor

Discount Factor	Years					
	1	2	3	4	5	Total
15%	0.870	0.756	0.658	0.572	0.497	3.353
14%	0.877	0.769	0.675	0.592	0.519	3.432
13%	0.886	0.783	0.693	0.614	0.544	3.52

You are required to Calculate:

1. Cost of the Project
2. Payback period
3. Net Present Value of Cash Flows
4. Cost of Capital

Solution

Cost of Project

At 15% I.R.R., the sum total of cash inflows = Cost of the project i.e. Initial cash outlay
Given:

Annual cost saving	₹96,000
Useful life	5 years
IRR	15%

Now, considering the discount factor table @ 15% cumulative present value of cash inflows for 5 years is 3.353. Therefore,

Total of cash inflows for 5 years for Project is (₹ 96,000 × 3.353) = ₹ 321888

Hence, cost of the project is = ₹ 321888

Payback period of the Project

$$\text{Payback period} = \frac{\text{Cost of Project}}{\text{Annual Cost Saving}}$$

$$= \frac{\text{Rs } 321888}{96000}$$

3.353 years or 3 years 4 months 7 days approximately

Cost of Capital

If the profitability index (PI) is 1, cash inflows and outflows would be equal. In this case, (PI) is 1.05. Therefore, cash inflows would be more by 0.64 than outflow.

Probability index (PI)=

Discounted cash inflows

Cost of the Project

or 1.05 =

Discounted cash inflows

Rs. 321888

or $1.05 \times ₹. 321888 = ₹. 337982.4$

Hence discounted cash inflows = ₹. 337982.4

Since, Annual cost saving is ₹. 96,000. Hence, cumulative discount factor for 5 years

$$= \frac{337982.4}{96.000}$$

$$= 3.52065 \text{ or } 3.52$$

Considering the discount factor table at discount rate of 13%, the cumulative discount factor for 5 years is 3.52

Hence, the cost of capital is 13%

Net present value of the project

N.P.V. = Total present values of cash inflows – Cost of the project

$$= ₹ 337982.4 - ₹ 321888$$

$$= ₹ 16,094.4$$

Q 5 What is an integrated Accounting System? State its advantages.

Ans: Integrated Accounting is the name given to a system of accounting whereby cost and financial accounts are kept in the same set of books. Such a system will have to afford full information required for Costing as well as for Financial Accounts. In other words, information and data should be recorded in such a way so as to enable the firm to ascertain the cost (together with the necessary analysis) of each product, job, process, operation or any other identifiable activity. For instance, purchases are analysed by nature of material and its end-use. Purchases account is eliminated and direct postings are made to Stores Control Account, Work-in-Progress account, or Overhead Account. Payroll is straightway analysed into direct labour and overheads. It also ensures the ascertainment of marginal cost, variances, abnormal losses and gains. In fact all information that management requires from a system of Costing for doing its work properly is made available. The integrated accounts give full information in such a manner so that the profit and loss account and the balance sheet can be prepared according to the requirements of law and the management maintains full control over the liabilities and assets of its business.

The main advantages of Integrated Accounting are as follows:

- (i) Since there is one set of accounts, thus there is one figure of profit. Hence the question of reconciliation of costing profit and financial profit does not arise.
- (ii) There is no duplication of recording of entries and efforts to maintain separate set of books.
- (iii) Costing data are available from books of original entry and hence no delay is caused in obtaining information.
- (iv) The operation of the system is facilitated with the use of mechanized accounting.
- (v) Centralization of accounting function results in economy

Q 5 (b) State the type of cost in the following cases:

- (i) Interest paid on own capital not involving any cash outflows
- (ii) Withdrawing money from Bank deposit for the purpose of purchasing new machine for expansion purpose .
- (iii) Rent paid for the factory building which is temporarily closed.
- (iv) Cost associated with the acquisition and conversion of Material into finished product.

Ans 5 (b)

- (i) Opportunity Cost
- (ii) Capital Expenditure
- (iii) Shut Down Cost
- (iv) Cost of Production

Q 5(c) Discuss factors that a venture capitalist should be considered before financing any risky project

Ans.: The venture capitalists usually take into account the following factors while making investments:

1. **Strong Management Team.** Venture capital firms ascertain the strength of the management team in terms of adequacy of level of skills,, commitment and motivation that creates a balance between members in area such as marketing, finance and operations, research and development, general management, personal management and legal and tax issues. Track record of promoters is also taken into account.
2. **A Viable Idea.** Before taking investment decision, venture capital firms consider the viability of project or the idea. Because a viable idea establishes the market for the product or service. Why the customers will purchase the product, who the ultimate users are, who the competition is with and the projected growth of the industry?
3. **Business Plan.** The business plan should concisely describe the nature of the business, the qualifications of the members of the management team, how well; the business has performed, and business projections and forecasts. The promoters experience in the proposed or related businesses is an important consideration. The business plan should also meet the investment objective of the venture capitalist.
4. **Project Cost and Returns** A VCI would like to undertake investment in a venture only if future cash inflows are likely to be more than the present cash outflows. While calculating the Internal Rate of Return (IRR) the risk associated with the business proposal, the length of time his money will be tied up are taken into consideration. Project cost, scheme of financing, sources of finance, cash inflows for next five years are closely studied.
5. **Future Market Prospects.** The marketing policies adopted, marketing strategies in relation to the competitors, market research undertaken, market size, share and future market prospects are some of the considerations that affect the decision.

6. **Existing Technology.** Existing technology used and any technical collaboration agreements entered into by the promoters also to a large extent affect the investment decision.

7. **Miscellaneous Factors.** Others factors which indirectly affect the investment decisions include availability of raw material and labor, pollution control measures undertaken, government policies, rules and regulations applicable to the business/industry, location of the industry etc.

Q 5(d) What is Net Operating Income theory of Capital Structure? Explain the assumptions on which the NOI theory is based.

Ans: Net Operating Income Approach

According to the net operating income approach, the market value of the depends upon the EBIT & K_o . The financing mix or capital structure is irrelevant and does not affect the value of firm. Market Value of firm is ascertained by Capitalizing the Net Operating Income (EBIT) at the overall cost of Capital (K_o), which is constant.

Assumptions

1. There are no corporate taxes.
2. K_o & K_d remains constant
3. K_d is always less than K_e .
4. The use of more and more debt in the capital structure increases the risk of the shareholders and thus results in the increase in the cost of equity capital i.e. K_e . However the increase in K_e is such as to completely offset the benefits of employing the cheaper debt, thus results in keeping the overall cost of capital (K_o) remains constant.
5. As K_o is constant, there is no optimal capital structure. Instead every capital structure is an optimal one.

Computation of Cost of Equity (K_e)

- a) Determine EBIT
- b) Compute EBT (Net Income) = EBIT – Interest on Debt Funds
- c) Compute Market Value Firm (V) = EBIT/ K_o
- d) Compute Market Value of Debt (D) = Interest on Debt Funds/ K_d
- e) Compute Market Value of Equity (E) = Market Value Firm (V) - Market Value of Debt (D)
- f) Compute K_e = EBT/ Market Value of Equity (E)

Under NI Approach $V=E+D$ to compute K_o ; While NOI Approach $E= V-D$, to compute K_e .

Q 6(a) A Product passes through two processes A and B. During the year 2011, the input to Process A of basic material was 8000 units @ Rs 9 per unit. Other information for the year is as follows:

Particulars	Process A	Process B
Output Units	7,500	4,800
Normal Loss (% of input)	5%	10%
Scrap value per unit (Rs)	2	10
Direct Wages (Rs)	12000	24000
Direct Expenses (Rs)	6000	5000
Selling Price per unit (RS)	15	25

Total Overheads Rs 17400 were recovered as % of Direct Wages. Selling Expenses were Rs 5000. They are not allocate to the processes. 2/3 of the output of Process A was passed on to the next process and the balance was sold. The entire output of process B was sold. Prepare Process A and B Accounts.

Solution 6(a)

Process A

Particulars	Quantity	Amount Rs	Particulars	Quantity	Amount Rs
To Basic Material	8000	72,000	By Normal Loss	400	800
To Wages		12,000	By Abnormal Loss	100	1250
To Direct Expenses		6,000	By Costing P& L A/c	2500	31250
To Factory OH		5800	By Process B A/c	5000	62500
		<u>95,800</u>			<u>95,800</u>

Normal Loss – Process A A/c

Particulars	Quantity	Amount Rs	Particulars	Quantity	Amount Rs
To Process A	400	800	By Bank	400	800
	<u>400</u>	<u>800</u>		<u>400</u>	<u>800</u>

Abnormal Loss – Process A A/c

Particulars	Quantity	Amount Rs	Particulars	Quantity	Amount Rs
To Process A	100	1250	By Bank	100	200
			By Costing P& L A/c (loss transferred)		1050
	<u>100</u>	<u>1250</u>		<u>100</u>	<u>1250</u>

Process B

Particulars	Quantity	Amount Rs	Particulars	Quantity	Amount Rs
To Process B	5000	62500	By Normal Loss	500	5000
To Wages		24,000	By Costing P& L A/c	4800	104640
To Direct Expenses		5,000			
To Factory OH		11600			
By Abnormal Gain	300	6540			
		<u>109640</u>			<u>109640</u>

Normal Loss – Process B A/c

Particulars	Quantity	Amount Rs	Particulars	Quantity	Amount Rs
To Process B	500	5000	By Bank	200	2000
			By Abnormal Gain A/c	300	3000
	<u>500</u>	<u>5000</u>		<u>500</u>	<u>5000</u>

Abnormal Gain– Process B A/c

Particulars	Quantity	Amount Rs	Particulars	Quantity	Amount Rs
To Normal Loss A/c	300	3000	By Process B	300	6540
To Costing P& L		3540			

A/c (Profit transferred					
		<u>6540</u>			<u>6540</u>

Costing P&L A/c

Particulars	Amount Rs	Particulars	Amount Rs
To Process A	31250	By Sales –A 2500*15	37500
To Process B	104640	By Sales –B 4800*25	120000
To Abnormal Loss	1050	By Abnormal Gain	3540
To Selling OH	5000		
To Net Profit	19100		
	<u>161040</u>		<u>161040</u>

Working Note 1:

Factory OH absorption Rate as % of Direct Wages=
100

Total Factory OH *

Direct Wages of Both Processes
17400 *100
36000
=48.333%

FOH for Process A= Rs 12000* 48.3333%=Rs 5800

FOH for Process A= Rs 24000* 48.3333%=Rs 11600

Working Note 2:

Cost of Abnormal Loss (Process A)

$$= \frac{(\text{Total Cost Incurred} - \text{Scrap Value of Normal Loss})}{\text{Input- Units of Normal Loss}} \times \text{Units of Abnormal Loss}$$

$$= \frac{(95800 - 800)}{8000 - 400} \times 100$$

$$= 1250 \text{ Rs}$$

Cost of Output transferred to Process B

$$= \frac{(\text{Total Cost Incurred} - \text{Scrap Value of Normal Loss})}{\text{Input- Units of Normal Loss}} \times \text{Units of Output trf. to Next process}$$

$$= \frac{(95800 - 800)}{8000 - 400} \times 5000$$

$$= \text{Rs } 62500$$

Cost of Output Sold

$$= \frac{(\text{Total Cost Incurred} - \text{Scrap Value of Normal Loss})}{\text{Input- Units of Normal Loss}} \times \text{Units of Output Sold}$$

$$= \frac{(95800 - 800)}{8000 - 400} \times 2500$$

$$= \text{Rs } 31250$$

Working Note 2:

Cost of Abnormal Gain (Process B)

$$= \frac{(\text{Total Cost Incurred} - \text{Scrap Value of Normal Loss})}{\text{Input- Units of Normal Loss}} \times \text{Units of Abnormal Gain}$$

$$= \frac{(\text{Rs } 103100 - 5000)}{5000 - 500} \times 300$$

$$= \text{Rs } 6540$$

Cost of Output transferred to Process B

$$= \frac{(\text{Total Cost Incurred} - \text{Scrap Value of Normal Loss})}{\text{Input- Units of Normal Loss}} \times \text{Units of Output trf. to Next process}$$

$$= \frac{(\text{Rs } 103100 - 5000)}{5000 - 500} \times 4800$$

$$= \text{Rs } 104640$$

Q6 (b) The Capital Structure of JCPL Ltd is as Follows:

Equity Share Capital of ₹ 10each	₹ 8,00,000
8% Preference Share Capital of ₹ 10each	₹ 6,25,000
10% Debentures of ₹ 100 each	₹ 4,00,000
	₹ 18,25,000

Additional Information

Profit after tax (Tax Rate 30%) Rs 1,82,000

Operating Expenses (including depreciation Rs 90,000) being 1.50 times of EBIT

Equity Dividend Paid 15%

Market price per equity Share Rs 20

Required to Calculate:

- Operating & Financial Leverage
- Cover the preference and equity Share Dividends
- Earning Yield and Price Earning Ratio
- The Net fund flow

Solution 6(b)

Profit Before tax = Profit After Tax / (1-tax Rate)

$$= 182000 / (1 - 30\%)$$

$$= \text{Rs } 260000$$

EBIT = EBT + Interest

$$= \text{Rs } 260000 + (400000 \times 10\%)$$

$$= \text{Rs } 300000$$

Operating Expenses = 1.5 * EBIT

$$= 1.5 \times 300000$$

$$= \text{Rs } 450000$$

Variable Expenses = Total Operating Expenses – Fixed Operating Expenses

$$= \text{Rs } 450000 - 90000$$

$$= \text{Rs } 360000$$

Contribution = EBIT + Fixed Operating Expenses

$$= \text{Rs } 300000 + 90000$$

$$= \text{Rs } 390000$$

Sales = Variable operating Expenses + Contribution

$$= \text{Rs } 360000 + 390000$$

$$= \text{Rs } 750000$$

Equity Dividend Distributed = Rs 8,00,000*15%= Rs 1,20,000

Income Statement

Sales	Rs 7,50,000
Less: Variable Cost	Rs 3,60,000
Contribution	Rs 3,90,000
Less Fixed Cost	Rs 90,000
EBIT	Rs 3,00,000
Interest	Rs 40,000
EBT	Rs 2,60,000
Less Taxes (30%)	Rs 78,000
EAT	Rs 1,82,000
Less Preference Dividend	Rs 50,000
Earnings available for Equity Shareholders	Rs 1,32,000
No of Equity Shares	Rs 80,000
Earning Per Share	Rs 1.65 per Share

(a) Degree of Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$
 $= \frac{\text{Rs } 3,90,000}{\text{Rs } 3,00,000}$
 $= 1.3 \text{ times}$

(b) Degree of Financial Leverage = $\frac{\text{EBIT}}{\text{EBT} - \text{Pref Div}}$
 $\frac{\text{EBT} - \text{Pref Div}}{(1 - \text{Tax Rate})}$
 $= \frac{\text{Rs } 3,00,000}{\text{Rs } 2,60,000 - \frac{50,000}{(1 - 30\%)}}$
 $= \frac{\text{Rs } 3,00,000}{\text{Rs } 2,60,000 - 71,429}$
 $= \frac{\text{Rs } 3,00,000}{\text{Rs } 1,88,571}$
 $= 1.59 \text{ times}$

(c) Preference & Equity Dividend Coverage Ratio = $\frac{\text{EAT}}{(\text{Equity} + \text{Preference Dividend})}$
 $= \frac{\text{Rs } 1,82,000}{(\text{Rs } 1,20,000 + 50,000)}$
 $= \frac{\text{Rs } 1,82,000}{1,70,000}$
 $= 1.070 \text{ times}$

(d) Earning Yield Ratio = $\frac{\text{EPS}}{\text{MPS}} = \frac{1.65}{20} = 0.0825 \text{ times}$

(e) Price Earning Ratio = $\frac{\text{MPS}}{\text{EPS}} = \frac{20}{1.65} = 12.12 \text{ times}$

(f) Fund Flow = Operating Variable Expenses + Int + Tax + Pref Div + Equity Div
 $= \text{Rs } 3,60,000 + 40,000 + 78,000 + 50,000 + 1,20,000$
 $= \text{Rs } 6,48,000$

Q7 (a) The profit Maximization is not an operationally feasible criterion" Comment on it

Answer 7(a) **A firm's financial management may often have the following as their objectives:**

- The maximisation of firm's profit.
- The maximisation of firm's value / wealth.

The maximisation of profit is often considered as an implied objective of a firm. To achieve the aforesaid objective various type of financing decisions may be taken. Options resulting into maximisation of profit may be selected by the firm's decision makers. They even sometime may adopt policies yielding exorbitant profits in short run which may prove to be unhealthy for the growth, survival and overall interests of the firm.

The profit of the firm in this case is measured in terms of its total accounting profit available to its shareholders.

The value/wealth of a firm is defined as the market price of the firm's stock. The market price of a firm's stock represents the focal judgment of all market participants as to what the value of the particular firm is. It takes into account present and prospective future earnings per share, the timing and risk of these earnings, the dividend policy of the firm and many other factors that bear upon the market price of the stock.

The value maximisation objective of a firm is superior to its profit maximisation objective due to following reasons.

1. The value maximisation objective of a firm considers all future cash flows, dividends, earning per share, risk of a decision etc. whereas profit maximisation objective does not consider the effect of EPS, dividend paid or any other returns to shareholders or the wealth of the shareholder.
2. A firm that wishes to maximise the shareholders wealth may pay regular dividends whereas a firm with the objective of profit maximisation may refrain from dividend payment to its shareholders.
3. Shareholders would prefer an increase in the firm's wealth against its generation of increasing flow of profits.
4. The market price of a share reflects the shareholders expected return, considering the long-term prospects of the firm, reflects the differences in timings of the returns, considers risk and recognizes the importance of distribution of returns.

The maximisation of a firm's value as reflected in the market price of a share is viewed as a proper goal of a firm. The profit maximisation can be considered as a part of the wealth maximisation strategy.

Q 7 (b) Explain the important ratio's that would be used in each of the following situations:

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

Current Ratio, Current Asset Turnover Ratio, Net Working Capital Turnover Ratio, Debtors/ Receivable Turnover Ratio, Inventory Turnover Ratio, Operating Ratio/Operating Cost Ratio,

1.

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

1. Debt to Total Fund ratio

Debt/ outside fund = Long term loans (Secured & unsecured) + Debentures+ bonds + loans from financial institutions

Total fund = Shareholders fund + Total Assets

Desirable norms for this ratio is 2:3

And

2. Gearing Ratio/ Capital Gearing Ratio

Capital Gearing Ratio = $\frac{\text{Fixed Interest \& Dividend bearing Securities}}{\text{Equity Shareholder's fund}}$

Fixed Interest & Dividend bearing Securities= Preference Share Capital + Debentures + Long term loans

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

1. Return on Equity or Return on Net Worth Ratio

Higher the ratio the more efficient the management and utilization of equity shareholder's fund.

Return on Equity Ratio= $\frac{\text{Net Profit After Tax \& Preference Dividend}}{\text{Equity Shareholder's fund}} \times 100$

Equity Shareholder's fund/Net Worth = Equity Share Capital + Reserve & Surplus – Accumulated Losses.

Equity Shareholder's fund/Net Worth = Net Fixed Assets + Net Working Capital Invested - Long term external liabilities.

And

2. Price Earnings Ratio or P/E Ratio

Price Earning Ratio = $\frac{\text{Market price per Equity Share}}{\text{Earning per share}}$ Or $\frac{\text{MPS}}{\text{EPS}}$

- (iv) A Finance Manager interested to know effectiveness with which a firm use its available resources

(i) Fixed Asset Ratio

Fixed Asset Ratio = Fixed Assets / Capital Employed

Fixed Assets = Gross Block - Depreciation

And

(ii) Current Asset to Fixed Asset Ratio

Current Asset to Fixed Asset Ratio = Current Assets / Fixed Assets

Q 7(c) Write Short notes on the Following

(i) Deep Discount Bonds

Deep Discount Bonds (DDBs) are in the form of zero interest bonds. These bonds are sold at a discounted value and on maturity face value is paid to the investors. In such bonds, there is no interest payout during lock-in period. IDBI was first to issue a Deep Discount Bonds (DDBs) in India in January 1992. The bond of a face value of

Rs.1 lakh was sold for Rs. 2,700 with a maturity period of 25 years.

(ii) Angle of Incidence

Angle of incidence is formed at the inter-section of total cost line and total sales line. As a matter of fact there are two angles of incidence.

(i) the angle formed at the right side of the break-even point.

(ii) the angle formed at the left side of the break-even point.

The angle formed at the right side of the break-even point indicates the profit area while that formed at the left side indicates the loss area. The size of the angle of incidence is indication of the quantum of profit or loss made by the firm at different output/sales levels. For example, if the angle of incidence is narrow to the right side of the BEP it indicates that the quantum of profits made by the firm is also low. Similarly, if it narrow to the left side of the BEP it indicates that the quantum of loss made by the firm is also low. In other words, a narrow angle of incidence shows a slow rate of profit earning while a wider angle of incidence indicates a swift rate of profit earning capacity of the firm. A narrow angle also indicates that the variable cost as a proportion to sales is quite high and therefore very little has been left by way of contribution

Q 7 (d) Discuss basic assumption of cost volume Profit analysis.

in marginal costing, marginal cost varies directly with the volume of production or output. On the other hand, fixed cost remains unaltered regardless of the volume of output within the scale of production already fixed by management. In case if cost behavior is related to sales income, it shows cost-volume-profit relationship. In net effect, if volume is changed, variable cost varies as per the change in volume. In this case, selling price remains fixed, fixed remains fixed and then there is a change in profit. The assumptions underlying CVP analysis are:

- The behavior of both costs and revenues is linear throughout the relevant range of activity. (This assumption precludes the concept of volume discounts on either purchased materials or sales.)
- Costs can be classified accurately as either fixed or variable.
- Changes in activity are the only factors that affect costs.
- All units produced are sold (there is no ending finished goods inventory).
- When a company sells more than one type of product, the sales mix (the ratio of each product to total sales) will remain constant.

Q7 (e) Distinguish between Bill of Material & Material Requisition note.

Distinction between bill of materials and material requisition note.

Bill of materials: It is a list of material: required either for a particular job or for a work order. It contains the description; code and quantity of materials and other stores items required for a particular job or work order. It serves as an advance intimation to stores department about the requirement of materials. It acts as an authorisation for the issue of all materials and stores items mentioned in the bill of materials. Its use reduces paper work and ensures requisition of the exact quantity of materials to the user department.

Material requisition note: It is a formal written demand or request, for the supply of specified materials, stores etc., to the production department for a specific job or work order. It authorises the issuing department to draw from stores the requisitioned materials. Such a note contains information about the description, code and quantity of materials needed. It also has job/work order number for which the material has been requisitioned. This note is signed by the Foreman of the concerned department. . It provides an advance intimation to store department about the requirements of materials. It reduces paper work. It serves as a work order to the production department and a document for computing the cost of material for a particular job or work order to the cost department.

The purpose of material requisition note is to draw material from the store by concerned departments.