

PAPER – 3: COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART I: COST ACCOUNTING

QUESTIONS

Material

1. Aditya Ltd. produces a product 'Exe' using a raw material Dee. To produce one unit of Exe, 2 kg of Dee is required. As per the sales forecast conducted by the company, it will be able to sell 10,000 units of Exe in the coming year. The following is the information regarding the raw material Dee:

- (i) The Re-order quantity is 200 kg. less than the Economic Order Quantity (EOQ).
- (ii) Maximum consumption per day is 20 kg. more than the average consumption per day.
- (iii) There is an opening stock of 1,000 kg.
- (iv) Time required to get the raw materials from the suppliers is 4 to 8 days.
- (v) The purchase price is ₹125 per kg.

There is an opening stock of 900 units of the finished product Exe.

The rate of interest charged by bank on Cash Credit facility is 13.76%.

To place an order company has to incur ₹ 720 on paper and documentation work.

From the above information find out the followings in relation to raw material Dee:

- (a) Re-order Quantity
- (b) Maximum Stock level
- (c) Minimum Stock level
- (d) Calculate the impact on the profitability of the company by not ordering the EOQ.

[Take 364 days for a year]

Labour

2. Corrs Consultancy Ltd. is engaged in BPO industry. One of its trainee executives in the Personnel department has calculated labour turnover rate 24.92% for the last year using Flux method.

Following is the some data provided by the Personnel department for the last year:

Employees	At the beginning	Joined	Left	At the end
Data Processors	540	1,080	60	1,560
Payroll Processors	?	20	60	40
Supervisors	?	60	---	?

Voice Agents	?	20	20	?
Assistant Managers	?	20	---	30
Senior Voice Agents	4	---	---	12
Senior Data Processors	8	---	---	34
Team Leaders	?	---	---	?
Employees transferred from the Subsidiary Company				
Senior Voice Agents	---	8	---	---
Senior Data Processors	---	26	---	---
Employees transferred to the Subsidiary Company				
Team Leaders	---	---	60	---
Assistant Managers	---	---	10	---

At the beginning of the year there were total 772 employees on the payroll of the company. The opening strength of the Supervisors, Voice Agents and Assistant Managers were in the ratio of 3 : 3 : 2.

The company has decided to abandon the post of Team Leaders and consequently all the Team Leaders were transferred to the subsidiary company.

The company and its subsidiary are maintaining separate set of books of account and separate Personnel Department.

You are required to calculate:

- Labour Turnover rate using Replacement method and Separation method.
- Verify the Labour turnover rate calculated under Flux method by the trainee executive of the Corrs Consultancy Ltd.

Overheads

- The Union Ltd. has the following account balances and distribution of direct charges on 31st March, 2014.

	Total	Production Depts.		Service Depts.	
		Machine Shop	Packing	General Plant	Stores
Allocated Overheads:	(₹)	(₹)	(₹)	(₹)	(₹)
Indirect labour	29,000	8,000	6,000	4,000	11,000
Maintenance Material	9,900	3,400	1,600	2,100	2,800
Misc. supplies	5,900	1,500	2,900	900	600
Supervisor's salary	16,000	--	--	16,000	--
Cost & payroll salary	80,000	--	--	80,000	--

Overheads to be apportioned:

Power	78,000
Rent	72,000
Fuel and Heat	60,000
Insurance	12,000
Taxes	8,400
Depreciation	1,20,000

The following data were compiled by means of the factory survey made in the previous year:

	Floor Space	Radiator Section	No. of employees	Investment	H.P. hours
Machine Shop	2,000 Sq. ft.	45	20	8,00,000	3,500
Packing	800 Sq. ft.	90	12	2,40,000	500
General Plant	400 Sq. ft.	30	4	80,000	-
Stores & maintenance	1,600 Sq. ft.	60	8	1,60,000	1,000

Expenses charged to the stores departments are to be distributed to the other departments by the following percentages:

Machine shop 50%; Packing 20%; General Plant 30%;

General Plant overheads is distributed on the basis of number of employees.

- Prepare an overhead distribution statement with supporting schedules to show computations and basis of distribution.
- Determine the service department distribution by simultaneous equation method.

Non-integrated Accounting

- The financial books of a company reveal the following data for the year ended 31st March, 2014:

	(₹)
Opening Stock:	
Finished goods 875 units	76,525
Work-in-process	33,000
01.04.2013 to 31.3.2014	
Raw materials consumed	7,84,000
Direct Labour	4,65,000

Factory overheads	2,65,000
Goodwill written off	95,000
Administration overheads	3,15,000
Interest paid	72,000
Bad Debts	21,000
Selling and Distribution Overheads	65,000
Interest received	18,500
Rent received	72,000
Sales 14,500 units	20,80,000
Closing Stock: Finished goods 375 units	43,250
Work-in-process	48,200

The cost records provide as under:

Factory overheads are absorbed at 60% of direct wages.

Administration overheads are recovered at 20% of factory cost.

Selling and distribution overheads are charged at ₹ 5 per unit sold.

Opening Stock of finished goods is valued at ₹ 105 per unit.

The company values work-in-process at factory cost for both Financial and Cost Profit Reporting.

Required:

- (i) Prepare statements for the year ended 31st March, 2014 show
 - the profit as per financial records
 - the profit as per costing records.
- (ii) Present a statement reconciling the profit as per costing records with the profit as per Financial Records.

Contract Costing

5. Dream house (P) Ltd. is engaged in building two residential housing projects in the city. Particulars related to two housing projects are as below:

	HP-1 (₹)	HP-2 (₹)
Work in Progress on 1 st April 2013	7,80,000	2,80,000
Materials Purchased	6,20,000	8,10,000
Land purchased near to the site to open an office	-	12,00,000
Brokerage and registration fee paid on the above purchase	-	60,000

Wages paid	85,000	62,000
Wages outstanding as on 31st March, 2014	12,000	8,400
Donation paid to local clubs	5,000	2,500
Plant hire charges paid for three years effecting from 1st April 2013	72,000	57,000
Value of materials at site as on 31st March, 2014	47,000	52,000
Contract price of the projects	48,00,000	36,00,000
Value of work certified	20,50,000	16,10,000
Work not certified	1,90,000	1,40,000

A concrete mixture machine was bought on 1st April 2013 for ₹ 8,20,000 and used for 180 days in HP-1 and for 100 days in HP-2. Depreciation is provided @ 15% p.a. (this machine can be used for any other projects)

As per the contract agreement contractee shall retain 20% of work certified as retention money.

Prepare contract account for the two housing projects showing the profit or loss on each project for the year ended 31st March, 2014.

Process Costing

6. The following data are available in respect of Process-I for October 2014:

(1) Opening stock of work in process: 600 units at a total cost of ₹ 4,200.

(2) Degree of completion of opening work in process:

Material	100%
Labour	60%
Overheads	60%

(3) Input of materials at a total cost of ₹ 55,200 for 9,200 units.

(4) Direct wages incurred ₹ 18,600

(5) Overheads ₹ 8,630.

(6) Units scrapped 200 units. The stage of completion of these units was:

Materials	100%
Labour	80%
Overheads	80%

(7) Closing work in process; 700 units. The stage of completion of these units was:

Material	100%
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Labour	70%
Overheads	70%

- (8) 8,900 units were completed and transferred to the next process.
 (9) Normal loss is 4% of the total input (opening stock plus units put in)
 (10) Scrap value is ₹ 6 per unit.

You are required to:

- (a) Compute equivalent production,
 (b) Calculate the cost per equivalent unit for each element.
 (c) Calculate the cost of abnormal loss (or gain), closing work in process and the units transferred to the next process using the FIFO method.

Standard Costing

7. ABC Ltd. had prepared the following estimation for the month of April:

	Quantity	Rate (₹)	Amount (₹)
Material-A	800 kg.	45.00	36,000
Material-B	600 kg.	30.00	18,000
Skilled labour	1,000 hours	37.50	37,500
Unskilled labour	800 hours	22.00	17,600

Normal loss was expected to be 10% of total input materials and an idle labour time of 5% of expected labour hours was also estimated.

At the end of the month the following information has been collected from the cost accounting department:

The company has produced 1,480 kg. finished product by using the followings:

	Quantity	Rate (₹)	Amount (₹)
Material-A	900 kg.	43.00	38,700
Material-B	650 kg.	32.50	21,125
Skilled labour	1,200 hours	35.50	42,600
Unskilled labour	860 hours	23.00	19,780

You are required to calculate:

- (a) Material Cost Variance;
 (b) Material Price Variance;
 (c) Material Mix Variance;

- (d) Material Yield Variance;
- (e) Labour Cost Variance;
- (f) Labour Efficiency Variance and
- (g) Labour Yield Variance.

Marginal Costing

8. Arnav Ltd. manufacture and sales its product R-9. The following figures have been collected from cost records of last year for the product R-9:

Elements of Cost	Variable Cost portion	Fixed Cost
Direct Material	30% of Cost of Goods Sold	--
Direct Labour	15% of Cost of Goods Sold	--
Factory Overhead	10% of Cost of Goods Sold	₹ 2,30,000
General & Administration Overhead	2% of Cost of Goods Sold	₹ 71,000
Selling & Distribution Overhead	4% of Cost of Sales	₹ 68,000

Last Year 5,000 units were sold at ₹185 per unit. From the given data find the followings:

- (a) Break-even Sales (in rupees)
- (b) Profit earned during last year
- (c) Margin of safety (in %)
- (d) Profit if the sales were 10% less than the actual sales.

Budget and Budgetary Control

9. S Ltd. has prepared budget for the coming year for its two products A and B.

	Product A (₹)	Product B (₹)
Production & Sales unit	6,000 units	9,000 units
Raw material cost per unit	60.00	42.00
Direct labour cost per unit	30.00	18.00
Variable overhead per unit	12.00	6.00
Fixed overhead per unit	8.00	4.00
Selling price per unit	120.00	78.00

After some marketing efforts, the sales quantity of the Product A & B can be increased by 1,500 units and 500 units respectively but for this purpose the variable overhead and fixed overhead will be increased by 10% and 5% respectively for the both products.

You are required to prepare flexible budget for both the products:

- (a) Before marketing efforts

- (b) After marketing efforts.

Miscellaneous

10. (a) A Ltd. is engaged in production of sugar. While producing sugar molasses is also produced. Molasses is identified as by-product of sugar. Suggest the treatment of molasses in the cost accounts of A Ltd.
- (b) Z Ltd. Produces product ZZ in batches, management of the Z Ltd. wants to know the number of batches of product ZZ to be produced where the cost incurred on batch setup and carrying cost of production is at optimum level.
- (c) Steel Heart Pvt. Ltd. Manufactures TMT bars from MS Ingots and MS Billets. After production of TMT bars, sorting is carried out to find any defects or units that do not match with standard specification. The products which do not match with the standard product specification are treated as scrap. You are required to state the treatment of the products which do not match with the product specifications in Cost Accounts.
- (d) What is cost plus contract? State its advantages.

SUGGESTED HINTS/ANSWERS

1. Working Notes:

- (i) Computation of Annual consumption & Annual Demand for raw material 'Dee':

Sales forecast of the product 'Exe'	10,000 units
Less: Opening stock of 'Exe'	900 units
Fresh units of 'Exe' to be produced	9,100 units
Raw material required to produce 9,100 units of 'Exe' (9,100 units × 2 kg.)	18,200 kg.
Less: Opening Stock of 'Dee'	1,000 kg.
Annual demand for raw material 'Dee'	17,200 kg.

- (ii) Computation of Economic Order Quantity (EOQ):

$$\begin{aligned} \text{EOQ} &= \sqrt{\frac{2 \times \text{Annual demand of 'Dee'} \times \text{Ordering cost}}{\text{Carrying cost per unit per annum}}} \\ &= \sqrt{\frac{2 \times 17,200 \text{ kg.} \times ₹ 720}{₹ 125 \times 13.76\%}} = \sqrt{\frac{2 \times 17,200 \text{ kg.} \times ₹ 720}{₹ 17.2}} = 1,200 \text{ kg.} \end{aligned}$$

- (iii) Re- Order level:

$$= (\text{Maximum consumption per day} \times \text{Maximum lead time})$$

$$= \left\{ \left(\frac{\text{Annual Consumption of 'Dee'}}{364 \text{ days}} + 20 \text{ kg.} \right) \times 8 \text{ days} \right\}$$

$$= \left\{ \left(\frac{18,200 \text{ kg.}}{364 \text{ days}} + 20 \text{ kg.} \right) \times 8 \text{ days} \right\} = 560 \text{ kg.}$$

(iv) **Minimum consumption per day of raw material 'Dee':**

Average Consumption per day = 50 Kg.

Hence, Maximum Consumption per day = 50 kg. + 20 kg. = 70 kg.

So Minimum consumption per day will be

$$\text{Average Consumption} = \frac{\text{Min. consumption} + \text{Max. consumption}}{2}$$

$$\text{Or, } 50 \text{ kg.} = \frac{\text{Min. consumption} + 70 \text{ kg.}}{2}$$

$$\text{Or, Min. consumption} = 100 \text{ kg} - 70 \text{ kg.} = 30 \text{ kg.}$$

(a) **Re-order Quantity :**

$$\text{EOQ} - 200 \text{ kg.} = 1,200 \text{ kg.} - 200 \text{ kg.} = 1,000 \text{ kg.}$$

(b) **Maximum Stock level:**

= Re-order level + Re-order Quantity - (Min. consumption per day × Min. lead time)

$$= 560 \text{ kg.} + 1,000 \text{ kg.} - (30 \text{ kg.} \times 4 \text{ days})$$

$$= 1,560 \text{ kg.} - 120 \text{ kg.} = 1,440 \text{ kg.}$$

(c) **Minimum Stock level:**

= Re-order level - (Average consumption per day × Average lead time)

$$= 560 \text{ kg.} - (50 \text{ kg.} \times 6 \text{ days}) = 260 \text{ kg.}$$

(d) **Impact on the profitability of the company by not ordering the EOQ.**

		When purchasing the ROQ	When purchasing the EOQ
I	Order quantity	1,000 kg.	1,200 kg.
II	No. of orders a year	$\frac{17,200 \text{ kg.}}{1,000 \text{ kg.}} = 17.2 \text{ or } 18 \text{ orders}$	$\frac{17,200 \text{ kg.}}{1,200 \text{ kg.}} = 14.33 \text{ or } 15 \text{ orders}$
III	Ordering Cost	18 orders × ₹ 720 = ₹12,960	15 orders × ₹ 720 = ₹10,800

IV	Average Inventory	$\frac{1,000\text{kg.}}{2} = 500\text{kg.}$	$\frac{1,200\text{kg.}}{2} = 600\text{kg.}$
V	Carrying Cost	500 kg. × ₹ 17.2 = ₹ 8,600	600 kg. × ₹ 17.2 = ₹ 10,320
VI	Total Cost	₹ 21,560	₹ 21,120

Extra Cost incurred due to not ordering EOQ = ₹ 21,560 - ₹ 21,120 = ₹ 440

2. Working Notes:

(i) Calculation of no. of employees at the beginning and end of the year

	At the Beginning of the year	At the end of the year
Data Processors	540	1,560
Payroll Processors [Left- 60 + Closing- 40 – Joined- 20]	80	40
Supervisors*	30	90
Voice Agents*	30	30
Assistant Managers*	20	30
Senior Voice Agents	4	12
Senior Data Processors	8	34
Team Leaders	60	0
Total	772	1,796

(* At the beginning of the year:

Strength of Supervisors, Voice Agents and Asst. Managers =

$$[772 - \{540 + 80 + 4 + 8 + 60\} \text{ employees}] \text{ or } [772 - 692 = 80 \text{ employees}]$$

$$\{(\text{Supervisors- } 80 \times \frac{3}{8} = 30, \text{ Voice Agents- } 80 \times \frac{3}{8} = 30 \text{ \& Asst. Managers- } 80 \times \frac{2}{8} = 20)$$

employees]

At the end of the year:

[Supervisor-(Opening- 30 + 60 Joining) = 90; Voice Agents- (Opening- 30 + 20 Joined – 20 Left) = 30]

(ii) No. of Employees Separated, Replaced and newly recruited during the year

Particulars	Separations	New Recruitment	Replacement	Total Joining
Data Processors	60	1,020	60	1,080
Payroll Processors	60	--	20	20

Supervisors	--	60	--	60
Voice Agents	20	--	20	20
Assistant Managers	10	10	10	20
Sr. Voice Agents	--	8	--	8
Sr. Data Processors	--	26	--	26
Team Leaders	60	--	--	--
Total	210	1,124	110	1,234

(Since, Corrs Consultancy Ltd. and its subsidiary are maintaining separate Personnel Department, so transfer-in and transfer-out are treated as recruitment and separation respectively.)

(a) Calculation of Labour Turnover:

$$\begin{aligned} \text{Replacement Method} &= \frac{\text{No. of employees replaced during the year}}{\text{Average no. of employees on roll}} \times 100 \\ &= \frac{110}{(772+1,796)/2} \times 100 = \frac{110}{1,284} \times 100 = 8.57\% \end{aligned}$$

$$\begin{aligned} \text{Separation Method} &= \frac{\text{No. of employees separated during the year}}{\text{Average no. of employees on roll}} \times 100 \\ &= \frac{210}{1,284} \times 100 = 16.36\% \end{aligned}$$

(b) Labour Turnover under Flux Method:

$$\begin{aligned} &= \frac{\text{No. of employees (Joined + Separated) during the year}}{\text{Average no. of employees on roll}} \times 100 \\ &= \frac{\text{No. of employees (Re placed + New recruited + Separated) during the year}}{\text{Average no. of employees on roll}} \times 100 \\ &= \frac{1,234 + 210}{1,284} \times 100 = 112.46\% \end{aligned}$$

Labour Turnover calculated by the executive trainee of the Personnel department is incorrect as it has not taken the No. of new recruitment while calculating the labour turnover under Flux method.

3. (a) Overhead Distribution Statement

	Production Departments		Service Departments	
	Machine Shops	Packing	General Plant	Stores
Allocated Overheads:	(₹)	(₹)	(₹)	(₹)
Indirect labour	8,000	6,000	4,000	11,000
Maintenance Material	3,400	1,600	2,100	2,800
Misc. supplies	1,500	2,900	900	600
Supervisor's salary	--	--	16,000	--
Cost & payroll salary	--	--	80,000	--
Total allocated overheads	12,900	10,500	1,03,000	14,400
Add: Apportioned Overheads (As per Schedule below)	1,84,350	70,125	22,775	73,150
	1,97,250	80,625	1,25,775	87,550

Schedule of Apportionment of Overheads

Item of Cost	Basis	Production Departments		Service Departments	
		Machine Shops (₹)	Packing (₹)	General Plant (₹)	Stores (₹)
Power	HP hours (7 : 1 : - : 2)	54,600	7,800	--	15,600
Rent	Floor space (5 : 2 : 1 : 4)	30,000	12,000	6,000	24,000
Fuel & Heat	Radiator sec. (3 : 6 : 2 : 4)	12,000	24,000	8,000	16,000
Insurance	Investment (10 : 3 : 1 : 2)	7,500	2,250	750	1,500
Taxes	Investment (10 : 3 : 1 : 2)	5,250	1,575	525	1,050
Depreciation	Investment (10 : 3 : 1 : 2)	75,000	22,500	7,500	15,000
		1,84,350	70,125	22,775	73,150

(b) Re-distribution of Overheads of Service Departments to Production Departments:

Let, the total overheads of General Plant = 'a' and the total overheads of Stores = 'b'

$$a = 1,25,775 + 0.3b \dots\dots\dots(i)$$

$$b = 87,550 + 0.2a \dots\dots\dots(ii)$$

Putting the value of 'b' in equation no. (i)

$$a = 1,25,775 + 0.3(87,550 + 0.2a)$$

$$\text{Or } a = 1,25,775 + 26,265 + 0.06a$$

$$\text{Or } 0.94a = 1,52,040 \quad \text{Or } a = 1,61,745 \text{ (appx.)}$$

Putting the value of a = 1,61,745 in equation no. (ii) to get the value of 'b'

$$b = 87,550 + 0.2 \times 1,61,745 = 1,19,899$$

Secondary Distribution Summary

Particulars	Total (₹)	Machine Shops (₹)	Packing (₹)
Allocated and Apportioned overheads as per Primary distribution	2,77,875	1,97,250.00	80,625.00
-General Plant	1,61,745	80,872.50 $(1,61,745 \times \frac{5}{10})$	48,523.50 $(1,61,745 \times \frac{3}{10})$
-Stores	1,19,899	59,949.50 $(1,19,899 \times 50\%)$	23,979.80 $(1,19,899 \times 20\%)$
		3,38,072.00	1,53,128.30

4. (i) Statement of Profit as per financial records

(for the year ended March 31, 2014)

	(₹)		(₹)
To Opening stock:		By Sales	20,80,000
Finished Goods	76,525	By Closing stock:	
Work-in-process	33,000	Finished Goods	43,250
To Raw materials consumed	7,84,000	Work-in-Process	48,200
To Direct labour	4,65,000	By Rent received	72,000
To Factory overheads	2,65,000	By Interest received	18,500

To Goodwill written off	95,000		
To Administration overheads	3,15,000		
To Selling & distribution overheads	65,000		
To Interest paid	72,000		
To Bad debts	21,000		
To Profit	70,425		
	22,61,950		22,61,950

Statement of Profit as per costing records
(for the year ended March 31,2014)

	(₹)	(₹)
Sales revenue (14,500 units) (A)		20,80,000
<u>Cost of Sales:</u>		
Opening stock (875 units x ₹ 105)	91,875	
Add: Cost of production of 14,000 units (Refer to Working Note 1 & 2)	18,15,360	
Less: Closing stock $\left(\frac{₹18,15,360 \times 375 \text{ units}}{14,000 \text{ units}} \right)$	(48,626)	
Production cost of goods sold (14,500 units)	18,58,609	
Selling & distribution overheads (14,500 units x ₹ 5)	72,500	
Cost of sales: (B)	19,31,109	19,31,109
Profit: {(A) – (B)}		1,48,891

(ii) **Statement of Reconciliation**

(Reconciling the profit as per costing records with the profit as per financial records)

	(₹)	(₹)
Profit as per Cost Accounts		1,48,891
Add: Factory overheads over absorbed (₹ 2,79,000 – ₹ 2,65,000)	14,000	
S & D overheads over absorbed (₹ 72,500 – ₹ 65,000)	7,500	
Opening stock overvalued (₹ 91,875 – ₹ 76,525)	15,350	

Interest received	18,500	
Rent received	72,000	1,27,350
		2,76,241
<i>Less: Administration overheads under recovery</i> (₹ 3,15,000 – ₹ 3,02,560)	12,440	
Closing stock overvalued (₹ 48,626 – ₹ 43,250)	5,376	
Goodwill written off	95,000	
Interest paid	72,000	
Bad debts	21,000	2,05,816
Profit as per financial accounts		70,425

Working Notes:

1. Number of units produced	Units
Sales	14,500
<i>Add: Closing stock</i>	<u>375</u>
Total	14,875
<i>Less: Opening stock</i>	<u>875</u>
Number of units produced	<u>14,000</u>

2. Cost Sheet

	(₹)	(₹)
Raw materials consumed		7,84,000
Direct labour		4,65,000
<i>Prime cost</i>		12,49,000
Factory overheads (60% of direct wages)		2,79,000
<i>Factory cost</i>		15,28,000
<i>Add: Opening work-in-process</i>		33,000
<i>Less: Closing work-in-process</i>		(48,200)
<i>Factory cost of goods produced</i>		15,12,800
Administration overheads (20% of factory cost)		3,02,560
Cost of production of 14,000 units		18,15,360

$$\text{Cost of production per unit} = \frac{\text{Total Cost of Production}}{\text{No. of units produced}} = \frac{\text{₹ } 18,15,360}{14,000 \text{ units}} = \text{₹ } 129.67$$

5. Dr. **Contract Account for the year ended 31st March, 2014** Cr.

Particulars	HP-1 (₹)	HP-2 (₹)	Particulars	HP-1 (₹)	HP-2 (₹)
To Balance b/d: W-I-P	7,80,000	2,80,000	By Closing material at site	47,000	52,000
To Material purchased	6,20,000	8,10,000	By W-I-P:		
To Wages: (₹85,000+₹12,000) (₹62,000+₹8,400)	97,000	70,400	Value of work certified	20,50,000	16,10,000
			Cost of work not certified	1,90,000	1,40,000
To Donation to local club*	5,000	2,500			
To Plant hire charges: (₹72,000x1/3) (₹57,000x1/3)	24,000	19,000			
To Depreciation on concrete mixture**: (₹8,20,000x15%x180/365) (₹8,20,000x15%x100/365)	60,658	33,699			
To Notional profit (balance c/d)	7,00,342	5,86,401			
	22,87,000	18,02,000		22,87,000	18,02,000
To Costing P & L A/c (WN-2)	1,86,758	1,56,374	By Notional profit (balance b/d)	7,00,342	5,86,401
To Costing P& L Reserve A/c.	5,13,584	4,30,027			
	7,00,342	5,86,401		7,00,342	5,86,401

* Assuming donation paid to local club was exclusively for the above projects, hence included in the contract account.

** Depreciation on concrete mixture machine is charged on the basis of number of days used for the projects, as it is clearly mentioned in the question that this machine can be used for other projects also.

Working Notes:

- 1 Computation of Stage of completion of the projects:

$$\frac{\text{Value of work certified}}{\text{Value of contract}} \times 100$$

$$\text{HP-1} = \frac{\text{₹ } 20,50,000}{\text{₹ } 48,00,000} \times 100 = 42.71\%$$

$$\text{HP-2} = \frac{\text{₹ } 16,10,000}{\text{₹ } 36,00,000} \times 100 = 44.72\%$$

- 2 Computation of profit to be recognized in the Costing profit & loss A/c.

$$\frac{1}{3} \times \text{Notional profit} \times \frac{\text{Cash Received}}{\text{Value of work certified}}$$

$$\text{HP-1} = \frac{1}{3} \times \text{₹ } 7,00,342 \times 80\% = \text{₹ } 1,86,758$$

$$\text{HP-2} = \frac{1}{3} \times \text{₹ } 5,86,401 \times 80\% = \text{₹ } 1,56,374$$

(Land purchased and brokerage and registration fee paid for this purpose cannot be charged to contract account, hence not included in the contract account)

6. (a) Statement of Equivalent Production (FIFO Method)

Input		Output		Equivalent Production					
				Materials		Labour		Overheads	
Details	Units	Details	Units	%	Units	%	Units	%	Units
Opening Stock	600	Finished goods transferred to next process:- opening stock	600	-	-	40	240	40	240
		- From fresh materials	8,300	100	8,300	100	8,300	100	8,300
		Closing W-I-P	700	100	700	70	490	70	490
Fresh inputs	9,200	Normal loss	392	-	-	-	-	-	-
			9,992		9,000		9,030		9,030
		Less: Abnormal Gain	(192)	100	(192)	100	(192)	100	(192)
	9,800		9,800		8,808		8,838		8,838

- (b) Statement of Cost per equivalent units

Elements	(₹)	Cost (₹)	Equivalent units	Cost per equivalent Unit (₹)
Material Cost	55,200			
Less: Scrap realisation 392 units @ ₹ 6/- p.u.	<u>2,352</u>	52,848	8,808	6.00
Labour cost		18,600	8,838	2.10

Overheads		<u>8,630</u>	8,838	<u>0.98</u>
Total Cost		<u>80,078</u>		<u>9.08</u>

(c) Cost of Abnormal Gain – 192 Units

	(₹)	(₹)
Material cost of 192 units @ ₹ 6.00/- p.u.	1,152.00	
Labour cost of 192 units @ ₹ 2.10/- p.u.	403.20	
Overheads of 192 units @ ₹ 0.98/- p.u.	<u>188.16</u>	<u>1,743.36</u>

Cost of closing WIP – 700 Units

Material cost of 700 equivalent units @ ₹ 6.00/- p.u.	4,200.00	
Labour cost of 490 equivalent units @ ₹ 2.10/- p.u.	1,029.00	
Overheads of 490 equivalent @ ₹ 0.98/- p.u.	<u>480.20</u>	<u>5709.20</u>

Cost of 8,900 units transferred to next process (₹)

(i) Cost of opening W-I-P Stock b/f – 600 units	4,200.00	
(ii) Cost incurred on opening W-I-P stock		
Material cost	—	
Labour cost 240 equivalent units @ ₹ 2.10 p.u.	504.00	
Overheads 240 equivalent units @ ₹ 0.98/- p.u.	<u>235.20</u>	739.20
(iii) Cost of 8,300 completed units		
8,300 units @ ₹ 9.08 p.u.		<u>75,364.00</u>
Total cost [(i) + (ii) + (iii)]		<u>80,303.20</u>

7. Material Variances:

Material	SQ (WN-1)	SP (₹)	SQ × SP (₹)	RSQ (WN-2)	RSQ × SP (₹)	AQ	AQ × SP (₹)	AP (₹)	AQ × AP (₹)
A	940 kg.	45.00	42,300	886 kg.	39,870	900 kg.	40,500	43.00	38,700
B	705 kg.	30.00	21,150	664 kg.	19,920	650 kg.	19,500	32.50	21,125
	1645 kg		63,450	1550 kg	59,790	1550 kg	60,000		59,825

WN-1: Standard Quantity (SQ):

$$\text{Material A-} \left(\frac{800 \text{ kg.}}{0.9 \times 1,400 \text{ kg.}} \times 1,480 \text{ kg.} \right) = 939.68 \text{ or } 940 \text{ kg.}$$

$$\text{Material B-} \left(\frac{600\text{kg.}}{0.9 \times 1,400\text{kg.}} \times 1,480\text{kg.} \right) = 704.76 \text{ or } 705 \text{ kg.}$$

WN- 2: Revised Standard Quantity (RSQ):

$$\text{Material A-} \left(\frac{800\text{kg.}}{1,400\text{kg.}} \times 1,550\text{kg.} \right) = 885.71 \text{ or } 886 \text{ kg.}$$

$$\text{Material B-} \left(\frac{600\text{kg.}}{1,400\text{kg.}} \times 1,550\text{kg.} \right) = 664.28 \text{ or } 664 \text{ kg.}$$

- (a) Material Cost Variance (A + B) = {(SQ × SP) – (AQ × AP)}
= {63,450 – 59,825} = 3,625 (F)
- (b) Material Price Variance (A + B) = {(AQ × SP) – (AQ × AP)}
= {60,000 – 59,825} = 175 (F)
- (c) Material Mix Variance (A + B) = {(RSQ × SP) – (AQ × SP)}
= {59,790 – 60,000} = 210 (A)
- (d) Material Yield Variance (A + B) = {(SQ × SP) – (RSQ × SP)}
= {63,450 – 59,790} = 3,660 (F)

Labour Variances:

Labour	SH (WN-3)	SR (₹)	SH × SR (₹)	RSH (WN-4)	RSH × SR (₹)	AH	AH × SR (₹)	AR (₹)	AH × AR (₹)
Skilled	1,116 hrs	37.50	41,850	1144	42,900	1,200	45,000	35.50	42,600
Unskilled	893 hrs	22.00	19,646	916	20,152	860	18,920	23.00	19,780
	2,009 hrs		61,496	2,060	63,052	2,060	63,920		62,380

WN- 3: Standard Hours (SH):

$$\text{Skilled labour-} \left(\frac{0.95 \times 1,000\text{hr.}}{0.90 \times 1,400\text{kg.}} \times 1,480\text{kg.} \right) = 1,115.87 \text{ or } 1,116 \text{ hrs.}$$

$$\text{Unskilled labour-} \left(\frac{0.95 \times 800\text{hr.}}{0.90 \times 1,400\text{kg.}} \times 1,480\text{kg.} \right) = 892.69 \text{ or } 893 \text{ hrs.}$$

WN- 4: Revised Standard Hours (RSH):

$$\text{Skilled labour-} \left(\frac{1,000\text{hr.}}{1,800\text{hr.}} \times 2,060\text{hr.} \right) = 1,144.44 \text{ or } 1,144 \text{ hrs.}$$

$$\text{Unskilled labour-} \left(\frac{800\text{hr.}}{1,800\text{hr.}} \times 2,060\text{hr.} \right) = 915.56 \text{ or } 916 \text{ hrs.}$$

- (e) Labour Cost Variance (Skilled + Unskilled) = $\{(SH \times SR) - (AH \times AR)\}$
= $\{61,496 - 62,380\} = 884 \text{ (A)}$
- (f) Labour Efficiency Variance (Skilled + Unskilled) = $\{(SH \times SR) - (AH \times SR)\}$
= $\{61,496 - 63,920\} = 2,424 \text{ (A)}$
- (g) Labour Yield Variance (Skilled + Unskilled) = $\{(SH \times SR) - (RSH \times SR)\}$
= $\{61,496 - 63,052\} = 1,556 \text{ (A)}$

8. Working Notes:

(i) Calculation of Cost of Goods Sold (COGS):

$$\text{COGS} = \{(DM- 0.3 \text{ COGS}) + (DL- 0.15 \text{ COGS}) + (FOH- 0.10 \text{ COGS} + ₹ 2,30,000) + (G\&AOH- 0.02 \text{ COGS} + ₹ 71,000)\}$$

$$\text{Or COGS} = 0.57 \text{ COGS} + ₹ 3,01,000$$

$$\text{Or COGS} = \frac{₹ 3,01,000}{0.43} = ₹ 7,00,000$$

(ii) Calculation of Cost of Sales (COS):

$$\text{COS} = \text{COGS} + (\text{S\&DOH- } 0.04 \text{ COS} + ₹ 68,000)$$

$$\text{Or COS} = ₹ 7,00,000 + (0.04 \text{ COS} + ₹ 68,000)$$

$$\text{Or COS} = \frac{₹ 7,68,000}{0.96} = ₹ 8,00,000$$

(iii) Calculation of Variable Costs:

Direct Material-	$(0.3 \times ₹ 7,00,000)$	₹ 2,10,000
Direct Labour-	$(0.15 \times ₹ 7,00,000)$	₹ 1,05,000
Factory Overhead-	$(0.10 \times ₹ 7,00,000)$	₹ 70,000
General & Administration OH-	$(0.02 \times ₹ 7,00,000)$	₹ 14,000
Selling & Distribution OH	$(0.04 \times ₹ 8,00,000)$	₹ 32,000
		₹ 4,31,000

(iv) Calculation of total Fixed Costs:

Factory Overhead-	₹ 2,30,000
General & Administration OH-	₹ 71,000
Selling & Distribution OH	₹ 68,000
	₹ 3,69,000

(v) Calculation of P/V Ratio:

$$\begin{aligned} \text{P/V Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{\text{Sales} - \text{Variable Costs}}{\text{Sales}} \times 100 \\ &= \frac{(\text{₹}185 \times 5,000 \text{ units}) - \text{₹}4,31,000}{\text{₹}185 \times 5,000 \text{ units}} \times 100 = 53.41\% \end{aligned}$$

$$(a) \text{ Break-Even Sales} = \frac{\text{Fixed Costs}}{\text{P/V Ratio}} = \frac{\text{₹}3,69,000}{53.41\%} = \text{₹}6,90,882$$

$$\begin{aligned} (b) \text{ Profit earned during the last year} \\ &= (\text{Sales} - \text{Total Variable Costs}) - \text{Total Fixed Costs} \\ &= (\text{₹}9,25,000 - \text{₹}4,31,000) - \text{₹}3,69,000 \\ &= \text{₹}1,25,000 \end{aligned}$$

$$\begin{aligned} (c) \text{ Margin of Safety (\%)} &= \frac{\text{Sales} - \text{Breakeven sales}}{\text{Sales}} \times 100 \\ &= \frac{\text{₹}9,25,000 - \text{₹}6,90,882}{\text{₹}9,25,000} \times 100 = 25.31\% \end{aligned}$$

$$\begin{aligned} (d) \text{ Profit if the sales were 10\% less than the actual sales:} \\ \text{Profit} &= 90\% (\text{₹}9,25,000 - \text{₹}4,31,000) - \text{₹}3,69,000 \\ &= \text{₹}4,44,600 - \text{₹}3,69,000 = \text{₹}75,600 \end{aligned}$$

9. (a) Flexible Budget before marketing efforts:

	Product A (₹) 6,000 units		Product B (₹) 9,000 units	
	Per unit	Total	Per unit	Total
Sales	120.00	7,20,000	78.00	7,02,000
Raw material cost	60.00	3,60,000	42.00	3,78,000
Direct labour cost per unit	30.00	1,80,000	18.00	1,62,000
Variable overhead per unit	12.00	72,000	6.00	54,000
Fixed overhead per unit	8.00	48,000	4.00	36,000
Total cost	110.00	6,60,000	70.00	6,30,000
Profit	10.00	60,000	8.00	72,000

(b) Flexible Budget after marketing efforts:

	Product A (₹) 7,500 units		Product B (₹) 9,500 units	
	Per unit	Total	Per unit	Total
Sales	120.00	9,00,000	78.00	7,41,000
Raw material cost	60.00	4,50,000	42.00	3,99,000
Direct labour cost per unit	30.00	2,25,000	18.00	1,71,000
Variable overhead per unit	13.20	99,000	6.60	62,700
Fixed overhead per unit	6.72	50,400	3.98	37,800
Total cost	109.92	8,24,400	70.58	6,70,500
Profit	10.08	75,600	7.42	70,500

10. (a) Molasses is a by product of sugar and treatment of by-product in cost accounting is as follows.

(i) When these are of small total value, the amount realized from their sale may be dealt as follows:

- Sales value of the by-product may be credited to Costing Profit and Loss Account and no credit be given in Cost Accounting. The credit to Costing Profit and Loss Account is treated here either as a miscellaneous income or as additional sales revenue.
- The sale proceeds of the by-product may be treated as deduction from the total costs. The sales proceeds should be deducted either from production cost or cost of sales.

(ii) When they require further processing: In this case, the net realisable value of the by-product at the split-off point may be arrived at by subtracting the further processing cost from realisable value of by-product. If the value is small, it may be treated as discussed in (i) above.

(b) Economic batch quantity in Batch Costing: In batch costing the most important problem is the determination of 'Economic Batch Quantity'. The determination of economic batch quantity involves two types of costs viz, (i) set up cost and (ii) carrying cost. With the increase in the batch size, there is an increase in the carrying cost but the set up cost per unit of product is reduced. This situation is reversed when the batch size is reduced. Thus there is one particular batch size for which both set up and carrying costs are minimum. This size of a batch is known as economic or optimum batch quantity.

Economic batch quantity can be determined with the help of table, graph or mathematical formula. The mathematical formula usually used for its determination is as follows:

$$\text{E.B.Q} = \sqrt{\frac{2DS}{C}}$$

Where, D= Annual demand for the product
 S = Setting up cost per batch
 C = Carrying cost per unit of production per annum

- (c) Scrap has been defined as the incidental residue from certain types of manufacture, usually of small amount and low value, recoverable without further processing.

Scrap may be treated in cost accounts in the following ways:-

- (i) **When the scrap value is negligible:** It may be excluded from costs. In other words, the cost of scrap is borne by good units and income from scrap is treated as other income.
 - (ii) **When the scrap value is not identifiable to a particular process or job:** The sales value of scrap net of selling and distribution cost, is deducted from overhead to reduce the overhead rate. A variation of this method is to deduct the net realisable value from material cost.
 - (iii) **When scrap is identifiable with a particular job or process and its value is significant:** The scrap account should be charged with full cost. The credit is given to the job or process concerned. The profit or loss in the scrap account, on realisation, will be transferred to the Costing Profit and Loss Account.
- (d) **Cost plus contract:** Under cost plus contract, the contract price is ascertained by adding a percentage of profit to the total cost of the work. Such types of contracts are entered into when it is not possible to estimate the contract cost with reasonable accuracy due to unstable condition of material, labour services etc.

Following are the advantages of cost plus contract:

- (i) The contractor is assured of a fixed percentage of profit. There is no risk of incurring any loss on the contract.
- (ii) It is useful specially when the work to be done is not definitely fixed at the time of making the estimate.
- (iii) Contractee can ensure himself about the 'cost of contract' as he is empowered to examine the books and documents of the contractor to ascertain the veracity of the cost of contract.

PART II: FINANCIAL MANAGEMENT

QUESTIONS

1. Answer the following, supporting the same with reasoning/working notes:
 - (a) 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.
 - (b) Beta Limited is into manufacturing. It has an expected usage of 50,000 units of certain product during the next year. The cost of processing an order is ₹ 20 and the carrying cost per unit is ₹ 0.50 for one year. Lead time on an order is five days and the company will keep a reserve supply of two days' usage. You are required to calculate:
 - (i) The economic order quantity and
 - (ii) The re-order point. (Assume 360 days in a year).
 - (c) If a company finds that its cost of capital has changed does this affect the profitability of the company?
 - (d) Is it worth offering discounts to debtors to encourage prompt payment?
 - (e) Suggest ways in which companies can exercise control over their levels of working capital.

Management of Working Capital

2. Gamma Limited sells goods at a uniform rate of gross profit of 20 percent on sales including depreciation as part of cost of production. Its annual figures are as under:

	(₹)
Sales (At 2 months' credit)	24,00,000
Materials Consumed (Suppliers credit 2 months)	6,00,000
Wages Paid (Monthly at the beginning of the subsequent month)	4,80,000
Manufacturing Expenses (Cash expenses are paid – one month in arrear)	6,00,000
Administration Expenses (Cash expenses are paid – one month in arrear)	1,50,000
Sales Promotion Expenses (Paid quarterly in advance)	75,000

Gamma Limited keeps one month stock each of raw materials and finished goods. A minimum cash balance of ₹ 80,000 is always kept. The company wants to adopt a 10 percent safety margin in the maintenance of working capital. The company has no work-in-progress.

Find out the requirements of working capital of Gamma Limited on cash cost basis.

Investment Decisions

3. Mahalaxmi Limited is required to choose between two machines M1 and M2. The two machines are designed differently, but have identical capacity and do exactly the same job. Machine M1 costs ₹ 1,50,000 and will last for 3 years. It costs ₹ 40,000 per year to run. Machine M2 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 should Mahalaxmi Limited buy?

Financing Decisions

4. 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.
- What is Sohna Limited's ROI?
 - Does it have favourable financial leverage?
 - If Sohna Limited belongs to an industry whose asset turnover is 3, does it have a high or low asset leverage?
 - What are the operating, financial and combined leverages of Sohna Limited?
 - If the sales drops to ₹ 50,00,000, what will the new EBIT be?

Financing Decisions

5. 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:

- To determine the pattern for raising the additional finance.
- 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.

Financial Analysis and Planning

6. You are required to prepare Cash flow statement using direct method for Luna Limited for the year ending 31st March, 2014 from the following information:
- (a) Sales for the year amounted to ₹ 135 crores out of which 60 percent was cash sales.
 (b) Purchases for the year amounted to ₹ 55 crores out of which credit purchase was 80 percent.
 (c) Administrative and selling expenses amounted to ₹ 18 crores and salary paid amounted to ₹ 22 crores.
 (d) Luna Limited redeemed debentures of ₹ 20 crores at a premium of 10 percent. Debenture holders were issued equity shares of ₹ 15 crores towards redemption and the balance was paid in cash. Debenture interest paid during the year was ₹1.5 crores.
 (e) Dividend paid during the year amounted to ₹ 10 crores. Dividend distribution tax @ 17% was also paid.
 (f) Investment costing ₹ 12 crores were sold at a profit of ₹ 2.4 crores.
 (g) ₹ 8 crores was paid towards income tax during the year.
 (h) A new plant costing ₹ 21 crores was purchased in part exchange of an old plant. The book value of the old plant was ₹ 12 crores but the vendor took over the old plant at a value of ₹ 10 crores only. The balance was paid in cash to the vendor.
 (i) The following balances are also provided for your consideration:

	1.4.2013	31.3.2014
Debtors	45	50
Creditors	21	23
Bank	6	-

Investment Decisions

7. Elite Limited is considering three projects A, B and C. The cash flows associated with the projects are given below:

<i>Cash flows associated with the Three Projects (₹)</i>					
<i>Project</i>	<i>C₀</i>	<i>C₁</i>	<i>C₂</i>	<i>C₃</i>	<i>C₄</i>
A	(5,000)	1,000	1,000	3,000	0

B	(1,000)	0	1,000	2,000	3,000
C	(5,000)	1,000	1,000	3,000	5,000

You are required to:

- Calculate the Payback period of each of the three projects.
- If the cut-off period is two years, then which projects should be accepted?
- Projects with positive NPVs if the opportunity cost of capital is 10 percent.
- "Payback gives too much weight to cash flows that occur after the cut-off date". Is it true or false?
- "If a firm used a single cut-off period for all projects, it is likely to accept too many short-lived projects." Is it true or false?

Financial Analysis and Planning

8. Shree Limited has furnished the following ratios and information relating to the year ended 31st March, 2014.

<i>Sales</i>	₹ 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:

- Calculate the operating expenses for the year ended 31st March, 2014.
- Prepare a draft balance sheet as on 31st March in the following format:

Draft Balance Sheet as on 31st March, 2014

<i>Liabilities</i>	₹	<i>Assets</i>	₹
Share Capital		Fixed Assets	
Reserve and Surplus		Current Assets	
15% Debentures		Stock	

Sundry Creditors		Debtors	
		Cash	

Management of Working Capital

9. The following are the financial statements of Noah Limited.

Noah Limited Balance Sheets

			(₹)
	31 st March 2014		31 st March 2013
Assets			
Cash	3,49,600		4,83,600
Trade Investments	1,60,000		4,20,000
Debtors	3,05,400		3,08,600
Stock	2,35,200		1,84,600
Prepaid Expenses	7,600		9,200
Investment in A Ltd.	3,00,000		-
Land	14,400		14,400
Buildings, Net of Depreciation	24,07,200		7,13,600
Machinery, Net of Depreciation	<u>4,43,400</u>		<u>4,28,200</u>
Total Assets	<u>42,22,800</u>		<u>25,62,200</u>
Liabilities			
Creditors	1,15,200		1,08,400
Bank Overdraft	30,000		25,000
Accrued Expenses	17,400		18,400
Income-Tax Payable	1,93,000		67,400
Current Instalment due on Long-Term Loans	40,000		-
Long-Term Loans	1,60,000		2,00,000
Debentures, Net of Discount	9,60,000		-
Share Capital, ₹ 10 par value	6,70,000		6,00,000
Share Premium	13,40,000		9,50,000
Reserves and Surplus	<u>6,97,200</u>		<u>4,93,000</u>
Total Liabilities	42,22,800		25,62,200

Noah Limited
Income Statement
for the year ended 31st March, 2014

	(₹)
Sales	16,92,400
Cost of goods sold and operating expenses including depreciation on buildings of ₹ 26,400 and depreciation on machinery of ₹ 45,600	11,91,200
Operating Profit	5,01,200
Gain on Sale of Trade Investments	25,600
Gain on Sale of Machinery	7,400
Profit before Taxes	5,34,200
Income Taxes	2,09,400
Net Profit	3,24,800

Additional Information:

- (i) Machinery with a net book value of ₹ 36,600 was sold during the year.
- (ii) The shares of A Ltd. were acquired upon a payment of ₹ 1,20,000 in cash and the issuance of 3,000 shares of Noah limited. The share of Noah Limited was selling for ₹ 60 a share at that time.
- (iii) A new building was purchased at a cost of ₹ 17,20,000.
- (iv) Debentures having a face value of ₹ 100 each were issued in January 2014, at 96.
- (v) The cost of trade investments sold was ₹ 2,60,000.
- (vi) The company issued 4,000 shares for ₹ 2,80,000.
- (vii) Cash dividends of ₹ 1.80 a share were paid on 67,000 outstanding shares.

You are required to prepare a statement of changes in financial position on working capital basis as well as cash basis of Noah limited for the year ended 31st March, 2014.

10. Answer the following:

- (a) Write a short note on "Inter-relationship between Investment, Financing and Dividend Decisions".
- (b) Differentiate between Business risk and Financial risk.
- (c) Differentiate between Inflation Bonds and Floating Rate Bonds.

SUGGESTED ANSWERS / HINTS

1. (a) Preparation of Amortisation Schedule

Amount of Equal Instalment (A)

$$A = \frac{P_n}{PVIFA_{i,n}} = \frac{₹ 1,000}{2.2832} = ₹ 437.98$$

Amortisation Schedule

Year	Payment	Interest*	Repayment of Principal	Balance Outstanding
	₹	₹	₹	₹
1	437.98	150.00	287.98	712.02
2	437.98	106.80	331.18	380.84
3	437.98	57.13	380.85	

* = Loan balance at the beginning of the year × interest rate,

e.g., year 1 = (₹ 1,000 × 0.15) = ₹ 150.

(b) (i) Computation of Economic Order Quantity (EOQ)

The economic order quantity is:

$$\begin{aligned} \text{EOQ} &= \sqrt{\frac{2OA}{c}} \\ &= \sqrt{\frac{2 \times 50,000 \times 20}{0.50}} \\ &= \sqrt{40,00,000} \\ &= 2,000 \text{ units} \end{aligned}$$

(ii) Computation of Re-order Point

Daily usage = 50,000 ÷ 360 = 139 units

Reorder point = Safety stock + Lead time × Usage

$$= 2 (139) + 5 (139)$$

$$= 278 + 695 = 973$$

- (c) The answer depends on how the company has been financed.

If the company is financed mainly from short-term sources, it cannot ignore an increase in interest rates and may choose to switch to long-term financing. This will be at a higher rate and profitability will be diminished.

If the company is financed mainly from long-term sources, an increase in interest rates will not affect its profits directly. However, higher interest rates may depress economic activity and its profits may fall accordingly.

If the company is financed mainly from retained earnings or equity, an increase in the required return of shareholders will lead to pressure for higher dividends. The company may have insufficient funds to meet such demands.

- (d) Proposed changes to credit policy should be evaluated in the light of the additional costs and benefits that will result from their being undertaken. For example, the cost of the introduction of cash discounts can be compared with the benefits of faster settlement of accounts in terms of reduced interest charges, and possibly also the additional business that may result. The change should only be undertaken if the marginal benefits arising from the new policy exceed its marginal costs.

- (e) Companies can exercise control over the levels of their working capital by formulating and implementing policies concerning inventory, debtors, cash and creditors. Such policies will take account of the factors that influence these components of working capital, as follows:

- *Debtors:* Credit period allowed by a company and its competitors, speed of invoicing and other aspects of administrative efficiency, the use of discounts for early settlement, debtor collection methods, the forecast volume of sales.
- *Stock:* The length of the production process, the rate of turnover of raw materials, the turnover period of finished goods, delivery lead time, the budgeted and actual volumes of output and sales.
- *Creditors:* The extent to which a company can delay payments to suppliers, the volume of purchases, and the availability of cash discounts for early payment.
- *Cash:* Interest rates and available short-term investments, the availability of credit, the ease with which a company can access funds.

2. Working Notes:

1.	<i>Manufacturing Expenses</i>	₹
	Sales	24,00,000
	<i>Less: Gross Profit Margin at 20%</i>	<u>4,80,000</u>
	Total Manufacturing Cost	19,20,000

	Less: Materials Consumed	6,00,000	
	Wages	<u>4,80,000</u>	<u>10,80,000</u>
	Manufacturing Expenses		8,40,000
	Less: Cash Manufacturing Expenses (50,000 × 12)		<u>6,00,000</u>
	Depreciation		<u>2,40,000</u>
2.	<i>Total Cash Costs</i>		₹
	Manufacturing Costs		19,20,000
	Less: Depreciation		<u>2,40,000</u>
	Cash Manufacturing Costs		16,80,000
	Add: Administrative Expenses		1,50,000
	Add: Sales Promotion Expenses		<u>75,000</u>
	Total Cash Costs		<u>19,05,000</u>

Statement showing the Requirements of Working Capital of the Company

		₹
<i>Current Assets:</i>		
Debtors 1/6 the of Total Cash Costs (1/6 × ₹ 19,05,000)		3,17,500
(Refer to Working Note 2)		
Sales Promotion Expenses (prepaid)		18,750
Stock of Raw Materials (1 month)		50,000
Finished Goods (1/12 of Cash Manufacturing Costs)		1,40,000
(₹ 16,80,000 × 1/12)		
(Refer to Working Note 2)		
Cash-in-Hand		<u>80,000</u>
		6,06,250
<i>Less: Current Liabilities</i>		
Creditors for Goods (2 months)	1,00,000	
Wages (1 month)	40,000	
Manufacturing Expenses (1 month)	50,000	
Administrative Expenses (1 month)	<u>12,500</u>	<u>2,02,500</u>
Net Working Capital		4,03,750
Add: Safety Margin @ 10%		<u>40,375</u>
Working Capital Required		<u>4,44,125</u>

3. Statement showing the Evaluation of Two Machines

<i>Machines</i>	<i>M1</i>	<i>M2</i>
Purchase Cost (₹): (i)	1,50,000	1,00,000
Life of Machines (years)	3	2
Running Cost of Machine per year (₹): (ii)	40,000	60,000
Cumulative Present Value Factor for 1-3 years @ 10%: (iii)	2.486	-
Cumulative Present Value Factor for 1-2 years @ 10%: (iv)	-	1.735
Present Value of Running Cost of Machines (₹): (v)	99,440	1,04,100
	[(ii) × (iii)]	[(ii) × (iv)]
Cash Outflow of Machines (₹): (vi)=(i) + (v)	2,49,440	2,04,100
Equivalent Present Value of Annual Cash Outflow	1,00,338	1,17,637
	[(vi) ÷ (iii)]	[(vi) ÷ (iv)]

Advise: Mahalaxmi Limited should buy Machine M1 since its equivalent cash outflow is less than that of Machine M2.

4. (a) Computation of Sohna Limited's ROI

$$\text{ROI} = \frac{\text{EBIT}}{\text{Investment}}$$

$$\text{EBIT} = \text{Sales} - \text{Variable Cost} - \text{Fixed Cost}$$

$$= ₹ 75 \text{ lakhs} - ₹ 42 \text{ lakhs} - ₹ 6 \text{ lakhs} = ₹ 27 \text{ lakhs.}$$

$$\text{ROI} = \frac{₹ 27 \text{ lakhs}}{₹ 100 \text{ lakhs}} = 27 \text{ per cent.}$$

(b) Yes, Sohna Limited has favourable financial leverage as its ROI is higher than the interest on debt.

(c) Computation of Asset Turnover of Sohna Limited

$$\text{Asset turnover} = \frac{\text{Sales}}{\text{Total assets or Total investments}} = \frac{₹ 75 \text{ lakhs}}{₹ 100 \text{ lakhs}} = 0.75$$

The asset turnover of Sohna Limited is lower than the industry average of 3.

(d) Computation of Leverages

$$\text{Operating leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{(₹ 75 \text{ lakhs} - ₹ 42 \text{ lakhs})}{₹ 27 \text{ lakhs}} = 1.22$$

$$\text{Financial leverage} = \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}} = \frac{\text{₹ 27 lakhs}}{(\text{₹ 27 lakhs} - \text{₹ 4.05 lakhs})} = 1.18$$

$$\text{Combined leverage} = \frac{\text{Sales} - \text{Variable cost}}{\text{EBIT} - \text{Interest}} = \frac{\text{₹ 33 lakhs}}{\text{₹ 22,95,000}} = 1.44$$

(e) EBIT at Sales Level of ₹ 50 lakhs

	₹
Sales Revenue	50,00,000
Less: Variable Costs (50 lakhs × 0.56)	28,00,000
Less: Fixed Costs	<u>6,00,000</u>
EBIT	<u>16,00,000</u>

5. (a) Pattern of Raising Additional Finance

Equity	70% of ₹ 10,00,000	= ₹ 7,00,000
Debt	30% of ₹ 10,00,000	= ₹ 3,00,000

Capital Structure after Raising Additional Finance

			(₹)
Shareholders' Funds			
Equity Capital	(7,00,000 – 2,10,000)		4,90,000
Retained Earnings			2,10,000
Debt (Interest at 10% p.a.)			1,80,000
(Interest at 16% p.a.)	(3,00,000 – 1,80,000)		1,20,000
		Total Funds	10,00,000

(b) Determination of Post-Tax Average Cost of Additional Debt

$$K_D = I(1 - T)$$

$$\text{On ₹ 1,80,000} = 10\% (1 - 0.5) = 5\% \text{ or } 0.05$$

$$\text{On ₹ 1,20,000} = 16\% (1 - 0.5) = 8\% \text{ or } 0.08$$

Average Cost of Debt

$$= \frac{(\text{₹ 1,80,000} \times 0.05) + (\text{₹ 1,20,000} \times 0.08)}{\text{₹ 3,00,000}} \times 100 = \frac{18,600}{3,00,000} = 6.2\%$$

(c) Determination of Cost of Retained Earnings and Cost of Equity Applying Dividend Growth Model

$$K_E = \frac{D_1}{P_0} + g$$

Where,

K_E = Cost of Equity

$D_1 = D_0(1+g)$

D_0 = Dividend Payout (i.e., 50% earnings = 50% × ₹ 4 = ₹ 2)

g = Growth Rate

P_0 = Current Market Price per Share

$$\text{Then, } K_E = \frac{\text{₹ } 2 (1.1)}{\text{₹ } 44} + 10\%$$

$$= \frac{\text{₹ } 2.2}{\text{₹ } 44} + 10\% = 5\% + 10\% = 15\%$$

$K_r = K_e = 15$ percent.

(d) Computation of Overall Weighted Average after Tax Cost of Additional Finance

Particular	₹	Weights	Cost of Funds
Equity (including Retained Earnings)	7,00,000	0.70	15%
Debt	3,00,000	0.30	6.2%

$$\begin{aligned} \text{WACC} &= (\text{Cost of Equity} \times \% \text{ Equity}) + (\text{Cost of Debt} \times \% \text{ Debt}) \\ &= (15\% \times 0.70) + (6.2\% \times 0.30) \\ &= 10.5\% + 1.86\% = 12.36\%. \end{aligned}$$

6.

Luna Ltd.

Cash Flow Statement for the year ended 31st March, 2014

(Using direct method)

Particulars	₹ in crores	₹ in crores
Cash flows from Operating Activities		
Cash Sales (135 x 0.6)	81	
Cash Receipts from Debtors [45 + (135 x 40%) - 50]	49	

Cash Purchases (20% of 55)	(11)	
Cash Payments to Suppliers [21+ (55x80%) – 23]	(42)	
Cash Paid to Employees	(22)	
Cash Payments for Overheads (Adm. and Selling)	(18)	
Cash Generated from Operations	37	
Income Tax Paid	<u>(8)</u>	
<i>Net Cash Generated from Operating Activities</i>	29	
Cash flows from Investing Activities		
Sale of Investments (12+ 2.40)	14.4	
Payments for Purchase of Fixed Assets	<u>(11)</u>	
<i>Net Cash Used in Investing Activities</i>	3.4	
Cash flows from Financing Activities		
Redemption of Debentures (22-15)	(7)	
Interest Paid	(1.5)	
Dividend Paid	(10.0)	
DDT paid	(1.7)	
<i>Net Cash Used in Financing Activities</i>		<u>(20.2)</u>
<i>Net Increase in Cash</i>		12.2
<i>Cash at beginning of the period</i>		<u>6.0</u>
<i>Cash at end of the period</i>		<u>18.2</u>

7. (a) Computation of Payback Periods

Year	Project A		Project B		Project C	
	Cash flows	Cumulative Cash flows	Cash flows	Cumulative Cash flows	Cash flows	Cumulative Cash flows
1	1,000	1,000	0	0	1,000	1,000
2	1,000	2,000	1,000	1,000	1,000	2,000
3	3,000	5,000	2,000	3,000	3,000	5,000
4	0	5,000	3,000	6,000	5,000	10,000

When projects cash flows are not uniform, then Payback period is calculated by the process of cumulative cash flows till the time when the cumulative cash flows become equal to the original investment. Taking this into consideration, therefore, the Payback Periods for Projects A, B and C are:

Payback Period for Project A = 3 years,

Payback Period for Project B = 2 years, and

Payback Period for Project C = 3 years.

(b) If cut-off period is 2 years then, Project B should be accepted.

(c) Computation of Net Present Values (NPVs) of Projects A, B and C

Year	Discount factor @10%	Project A		Project B		Project C	
		Cash flows	Present Value of Cash flows	Cash flows	Present Value of Cash flows	Cash flows	Present Value of Cash flows
0		(5,000)		(1,000)		(5,000)	
1	0.909	1,000	909	0	0	1,000	909
2	0.826	1,000	826	1,000	826	1,000	826
3	0.751	3,000	2,253	2,000	1,502	3,000	2,253
4	0.683	0	<u>0</u>	3,000	<u>2,049</u>	5,000	<u>3,415</u>
			<u>3,988</u>		<u>4,377</u>		<u>7,403</u>
		NPV	(1,012)		3,377		2,403

Advise: Projects B and C should be accepted as they have positive net present values. ($NPV_B = ₹ 3,377$; $NPV_C = ₹ 2,403$)

(d) False.

(e) True.

8. (a) Calculation of Operating Expenses for the year ended 31st March, 2014

Net Profit [@ 6.25% of Sales]		3,75,000
Add: Income Tax (@ 50%)		<u>3,75,000</u>
Profit Before Tax (PBT)		7,50,000
Add: Debenture Interest		<u>60,000</u>
Profit before interest and tax (PBIT)		<u>8,10,000</u>
Sales		60,00,000
Less: Cost of goods sold	18,00,000	
PBIT	<u>8,10,000</u>	<u>26,10,000</u>
Operating Expenses		<u>33,90,000</u>

(b) **Draft Balance Sheet as on 31st March, 2014**

<i>Liabilities</i>	₹	<i>Assets</i>	₹
Share Capital	10,50,000	Fixed Assets	17,00,000
Reserve and Surplus	4,50,000	Current Assets:	
15% Debentures	4,00,000	Stock	1,50,000
Sundry Creditors	2,00,000	Debtors	2,00,000
		Cash	<u>50,000</u>
	<u>21,00,000</u>		<u>21,00,000</u>

Working Notes:(i) **Share Capital and Reserves**

The return on net worth is 25%. Therefore, the profit after tax of ₹ 3,75,000 should be equivalent to 25% of the networth.

$$\text{Net worth} \times \frac{25}{100} = ₹ 3,75,000$$

$$\begin{aligned} \therefore \text{Net worth} &= \frac{₹ 3,75,000 \times 100}{25} \\ &= ₹ 15,00,000 \end{aligned}$$

The ratio of share capital to reserves is 7:3

$$\text{Share Capital} = 15,00,000 \times \frac{7}{10} = ₹ 10,50,000$$

$$\text{Reserves} = 15,00,000 \times \frac{3}{10} = ₹ 4,50,000$$

(ii) **Debentures**

Interest on Debentures @ 15% = ₹ 60,000

$$\begin{aligned} \therefore \text{Debentures} &= \frac{60,000 \times 100}{15} \\ &= ₹ 4,00,000 \end{aligned}$$

(iii) **Current Assets**

Current Ratio = 2

Sundry Creditors = ₹ 2,00,000

$$\begin{aligned} \therefore \text{Current Assets} &= 2 \text{ Current Liabilities} \\ &= 2 \times 2,00,000 = ₹ 4,00,000 \end{aligned}$$

(iv) **Fixed Assets**

	(₹)
<i>Liabilities:</i>	
Share Capital	10,50,000
Reserves	4,50,000
Debentures	4,00,000
Sundry Creditors	<u>2,00,000</u>
	21,00,000
<i>Less: Current Assets</i>	<u>4,00,000</u>
Fixed Assets	17,00,000

(v) **Composition of Current Assets**

Inventory Turnover = 12

$$\frac{\text{Cost of goods sold}}{\text{Closing stock}} = 12$$

$$\text{Closing Stock} = \frac{₹ 18,00,000}{12}$$

Closing Stock = ₹ 1,50,000

<i>Composition:</i>	(₹)
Stock	1,50,000
Sundry Debtors	2,00,000
Cash (balancing figure)	<u>50,000</u>
Total Current Assets	<u>4,00,000</u>

9.

Noah Limited**Statement of Changes in Financial Position (Working Capital Basis)
for the year ended 31st March, 2014**

	(₹)
Sources	
Working Capital from Operations:	
Net Income after Tax	3,24,800

Add: Depreciation	72,000
	3,96,800
Less: Gain on Sale of Machinery	7,400
	3,89,400
Sale of Machinery (₹ 36,600 + ₹ 7,400)	44,000
Debentures Issued	9,60,000
Share Capital Issued for Cash (including Share Premium)	2,80,000
Financial Transaction not Affecting Working Capital	
Share Issued in Partial Payment for Investments in A Ltd.	1,80,000
Financial Resources Provided	18,53,400
Uses	
Purchase of Building	17,20,000
Purchase of Machinery	97,400
Instalment Currently due on Long-term Loans	40,000
Payment of Cash Dividends	1,20,600
Purchase of Investments in A Ltd. for Cash	1,20,000
Financial Transaction not Affecting Working Capital	
Purchase of Investments in A Ltd. in Exchange of Issue of 3000 Shares @ ₹ 60 each	1,80,000
Financial Resources Applied	22,78,000
Net Decrease in Working Capital	4,24,600

<i>Machinery A/c</i>			
<i>Particulars</i>	₹	<i>Particulars</i>	₹
Opening balance (given)	4,28,200	Sale of Machinery (given)	36,600
Purchase	97,400	Depreciation (given)	45,600
	-	Closing Balance (given)	<u>4,43,400</u>
	<u>5,25,600</u>		5,25,600

Noah limited
Statement of Changes in Financial Position (Cash Basis)
for the year ended 31 March, 2014

	₹	₹
Sources		
Cash from Operations:		
Net Income after Tax	3,24,800	

<i>Add:</i> Depreciation	72,000	
Decrease in Debtors	3,200	
Decrease in Prepaid Expenses	1,600	
Increase in Creditors	6,800	
Increase in Income Tax Payable	25,600	4,34,000
<i>Less:</i> Gain on Sale of Machinery	7,400	
Increase in Stock	50,600	
Decrease in Accrued Expenses	1,000	59,000
		3,75,000
Sale of Trade Investment		2,60,000
Increase in Bank Overdraft		5,000
Sale of Machinery		44,000
Debentures Issued		9,60,000
Shares Issued		2,80,000
Financial Transaction not Affecting Cash		
Share Issued in Partial Payment for Investments in A Ltd.		1,80,000
Instalments Currently due on Long-term Loans		40,000
Financial Resources Provided		21,44,000
Uses		
Purchase of Buildings		17,20,000
Purchase of Machinery		97,400
Payment of Cash Dividend		1,20,600
Purchase of Investments in A Ltd. for Cash		1,20,000
Financial Transaction not Affecting Cash		
Purchase of Investments in A Ltd. in Exchange of Issue of 3,000 Shares @ ₹ 60 each		1,80,000
Instalments Currently due on Long-term Loans		40,000
Financial Resources Applied		22,78,000
Net Decrease in Cash		1,34,000

[Notes:

- (a) Funds from operations are shown in net of taxes. Alternatively, payment of tax may be separately treated as use of funds. In that case, tax would be added to net profit.
- (b) If tax shown in Profit and Loss Account is assumed to be a provision, then the amount of cash paid for tax has to be calculated. In the present problem if this

procedure is followed, then cash paid for tax is: ₹ 1,67,400 + ₹ 2,09,400 – ₹ 1,93,000 = ₹ 1,83,800.

- (c) Gain on the sale of trade investments is considered an operating income.]
10. (a) **Inter-relationship between Investment, Financing and Dividend Decisions:** The finance functions are divided into three major decisions, viz., investment, financing and dividend decisions. These decisions are inter-related because the underlying objective of these three decisions is the same, i.e. maximisation of shareholders' wealth. Since investment, financing and dividend decisions are all interrelated, one has to consider the joint impact of these decisions on the market price of the company's shares and these decisions should also be solved jointly. The decision to invest in a new project needs the finance for the investment. The financing decision, in turn, is influenced by and influences dividend decision because retained earnings used in internal financing deprive shareholders of their dividends. An efficient financial management can ensure optimal joint decisions. This is possible by evaluating each decision in relation to its effect on the shareholders' wealth.

The above three decisions are briefly examined below in the light of their inter-relationship and to see how they can help in maximising the shareholders' wealth i.e. market price of the company's shares.

Investment decision: The investment of long term funds is made after a careful assessment of the various projects through capital budgeting and uncertainty analysis. However, only that investment proposal is to be accepted which is expected to yield at least so much return as is adequate to meet its cost of financing. This has an influence on the profitability of the company and ultimately on its wealth.

Financing decision: Funds can be raised from various sources. Each source of funds involves different issues. The finance manager has to maintain a proper balance between long-term and short-term funds. With the total volume of long-term funds, he has to ensure a proper mix of loan funds and owner's funds. The optimum financing mix will increase return to equity shareholders and thus maximise their wealth.

Dividend decision: The finance manager is also concerned with the decision to pay or declare dividend. He assists the top management in deciding as to what portion of the profit should be paid to the shareholders by way of dividends and what portion should be retained in the business. An optimal dividend pay-out ratio maximises shareholders' wealth.

The above discussion makes it clear that investment, financing and dividend decisions are interrelated and are to be taken jointly keeping in view their joint effect on the shareholders' wealth.

- (b) **Business Risk and Financial Risk:** Business risk refers to the risk associated with the firm's operations. It is the uncertainty about the future operating income (EBIT), i.e. how well can the operating income be predicted? Business risk can be measured by the standard deviation of the Basic Earning Power ratio.

Financial risk refers to the additional risk placed on the firm's shareholders as a result of debt use i.e. the additional risk a shareholder bears when a company uses debt in addition to equity financing. Companies that issue more debt instruments would have higher financial risk than companies financed mostly or entirely by equity. Financial risk can be measured by ratios such as the firm's financial leverage multiplier, total debt to assets ratio or degree of financial leverage. A company's risk is composed of financial risk, which is linked to debt, and risk, which is often linked to economic climate. If a company is entirely financed by equity, it would pose almost no financial risk, but, it would be susceptible to business risk or changes in the overall economic climate.

- (c) **Inflation Bonds and Floating Rate Bonds:** Inflation Bonds are the bonds in which interest rate is adjusted for inflation. Thus, the investor gets interest which is free from the effects of inflation. For example, if the interest rate is 11 per cent and the inflation is 5 per cent, the investor will earn 16 per cent meaning thereby that the investor is protected against inflation.

Floating Rate Bonds, as the name suggests, are the bonds where the interest rate is not fixed and is allowed to float depending upon the market conditions. This is an ideal instrument which can be resorted to by the issuer to hedge themselves against the volatility in the interest rates. This has become more popular as a money market instrument and has been successfully issued by financial institutions like IDBI, ICICI etc.