PAPER – 3: COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART I: COST ACCOUNTING

QUESTIONS

Material

1. A 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 able to sale 20,000 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 2,000 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 1,800 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. J Ltd. wants to ascertain the profit lost during the year 2016-17 due to increased labour turnover. For this purpose, they have given you the following information:

   (1) Training period of the new recruits is 50,000 hours. During this period their productivity is 60% of the experienced workers. Time required by an experienced worker is 10 hours per unit.

   (2) 20% of the output during training period was defective. Cost of rectification of a defective unit was ₹ 25.

   (3) Potential productive hours lost due to delay in recruitment were 1,00,000 hours.

   (4) Selling price per unit is ₹ 360 and P/V ratio is 20%.

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(5) Settlement cost of the workers leaving the organization was ₹ 3,66,960.

(6) Recruitment cost was ₹3,12,680

(7) Training cost was ₹2,26,360

You are required to calculate the profit lost by the company due to increased labour turnover during the year 2016-17.

Overheads

3. The Union Ltd. has the following account balances and distribution of direct charges on 31st March, 2017.

	Total	Production Depts.		Service Depts.	
		Machine Shop	Packing	General Plant	Stores
Allocated Overheads:	(₹)	(₹)	(₹)	(₹)	(₹)
Indirect labour	2,90,000	80,000	60,000	40,000	1,10,000
Maintenance Material	99,000	34,000	16,000	21,000	28,000
Misc. supplies	59,000	15,000	29,000	9,000	6,000
Supervisor's salary	1,60,000	--	--	1,60,000	--
Cost & payroll salary	8,00,000	--	--	8,00,000	--

Overheads to be apportioned:	
Power	7,80,000
Rent	7,20,000
Fuel and Heat	6,00,000
Insurance	1,20,000
Taxes	84,000
Depreciation	12,00,000

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	80,00,000	3,500
Packing	800 Sq. ft.	90	12	24,00,000	500
General Plant	400 Sq. ft.	30	4	8,00,000	-
Stores & maintenance	1,600 Sq. ft.	60	8	16,00,000	1,000

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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.

(a) Prepare an overhead distribution statement with supporting schedules to show computations and basis of distribution.

(b) Determine the service department distribution by simultaneous equation method.

Non- Integrated Accounts

4. The financial books of a company reveal the following data for the year ended 31st March, 2017:

	(₹)
Opening Stock:	
Finished goods 875 units	76,525
Work-in-process	33,000
01.04.2016 to 31.3.2017	
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.

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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, 2017, 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. G. Constructions has undertaken three separate building contracts. Information relating to these contracts for the year 2016-17 are as under:

	Contract –I (Amount in ₹'000)	Contract –II (Amount in ₹'000)	Contract –IIII (Amount in ₹'000)
Value of contract	17,500	14,500	24,500
Balance as on 01-04-2016:			
Work completed and certified	--	4,100	8,150
Materials at site	--	220	310
Plant & Machinery (WDV)	--	770	3,760
Wages outstanding	--	48	104
Profit transferred to Costing P/L A/c.	--	--	350
Transaction during the year:			
Materials issued to the sites	870	2,150	4,020
Wages paid to workers	450	1,160	2,180
Salary to site staffs	90	85	135
Travelling and other expenses	18	24	32
Plants issued to sites	910	240	680
Apportionment of Head office expenses	110	90	126
Balance as on 31-03-2017:			
Materials at site	215	152	12
Plant & Machinery (WDV)	728	808	3,552

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Wages outstanding	52	98	146
Value of work certified	2,000	8,600	24,000
Cost of work not certified	800	452	560

As per the contract agreement 15% of the certified value of the contract is kept by the contractees as retention money. The Contact-III is scheduled to be completed in the coming months, however, this contract required a further estimated cost of ₹ 7,20,000 to get it completed.

Required:

(a) Prepare Contract Statement for each of the three contracts and calculate the notional/ estimated profit/ loss

(b) Calculate the profit/ loss to be transferred to Costing Profit & Loss Account for internal managerial purpose.

Process Costing

6. The following data are available in respect of Process-I for July 2017:

(1) Opening stock of work in process: 600 units at a total cost of ₹84,000.

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

Material	100%
Labour	60%
Overheads	60%

(3) Input of materials at a total cost of ₹ 11,04,000 for 9,200 units.

(4) Direct wages incurred ₹ 3,72,000

(5) Overheads ₹ 1,72,600.

(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%
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)

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(10) Scrap value is ₹ 120 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. The following information has been provided by a company:

Number of units produced and sold	12,000
Standard labour rate per hour	₹ 16
Standard hours required for 12,000 units	-
Actual hours required	34,188 hours
Labour efficiency	105.3%
Labour rate variance	₹ 1,36,752 (A)

You are required to calculate:

(i) Actual labour rate per hour

(ii) Standard hours required for 12,000 units

(iii) Labour Efficiency variance

(iv) Standard labour cost per unit

(v) Actual labour cost per unit

Marginal Costing

8. Following information are available for the year 2016 and 2017 of PIX Limited:

Year	2016	2017
Sales	₹ 32, 00,000	₹ 57, 00,000
Profit/ (Loss)	(₹ 3,00,000)	₹ 7, 00,000

Calculate – (a) P/V ratio, (b) Total fixed cost, and (c) Sales required to earn a Profit of ₹ 12,00,000.

Budget and Budgetary Control

9. G Ltd. manufactures two products called 'M' and 'N'. Both products use a common raw material Z. The raw material Z is purchased @ ₹72 per kg from the market. The company has decided to review inventory management policies for the forthcoming year.

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The following forecast information has been extracted from departmental estimates for the year ended 31st March 2017 (the budget period):

	Product M	Product N
Sales (units)	28,000	13,000
Finished goods stock increase by year-end	320	160
Post-production rejection rate (%)	4	6
Material Z usage (per completed unit, net of wastage)	5 kg	6 kg
Material Z wastage (%)	10	5

Additional information:

- Usage of raw material Z is expected to be at a constant rate over the period.
- Annual cost of holding one unit of raw material in stock is 11% of the material cost.
- The cost of placing an orders is ₹640 per order.
- The management of G Ltd. has decided that there should not be more than 40 orders in a year for the raw material Z.

Required:

(a) Prepare functional budgets for the year ended 31st March 2017 under the following headings:

  (i) Production budget for Products M and N (in units).

  (ii) Purchases budget for Material Z (in kgs and value).

(b) Calculate the Economic Order Quantity for Material Z (in kgs).

(c) If there is a sole supplier for the raw material Z in the market and the supplier do not sale more than 4,000 kg. of material Z at a time. Keeping the management purchase policy and production quantity mix into consideration, calculate the maximum number of units of Product M and N that could be produced.

Miscellaneous

10. (a) Define Product costs. Describe three different purposes for computing product costs.

(b) What do you understand by Operating Costs? Describe its essential features and state where it can be usefully implemented?

(c) How apportionment of joint costs upto the point of separation amongst the joint products using market value at the point of separation and net realizable value method is done? Discuss.

(d) Explain:

  (i) Pre-production Costs

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(ii) Research and Development Costs

(iii) Training Costs

SUGGESTED ANSWER/HINTS

1. Working Notes:

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

Sales forecast of the product 'Exe'	20,000 units
Less: Opening stock of 'Exe'	1,800 units
Fresh units of 'Exe' to be produced	18,200 units
Raw material required to produce 18,200 units of 'Exe' (18,200 units × 2 kg.)	36,400 kg.
Less: Opening Stock of 'Dee'	2,000 kg.
Annual demand for raw material 'Dee'	34,400 kg.

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

$$EOQ = \sqrt{\frac{2 \times \text{Annual demand of 'Dee'} \times \text{Ordering cost}}{\text{Carrying cost per unit per annum}}}$$

$$= \sqrt{\frac{2 \times 34,400\text{kg.} \times ₹720}{₹125 \times 13.76\%}} = \sqrt{\frac{2 \times 34,400\text{kg.} \times ₹720}{₹17.2}} = 1,697 \text{ kg.}$$

(iii) Re- Order level:

= (Maximum consumption per day × Maximum lead time)

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

$$= \left\{\left(\frac{36,400\text{kg.}}{364\text{ days}} + 20\text{kg.}\right) \times 8 \text{ days}\right\} = 960 \text{ kg.}$$

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

Average Consumption per day = 100 kg.

Hence, Maximum Consumption per day = 100 kg. + 20 kg. = 120 kg.

So, Minimum consumption per day will be

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

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Or, 100 kg. $= \frac{\text{Min. consumption} + 120\,\text{kg.}}{2}$

Or, Min. consumption = 200 kg – 120 kg. = 80 kg.

(a) Re-order Quantity:

EOQ – 200 kg. = 1,697 kg. – 200 kg. = 1,497 kg.

(b) Maximum Stock level:

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

= 960 kg. + 1,497 kg. – (80 kg. × 4 days)

= 2,457 kg. – 320 kg. = 2,137 kg.

(c) Minimum Stock level:

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

= 960 kg. – (100 kg. × 6 days) = 360 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	1,497 kg.	1,697 kg.
II	No. of orders a year	$\frac{34,400\,\text{kg.}}{1,497\,\text{kg.}} = 22.9 \text{ or } 23 \text{ orders}$	$\frac{34,400\,\text{kg.}}{1,697\,\text{kg.}} = 20.27 \text{ or } 21 \text{ orders}$
III	Ordering Cost	23 orders × ₹ 720 = ₹16,560	21 orders × ₹ 720 = ₹15,120
IV	Average Inventory	$\frac{1,497\,\text{kg.}}{2} = 748.5\,\text{kg.}$	$\frac{1,697\,\text{kg.}}{2} = 848.5\,\text{kg.}$
V	Carrying Cost	748.5 kg. × ₹ 17.2 = ₹12,874.2	848.5 kg. × ₹ 17.2 = ₹14,594.2
VI	Total Cost	₹ 29,434.20	₹ 29,714.20

Cost saved by not ordering EOQ = ₹ 29,714.20 - ₹ 29,434.20 = ₹280.

2. Output by experienced workers in 50,000 hours = $\frac{50,000}{10}$ = 5,000 units

∴ Output by new recruits = 60% of 5,000 = 3,000 units

Loss of output = 5,000 – 3,000 = 2,000 units

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Total loss of output = Due to delay recruitment + Due to inexperience
= 10,000 + 2,000 = 12,000 units

Contribution per unit = 20% of ₹360 = ₹ 72

Total contribution lost = ₹72 × 12,000 units = ₹ 8,64,000

Cost of repairing defective units = 3,000 units × 0.2 × ₹ 25 = ₹ 15,000

Profit forgone due to labour turnover

	(₹)
Loss of Contribution	8,64,000
Cost of repairing defective units	15,000
Recruitment cost	3,12,680
Training cost	2,26,360
Settlement cost of workers leaving	3,66,960
Profit forgone in 2016-17	17,85,000

3. (a) Overhead Distribution Statement

	Production Departments		Service Departments	
	Machine Shops	Packing	General Plant	Stores
Allocated Overheads:	(₹)	(₹)	(₹)	(₹)
Indirect labour	80,000	60,000	40,000	1,10,000
Maintenance Material	34,000	16,000	21,000	28,000
Misc. supplies	15,000	29,000	9,000	6,000
Supervisor's salary	--	--	1,60,000	--
Cost & payroll salary	--	--	8,00,000	--
Total allocated overheads	1,29,000	1,05,000	10,30,000	1,44,000
Add: Apportioned Overheads (As per Schedule below)	18,43,500	7,01,250	2,27,750	7,31,500
	19,72,500	8,06,250	12,57,750	8,75,500

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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)	5,46,000	78,000	--	1,56,000
Rent	Floor space (5 : 2 : 1 : 4)	3,00,000	1,20,000	60,000	2,40,000
Fuel & Heat	Radiator sec. (3 : 6 : 2 : 4)	1,20,000	2,40,000	80,000	1,60,000
Insurance	Investment (10 : 3 : 1 : 2)	75,000	22,500	7,500	15,000
Taxes	Investment (10 : 3 : 1 : 2)	52,500	15,750	5,250	10,500
Depreciation	Investment (10 : 3 : 1 : 2)	7,50,000	2,25,000	75,000	1,50,000
		18,43,500	7,01,250	2,27,750	7,31,500

(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 = 12,57,750 + 0.3b .....(i)

b = 8,75,500 + 0.2a .....(ii)

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

a = 12,57,750 + 0.3 (8,75,500 + 0.2a)

Or a = 12,57,750 + 2,62,650 + 0.06a

Or 0.94a = 15,20,400 Or a = 16,17,447 (appx.)

Putting the value of a = 16,17,447 in equation no. (ii) to get the value of 'b'

b = 8,75,500 + 0.2 × 16,17,447 = 11,98,989 (appx.)

Secondary Distribution Summary

Particulars	Total (₹)	Machine Shops (₹)	Packing (₹)
Allocated and Apportioned overheads as per Primary distribution	27,78,750	19,72,500.00	8,06,250.00

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-General Plant	16,17,447	8,08,723.50 (16,17,447× $\frac{5}{10}$)	4,85,234.10 (16,17,447 × $\frac{3}{10}$)
-Stores	11,98,989	5,99,494.50 (11,98,989 × 50%)	2,39,797.80 (11,98,989 × 20%)
		33,80,718	15,31,281.9

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

(for the year ended March 31, 2017)

	(₹)		(₹)
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 31,2017)

		(₹)	(₹)
Sales revenue (14,500 units)	(A)		20,80,000
Cost of Sales:			
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	

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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
Less: Administration overheads under recovery (₹ 3,15000 – ₹ 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
	Add: Closing stock	375
	Total	14,875
	Less: Opening stock	875

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Number of units produced	14,000

2. Cost Sheet

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

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

5. (a) Contract Statement (Amount in ₹'000)

	Contract-I (₹)	Contract-II (₹)	Contract-III (₹)
Balance as on 01-04-2016:			
- Work completed and certified	--	4,100	8,150
- Materials at site	--	220	310
- Plant & Machinery	--	770	3,760
Transaction during the year:			
Materials issued	870	2,150	4,020
Wages paid to workers	450	1,160	2,180
Less: Outstanding at beginning	--	(48)	(104)
Add: Outstanding at closing	52	98	146
Salary to site staffs	90	85	135
Travelling and other expenses	18	24	32
Plant issued to sites	910	240	680
Apportionment of Head office expenses	110	90	126

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Estimated additional cost	--	--	720
Total (A)	2,500	8,889	20,155
Balance as on 31-03-2017			
- Materials at site	215	152	12
- Plant & Machinery	728	808	3,552
- Work in progress:			
- Value of work certified	2,000	8,600	24,000
- Cost of work not certified	800	452	560
Total (B)	3,743	10,012	28,124
Notional/ estimated profit {(B) – (A)}	1,243	1,123	7,969

(b) Profit to be transferred to Costing Profit and Loss Account for internal purpose:

	Contract-I	Contract-II	Contract-III
Value of Contract	17,500	14,500	24,500
Value of work certified	2,000	8,600	24,000
Percentage of completion (%) $\left(\frac{\text{Work certified}}{\text{Value of contract}} \times 100\right)$	11.43	59.31	97.96
Notional/ Estimated profit	1,243	1,123	7,969
Profit to be transferred to Costing Profit & loss A/c	Nil	636.37 $\left(\frac{2}{3} \times ₹1,123 \times 85\%\right)$	6,285.47 {(7,969 × 97.96% × 85%) - 350}

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:- from 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

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		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	11,04,000			
Less: Scrap realisation 392 units @ ₹ 120/- p.u.	47,040	10,56,960	8,808	120.00
Labour cost		3,72,000	8,838	42.10
Overheads		1,72,600	8,838	19.53
Total Cost		16,01,560		181.63

(c) Cost of Abnormal Gain – 192 Units

	(₹)	**(₹)**
Material cost of 192 units @ ₹ 120.00/- p.u.	23,040.00	
Labour cost of 192 units @ ₹ 42.10/- p.u.	8,083.20	
Overheads of 192 units @ ₹ 19.53/- p.u.	3,749.76	34,872.96

Cost of closing WIP – 700 Units

Material cost of 700 equivalent units @ ₹ 120.00/- p.u.	84,000.00	
Labour cost of 490 equivalent units @ ₹42.10/- p.u.	20,629.00	
Overheads of 490 equivalent @ ₹ 19.53/- p.u.	9,569.70	1,14,198.70

Cost of 8,900 units transferred to next process		**(₹)**
(i) Cost of opening W-I-P Stock b/f – 600 units		84,000.00
(ii) Cost incurred on opening W-I-P stock		
Material cost	—	
Labour cost 240 equivalent units @ ₹ 42.10 p.u.	10,104.00	
Overheads 240 equivalent units @ ₹19.53/- p.u.	4,687.20	14,791.20
(iii) Cost of 8,300 completed units		
8,300 units @ ₹181.63 p.u.		15,07,529.00
Total cost [(i) + (ii) + (iii))]		16,06,320.20

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7. SR – Standard labour Rate per Hour

AR – Actual labour rate per hour

SH – Standard Hours

AH – Actual hours

(i) Actual labour rate per hour:

Labour rate Variance = AH (SR – AR)

= 34,188 (₹16 – AR) = 1,36,752 (A)

= ₹16 – AR = - 4

Or, AR = ₹20

(ii) Standard hour required for 12,000 units:

Labour Efficiency $= \frac{SH}{AH} \times 100 = 105.3$

$= SH = \frac{AH \times 105.3}{100} = \frac{34,188 \text{ hours} \times 105.3}{100}$

= 35,999.982 or, SH = 36,000 hours

(iii) Labour Efficiency Variance = SR (SH – AH)

= ₹16 (36,000 – 34,188)

= 16 × 1,812 = ₹ 28,992 (F)

(iv) Standard Labour Cost per Unit $= \frac{36,000 \text{ hours} \times ₹16}{12,000 \text{ units}} = ₹ 48$

(v) Actual Labour Cost per Unit $= \frac{34,188 \text{ hours} \times ₹20}{12,000 \text{ units}} = ₹ 56.98$

8. **(a)** P/V Ratio $= \frac{\text{Change in profit}}{\text{Change in sales}} \times 100$

$= \frac{₹7,00,000 - (-₹3,00,000)}{(₹57,00,000 - ₹32,00,000)} = \frac{₹10,00,000}{₹25,00,000} \times 100 = 40\%$

(b) Total Fixed cost = Total Contribution - Profit

= (Sales × P/V Ratio) – Profit

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$$= (₹57,00,000 \times \frac{40}{100}) - ₹7,00,000$$

$$= ₹22,80,000 - ₹7,00,000 \qquad = ₹15,80,000$$

(c) Contribution required to earn a profit of ₹12,00,000

= Total fixed cost + Profit required

= ₹15,80,000 + ₹12,00,000 = ₹27,80,000

$$\text{Required Sales} = \frac{27,80,000}{P/V\,Ratio} = \frac{27,80,000}{40\%} = ₹69,50,000$$

9. (a) (i) Production Budget (in units) for the year ended 31st March 2017

	Product M	Product N
Budgeted sales (units)	28,000	13,000
Add: Increase in closing stock	320	160
No. good units to be produced	28,320	13,160
Post production rejection rate	4%	6%
No. of units to be produced	29,500 $\left(\frac{28,320}{0.96}\right)$	14,000 $\left(\frac{13,160}{0.94}\right)$

(ii) Purchase budget (in kgs and value) for Material Z

	Product M	Product N
No. of units to be produced	29,500	14,000
Usage of Material Z per unit of production	5 kg.	6 kg.
Material needed for production	1,47,500 kg.	84,000 kg.
Materials to be purchased	1,63,889 kg. $\left(\frac{1,47,500}{0.90}\right)$	88,421 kg. $\left(\frac{84,000}{0.95}\right)$
Total quantity to be purchased	2,52,310 kg.	
Rate per kg. of Material Z	₹72	
Total purchase price	₹1,81,66,320	

(b) Calculation of Economic Order Quantity for Material Z

$$EOQ = \sqrt{\frac{2 \times 2,52,310\,kg. \times ₹640}{₹72 \times 11\%}} = \sqrt{\frac{32,29,56,800}{₹7.92}} = 6,385.72 \text{ kg.}$$

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(c) Since, the maximum number of order per year cannot be more than 40 orders and the maximum quantity per order that can be purchased is 4,000 kg. Hence, the total quantity of Material Z that can be available for production:

= 4,000 kg. × 40 orders = 1,60,000 kg.

	Product M	Product N
Material needed for production to maintain the same production mix	1,03,929 kg. $\left(1,60,000 \times \frac{1,63,889}{2,52,310}\right)$	56,071 kg. $\left(1,60,000 \times \frac{88,421}{2,52,310}\right)$
Less: Process wastage	10,393 kg.	2,804 kg.
Net Material available for production	93,536 kg.	53,267 kg.
Units to be produced	18,707 units $\left(\frac{93,536\,kg.}{5\,kg.}\right)$	8,878 units $\left(\frac{53,267\,kg.}{6\,kg.}\right)$

10. (a) Definition of product costs: Product costs are inventoriable costs. These are the costs, which are assigned to the product. Under marginal costing variable manufacturing costs and under absorption costing, total manufacturing costs constitute product costs.

Purposes for computing product costs:

The three different purposes for computing product costs are as follows:

(i) Preparation of financial statements: Here focus is on inventoriable costs.

(ii) *Product pricing:* It is an important purpose for which product costs are used. For this purpose, the cost of the areas along with the value chain should be included to make the product available to the customer.

(iii) *Contracting with government agencies:* For this purpose, government agencies may not allow the contractors to recover research and development and marketing costs under cost plus contracts.

(b) Operating Costs are the costs incurred by undertakings which do not manufacture any product but provide a service. Such undertakings for example are — Transport concerns, Gas agencies; Electricity Undertakings; Hospitals; Theatres etc. Because of the varied nature of activities carried out by the service undertakings, the cost system used is obviously different from that followed in manufacturing concerns.

The essential features of operating costs are as follows:

(1) The operating costs can be classified under three categories. For example, in the case of transport undertaking these three categories are as follows:

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(a) Operating and running charges: It includes expenses of variable nature. For example, expenses on petrol, diesel, lubricating oil, and grease etc.

(b) Maintenance charges: These expenses are of semi-variable nature and includes the cost of tyres and tubes, repairs and maintenance, spares and accessories, overhaul, etc.

(c) Fixed or standing charges: These includes garage rent, insurance, road licence, depreciation, interest on capital, salary of operating manager, etc.

(2) The cost unit used is composite like passenger-mile; Kilowatt-hour, etc.

It can be implemented in all firms of transport, airlines, bus-service, etc., and by all firms of distribution undertakings.

(c) Apportionment of Joint Cost amongst Joint Products using:

Market value at the point of separation

This method is used for apportionment of joint costs to joint products upto the split off point. It is difficult to apply if the market value of the product at the point of separation is not available. It is useful method where further processing costs are incurred disproportionately.

Net realizable value Method

From the sales value of joint products (at finished stage) the followings are deducted:

– Estimated profit margins

– Selling & distribution expenses, if any

– Post-split off costs.

The resultant figure so obtained is known as net realizable value of joint products. Joint costs are apportioned in the ratio of net realizable value.

(d) (i) Pre-production Costs: These costs form the part of development cost, incurred in making a trial production run, preliminary to formal production. These costs are incurred when a new factory is in the process of establishment or a new project is undertaken or a new product line or product is taken up, but there is no established or formal production to which such costs may be charged.

(ii) Research and Development Costs: Research costs are the costs incurred for the original and planned investigation undertaken with a prospect of gaining new scientific or technical knowledge and understanding.

Development costs are the cost incurred in applying research findings or other knowledge to a plan or design for the production of new or substantially

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improved materials, devices, products, processes, systems or services prior to the commencement of commercial production or use.

(iii) **Training Costs:** Costs which are incurred in and in relation to providing training to the workers, apprentices, executives etc. Training cost consists of wages and salaries paid to new trainees, fees paid to trainers, cost of materials and properties used to train the trainees, costs associated with training centre, loss suffered due to lower production and extra spoilage etc. The total cost of training section is thereafter apportioned to production centers.

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PAPER – 3: COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART II: FINANCIAL MANAGEMENT

QUESTIONS

Time Value of Money

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

   (i) What amount to be deposited today or

   (ii) What amount must be deposited annually?

   (PVF, 6%, 10 Yrs= 0.558)

Ratio Analysis

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

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

Comment on the following aspect of R. Textiles Limited

(i) Liquidity

(ii) Operating profits

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(iii) Financing

(iv) Return to the shareholders

Fund Flow Analysis

3. Balance Sheets of RST Limited as on March 31, 20X8 and March 31, 20X9 are as under:

Liabilities	31.3.20X8 (₹)	31.3.20X9 (₹)	Assets	31.3.20X8 (₹)	31.3.20X9 (₹)
Equity Share Capital (₹10 face value per share)	10,00,000	12,00,000	Land & Building	6,00,000	7,00,000
General Reserve	3,50,000	2,00,000	Plant & Machinery	9,00,000	11,00,000
9% Preference Share Capital	3,00,000	5,00,000	Investments (Long-term)	2,50,000	2,50,000
Share Premium A/c	25,000	4,000	Stock	3,60,000	3,50,000
Profit & Loss A/c	2,00,000	3,00,000	Debtors	3,00,000	3,90,000
8% Debentures	3,00,000	1,00,000	Cash & Bank	1,00,000	95,000
Creditors	2,05,000	3,00,000	Prepaid Expenses	15,000	20,000
Bills Payable	45,000	81,000	Advance Tax Payment	80,000	1,05,000
Provision for Tax	70,000	1,00,000	Preliminary Expenses	40,000	35,000
Proposed Dividend	1,50,000	2,60,000			
	26,45,000	30,45,000		26,45,000	30,45,000

Additional information:

(i) Depreciation charged on building and plant and machinery during the year 20X8-X9 were ₹ 50,000 and ₹ 1,20,000 respectively.

(ii) During the year an old machine costing ₹ 1,50,000 was sold for ₹ 32,000. Its written down value was ₹ 40,000 on date of sale.

(iii) During the year, income tax for the year 20X7-X8 was assessed at ₹76,000. A cheque of ₹ 4,000 was received along with the assessment order towards refund of income tax paid in excess, by way of advance tax in earlier years.

(iv) Proposed dividend for 20X7-X8 was paid during the year 20X8-X9.

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(v) 9% Preference shares of ₹ 3,00,000, which were due for redemption, were redeemed during the year 20X8-X9 at a premium of 5%, out of the proceeds of fresh issue of 9% Preference shares.

(vi) Bonus shares were issued to the existing equity shareholders at the rate of one share for every five shares held on 31.3.20X8 out of general reserves.

(vii) Debentures were redeemed at the beginning of the year at a premium of 3%.

(viii) Interim dividend paid during the year 20X8-X9 was ₹ 50,000.

Required:

(a) Schedule of Changes in Working Capital; and

(b) Fund Flow Statement for the year ended March 31, 20X9.

Cost of Capital

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

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

You are required:

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

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

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

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

Capital Structure

5. Akash Limited provides you the following information:

	(₹)
Profit (EBIT)	2,80,000

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

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

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

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

Leverage

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

(i) What is the firm's ROI?

(ii) Does it have favourable financial leverage?

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

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

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

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

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

Capital Budgeting

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

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Working Capital Management

8. The following information has been extracted from the records of a Company:

Product Cost Sheet	₹ / unit
Raw materials	45
Direct labour	20
Overheads	40
Total	105
Profit	15
Selling price	120

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

The Company is poised for a manufacture of 1,44,000 units in the year.

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

Receivable Management

9. Tony Limited manufactures Colour TV sets, is considering the liberalization of existing credit terms to three of their large customers A, B and C. The credit period and likely quantity of TV sets that will be sold to the customers in addition to the other sales are as follows:

Quantity sold (No. of TV Sets)

Credit Period (Days)	A	B	C
0	1,000	1,000	-
30	1,000	1,500	-

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60	1,000	2,000	1,000
90	1,000	2,500	1,500

The selling price per TV set is ₹ 9,000. The expected contribution is 20% of the selling price. The cost of carrying receivable averages 20% per annum.

You are required:

(a) Determine the credit period to be allowed to each customer.

(Assume 360 days in a year for calculation purposes).

(b) What other problems the company might face in allowing the credit period as determined in (a) above?

Miscellaneous

10. (a) What is debt securitisation? Explain the basics of debt securitisation process.

(b) "The profit maximization is not an operationally feasible criterion." Comment on it.

SUGGESTED ANSWER/HINTS

1. (i) $PV = \frac{FV}{(1+k)^n}$ Or, $PV = \frac{₹10,00,000}{(1+0.06)^{10}}$

₹ 10,00,000 × 0.558 = ₹ 5,58,000

(ii) $FVA\,(k,n) = A\left[\frac{(1+k)^n - 1}{k}\right]$

$$A = \frac{FVA(k,n)}{\left[\frac{(1+k)^n - 1}{k}\right]} = \frac{₹10,00,000}{13.181} = ₹\ 75,867$$

2.

Ratios	Comment
Liquidity	It is reasonably good. All the liquidity ratios are either better or same in both the year compare to the Industry Average. Receivable turnover and collection period is also good.
Operating Profits	Operating Income-ROI and Operating Profit Margin is favorable compare to the Industry average. Operating Income-ROI is stable also.

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Financing	More than 50% of financing is being done with shareholders' funds. It also signifies that dependency on debt compared to other industry players (57%) is low.
Return to the shareholders	R's ROE is 24 per cent in 2016 and 25 per cent in 2017 compared to an industry average of 15 per cent. The ROE is stable and improved over the last year

3. (a) Schedule of Changes in Working Capital

Particulars	31st March		Working Capital	
	20X8 (₹)	20X9 (₹)	Increase (₹)	Decrease (₹)
A. Current Assets:				
Stock	3,60,000	3,50,000	--	10,000
Sundry Debtors	3,00,000	3,90,000	90,000	--
Prepaid expenses	15,000	20,000	5,000	--
Cash and Bank	1,00,000	95,000	--	5,000
Total (A)	7,75,000	8,55,000		
B. Current Liabilities:				
Sundry Creditors	2,05,000	3,00,000	--	95,000
Bills Payables	45,000	81,000	--	36,000
Total (B)	2,50,000	3,81,000		
Working Capital (A – B)	5,25,000	4,74,000		
Decrease in Working Capital		51,000	51,000	
Total	5,25,000	5,25,000	1,46,000	1,46,000

(b) Funds Flow Statement for the year ending 31st March, 20X9

	(₹)
A. Sources of Funds:	
(i) Fund from Business Operations	7,49,000
(ii) Proceeds from issue of 9% Preference shares	5,00,000
(iii) Proceeds from sale of Plant & Machinery	32,000
(iv) Income tax refund	4,000
Total sources	12,85,000

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B. Application of Funds:	
(i) Purchase of Land and Building	1,50,000
(ii) Purchase of Plant and Machinery	3,60,000
(iii) Redemption of 8% Debentures	2,06,000
(iv) Redemption of 9% Preference shares	3,15,000
(v) Payment of income tax assessed	1,05,000
(vi) Payment of Interim dividend	50,000
(vii) Payment of dividend	1,50,000
Total uses	13,36,000
Net Decrease in Working Capital (A – B)	51,000

Working Notes:

(1) Computation of Funds from Business Operation

		(₹)
	Profit & Loss as on March 31, 20X9	3,00,000
Add:	Depreciation on Land and Building	50,000
	Depreciation on Plant and Machinery	1,20,000
	Loss on sale of Plant and Machinery	8,000
	Preliminary expenses written off	5,000
	Transfer to General Reserve	50,000
	Proposed dividend	2,60,000
	Provision for tax	1,06,000
	Interim dividend paid	50,000
		9,49,000
Less:	Profit and loss as on March 31, 20X8	2,00,000
	Fund from Operations	7,49,000

(2) Plant & Machinery A/c

	(₹)		(₹)
To Balance b/d	9,00,000	By Depreciation	1,20,000
To Bank [Purchase (Bal. Fig.)]	3,60,000	By Bank (Sale)	32,000
		By P/L A/c (Loss on Sale)	8,000
		By Balance c/d	11,00,000
	12,60,000		12,60,000

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(3) Land and Building A/c

	(₹)		(₹)
To Balance b/d	6,00,000	By Depreciation	50,000
To Bank (Purchase) (Bal. Fig.)	1,50,000	By Balance c/d	7,00,000
	7,50,000		7,50,000

(4) Advance Tax Payment A/c

	(₹)		(₹)
To Balance b/d	80,000	By Provision for taxation A/c	76,000
To Bank (paid for X8-X9)	1,05,000	By Bank (Refund of tax)	4,000
		By Balance c/d	1,05,000
	1,85000		1,85,000

(5) Provision for Taxation A/c

	(₹)			(₹)
To Advance tax payment A/c	76,000	By	Balance b/d	70,000
To Balance c/d	1,00,000	By	P/L A/c (additional provision for 20X7-X8)	6,000
		By	P/L A/c (Provision for X8-X9)	1,00,000
	1,76,000			1,76,000

(6) 8% Debentures A/c

	(₹)		(₹)
To Bank (2,00,000 x 103%) (redemption)	2,06,000	By Balance b/d	3,00,000
To Balance c/d	1,00,000	By Premium on redemption of Debentures A/c	6,000
	3,06,000		3,06,000

(7) 9% Preference Share Capital A/c

	(₹)		(₹)
To Bank A/c (redemption) (3,00,000 × 105%)	3,15,000	By Balance b/d	3,00,000

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To Balance c/d	5,00,000	By Premium on redemption of Preference shares A/c	15,000
		By Bank (Issue)	5,00,000
	8,15,000		8,15,000

(8) Securities Premium A/c

	(₹)		(₹)
To Premium on redemption of debentures A/c	6,000	By Balance b/d	25,000
To Premium on redemption of preference shares A/c	15,000		
To Balance c/d	4,000		
	25,000		25,000

(9) General Reserve A/c

	(₹)		(₹)
To Bonus to Shareholders A/c	2,00,000	By Balance b/d	3,50,000
To Balance c/d	2,00,000	By P/L A/c (transfer)	50,000
	4,00,000		4,00,000

Provision for tax and Advance tax may be taken as current liability and current assets respectively and the effect may be shown in changes of Working Capital.

4. (a) Pattern of Raising Additional Finance

Equity = 10,00,000 × 60/100 = ₹ 6,00,000

Debt = 10,00,000 × 40/100 = ₹ 4,00,000

Capital structure after Raising Additional Finance

Sources of fund	Amount (₹)
Shareholder's funds	
Equity capital (6,00,000 – 3,00,000)	3,00,000
Retained earnings	3,00,000
Debt at 10% p.a.	1,80,000
Debt at 16% p.a. (4,00,000 –1,80,000)	2,20,000
Total funds	10,00,000

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(b) Post-tax Average Cost of Additional Debt

$K_d = I(1 - t)$, where 'K_d' is cost of debt, 'I' is interest and 't' is tax.

On ₹ 1,80,000 = 10% (1 - 0.5) = 5% or 0.05

On ₹ 2,20,000 = 16% (1 – 0.5) = 8% or 0.08

Average Cost of Debt (Post tax) i.e.

$$K_d = \frac{1,80,000 \times 0.05 + 2,20,000 \times 0.08}{4,00,000} \times 100 = 6.65\%$$

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

$$K_e = \frac{D_1}{P_0} + g \quad \text{or} \quad \frac{D_0\ 1+g}{P_0} + g$$

Then, $K_e = \frac{2\ 1.1}{44} + 0.10 = \frac{2.2}{44} + 0.10 = 0.15$ or 15%

(d) Overall Weighted Average Cost of Capital (WACC) (After Tax)

Particulars	Amount (₹)	Weights	Cost of Capital	WACC
Equity (including retained earnings)	6,00,000	0.60	15%	9.00
Debt	4,00,000	0.40	6.65%	2.66
Total	10,00,000	1.00		11.66

5. Ascertainment of probable price of shares of Akash limited

Particulars	Plan-I	Plan-II
	If ₹ 4,00,000 is raised as debt (₹)	If ₹ 4,00,000 is raised by issuing equity shares (₹)
Earnings Before Interest and Tax (EBIT) {20% of new capital i.e. 20% of (₹14,00,000 + ₹4,00,000)} (Refer working note1)	3,60,000	3,60,000
Less: Interest on old debentures (10% of ₹4,00,000)	(40,000)	(40,000)

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Less: Interest on new debt (12% of ₹4,00,000)	(48,000)	--
Earnings Before Tax (EBT)	2,72,000	3,20,000
Less: Tax @ 50%	(1,36,000)	1,60,000
Earnings for equity shareholders (EAT)	1,36,000	1,60,000
No. of Equity Shares (refer working note 2)	30,000	40,000
Earnings per Share (EPS)	₹ 4.53	₹ 4.00
Price/ Earnings (P/E) Ratio (refer working note 3)	8	10
Probable Price Per Share (PE Ratio × EPS)	₹ 36.24	₹ 40

Working Notes:

1. Calculation of existing Return of Capital Employed (ROCE):

	(₹)
Equity Share capital (30,000 shares × ₹10)	3,00,000
10% Debentures $\left(₹40,000 \times \frac{100}{10}\right)$	4,00,000
Reserves and Surplus	7,00,000
Total Capital Employed	14,00,000
Earnings before interest and tax (EBIT) (given)	2,80,000
ROCE = $\frac{₹2,80,000}{₹14,00,000} \times 100$	20%

2. Number of Equity Shares to be issued in Plan-II:

$= \frac{₹4,00,000}{₹40} = 10,000 \text{ shares}$

Thus, after the issue total number of shares = 30,000+ 10,000 = 40,000 shares

3. Debt/Equity Ratio if ₹ 4,00,000 is raised as debt:

$= \frac{₹8,00,000}{₹18,00,000} \times 100 = 44.44\%$

As the debt equity ratio is more than 40% the P/E ratio will be brought down to 8 in Plan-I.

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6. Income Statement

Particulars	Amount (₹)
Sales	75,00,000
Less: Variable cost (56% of 75,00,000)	42,00,000
Contribution	33,00,000
Less: Fixed costs	6,00,000
Profit/ Earnings before interest and tax (EBIT)	27,00,000
Less: Interest on debt (@ 9% on ₹ 45 lakhs)	4,05,000
Earnings before tax (EBT)	22,95,000

(i) $ROI = \frac{EBIT}{Capital\ employed} \times 100 = \frac{EBIT}{Equity + Debt} \times 100$

$= \frac{27,00,000}{55,00,000 + 45,00,000} \times 100 = 27\%$

(ROI is calculated on Capital Employed)

(ii) ROI = 27% and Interest on debt is 9%. It shows that ROI is more than interest on debt, hence, it has a favourable financial leverage.

(iii) $Capital\ Turnover = \frac{Net\ Sales}{Capital}$

$Or = \frac{Net\ Sales}{Capital} = \frac{75,00,000}{1,00,00,000} = 0.75$

Which is very low as compared to industry average of 3.

(iv) Calculation of Operating, Financial and Combined leverages

(a) Operating Leverage $= \frac{Contribution}{EBIT} = \frac{33,00,000}{27,00,000} = 1.22$ (approx)

(b) Financial Leverage $= \frac{EBIT}{EBT} = \frac{27,00,000}{22,95,000} = 1.18$ (approx)

(c) Combined Leverage $= \frac{Contribution}{EBT} = \frac{33,00,000}{22,95,000} = 1.44$ (approx)

Or = Operating Leverage × Financial Leverage = 1.22 × 1.18 = 1.44 (approx)

(v) Operating leverage is 1.22. So if sales is increased by 10%. EBIT will be increased by 1.22 × 10 i.e. 12.20% (approx)

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(vi) Since the combined Leverage is 1.44, sales have to drop by 100/1.44 i.e. 69.44% to bring EBT to Zero

Accordingly, New Sales = ₹ 75,00,000 × (1 - 0.6944)

= ₹ 75,00,000 × 0.3056

= ₹ 22,92,000 (approx)

Hence at ₹ 22,92,000 sales level EBT of the firm will be equal to Zero.

(vii) Financial leverage is 1.18. So, if EBIT increases by 20% then EBT will increase by 1.18 × 20 = 23.6% (approx).

7.

Particulars	**₹ (in crore)**
Cost of machine	220
Salvage value after 10 years	20
Annual depreciation (220-20)/10	20
Calculation of cash flow and Net Present Value	**₹ (Crore)**
Profit before taxes(PBT)	30
Less Taxes @ 35%	10.5
Profit after tax(PBT-Tax)	19.5
Add: Depreciation	20
Cash flow per year	39.5
A. Present value of cash flows for 10 years	39.5 × PVAF $_{(0.1,10)}$ = 39.5 × 5.6502 = 223.18
B. Present value of the salvage value	20 × PVF (0.1.10) = 20 × 0.3220 = 6.44
C. Total present value of cash inflows (A+B)	229.62
D. Initial Investment	220
Net Present Value(NPV)	**9.62**

From the above calculation, it is clear that Net Present Value is positive and Hence, *Rounak* Ltd. should buy the lathe machine.

8. Statement showing the Working Capital Requirement of the Company

A. Current Assets (CA)	**(₹)**
Stock of raw materials [₹ 64,80,000 / 12 months) × 2 months]	10,80,000
Work-in-progress [(₹ 1,51,20,000 × 4) / 52 months] × 50%	5,81,538

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Finished goods (₹ 1,51,20,000 / 12 months)	12,60,000
Debtors (₹ 28,80,000× 80%) (Refer to Working note 2)	23,04,000
Cash balances	1,00,000
	53,25,538
B. Current Liabilities (CL)	
Creditors of raw materials (₹ 64,80,000 / 12 months)	5,40,000
Creditors for wages & overheads $\left(\frac{28,80,000+57,60,000}{52\,\text{weeks}}\times 1.5\,\text{weeks}\right)$	2,49,231
	7,89,231
Net Working Capital (CA– CL)	45,36,307

Working Notes:	**(₹)**
1, Annual raw materials requirements (1,44,000 units × ₹ 45)	64,80,000
Annual direct labour cost (1,44,000 units × ₹ 20)	28,80,000
Annual overhead costs (1,44,000 units × ₹ 40)	57,60,000
Total Cost (₹)	1,51,20,000
2. Total Sales (1,44,000 units × ₹ 120)	1,72,80,000
Two months sales (₹ 1,72,80,000 / 6 months)	28,80,000

9. (a) In case of customer A, there is no increase in sales even if the credit is given. Hence comparative statement for B & C is given below:

Particulars	**Customer B**				**Customer C**			
1. Credit period (days)	0	30	60	90	0	30	60	90
2. Sales Units	1,000	1,500	2,000	2,500	-	-	1,000	1,500
	₹ in lakhs				**₹in lakhs**			
3. Sales Value	90	135	180	225	-	-	90	135

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4. Contribution at 20% (A)	18	27	36	45	-	-	18	27
5. Receivables:- $\frac{\text{Credit Period} \times \text{Sales}}{360}$	-	11.25	30	56.25	-	-	15	33.75
6. Debtors at cost i.e. 80% of 11.25	-	9	24	45	-	-	12	27
7. Cost of carrying debtors at 20% (B)	-	1.8	4.8	9	-	-	2.4	5.4
8. Excess of contributions over cost of carrying debtors (A – B)	18	25.2	31.2	36	-	-	15.6	21.6

The excess of contribution over cost of carrying Debtors is highest in case of credit period of 90 days in respect of both the customers B and C. Hence, credit period of 90 days should be allowed to B and C.

(b) Problem;-

(i) Customer A is taking 1000 TV sets whether credit is given or not. Customer C is taking 1000 TV sets at credit for 60 days. Hence A also may demand credit for 60 days compulsorily.

(ii) B will take 2500 TV sets at credit for 90 days whereas C would lift 1500 sets only. In such case B will demand further relaxation in credit period i.e. B may ask for 120 days credit.

10. (a) Debt Securitisation: It is a method of recycling of funds. It is especially beneficial to financial intermediaries to support the lending volumes. Assets generating steady cash flows are packaged together and against this asset pool, market securities can be issued, e.g. housing finance, auto loans, and credit card receivables.

Process of Debt Securitisation

(i) *The origination function* – A borrower seeks a loan from a finance company or bank. The credit worthiness of borrower is evaluated and a contract is entered into with repayment schedule structure over the life of the loan.

(ii) *The pooling function* – Similar loans on receivables are clubbed together to create an underlying pool of assets. The pool is transferred in favour of Special Purpose Vehicle (SPV), which acts as a trustee for investors.

(iii) *The securitisation function* – The SPV structure and issue securities on the basis of these assets pool. The securities carry a coupon and expected maturity which can be asset-based/mortgage based. These are generally sold to investors

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through merchant bankers. Investors may be a pension funds, mutual funds, insurance funds.

The process of securitization is generally without recourse i.e. investors bear the credit risk and issuer is under an obligation to pay to investors only if the cash flows are received by him from the collateral. The benefits to the originator are that assets are shifted off the balance sheet, thus giving the originator recourse to off-balance sheet funding.

(b) "The profit maximisation is not an operationally feasible criterion." This statement is true because profit maximisation can be a short-term objective for any organisation and cannot be its sole objective. Profit maximization fails to serve as an operational criterion for maximizing the owner's economic welfare. It fails to provide an operationally feasible measure for ranking alternative courses of action in terms of their economic efficiency. It suffers from the following limitations:

(i) Vague term: The definition of the term profit is ambiguous. Does it mean short term or long term profit? Does it refer to profit before or after tax? Total profit or profit per share?

(ii) Timing of Return: The profit maximization objective does not make distinction between returns received in different time periods. It gives no consideration to the time value of money, and values benefits received today and benefits received after a period as the same.

(iii) It ignores the risk factor.

(iv) The term maximization is also vague.

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