PAPER – 3: COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART I: COST ACCOUNTING

QUESTIONS

Material

1. Aditya Ltd. has a monthly requirement for an item of raw material is 1,000 units. The purchase price per unit of material is ₹60. The cost of processing an order is ₹540 and the carrying cost is 20%. There is a single supplier for the material which offers quantity discounts as under:

Order Quantity (in units)	Price per unit (₹)
Less than 2,000 units	60.00
2,000 units and less than 4,000 units	59.80
4,000 units and less than 6,000 units	59.50
6,000 units and less than 8,000 units	58.90
8,000 units and above	58.40

The company uses the cash credit facility provided by the company's banker to finance its raw material purchase. The bank due to its own infrastructural constraint, can accommodate a maximum of five fund transfer (NEFT/ RTGS) requests for any single beneficiary per annum. The company in short term is unable to arrange any other source of finance.

Required:

(i) Calculate the optimum purchase order size for the company;

(ii) Calculate the order level where the company could have minimised its total cost;

(iii) The amount of loss that the company has to bear due to bank's inability to process fund transfer requests.

Labour

2. Jigyasa Ltd. pays a basic wage of ₹ 125 per hour to its production workers. The company works 6 days a week in a single shift of 8:00 AM. to 4:30 PM. The company also pays overtime to its workers apart from basic wages for work beyond its normal working hours. The overtime rule is as under:

(i) No over-time is paid for any work upto 5:30 PM.

(ii) ₹ 62.50 per hour for any work done after 5:30 PM.

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(iii) The Maximum over-time payment is restricted to ₹ 375 for a day, However, workers are paid ₹ 80 as diet allowance for work done beyond 8:30 PM.

(iv) On Sunday or any holiday, workers are paid ₹ 375 provided they work atleast for 4 hours.

The extract of attendance for three workers is as follows:

	Worker- A	Worker- B	Worker- C
Monday	8:00AM – 6:30 PM	8:00 AM – 7:30 PM	8:00 AM – 9:30 PM
Tuesday (Holiday)	8:00 AM – 5:30 PM	8:00 AM – 12:30 PM	Absent
Wednesday	8:00 AM – 10:30 PM	8:00 AM – 5:30 PM	8:00 AM – 11:30 PM
Thursday	8:00 AM – 4:30 PM	8:00 AM – 9:30 PM	8:00 AM – 8:30 PM
Friday	8:00 AM – 11:00 PM	8:00 AM – 4:30 PM	8:00 AM – 4:30 PM
Saturday	Absent	8:00 AM – 5:30 PM	8:00 AM – 7:30 PM
Sunday	Absent	8:00 AM – 1:30 PM	8:00 AM – 4:30 PM

Required:

(i) Calculate the amount of overtime and diet allowance payable to each worker.

(ii) Calculate the amount and accounting treatment of overtime and diet allowance in each case:

(a) Worker A and C were involved in a specific job work assigned to them.

(b) Overtime was due to under-estimation of sales demand provided by the sales department.

(c) Overtime was due to make up a shortfall in production due to sudden demand.

Overheads

3. Arnav Ltd. manufactures and sells three products namely A, B and C. The organisational structure of the company is as follows:

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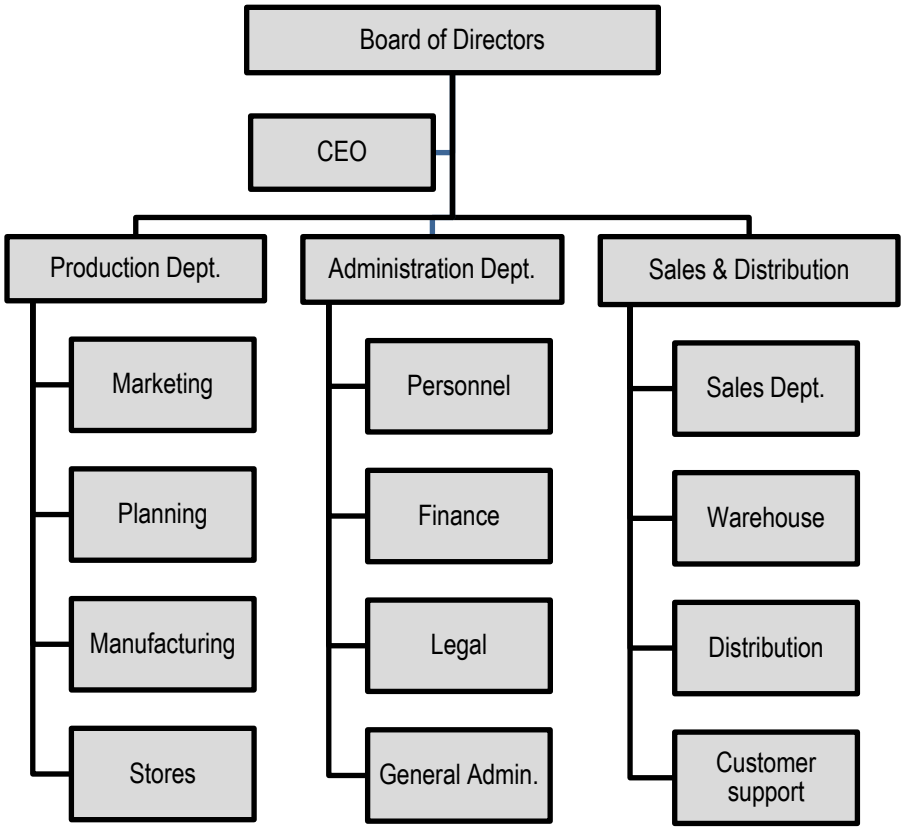

The work of Board of Directors and CEO is also known as General Management.

The extract from the budget for the next financial year is as follows:

		Explanations
Raw Material Cost	₹ 4,25,00,000	Consumed in manufacturing of all three products in the ratio of 2:3:2
Indirect material cost	₹ 10,36,000	Manufacturing - ₹ 6,00,000, Stores - ₹ 10,000, Planning - ₹ 6,000, General administration - ₹ 3,20,000, Personnel - ₹ 80,000 and Sales - ₹ 20,000
Salary & wages	₹ 3,40,00,000	It includes direct wages paid to manufacturing workers (not on roll) ₹ 1,40,00,000.
Rent & Property tax	₹ 1,00,000	Warehouse rent of ₹ 80,000 and Property tax ₹ 20,000.
Depreciation on non-current assets (on WDV basis)	₹ 22,50,000	It includes ₹9,00,000 for factory and office building, ₹ 1,50,000 on Air Conditioner, ₹ 12,00,000 on Machinery.

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Power & Fuel ₹ 4,10,000	It consists of ₹ 4,00,000 for manufacturing activities and others related with fuel cost of delivery vans.
Insurance premium on machinery	4% of the opening written down value of the machinery.
Insurance premium on employees group insurance (excluding direct workers and General management) ₹ 2,50,000	Premium amount depends on the gross salary of the employees on roll.
Printing & Stationery ₹ 7,00,800	Planning Dept.- ₹4,800, Marketing- ₹ 12,000, Finance- ₹ 4,80,000, Legal- ₹ 24,000 and Sales Dept. ₹ 1,80,000
Audit fee ₹ 1,20,000	For statutory and concurrent audit.
Electricity expenses ₹ 3,20,000	Each division has separate meters. The expected electricity consumption (in units, 1 unit = 1,000 kWh) will be as follows: Production Dept.- 4,800, Administration Dept.- 9,600, Sales & Distribution- 3,600 and General Management - 1,200.
Telephone & Mobile expenses ₹ 4,23,000	Marketing- ₹ 1,10,000, Personnel- ₹ 42,000, General Management – ₹ 26,000, Sales Dept. ₹ 65,000 and Customer support- ₹ 1,80,000
Travelling expenses ₹ 20,33,000	Marketing- ₹ 4,80,000, General Management ₹ 10,25,000, Sales Dept. ₹ 5,28,000.
Subsidy for meal coupons ₹ 1,83,000	It is given uniformly to all employees on roll @ ₹ 3,000.
Software licence renewal fee ₹ 14,24,000	Planning- ₹ 7,20,000, Finance- ₹ 1,20,000, Store- ₹ 24,000, Customer support- ₹ 5,60,000.
Other miscellaneous expenditure ₹ 8,05,085	

Other Information:

No. of employees on roll	Production Dept. 18; Administration Dept. 19 and Sales & Distribution Dept. 24
Average Gross Salary	Production Dept. ₹ 6,00,000, Administration Dept. ₹ 3,50,000, Sales & Distribution ₹ 3,00,000 and General Management ₹ 2,50,000.
Building floor area	Production dept- 9,000 sq. mtr., Administration dept- 3,000 sq. mtr., S&D – 2,500 sq. mtr., General management- 1,500 sq. mtr.
Air Conditioner	Production dept- 6,000 RT, Administration dept- 3,000 RT,

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	S& D – 2,800 RT, General management- 1,200 RT
Rate of Depreciation	Building- 5%, Air Conditioner- 15%, Machinery- 10%
Other miscellaneous expenditure	It may be apportioned on the basis of direct allocated expenses.

General Management devotes their 70% time for Sales strategy, 20% for Production and marketing and 10% for internal administration.

Administration department works 45% for production and 55% for sales department.

Required:

(i) Prepare a schedule of Cost Allocation for Production Dept., Administration Dept., Sales & Distribution Dept. and General Management.

(ii) Prepare a schedule of Cost Apportionment (Primary Distribution) for Production Dept., Administration Dept., Sales & Distribution Dept. and General Management.

(iii) Prepare a schedule of Secondary distribution of Administration Dept. and General Management costs.

Non- Integrated Accounting

4. The following is the Trading and Profit & Loss Account of ABC Limited:

Dr. Cr.

Particulars	(₹)	Particulars		(₹)
To Materials	28,06,000	By Sales (30,000 units)		68,75,000
To Direct wages	18,05,750	By Finished goods stock (1,000 units)		1,30,000
To Production Overheads	9,92,250	By Work-in-progress:		
To Administration Overheads	5,10,375	Materials	55,250	
To Selling and Distribution Overheads	3,68,875	Wages	26,000	
To Preliminary Expenses written off	22,750	Production Overheads	16,250	97,500
To Goodwill written off	45,500			
To Fines	7,250	By Dividends received		4,90,000
To Interest on term loan	13,000	By Interest from bank deposits		95,000
To Loss on Sale of machine	16,250			
To Tax	1,95,000			
To Net Profit for the year	9,04,500			
	76,87,500			76,87,500

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ABC Limited manufactures a standard unit.

The Cost Accounting records of ABC Ltd. show the following:

(i) Production overheads have been charged to work-in-progress at 20% on Prime cost.

(ii) Administration Overheads have been recovered at ₹15.75 per finished Unit.

(iii) Selling & distribution Overheads have been recovered at ₹ 13 per Unit sold.

(iv) The Under- or Over-absorption of Overheads have not been transferred to costing P/L A/c.

Required:

(i) Prepare a proforma Costing Profit & Loss statement, indicating net profit.

(ii) Prepare Control accounts for Production overheads, Administration Overheads and Selling & Distribution Overheads.

(iii) Prepare a statement reconciling the profit disclosed by the Cost records with that shown in Financial accounts.

Contract Costing

5. The following details have been extracted from the books of DKG Construction LLP, which closes its books on 31st March every year.

	Contract 101	**Contract 102**
Date of commencement	1st April, 2015	1st December, 2015
Expected date of completion	31st September, 2016	31st December, 2016
	Amount (₹'000)	**Amount (₹'000)**
Contract price	4,000	1,100
Material issued to construction site	1,400	300
Material returned to store	160	60
Plant & Machinery sent to construction site	2,000	300
Inter-contract material transfer	(80)	80
Materials at site on 31st March, 2016	150	30
Plant hire charges	400	60
Wages paid to workers	600	540
Overhead apportioned	150	36
Other direct expenses	50	8
Value of work certified	3,000	750

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Cost of work not certified	320	40
Progress payment received from contractees	2,880	700
Estimated cost of completion	270	220

Depreciation is charged on plant and machinery @ 15% p.a. using straight line method.

Required:

Prepare contract account for each contract using columnar format, showing Cost of work certified and Notional profit / loss on each contract.

Operating Costing

6. Happy Transport Service is a Delhi based national goods transport service provider, owning four trucks for this purpose. The cost of running and maintaining these trucks are as follows:

Particulars	Amount
Diesel cost	₹13.75 per km.
Engine oil	₹ 4,200 for every 13,000 km.
Repair and maintenance	₹ 12,000 for every 10,000 km.
Driver's salary	₹18,000 per truck per month
Cleaner's salary	₹7,500 per truck per month
Supervision and other general expenses	₹12,000 per month
Cost of loading of goods	₹150 per Metric Ton (MT)

Each trucks were purchased for ₹ 20 lakhs with an estimated life of 7,20,000 km.

During the next month, it is expecting 6 bookings, the details are as follows:

Sl. No.	Journey	Distance in km	Weight- Up (in MT)	Weight- Down (in MT)
1.	Delhi to Kochi	2,700	14	6
2.	Delhi to Guwahati	1,890	12	0
3.	Delhi to Vijayawada	1,840	15	0
4.	Delhi to Varanasi	815	10	0
5.	Delhi to Asansol	1,280	12	4
6.	Delhi to Chennai	2,185	10	8
	Total	10,710	73	18

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Required

(i) Calculate the total absolute Ton-km for the vehicles.

(ii) Calculate the cost per ton-km.

Joint Products & By-Products

7. In an Oil Mill four products emerge from a refining process. The total cost of input during the quarter ending March 2016 is ₹1,48,000. The output, sales and additional processing costs are as under:

Products	Output in Litres	Additional processing cost after split off (₹)	Sales value (₹)
ACH	8,000	43,000	1,72,500
BCH	4,000	9,000	15,000
CSH	2,000	–	6,000
DSH	4,000	1,500	45,000

In case these products were disposed-off at the split off point that is before further processing, the selling price per litre would have been:

ACH (₹)	BCH (₹)	CSH (₹)	DSH (₹)
15.00	6.00	3.00	7.50

Prepare a statement of profitability based on:

(i) If the products are sold after further processing is carried out in the mill.

(ii) If they are sold at the split off point.

Standard Costing

8. XYZ Ltd. produces two products M and N by using two inputs Material A and B. The standard price per unit of Material A is ₹20 and of Material B is ₹10. The standard quantities of materials for each product are as follows:

Products	Materials	
	A (units)	B (units)
M	2	3
N	1	4

The company actually produced 11,000 units of M and 9,000 units of N and used 32,500 units of Material A at a cost of ₹6,59,750 and 67,000 units of Material B at a cost of ₹ 6,83,400.

Calculate:

(i) Material Price Variance;

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(ii) Material Usage Variance;

(iii) Material Cost Variance.

Marginal Costing

9. A Company manufactures a product, currently utilizing 80% capacity with a turnover of ₹ 8,00,000 at ₹ 25 per unit. The cost data are as under:

Material cost ₹7.50 per unit, Labour cost ₹6.25 per unit.

Semi variable cost (including variable cost of ₹3.75 per unit) ₹1,80,000. Fixed cost ₹ 90,000 upto 80% level of output, beyond this an additional ₹20,000 will be incurred.

Calculate:

(i) Level of output at Break-even Point

(ii) Number of units to be sold to earn a net income of 8% of sales.

(iii) Level of output needed to earn a profit of ₹95,000

(iv) What should be the selling price per unit, if break-even point is to be brought down to 40% activity level?

Budget & Budgetary Control

10. Vivekananda Primary School has a total of 150 students consisting of 5 sections with 30 students per section. The school plans for a picnic around the city during the weekend to places such as the zoo, the Japanese park, Birla planetarium etc. A private transport operator has come forward to lease out the buses for taking the students. Each bus will have a maximum capacity of 50 (excluding 2 seats reserved for the teachers accompanying the students.) The school will employ two teachers for each bus paying them an allowance of ₹500 per teacher. It will also lease out the required number of buses. The following are the other cost estimates:

Particulars	Cost per student (₹)
Breakfast	50
Lunch	100
Tea	30
Entrance fee at zoo	20
Bus hire charge	6,500 per bus
Special permit fee	500 per bus
Block Entrance fee at the planetarium	2,500
Prizes to students for games	2,500

No costs are incurred in respect of the accompanying teachers (except the allowances of ₹ 500 per teacher).

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You are required to prepare:

(a) A flexible budget estimating the total cost for the students' levels of 30, 60, 90, 120 and 150. Each item of cost is to be indicated separately.

(b) Compute the average cost per student at these levels.

(c) What will be your conclusions regarding the break-even level of students if the school proposes to collect ₹ 450 per student.

SUGGESTED ANSWERS

1. (i) Calculation of optimum purchase order size or Economic Order Quantity (EOQ):

$$EOQ = \sqrt{\frac{2 \times A \times O}{C \times i}}$$

Where, A = Annual requirement for inventory = 1,000 units × 12 months = 12,000 units

O = Ordering cost = ₹ 540

C = Cost per unit = ₹60

C × i = Carrying cost per unit per annum = 20% × ₹60 = ₹ 12

$$EOQ = \sqrt{\frac{2 \times 12{,}000\,\text{units} \times ₹540}{₹12}} = \sqrt{\frac{1{,}29{,}60{,}000}{12}} = 1{,}039.23 \text{ or } 1{,}039 \text{ units.}$$

(ii)

Order Size (in units)	1,500	2,000	4,000	6,000	8,000
No. of order	8	6	3	2	1.5*
Cost per order (₹)	540	540	540	540	540
Average inventory	750	1,000	2,000	3,000	4,000
Cost per unit (₹)	60.00	59.80	59.50	58.90	58.40
Carrying cost per unit @20% (₹)	12.00	11.96	11.90	11.78	11.68
(a) Ordering Cost (₹)	4,320	3,240	1,620	1,080	810
(b) Carrying cost (₹)	9,000	11,960	23,800	35,340	46,720
(c) Material cost (₹)	7,20,000	7,17,600	7,14,000	7,06,800	7,00,800
Total Cost {(a) + (b) + (c)} (₹)	7,33,320	7,32,800	7,39,420	7,43,220	7,48,330

*(This may also be taken as 2 orders)

At order level of 2,000 units, the total cost to the company is least.

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(iii) Calculation of amount of loss due to bank's inability to process more than five fund transfer requests:

No. of orders	5
Purchase quantity per order (12,000 units ÷ 5)	2,400 units
Cost per unit	₹59.80
(a) Ordering Cost (₹540 × 5 orders)	₹2,700
(b) Carrying Cost (20% of ₹59.80 ×1,200 units)	₹14,352
(c) Material Cost (₹59.80 × 12,000 units)	₹7,17,600
Total Cost {(a) + (b) + (c)}	₹7,34,652
Minimum cost at 2,000 units order level	₹7,32,800
Loss	₹1,852

2. Working:

	Worker- A		Worker- B		Worker- C	
	Total hours	Overtime Hours	Total hours	Overtime Hours	Total hours	Overtime Hours
Normal days						
- Monday	10.5	1.0	11.5	2.0	13.5	4.0*
- Wednesday	14.5	5.0*	9.5	-	15.5	6.0*
- Thursday	8.5	-	13.5	4.0*	12.5	3.0
- Friday	15.0	5.5*	8.5	-	8.5	-
- Saturday	-	-	9.5	-	11.5	2.0
Holiday & Sunday						
- Tuesday	9.5	6.0	4.5	6.0	-	-
- Sunday	-	-	5.5	6.0	8.5	6.0
Total Hours	58.0	17.5	62.5	18.0	70.0	21.0

* Eligible for diet allowance

(i) Calculation of Overtime and diet Allowance payable to the workers:

Worker	Overtime Allowance (₹)	Diet Allowance (₹)	Total (₹)
A	1,093.75 (₹ 62.50 × 17.5)	160.00 (₹80 × 2 days)	1,253.75
B	1,125.00 (₹ 62.50 × 18.0)	80.00 (₹80 × 1 day)	1,205.00

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C	1,312.50 (₹ 62.50 × 21.0)	160.00 (₹80 × 2 days)	1,472.50
Total	3,531.25	400.00	3,931.25

(ii) Accounting Treatment of overtime and diet allowance:

(a) Worker A & C were involved in a specific job assigned to them:

Overtime and diet allowance of ₹ 2,726.25 payable to worker A & C shall be charged to the specific job and are treated as cost for the job.

Further, Overtime and diet allowance of ₹1,205 payable to Worker-B, will be charged to:

Either, as Cost of production as a part of labour if it is due to labour shortage.

Or, as Cost of production as a part of factory overhead, if it is irregular and to meet production requirement, which arises due to some uncontrollable developments.

Or, either to Responsibility centre in fault or Costing Profit & Loss A/c., if it is irregular and to meet production requirement, which arises due to some controllable developments.

(b) Overtime was due to under-estimation of sales demand provided by the sales department:

The total amount of overtime allowance and diet allowance of ₹ 3,931.25 shall be charged to Sales Department.

(c) Overtime was due to make up a shortfall in production due to sudden demand:

The total amount of overtime allowance and diet allowance of ₹ 3,931.25 shall be charged to Cost of production as factory overhead.

3. (i) Schedule of Cost Allocation among the Departments

	Total	Production Dept.	Administration Dept.	Selling & Distribution Dept.	General Management	Amount to be apportioned
Raw Material Cost	4,25,00,000	4,25,00,000	-	-	-	-
Indirect Material Cost:	10,36,000					-
- Manufacturing		6,00,000	-	-	-	-
- Stores		10,000	-	-	-	-
- Planning		6,000	-	-	-	-
- General admin.		-	3,20,000	-	-	-

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- Personnel		-	80,000	-	-	-
- Sales		-	-	20,000	-	-
Salary & Wages	3,40,00,000	1,40,00,000	-	-	-	2,00,00,000
Rent & Property tax	1,00,000	-	-	80,000	-	20,000
Depreciation	22,50,000	12,00,000	-	-	-	10,50,000
Power & fuel	4,10,000	4,00,000	-	10,000	-	-
Insurance premium on machinery	4,80,000	4,80,000	-	-	-	-
Printing & Stationery:	7,00,800					
- Planning		4,800	-	-	-	-
- Marketing		12,000	-	-	-	-
- Finance		-	4,80,000	-	-	-
- Legal		-	24,000	-	-	-
- Sales		-	-	1,80,000	-	-
Audit fees	1,20,000	-	-	-	1,20,000	-
Telephone & Mobile expenses:	4,23,000					
- Marketing		1,10,000	-	-	-	-
- Personnel		-	42,000	-	-	-
- General Management.		-	-	-	26,000	-
- Sales		-	-	65,000	-	-
- Customer Support		-	-	1,80,000	-	-
Travelling exp.:	20,33,000					
- Marketing		4,80,000	-	-	-	-
- Board of Directors & CEO		-	-	-	10,25,000	-
- Sales		-	-	5,28,000	-	-
Software licence renewal fees:	14,24,000					
- Planning		7,20,000	-	-	-	-

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- Finance		-	1,20,000	-	-	-
- Store		24,000	-	-	-	-
- Customer support		-	-	5,60,000		-
Total	8,54,76,800	6,05,46,800	10,66,000	16,23,000	11,71,000	2,10,70,000

(ii) Schedule of Cost Apportionment (Primary Distribution)

	Basis	Total	Production Dept.	Administration Dept.	Selling & Distribution Dept.	General Management
Allocated Cost	Direct	6,44,06,800	6,05,46,800	10,66,000	16,23,000	11,71,000
Salary & Wages	Gross Salary (12:7:6:5)	2,00,00,000	80,00,000	46,66,667	40,00,000	33,33,333
Rent & Property tax	Floor area (18:6:5:3)	20,000	11,250	3,750	3,125	1,875
Depreciation:						
- Building	Floor area (18:6:5:3)	9,00,000	5,06,250	1,68,750	1,40,625	84,375
- Air Conditioner	RT (30:15:14:6)	1,50,000	69,231	34,615	32,308	13,846
Insurance premium for employees	Gross Salary (12:7:6)	2,50,000	1,20,000	70,000	60,000	-
Electricity exp.	Units (4:8:3:1)	3,20,000	80,000	1,60,000	60,000	20,000
Subsidy for Meal coupons	No. of employees (18:19:24)	1,83,000	54,000	57,000	72,000	-
Other miscellaneous expenditure	Direct expenses (allocated expenses)	8,05,085	7,56,835	13,325	20,287.5	14,637.5
Total		8,70,34,885	7,01,44,366	62,40,107	60,11,345.5	46,39,066.5

(iii) Schedule of Secondary Distribution:

	Basis	Total	Production Dept.	Administra-tion Dept.	Selling & Distribution Dept.	General Management
Total		8,70,34,885	7,01,44,366	62,40,107	60,11,345.5	46,39,066.5

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Allocated and Apportioned costs						
General Management	(2:1:7)	46,39,066.5	9,27,813.3	4,63,906.65	32,47,346.55	(46,39,066.5)
			7,10,72,179.3	67,04,013.65	92,58,692.05	
Administration dept.	(9:11)	67,04,013.65	30,16,806.14	(67,04,013.65)	36,87,207.51	
Total			7,40,88,985.44	-	1,29,45,899.56	

4. (i) Costing Profit & Loss statement

		(₹)
	Materials	28,06,000
	Wages	18,05,750
	Prime Cost	46,11,750
	Production overheads (20% of Prime Cost)	9,22,350
		55,34,100
Less:	Work in Progress	(97,500)
	Manufacturing cost incurred during the period	54,36,600
Add:	Administration Overheads (₹15.75 x 31,000 units)	4,88,250
	Cost of Production	59,24,850
Less:	Closing Finished goods stock($\left(₹59,24,850 \times \frac{1,000}{31,000}\right)$	(1,91,124)
	Cost of Goods Sold	57,33,726
Add:	Selling & Distribution Overheads (₹13 × 30,000 units)	3,90,000
	Cost of Sales	61,23,726
	Profit (Balancing figure)	7,51,274
	Sales	68,75,000

(ii) Production OH A/c

	(₹)		(₹)
To Gen ledger Adj. A/c	9,92,250	By WIP A/c	9,22,350
		By Overhead adj. A/c (Under-absorption)	69,900
	9,92,250		9,92,250

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Administration Overheads A/c

	(₹)		(₹)
To Gen Ledger Adj. A/c	5,10,375	By Finished goods A/c	4,88,250
		By Overhead adj. A/c (Under-absorption)	22,125
	5,10,375		5,10,375

Selling & Distribution Overheads A/c

	(₹)		(₹)
To Gen. Ledger Adj A/c	3,68,875	By Cost of Sales A/c	3,90,000
To Overhead Adj. A/c (Over-absorption)	21,125		
	3,90,000		3,90,000

(iii) Reconciliation Statement

		(₹)	(₹)
	Profits as per cost accounts		7,51,274
Add:	Selling & Distribution Overheads- over absorbed	21,125	
	Dividend received	4,90,000	
	Interest on bank deposits	95,000	6,06,125
			13,57,399
Less:	Production Overheads- under-absorbed	69,900	
	Administration Overheads- under-absorbed	22,125	
	Preliminary exp. Written off	22,750	
	Goodwill written off	45,500	
	Fines	7,250	
	Interest on term loan	13,000	
	Loss on sale of machinery	16,250	
	Taxation	1,95,000	
	Write-down of Finished stock (₹1,91,124 – ₹1,30,000)	61,124	(4,52,899)
	Profit as per Financial Accounts		9,04,500

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5. Contract Accounts of M/s DKG LLP for the year ended 31st March, 2016:

Amount (₹'000)

Particulars	Contract 101	Contract 102	Particulars	Contract 101	Contract 102
To Stores	1,400	300	By Stores return	160	60
To Plant & Machinery	2,000	300	By Transfer to 102	80	-
To Transfer from 101	-	80	By Materials at site	150	30
To Plant hire charges	400	60	By Plant at site	1,700	285
To Wages	600	540	By Cost of work not certified	320	40
To Overheads	150	36	By Cost of work certified (bal. fig) c/d	2,190	909
To Other direct expenses	50	8			
	4,600	1,324		4,600	1,324
To Cost of work certified b/d	2,190	909	By Value of work certified	3,000	750
To Notional profit	810	-	By Notional loss	-	159
	3,000	909		3,000	909

6. (i) Calculation of Absolute Ton-km for the next month:

Journey	Distance in km	Weight-Up (in MT)	Ton-km	Weight-Down (in MT)	Ton-km	Total
	(a)	(b)	(c)=(a)×(b)	(d)	(e)= (a)×(d)	(c)+(e)
Delhi to Kochi	2,700	14	37,800	6	16,200	54,000
Delhi to Guwahati	1,890	12	22,680	0	0	22,680
Delhi to Vijayawada	1,840	15	27,600	0	0	27,600
Delhi to Varanasi	815	10	8,150	0	0	8,150
Delhi to Asansol	1,280	12	15,360	4	5,120	20,480
Delhi to Chennai	2,185	10	21,850	8	17,480	39,330
Total	10,710	73	1,33,440	18	38,800	1,72,240

Total Ton-Km = 1,72,240 ton-km

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(ii) Calculation of cost per ton-km:

Particulars	Amount (₹)	Amount (₹)
A. Running cost:		
- Diesel Cost {₹13.75 × (10,710 × 2)}	2,94,525.00	
- Engine oil cost $\left(\frac{₹4,200}{13,000\,km} \times 21,420\,km\right)$	6,920.31	
- Cost of loading of goods {₹150 × (73+18)}	13,650.00	
- Depreciation $\left(\frac{₹20,00,000}{7,20,000\,km} \times 21,420\,km\right)$	59,500.00	3,74,595.31
B. Repairs & Maintenance Cost $\left(\frac{₹12,000}{10,000\,km} \times 21,420\,km\right)$		25,704
C. Standing Charges		
- Drivers' salary (₹18,000 × 4 trucks)	72,000	
- Cleaners' salary (₹7,500 × 4 trucks)	30,000	
- Supervision and other general exp.	12,000	1,14,000
Total Cost (A + B + C)		5,14,299.31
Total ton-km		1,72,240
Cost per ton-km		2.99

7. (i) Statement of profitability of an Oil Mill (after carrying out further processing) for the quarter ending 31st March 2016.

Products	Sales Value after further processing	Share of Joint cost	Additional processing cost	Total cost after processing	Profit (loss)
ACH	1,72,500	98,667	43,000	1,41,667	30,833
BCH	15,000	19,733	9,000	28,733	(13,733)
CSH	6,000	4,933	--	4,933	1,067
DSH	45,000	24,667	1,500	26,167	18,833
	2,38,500	1,48,000	53,500	2,01,500	37,000

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(ii) Statement of profitability at the split off point

Products	Selling price of split off	Output in units	Sales value at split off point	share of joint cost	profit at split off point
ACH	15.00	8,000	1,20,000	98,667	21,333
BCH	6.00	4,000	24,000	19,733	4,267
CSH	3.00	2,000	6,000	4,933	1,067
DSH	7.50	4,000	30,000	24,667	5,333
			1,80,000	1,48,000	32,000

Note: Share of Joint Cost has been arrived at by considering the sales value at split off point.

8. Standard and actual costs of material for actual output:

Material	SQ	SP (₹)	SQ × SP (₹)	AQ	AQ × AP (₹)	AQ × SP (₹)
A	31,000*	20	6,20,000	32,500	6,59,750	6,50,000
B	69,000**	10	6,90,000	67,000	6,83,400	6,70,000
	1,00,000		13,10,000	99,500	13,43,150	13,20,000

*Material A- 11,000 × 2 + 9,000 × 1 = 31,000 units

**Material B- 11,000 × 3 + 9,000 × 4 = 69,000 units

(i) Material Price Variance = Actual Quantity (Std. Price – Actual Price)

= AQ × SP – AQ × AP

= 13,20,000 – 13,43,150 = 23,150 (Adverse)

(ii) Material Usage Variance = Std. Price (Std. Qty. – Actual Qty.)

= SP × SQ – SP × AQ

= 13,10,000 – 13,20,000 = 10,000 (Adverse)

(iii) Material Cost Variance = Std. Qty. × Std. Price – Actual Qty. × Actual Price

= 13,10,000 – 13,43,150 = 33,150 (Adverse)

9. Working Note:

1. Current utilization 80% capacity and Turnover is ₹ 8,00,000

No. of units = ₹8,00,000/₹25 = 32,000 units

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Variable Cost per units:	
Material	7.50
Labour cost	6.25
Variable overheads	3.75
Total Variable Cost	17.50
Selling price	25.00
Contribution per unit (Selling price – Variable Cost)	7.50

Calculation of Total Fixed Cost

Particulars	(₹)
Semi-variable cost	1,80,000
Less: Variable cost (32,000 units × ₹3.75)	1,20,000
Fixed Cost	60,000
Add: Fixed cost upto 80% level	90,000
Total Fixed Cost	1,50,000

2. Present Profit:

Contribution (32,000 units at ₹ 7.50)	2,40,000
Less: Fixed cost	1,50,000
Profit	90,000

(i) Break-even point = Total Fixed Cost /Contribution per unit

= ₹1,50,000/ ₹7.50 = 20,000 Units

At 20,000 units, output level is = $\frac{20,000}{32,000} \times 80\% = 50\%$

i.e. at 50% activity level, this company reaches at BEP.

(ii) Sales (Units) $= \frac{\text{Fixed Cost + Profit}}{\text{Contribution per unit}}$

8% of sales = 8% of ₹25 = ₹ 2 per unit profit.

Let us assume 'S' is the no. of units to be sold, hence profit will be 2S

So, S $= \frac{₹1,50,000 + 2S}{₹7.50}$

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Or, 7.50 S – 2 S = 1,50,000

Or, S = 1,50,000 ÷ 5.50 = 27,273 units.

(iii) Sales (units) = $\frac{₹1,50,000 + ₹95,000}{₹7.50}$

= ₹ 2,45,000 ÷ ₹ 7.50 = 32,667 units

32,667 units is beyond 80% activity level. In such case, the fixed cost will be increased by ₹ 20,000 to ₹ 1,70,000.

Then, S = $\frac{₹1,70,000 + ₹95,000}{₹7.50} = 35,333$ units i.e. $\frac{35,333}{40,000} \times 100 = 88.33\%$ activity level.

(iv) When BEP is 40% of activity level, i.e., 40% of 40,000 = 16,000 units BEP

Variable Cost (16,000 × ₹17.50) = ₹ 2,80,000

Add: fixed cost = ₹ 1,50,000

Total cost ₹ 4,30,000

Total cost = Sales at BEP ₹ 4,30,000

Selling price per unit = ₹ 4,30,000 ÷ 16,000 units = ₹ 26.875 per unit.

10. (a) Flexible Budget

Level of students	30	60	90	120	150
Variable Costs (₹)					
Breakfast at ₹ 50	1,500	3,000	4,500	6,000	7,500
Lunch at ₹ 100	3,000	6,000	9,000	12,000	15,000
Tea at ₹ 30	900	1,800	2,700	3,600	4,500
Entrance fee at zoo at ₹ 20	600	1,200	1,800	2,400	3,000
Variable cost at ₹ 200	6,000	12,000	18,000	24,000	30,000
Semi-variable costs (₹)					
Bus hire charge	6,500	13,000	13,000	19,500	19,500
Special permit fee	500	1,000	1,000	1,500	1,500
Allowance to teachers	1,000	2,000	2,000	3,000	3,000
	8,000	16,000	16,000	24,000	24,000
Fixed costs (₹)					
Block entrance fee other than zoo	2,500	2,500	2,500	2,500	2,500

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Prizes to students for games	2,500	2,500	2,500	2,500	2,500
	5,000	5,000	5,000	5,000	5,000
Total Cost	19,000	33,000	39,000	53,000	59,000
(b) Average cost per student (Total Cost /Number of Students)	633.33	550.00	433.33	441.67	393.33

(c) Calculation of Break-even level of students:

Collection per student	₹ 450
Variable cost per student	₹ 200
Contribution per student	₹ 250

Semi-variable costs for levels of 50, 100 and 150 students.

Level of students	50	100	150
Semi-variable costs	8,000	16,000	24,000
Fixed costs	5,000	5,000	5,000
	13,000	21,000	29,000
Break- even students [Fixed cost / Contribution per student]	52	84	116

There are two practically possible break-even levels, i.e., 84 students and 116 students. Break-even level of 52 is outside the level of 50 and hence shall be ignored.

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PAPER – 3: COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART II: FINANCIAL MANAGEMENT

QUESTIONS

Time Value of Money

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

   Required:

   (i) Calculate the amount of EMI

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

Ratio Analysis

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

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

Fund Flow Analysis

3. The following are the Balance Sheet of Peacock Limited as on 31st March, 20X8 and 31st March, 20X9.

	Rupees 31st March, 20X8	Rupees 31st March, 20X9
Liabilities		
Share capital	44,00,000	66,00,000
Reserves and Surplus	27,50,000	38,50,000
Depreciation	8,80,000	13,20,000
Bank Loan	17,60,000	8,80,000
Trade Payables	13,20,000	14,85,000
Proposed dividend	4,00,000	6,00,000
Provision for taxation	4,00,000	5,50,000

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	1,19,10,000	1,52,85,000
Assets		
Land	33,00,000	44,00,000
Plant and Machinery	50,60,000	69,30,000
Inventories	19,80,000	22,00,000
Trade Receivables	11,00,000	17,05,000
Cash and Bank balances	4,70,000	50,000
	1,19,10,000	1,52,85,000

Additional Information:

(a) The machine which was purchased earlier for ₹ 6,00,000 was sold during the financial year 20X8-20X9 for ₹ 40,000. The book value of the machine was ₹ 60,000. A new machinery was purchased during the financial year.

(b) The company had issued new shares to the extent of ₹22,00,000.

You are required to prepare:

1. Statement showing changes in the Working Capital;
2. Statement of Sources and Application of funds.

Cost of Capital

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

Required:

(i) Calculated the Cost of equity

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

Capital Structure

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

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

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

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

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

(ii) Which alternative would you recommend and why?

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

Leverages

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

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

Fixed Cost:

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

Capital Structure:

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

Investment Decisions/ Capital Budgeting

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

Year	Project A	Project B	Discounting factor @ 16%
1	–	60,000	0.862
2	30,000	84,000	0.743
3	1,32,000	96,000	0.641

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4	84,000	1,02,000	0.552
5	84,000	90,000	0.476

You are required to calculate for each project:

(i) Discounted payback period

(ii) Profitability index

(iii) Net present value

Management of Working Capital

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

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

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

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

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

Receivable Management

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

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

Calculate the effective cost of factoring to the Firm.

Miscellaneous

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

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

SUGGESTED ANSWERS

1. (i) Calculation of the amount of EMI:

$$\text{EMI} = \text{Amount}\left[\frac{i(1+i)^n}{(1+i)^n-1}\right]$$

Where, i = rate of interest divided by 12 i.e. 0.14 ÷ 12 = 0.01167

n = Tenure of loan in months i.e. 24 months

Amount = ₹ 25,000 – ₹ 5,000 = ₹ 20,000.

$$\text{EMI} = ₹20,000\left[\frac{0.01167(1+0.01167)^{24}}{(1+0.01167)^{24}-1}\right] = ₹20,000\left[\frac{0.01167(1.01167)^{24}}{(1.01167)^{24}-1}\right]$$

$$\text{Or, EMI} = ₹20,000\left[\frac{0.01167\times1.32}{1.32-1}\right] = ₹20,000\times\frac{0.0154}{0.32} = ₹\ 962.5$$

(ii) Calculation of total amount of interest payable to bank:

Amount of EMI × No. of months – Amount of loan

= ₹962.5 × 24 – ₹20,000 = ₹3,100

[Value of EMI and Interest may slightly differ due to rounding off error]

2. Working notes:

1. Computation of Current Assets and Current Liabilities:

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{2.5}{1} \text{ or } \frac{\text{Current Assets}}{2.5} = \frac{\text{Current Liabilities}}{1} = k \text{ (say)}$$

Or, Current Assets = 2.5 k and Current Liabilities = k

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Or, Working capital = (Current Assets – Current Liabilities)

Or, ₹2,40,000 = k (2.5 – 1) = 1.5 k

Or, k = ₹1,60,000

∴ Current liabilities = ₹1,60,000

Current assets = ₹1,60,000 × 2.5 = ₹4,00,000

2. Computation of Inventories

$$\text{Liquid ratio} = \frac{\text{Liquid assets}}{\text{Current liabilities}}$$

$$\text{Or, } 1.5 = \frac{\text{Current assets - Inventories}}{₹1,60,000}$$

Or, 1.5 × ₹1,60,000 = ₹4,00,000 – Inventories

Or, Inventories = ₹1,60,000

3. Computation of Proprietary fund; Fixed assets; Capital and Trade payables

$$\text{Proprietary ratio} = \frac{\text{Fixed assets}}{\text{Proprietary fund}} = 0.75$$

∴ Fixed assets = 0.75 Proprietary fund

and Net working capital = 0.25 Proprietary fund

Or, ₹2,40,000/0.25 = Proprietary fund

Or, Proprietary fund = ₹9,60,000

and Fixed assets = 0.75 proprietary fund

= 0.75 × ₹9,60,000

= ₹7,20,000

Capital = Proprietary fund – Reserves & Surplus

= ₹9,60,000 – ₹1,60,000

= ₹8,00,000

Trade payables = (Current liabilities – Bank overdraft)

= (₹1,60,000 – ₹40,000)

= ₹1,20,000

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Construction of Balance sheet

(Refer to working notes 1 to 3)

Balance Sheet as at 31st March, 2016

Liabilities	(₹)	Assets	(₹)
Capital	8,00,000	Fixed assets	7,20,000
Reserves & Surplus	1,60,000	Inventories	1,60,000
Bank overdraft	40,000	Current assets (other than inventories)	2,40,000
Trade Payables	1,20,000		
	11,20,000		11,20,000

3. (1) Statement of Changes in Working Capital

Particulars	31st March		Working Capital	
	20X8 (₹)	20X9 (₹)	Increase (₹)	Decrease (₹)
A Current Assets:				
Inventories	19,80,000	22,00,000	2,20,000	--
Trade Receivables	11,00,000	17,05,000	6,05,000	--
Cash and Bank	4,70,000	50,000	--	4,20,000
Total (A)	35,50,000	39,55,000		
B Current Liabilities:				
Trade Payables	13,20,000	14,85,000	--	1,65,000
Provision for Taxation	4,00,000	5,50,000	--	1,50,000
Total (B)	17,20,000	20,35,000		
Working Capital (A – B)	18,30,000	19,20,000		
Increase in Working Capital	90,000			90,000
Total	19,20,000	19,20,000	8,25,000	8,25,000

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

	(₹)
A. Sources of Funds:	
(i) Fund from Business Operations (WN-1)	27,00,000
(ii) Proceeds from issue of shares	22,00,000

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	(iii) Proceeds from sale of machinery	40,000
	Total sources	49,40,000
B.	**Application of Funds:**	
	(i) Payment of dividend	4,00,000
	(ii) Repayment of bank loan	8,80,000
	(iii) Purchase of land	11,00,000
	(iv) Purchase of machinery (WN-3)	24,70,000
	Total uses	48,50,000
	Net Increase in Working Capital (A – B)	90,000

Working Notes:

1. Computation of Funds from Business Operation

		(₹)
	Reserve and surplus as on March 31, 20X9	38,50,000
Add:	Provision for depreciation (WN- 2)	9,80,000
	Proposed dividend	6,00,000
	Loss on sale of machinery	20,000
		54,50,000
Less:	Profit and loss as on March 31, 20X8	27,50,000
	Fund from Operations	27,00,000

2. Provision for Depreciation A/c

	(₹)		(₹)
To Plant & Machinery A/c	5,40,000	By Balance b/d	8,80,000
To Balance c/d	13,20,000	By Profit & Loss A/c (Balancing figure)	9,80,000
	18,60,000		18,60,000

3. Plant & Machinery A/c

	(₹)		(₹)
To Balance b/d	50,60,000	By Prov. for Dep. A/c	5,40,000
To Bank (Purchases)	24,70,000	By Cash	40,000
		By Profit & Loss A/c (Loss on Sale)	20,000

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		By Balance c/d	69,30,000
	75,30,000		75,30,000

4. (i) Since, the earnings for the company will remain same for future years and the pay-out ratio is 100 per cent too. It indicates that the dividend is equal to earnings per share and growth rate is zero per cent.

$$\text{Therefore, the Cost of equity } (K_e) = \frac{\text{Earnings per share (EPS)}}{\text{Market price per share } (P_0)}$$

$$\text{Where, EPS} = \frac{\text{Earnings available to shareholders}}{\text{No. of shares outstanding}} = \frac{₹25,00,000}{1,00,000} = ₹25$$

$$\text{and } P_0 = ₹450$$

$$\text{Therefore, } K_e = \frac{₹25}{₹450} = 0.055 \text{ or } 5.55\%$$

(ii) In this case pay-out ratio is 70% and the earning rate on investment is 20%, which means the amount retained after payment of dividend can be invested to earn an interest of 20% p.a.

$$\text{The Cost of Equity } (K_e) = \frac{\text{Earnings per share (EPS)} \times \text{payout ratio}}{\text{Market price per share } (P_0)} + \text{growth rate}$$

$$= \frac{₹25 \times 70\%}{₹450} + (30\% \times 20\%)$$

$$= \frac{₹17.5}{₹450} + 0.06 = 0.0988 \text{ or } 9.89\%$$

5. (i) Computation of EPS under three-financial plans.

Plan I: Equity Financing

	(₹)	(₹)	(₹)	(₹)	(₹)
EBIT	62,500	1,25,000	2,50,000	3,75,000	6,25,000
Interest	0	0	0	0	0
EBT	62,500	1,25,000	2,50,000	3,75,000	6,25,000
Less: Taxes 40%	(25,000)	(50,000)	(1,00,000)	(1,50,000)	(2,50,000)
PAT	37,500	75,000	1,50,000	2,25,000	3,75,000
No. of equity shares	3,12,500	3,12,500	3,12,500	3,12,500	3,12,500
EPS	0.12	0.24	0.48	0.72	1.20

Plan II: Debt – Equity Mix

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	(₹)	(₹)	(₹)	(₹)	(₹)
EBIT	62,500	1,25,000	2,50,000	3,75,000	6,25,000
Less: Interest	(1,25,000)	(1,25,000)	(1,25,000)	(1,25,000)	(1,25,000)
EBT	(62,500)	0	1,25,000	2,50,000	5,00,000
Less: Taxes 40%	25,000*	0	(50,000)	(1,00,000)	(2,00,000)
PAT	(37,500)	0	75,000	1,50,000	3,00,000
No. of equity shares	1,56,250	1,56,250	1,56,250	1,56,250	1,56,250
EPS	(0.24)	0	0.48	0.96	1.92

* The Company will be able to set off losses against other profits. If the Company has no profits from operations, losses will be carried forward.

Plan III: Preference Shares – Equity Mix

	(₹)	(₹)	(₹)	(₹)	(₹)
EBIT	62,500	1,25,000	2,50,000	3,75,000	6,25,000
Less: Interest	0	0	0	0	0
EBT	62,500	1,25,000	2,50,000	3,75,000	6,25,000
Less: Taxes (40%)	(25,000)	(50,000)	(1,00,000)	(1,50,000)	(2,50,000)
PAT	37,500	75,000	1,50,000	2,25,000	3,75,000
Less: Pref. dividend	(1,25,000)*	(1,25,000)*	(1,25,000)	(1,25,000)	(1,25,000)
PAT for equity shareholders	(87,500)	(50,000)	25,000	1,00,000	2,50,000
No. of Equity shares	1,56,250	1,56,250	1,56,250	1,56,250	1,56,250
EPS	(0.56)	(0.32)	0.16	0.64	1.60

*In case of cumulative preference shares, the dividend gets accumulated if there is insufficient profit to pay dividend. If we assume it as non-cumulative preference shares, then in this case dividend amount will be lower of PAT and amount of preference dividend.

(ii) The choice of the financing plan will depend on the state of economic conditions. If the company's sales are increasing, the EPS will be maximum under Plan II: Debt – Equity Mix. Under favourable economic conditions, debt financing gives more benefit due to tax shield availability than equity or preference financing.

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(iii) EBIT – EPS Indifference Point- Plan I and Plan II:

$$\frac{(EBIT)\times(1-T_C)}{N_1}=\frac{(EBIT-Interest)\times(1-T_C)}{N_2}$$

$$\frac{EBIT(1-0.40)}{3,12,500}=\frac{(EBIT-1,25,000)\times(1-0.40)}{1,56,250}$$

$$EBIT = \frac{3,12,500}{3,12,500-1,56,250}\times 1,25,000$$

= ₹2,50,000

EBIT – EPS Indifference Point: Plan I and Plan III

$$\frac{EBIT(1-T_c)}{N_1}=\frac{EBIT(1-T_c)-Pref.\ Div.}{N_2}$$

$$EBIT = \frac{N_1}{N_1-N_2}\times\frac{Pref.\ Div.}{1-T_C}$$

$$= \frac{3,12,500}{3,12,500-1,56,250}\times\frac{1,25,000}{1-0.4} = ₹4,16,666.67$$

6. (i) Operating leverages:

Particulars	Situation-I (₹)	Situation-II (₹)
Sales (S) (3,000 units @ ₹ 30/- per unit)	90,000	90,000
Less: Variable Cost (VC) @ ₹15 per unit	(45,000)	(45,000)
Contribution (C)	45,000	45,000
Less: Fixed Cost (FC)	15,000	20,000
EBIT	30,000	25,000
Operating Leverage $\left(\frac{C}{EBIT}\right)$	$\frac{45,000}{30,000}$	$\frac{45,000}{25,000}$
	= 1.5	= 1.8

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(ii) Financial Leverages:

	A (₹)	B (₹)
Situation I:		
EBIT	30,000	30,000
Less: Interest on debt	(2,000)	(1,000)
EBT	28,000	29,000
Financial Leverage $\left(\frac{EBIT}{EBT}\right)$	$\frac{30,000}{28,000}$	$\frac{30,000}{29,000}$
	= 1.07	= 1.03
Situation-II:		
EBIT	25,000	25,000
Less: Interest on debt	(2,000)	(1,000)
EBT	23,000	24,000
Financial Leverage $\left(\frac{EBIT}{EBT}\right)$	$\frac{25,000}{23,000}$	$\frac{25,000}{24,000}$
	= 1.09	= 1.04

(iii) Combined Leverages:

	A (₹)	B (₹)
(a) Situation I	1.5 × 1.07 = 1.61	1.5 × 1.03 = 1.55
(b) Situation II	1.8 × 1.09 = 1.96	1.8 × 1.04 = 1.87

7. Working Notes:

(1) Computation of Net Present Values of Projects

Year	Cash flows		Discounting factor @ 16%	Discounted Cash flow	
	Project A (₹) (1)	Project B (₹) (2)	(3)	Project A (₹) (3) × (1)	Project B (₹) (3) × 2)
0	(1,35,000)	(2,40,000)	1.000	(1,35,000)	(2,40,000)
1	–	60,000	0.862	–	51,720
2	30,000	84,000	0.743	22,290	62,412
3	1,32,000	96,000	0.641	84,612	61,536

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4	84,000	1,02,000	0.552	46,368	56,304
5.	84,000	90,000	0.476	39,984	42,840
Net Present Value				58,254	34,812

(2) Computation of Cumulative Present Values of Projects Cash inflows

Year	Project A (₹)		Project B (₹)	
	PV of cash inflows	Cumulative PV	PV of cash inflows	Cumulative PV
1	–	–	51,720	51,720
2	22,290	22,290	62,412	1,14,132
3	84,612	1,06,902	61,536	1,75,668
4	46,368	1,53,270	56,304	2,31,972
5	39,984	1,93,254	42,840	2,74,812

(i) Discounted payback period: (Refer to Working note 2)

Cost of Project A = ₹1,35,000

Cost of Project B = ₹2,40,000

Cumulative PV of cash inflows of Project A after 4 years = ₹1,53,270

Cumulative PV of cash inflows of Project B after 5 years = ₹2,74,812

A comparison of projects cost with their cumulative PV clearly shows that the project A's cost will be recovered in less than 4 years and that of project B in less than 5 years. The exact duration of discounted payback period can be computed as follows:

	Project A	Project B
Excess PV of cash inflows over the project cost (₹)	18,270 (₹1,53,270 – ₹1,35,000)	34,812 (₹2,74,812 – ₹2,40,000)
Computation of period required to recover excess amount of cumulative PV over project cost (Refer to Working note 2)	0.39 year (₹18,270 / ₹46,368)	0.81 years (₹34,812 / ₹42,840)
Discounted payback period	3.61 year (4 – 0.39) years	4.19 years (5 – 0.81) years

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(ii) Profitability Index: $= \frac{\text{Sum of discount cash inflows}}{\text{Initian cash outlay}}$

Profitability Index (*for Project A)* $= \frac{₹1,93,254}{₹1,35,000} = 1.43$

Profitability Index (*for Project B)* $= \frac{₹2,74,812}{₹2,40,000} = 1.15$

(iii) Net present value = ₹ 58,254
(for Project A)
(Refer to Working note 1)
Net present value = ₹ 34,812 (for Project B)

8. Statement showing the Working Capital Requirement of the Company

		(₹)
A.	**Current Assets:**	
	Stock of raw materials [(₹64,80,000 / 12 months) × 2 months]	10,80,000
	Work-in-progress [(₹1,51,20,000 × 4) / 52 weeks × 50%]	5,81,538
	Finished goods (₹1,51,20,000 / 12 months)	12,60,000
	Receivables (Refer to Working note 2)	20,16,000
	Cash balances	1,00,000
		50,37,538
B.	**Current Liabilities:**	
	Creditors of raw materials (₹64,80,000 / 12 months)	5,40,000
	Creditors for wages & overheads $\left(\frac{₹86,40,000}{52 \text{ weeks}} \times 1.5 \text{ weeks}\right)$	2,49,231
		7,89,231
	Net Working Capital (A – B)	42,48,307

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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 Cost of Sales: (1,44,000 units × ₹105)	1,51,20,000
	Total cost of credit sales (80% of ₹1,51,20,000)	1,20,96,000
	Two months' sales (₹1,20,96,000 / 12 × 2 months)	20,16,000

9.

	(₹)
Average level of Receivables (₹3,20,00,000 × 90/360)	80,00,000
Factoring commission (₹80,00,000 × 2/100)	(1,60,000)
Factoring reserve (₹80,00,000 × 10/100)	(8,00,000)
Amount available for advance [₹80,00,000 - (₹1,60,000 + ₹ 8,00,000)]	70,40,000
Factor will deduct his interest @ 18%: $\left(\frac{70,40,000\times18\times90}{100\times360}\right)$	3,16,800

Advance to be paid = ₹70,40,000 – ₹3,16,800 = ₹67,23,200

	(₹)
Annual Cost of Factoring to the Firm:	
Factoring commission (₹1,60,000 × 360/90)	6,40,000
Interest charges (₹3,16,800 × 360/90)	12,67,200
Total	19,07,200
Firm's Savings on taking Factoring Service:	
Cost of credit administration saved	5,00,000
Cost of Bad Debts (₹3,20,00,000 × 1.5/100) avoided	4,80,000
Total	9,80,000
Net Cost to the firm (₹19,07,200 – ₹9,80,000)	9,27,200
Effective rate of interest to the firm = $\left(\frac{₹9,27,200\times100}{₹67,23,200}\right)$	13.79%

Note: The number of days in a year have been assumed to be 360 days.

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10. (a) "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.

(b) 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, bank. The credit worthiness of borrower is evaluated and contract is entered into with repayment schedule structured 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 – SPV will structure and issue securities on the basis of asset pool. The securities carry a coupon and expected maturity which can be asset-based/mortgage based. These are generally sold to investors through merchant bankers. Investors are – 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.

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