PAPER – 3: COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART-I: COST ACCOUNTING

QUESTIONS

Material

1. HBL Limited produces product 'M' which has a quarterly demand of 20,000 units. Each product requires 3 kg. and 4 kg. of material X and Y respectively. Material X is supplied by a local supplier and can be procured at factory stores at any time, hence, no need to keep inventory for material X. The material Y is not locally available, it requires to be purchased from other states in a specially designed truck container with a capacity of 10 tons.

   The cost and other information related with the materials are as follows:

Particulars	Material –X	Material-Y
Purchase price per kg. (excluding GST)	₹140	₹640
Rate of GST	18%	18%
Freight per trip (fixed, irrespective of quantity)	-	₹28,000
Loss of materials in transit*	-	2%
Loss in process*	4%	5%

   *On purchased quantity

   Other information:

   - The company has to pay 15% p.a. to bank for cash credit facility.

   - Input credit is available on GST paid on materials.

   Required:

   (i) Calculate cost per kg. of material X and Y

   (ii) Calculate the Economic Order quantity for both the materials.

Labour

2. ADV Pvt. Ltd. manufactures a product which requires skill and precision in work to get quality products. The company has been experiencing high labour cost due to slow speed of work. The management of the company wants to reduce the labour cost but without compromising with the quality of work. It wants to introduce a bonus scheme but is indifferent between the Halsey and Rowan scheme of bonus.

   For the month of November 2019, the company budgeted for 24,960 hours of work. The workers are paid ₹80 per hour.

   Required:

Calculate and suggest the bonus scheme where the time taken (in %) to time allowed to complete the works is (a) 100% (b) 75% (c) 50% & (d) 25% of budgeted hours.

Overheads

3. PLR Ltd. manufacturers a single product and recovers the overheads by adopting a single blanket rate based on machine hours. The budgeted production overheads of the factory for the FY 2019-20 are ₹50,40,000 and budgeted machine hours are 6,000.

For a period of first six months of the financial year 2019–20, following information were extracted from the books:

Actual production overheads	₹34,08,000
Amount included in the production overheads:	
Paid as per court's order	₹4,50,000
Expenses of previous year booked in current year	₹1,00,000
Paid to workers for strike period under an award	₹4,20,000
Obsolete stores written off	₹36,000

Production and sales data of the concern for the first six months are as under:

Production:	
Finished goods	1,10,000 units
Works-in-progress (50% complete in every respect)	80,000 units
Sale:	
Finished goods	90,000 units

The actual machine hours worked during the period were 3,000 hours. It is revealed from the analysis of information that 40% of the over/under-absorption was due to defective production policies and the balance was attributable to increase in costs.

You are required:

(i) to determine the amount of over/ under absorption of production overheads for the period,

(ii) to show the accounting treatment of over/ under-absorption of production overheads, and

(iii) to apportion the over/ under-absorbed overheads over the items.

Non-Integrated Accounting

4. As of 30th September, 2019, the following balances existed in a firm's cost ledger, which is maintained separately on a double entry basis:

	Debit (₹)	Credit (₹)
Stores Ledger Control A/c	15,00,000	–
Work-in-progress Control A/c	7,50,000	–
Finished Goods Control A/c	12,50,000	–
Manufacturing Overhead Control A/c	–	75,000
Cost Ledger Control A/c	–	34,25,000
	35,00,000	35,00,000

During the next quarter, the following items arose:

	(₹)
Finished Product (at cost)	11,25,000
Manufacturing overhead incurred	4,25,000
Raw material purchased	6,25,000
Factory wages	2,00,000
Indirect labour	1,00,000
Cost of sales	8,75,000
Materials issued to production	6,75,000
Sales returned (at cost)	45,000
Materials returned to suppliers	65,000
Manufacturing overhead charged to production	4,25,000

Required:

Prepare the Cost Ledger Control A/c, Stores Ledger Control A/c, Work-in-progress Control A/c, Finished Stock Ledger Control A/c, Manufacturing Overhead Control A/c, Wages Control A/c, Cost of Sales A/c and the Trial Balance at the end of the quarter.

Contract Costing

5. GVL Ltd. commenced a contract on April 1, 2018. The total contract was for ₹ 1,08,50,000. It was decided to estimate the total profit and to take to the credit of Costing P & L A/c the proportion of estimated profit on cash basis which work completed bear to the total contract. Actual expenditure in 2018-19 and estimated expenditure in 2019-20 are given below:

	2018-19	2019-20
	Actual (₹)	Estimated (₹)
Material issued	18,24,000	32,56,000

Labour : Paid	12,20,000	15,20,000
: Outstanding at end	96,000	1,50,000
Plant purchased	9,00,000	-
Expenses : Paid	4,00,000	7,00,000
: Outstanding at the end	-	1,00,000
: Prepaid at the end	90,000	-
Plant returned to stores (at historical cost)	3,00,000	6,00,000 (on Sep. 30, 2019)
Material at site	1,20,000	3,00,000
Work-in progress certified	51,00,000	Full
Work-in-progress uncertified	1,60,000	----
Cash received	40,00,000	Full

The plant is subject to annual depreciation @ 20% of WDV cost. The contract is likely to be completed on September 30, 2019.

Required:

(i) Prepare the Contract A/c for the year 2018-19.

(ii) Estimate the profit on the contract for the year 2018-19 on prudent basis which has to be credited to Costing P & L A/c.

Batch Costing

6. BTL LLP. manufactures glass bottles for HDL Ltd., a pharmaceutical company, which is in ayurvedic medicines business..

BTL can produce 2,00,000 bottles in a month. Set-up cost of each production run is ₹5,200 and the cost of holding one bottle for a year is ₹1.50.

As per an estimate HDL Ltd. can order as much as 19,00,000 bottles in a year spreading evenly throughout the year.

At present the BTL manufactures 1,60,000 bottles in a batch.

Required:

(i) Compute the Economic Batch Quantity for bottle production.

(ii) Compute the annual cost saving to BTL by adopting the EBQ of a production.

Job Costing

7. Ispat Engineers Limited (IEL) undertook a plant manufacturing work for a client. It will charge a profit mark up of 20% on the full cost of the jobs. The following are the information related to the job:

Direct materials utilised – ₹1,87,00,000

Direct labour utilised – 2,400 hours at ₹80 per hour

Budgeted production overheads are Rs. 48,00,000 for the period and are recovered on the basis of 24,000 labour hours.

Budgeted selling and administration overheads are `18,00,000 for the period and recovered on the basis of total budgeted total production cost of `36,00,00,000.

Required:

Calculate the price to be charged for the job.

Operating Costing

8. A transport company has a fleet of four trucks of 10 tonne capacity each plying in different directions for transport of customer's goods. The trucks run loaded with goods and return empty. The distance travelled, number of trips made and the load carried per day by each truck are as under:

Truck No.	One way Distance Km	No. of trips per day	Load carried per trip / day tonnes
1	48	4	6
2	120	1	9
3	90	2	8
4	60	4	8

The analysis of maintenance cost and the total distance travelled during the last two years is as under

Year	Total distance travelled	Maintenance Cost ₹
1	1,60,200	1,38,150
2	1,56,700	1,35,525

The following are the details of expenses for the year under review:

Diesel	₹ 60 per litre. Each litre gives 4 km per litre of diesel on an average.
Driver's salary	₹ 22,000 per truck per month
Licence and taxes	₹ 15,000 per annum per truck
Insurance	₹ 80,000 per annum for all the four trucks
Purchase Price per truck	₹30,00,000, Life 10 years. Scrap value at the end of life is ₹1,00,000.

Oil and sundries	₹ 525 per 100 km run.
General Overhead	₹ 1,10,840 per annum

The trucks operate 24 days per month on an average.

Required:

(i) Prepare an Annual Cost Statement covering the fleet of four trucks.

(ii) Calculate the cost per km. run.

(iii) Determine the freight rate per tonne km. to yield a profit of 30% on freight.

Process Costing

9. A product is manufactured in two sequential processes, namely Process-1 and Process-2. The following information relates to Process-1. At the beginning of June 2019, there were 1,000 WIP goods (60% completed in terms of conversion cost) in the inventory, which are valued at ₹2,86,020 (Material cost: ₹2,55,000 and Conversion cost: ₹31,020). Other information relating to Process-1 for the month of June 2019 is as follows;

Cost of materials introduced- 40,000 units (₹)	96,80,000
Conversion cost added (₹)	18,42,000
Transferred to Process-2 (Units)	35,000
Closing WIP (Units) (60% completed in terms of conversion cost)	1,500

100% of materials are introduced to Process-1 at the beginning. Normal loss is estimated at 10% of input materials (excluding opening WIP).

Required:

(i) Prepare a statement of equivalent units using the weighted average cost method and thereby calculate the following:

(ii) Calculate the value of output transferred to Process-2 and closing WIP.

Standard Costing

10. JVG Ltd. produces a product and operates a standard costing system and value material and finished goods inventories at standard cost. The information related with the product is as follows:

Particulars	Cost per unit (₹)
Direct materials (30 kg at ₹350 per kg)	10,500
Direct labour (5 hours at ₹80 per hour)	400

The actual information for the month just ended is as follows:

(a) The budgeted and actual production for the month of September 2019 is 1,000 units.

(b) Direct materials –5,000 kg at the beginning of the month. The closing balance of direct materials for the month was 10,000 kg. Purchases during the month were made at ₹365 per kg. The actual utilization of direct materials was 7,200 kg more than the budgeted quantity.

(c) Direct labour – 5,300 hours were utilised at a cost of ₹ 4,34,600.

Required:

Calculate (i) Direct material price and usage variances (ii) Direct labour rate and efficiency variances.

Marginal Costing

11. PVC Ltd sold 55,000 units of its product at ₹375 per unit. Variable costs are ₹175 per unit (manufacturing costs of ₹140 and selling cost ₹35 per unit). Fixed costs are incurred uniformly throughout the year and amount to ₹65,00,000 (including depreciation of ₹ 15,00,000). There is no beginning or ending inventories.

Required:

(i) Estimate breakeven sales level quantity and cash breakeven sales level quantity.

(ii) Estimate the P/V ratio.

(iii) Estimate the number of units that must be sold to earn an income (EBIT) of ₹5,00,000.

(iv) Estimate the sales level achieve an after-tax income (PAT) of ₹5,00,000, assume 40% corporate tax rate.

Budget and Budgetary Control

12. KLM Limited has prepared its expense budget for 50,000 units in its factory for the year 2019-20 as detailed below:

	(₹ per unit)
Direct Materials	125
Direct Labour	50
Variable Overhead	40
Direct Expenses	15
Selling Expenses (20% fixed)	25
Factory Expenses (100% fixed)	15
Administration expenses (100% fixed)	8
Distribution expenses (85% variable)	20
Total	298

Prepare an expense budget for the production of 35,000 units and 70,000 units.

Miscellaneous

13. (i) Differentiate between Cost Accounting and Management Accounting.
    (ii) Explain the meaning of Budget Manual.
    (iii) Explain the term Equivalent units used in process industries.

SUGGESTED ANSWERS/HINTS

1. Working Notes:

(a) Annual purchase quantity for material X and Y:

Annual demand for product M - 20,000 units × 4 = 80,000 units

Particulars	Mat-X	Mat-Y
Quantity required for per unit of product M	3 kg.	4 kg.
Net quantity for materials required	2,40,000 kg.	3,20,000 kg.
Add: Loss in transit	-	6,881 kg.
Add: Loss in process	10,000 kg.	17,204 kg.
Purchase quantity	2,50,000 kg.	3,44,085 kg.

Note- Input credit on GST paid is available; hence, it will not be included in cost of material.

(i) Calculation of cost per kg. of material X and Y:

Particulars	Mat-X	Mat-Y
Purchase quantity	2,50,000 kg.	3,44,085 kg.
Rate per kg.	₹140	₹640
Purchase price	₹3,50,00,000	₹22,02,14,400
Add: Freight	0	₹9,80,000*
Total cost	₹3,50,00,000	₹22,11,94,400
Net Quantity	2,40,000 kg.	3,20,000 kg
Cost per kg.	₹145.83	₹691.23

*No. of trucks = $\frac{3,44,085\,kg.}{10\,ton \times 1,000}$ = 34.40 trucks or 35 trucks

Therefore, total freight = 35 trucks × ₹28,000 = ₹9,80,000

(ii) Calculation of Economic Order Quantity (EOQ) for Mat.-X and Y:

$$EOQ = \sqrt{\frac{2 \times \text{Annual Requirement} \times \text{Order cost}}{\text{Carrying cost per unit p.a.}}}$$

Particulars	Mat-X	Mat-Y
Annual Requirement	2,50,000 kg.	3,44,085 kg.
Ordering cost	0	₹28,000
Cost per unit	₹145.83	₹691.23
Carrying cost	15%	15%
Carrying cost per unit p.a.	0*	₹103.68
EOQ	0	13,632.62 kg.

2. The Cost of labour under the bonus schemes are tabulated as below:

Time Allowed	Time taken	Wages (₹)	Bonus (₹)		Total Wages (₹)		Earning per hour (₹)	
			Halsey*	Rowan**	Halsey	Rowan	Halsey	Rowan
(1)	(2)	(3) = (2) ×₹80	(4)	(5)	(6) = (3) + (4)	(7) = (3) + (5)	(8) = (6)/(2)	(9) = (7)/(2)
24,960	24,960	19,96,800	-	-	19,96,800	19,96,800	80.00	80.00
24,960	18,720	14,97,600	2,49,600	3,74,400	17,47,200	18,72,000	93.33	100.00
24,960	12,480	9,98,400	4,99,200	4,99,200	14,97,600	14,97,600	120.00	120.00
24,960	6,240	4,99,200	7,48,800	3,74,400	12,48,000	8,73,600	200.00	140.00

* Bonus under Halsey Plan = 50% of (Time Allowed – Time Taken) × Rate per hour

** Bonus under Rowan Plan = $\frac{\text{Time taken}}{\text{Time allowed}} \times \text{Time saved} \times \text{Rate per hour}$

Rowan scheme of bonus keeps checks on speed of work as the rate of incentive increases only upto 50% of time taken to time allowed but the rate decreases as the time taken to time allowed comes below 50%. It provides incentives for efficient workers for saving in time but also puts check on careless speed. On implementation of Rowan scheme, the management of ADV Pvt. Ltd. would resolve issue of the slow speed work while maintaining the skill and precision required maintaining the quality of product.

3. (i) Amount of over/ under absorption of production overheads during the period of first six months of the year 2019-20:

	Amount (₹)	Amount (₹)
Total production overheads actually incurred during the period		34,08,000
Less: Amount paid to worker as per court order	4,50,000	
Expenses of previous year booked in the current year	1,00,000	
Wages paid for the strike period under an award	4,20,000	
Obsolete stores written off	36,000	10,06,000
		24,02,000
Less: Production overheads absorbed as per machine hour rate (3,000 hours × ₹840*)		25,20,000
Amount of over absorbed production overheads		1,18,000

*Budgeted Machine hour rate (Blanket rate) = $\frac{₹\ 50,40,000}{6,000\ \text{hours}}$ = ₹840 per hour

(ii) Accounting treatment of over absorbed production overheads: As, 40% of the over absorbed overheads were due to defective production policies, this being abnormal, hence should be credited to Costing Profit and Loss Account.

Amount to be credited to Costing Profit and Loss Account

= ₹1,18,000× 40% = ₹47,200.

Balance of over absorbed production overheads should be distributed over Works in progress, Finished goods and Cost of sales by applying supplementary rate*.

Amount to be distributed = ₹1,18,000× 60% = ₹70,800

Supplementary rate = $\frac{₹\ 70,800}{2,40,000\ \text{units}}$ = ₹ 0.295 per unit

(iii) Apportionment of over absorbed production overheads over WIP, Finished goods and Cost of sales:

	Equivalent completed units	Amount (₹)
Work-in-Progress (80,000 units × 50% ×0.472)	40,000	18,880
Finished goods (20,000 units × 0.472)	20,000	9,440
Cost of sales (90,000 units × 0.472)	90,000	42,480
Total	1,50,000	70,800

4. **Cost Ledger Control Account**

Dr. Cr.

	(₹)		(₹)
To Store Ledger Control A/c	65,000	By Opening Balance	34,25,000
To Balance c/d	47,10,000	By Store ledger control A/c	6,25,000
		By Manufacturing Overhead Control A/c	4,25,000
		By Wages Control A/c	3,00,000
	47,75,000		47,75,000

Stores Ledger Control Account

Dr. Cr.

	(₹)		(₹)
To Opening Balance	15,00,000	By WIP Control A/c	6,75,000
To Cost ledger control A/c	6,25,000	By Cost ledger control A/c (Returns)	65,000
		By Balance c/d	13,85,000
	21,25,000		21,25,000

WIP Control Account

Dr. Cr.

	(₹)		(₹)
To Opening Balance	7,50,000	By Finished Stock Ledger Control A/c	11,25,000
To Wages Control A/c	2,00,000	By Balance c/d	9,25,000
To Stores Ledger Control A/c	6,75,000		
To Manufacturing Overhead Control A/c	4,25,000		
	20,50,000		20,50,000

Finished Stock Ledger Control Account

Dr. Cr.

	(₹)		(₹)
To Opening Balance	12,50,000	By Cost of Sales	8,75,000
To WIP Control A/c	11,25,000	By Balance c/d	15,45,000
To Cost of Sales A/c (Sales Return)	45,000		
	24,20,000		24,20,000

Manufacturing Overhead Control Account

Dr. Cr.

	(₹)		(₹)
To Cost Ledger Control A/c	4,25,000	By Opening Balance	75,000
To Wages Control A/c	1,00,000	By WIP Control A/c	4,25,000
		By Under recovery c/d	2 5,000
	5,25,000		5,25,000

Wages Control Account

Dr. Cr.

	(₹)		(₹)
To Transfer to Cost Ledger Control A/c	3,00,000	By WIP Control A/c	2,00,000
		By Manufacturing Overhead Control A/c	1,00,000
	3,00,000		3,00,000

Cost of Sales Account

Dr. Cr.

	(₹)		(₹)
To Finished Stock Ledger Control A/c	8,75,000	By Finished Stock Ledger Control A/c (Sales return)	45,000

		By Balance c/d	8,30,000
	8,75,000		8,75,000

Trial Balance

	(₹)	(₹)
Stores Ledger Control A/c	13,85,000	
WIP Control A/c	9,25,000	
Finished Stock Ledger Control A/c	15,45,000	
Manufacturing Overhead Control A/c	25,000	
Cost of Sales A/c	8,30,000	
Cost ledger control A/c	----	47,10,000
	47,10,000	47,10,000

5. GVL Ltd.

Contract A/c
(April 1, 2018 to March 31, 2019)

Particulars	Amount (₹)	Particulars	Amount (₹)
To Materials Issued	18,24,000	By Plant returned to Stores (Working Note 1)	2,40,000
To Labour 12,20,000		By Materials at Site	1,20,000
Add: Outstanding 96,000	13,16,000	By W.I.P.	
To Plant Purchased	9,00,000	Certified 51,00,000	
To Expenses 4,00,000		Uncertified 1,60,000	52,60,000
Less: Prepaid 90,000	3,10,000	By Plant at Site (Working Note 2)	4,80,000
To Notional Profit c/d	17,50,000		
	61,00,000		61,00,000
To Costing Profit & Loss A/c (Refer to Working Note 5)	6,45,899	By Notional Profit b/d	17,50,000

To Work-in-Progress A/c (Profit-in-reserve)	11,04,101		
	17,50,000		17,50,000

GVL Ltd.

Contract A/c
(April 1, 2018 to September 30, 2019)
(For Computing estimated profit)

Particulars	Amount (₹)	Particulars	Amount (₹)
To Materials Issued (₹ 18,24,000 + ₹32,56,000)	50,80,000	By Material at Site	3,00,000
To Labour Cost (₹12,20,000+₹96,000+₹14,24,000* + ₹1,50,000)	28,90,000	By Plant returned to Stores on 31.03.2019.	2,40,000
To Plant purchased	9,00,000	By Plant returned to Stores on 30.09.2019 (Working Note 3)	4,32,000
To Expenses (₹3,10,000+₹7,90,000+ ₹1,00,000)	12,00,000	By Contractee A/c	1,08,50,000
To Estimated profit	17,52,000		
	1,18,22,000		1,18,22,000

* Labour paid in 2019-20: ₹15,20,000 – ₹96,000 = ₹14,24,000

Working Notes

		(₹)
1.	**Value of the Plant returned to Stores on 31.03.2019**	
	Historical Cost of the Plant returned	3,00,000
	Less: Depreciation @ 20% of WDV for one year	(60,000)
		2,40,000
2.	**Value of Plant at Site 31.03.2019**	
	Historical Cost of Plant at Site (₹9,00,000 – ₹3,00,000)	6,00,000
	Less: Depreciation @ 20% on WDV for one year	(1,20,000)
		4,80,000
3.	**Value of Plant returned to Stores on 30.09.2019**	
	Value of Plant (WDV) on 31.3.2019	4,80,000
	Less: Depreciation @ 20% of WDV for a period of 6 months	(48,000)
		4,32,000

4.	**Expenses Paid for the year 2018-19**	
	Total expenses paid	4,00,000
	Less: Pre-paid at the end	(90,000)
		3,10,000
5.	**Profit to be credited to Costing Profit & Loss A/c** on March 31, 2019 for the Contract likely to be completed on September 30, 2019.	
	$\text{Estimated Profit} \times \frac{\text{Work Certified}}{\text{Total Contract Price}} \times \frac{\text{Cash received}}{\text{Work Certified}}$	
	$= ₹17,52,000 \times \frac{51,00,000}{1,08,50,000} \times \frac{40,00,000}{51,00,000}$	6,45,899

6. Economic Batch Quantity (EBQ) = $\sqrt{\frac{2DS}{C}}$

Where, D = Annual demand for the product

S = Setting up cost per batch

C = Carrying cost per unit of production

(i) Computation of EBQ :

$$= \sqrt{\frac{2 \times 19,00,000 \times ₹5,200}{₹1.5}}$$

= 1,14,775 bottles

(ii) Computation of savings in cost by adopting EBQ:

Batch Size	No. of Batch	Set-up cost	Carrying cost	Total Cost
1,60,000 bottles	12	62,400 (₹5,200 × 12)	1,20,000 (₹1.5 × ½ × 1,60,000)	1,82,400
1,14,775 bottles	17	88,400 (₹5,200 × 17)	86,081.25 (₹1.5 × ½ × 1,14,775)	1,74,481.25
Saving				7,918.75

7. Calculation of job price

Particulars	Amount (₹)
Direct materials	1,87,00,000
Direct wages (₹80 × 2,400 hours)	1,92,000

Production overheads $\left(\frac{₹48,00,000}{24,000\,hrs} \times 2,400\,hrs\right)$	4,80,000
Production cost	**1,93,72,000**
Selling and administration overheads $\left(\frac{₹18,00,000}{₹36,00,00,000} \times ₹1,93,72,000\right)$	96,860
Total cost of sales	1,94,68,860
Profit mark-up @ 20%	38,93,772
Price for the job	**2,33,62,632**

8. (i) Annual Cost Statement of four vehicles

	(₹)
Diesel {(4,21,632 km. ÷ 4 km) × ₹ 60) (Refer to Working Note 1)	63,24,480
Oil & sundries {(4,21,632 km. ÷ 100 km.) × ₹ 525}	22,13,568
Maintenance {(4,21,632 km. × ₹ 0.75) + ₹ 18,000} (Refer to Working Note 2)	3,34,224
Drivers' salary {(₹22,000 × 12 months) × 4 trucks}	10,56,000
Licence and taxes (₹ 15,000 × 4 trucks)	60,000
Insurance	80,000
Depreciation {(₹29,00,000 ÷ 10 years) × 4 trucks}	11,60,000
General overhead	1,10,840
Total annual cost	**1,13,39,112**

(ii) Cost per km. run

$$\text{Cost per kilometer run} = \frac{\text{Total annual cost of vehicles}}{\text{Total kilometre travelled annually}} \text{ (Refer to Working Note 1)}$$

$$= \frac{₹1,13,39,112}{4,21,632\ \text{Kms}} = ₹\,26.89$$

(iii) Freight rate per tonne km (to yield a profit of 30% on freight)

$$\text{Cost per tonne km.} = \frac{\text{Total annual cost of three vehicles}}{\text{Total effective tonnes kms. per annum}} \text{ (Refer to Working Note 1)}$$

$$= \frac{₹1,13,39,112}{16,10,496\ \text{kms}} = ₹\,7.04$$

Freight rate per tonne km. $\left(\frac{₹7.04}{0.7}\right) \times 1$ = ₹ 10.06

Working Notes:

1. Total kilometre travelled and tonnes kilometre (load carried) by four trucks in one year

Truck number	One way distance in kms	No. of trips	Total distance covered in km per day	Load carried per trip / day in tonnes	Total effective tonnes km
1	48	4	384	6	1,152
2	120	1	240	9	1,080
3	90	2	360	8	1,440
4	60	4	480	8	1,920
Total			1,464		5,592

Total kilometre travelled by four trucks in one year

(1,464 km. × 24 days × 12 months) = 4,21,632

Total effective tonnes kilometre of load carried by four trucks during one year

(5,592 tonnes km. × 24 days × 12 months) = 16,10,496

2. Fixed and variable component of maintenance cost:

$$\text{Variable maintenance cost per km} = \frac{\text{Difference in maintenance cost}}{\text{Difference in distance travelled}}$$

$$= \frac{₹\ 1,38,150 - ₹\ 1,35,525}{1,60,200 \text{ kms} - 1,56,700 \text{ kms}}$$

$$= ₹\ 0.75$$

Fixed maintenance cost = Total maintenance cost – Variable maintenance cost

= ₹1,38,150 – 1,60,200 kms × ₹ 0.75 = ₹ 18,000

9. (i) Statement of Equivalent Production

Particulars	Input Units	Particulars	Output Units	Equivalent Production			
				Material		Conversion cost	
				%	Units	%	Units
Opening WIP	1,000	Completed and transferred to Process-2	35,000	100	35,000	100	35,000

Units introduced	40,000	Normal Loss (10% of 40,000)	4,000	--	--	--	--
		Abnormal loss (Balancing figure)	500	100	500	60	300
		Closing WIP	1,500	100	1,500	60	900
	41,000		41,000		37,000		36,200

(ii) Calculation of value of output transferred to Process-2 & Closing WIP

	Amount (₹)	Amount (₹)
1. Value of units completed and transferred (35,000 units × ₹ 320.25) (Refer working note)		1,12,08,750
3. Value of Closing W-I-P:		
- Materials (1,500 units × ₹ 268.51)	4,02,765	
- Conversion cost (900 units × ₹ 51.74)	46,566	4,49,331

Workings:

Cost for each element

Particulars	Materials (₹)	Conversion (₹)	Total (₹)
Cost of opening work-in-process	2,55,000	31,020	2,86,020
Cost incurred during the month	96,80,000	18,42,000	1,15,22,000
Total cost: (A)	99,35,000	18,73,020	1,18,08,020
Equivalent units: (B)	37,000	36,200	
Cost per equivalent unit: (C) = (A ÷ B)	268.51	51.74	320.25

10. Working:

Quantity of material purchased and used.

No. of units produced	1,000 units
Std. input per unit	30kg.
Std. quantity (Kg.)	30,000 kg.
Add: Excess usage	7,200 kg.
Actual Quantity	37,200 kg.
Add: Closing Stock	10,000 kg.
Less: Opening stock	5,000 kg.
Quantity of Material purchased	42,200 kg.

(i) Direct Material Price Variance:

= Actual Quantity purchased (Std. Price – Actual Price)

= 42,200 kg.(₹350 – ₹365) = 6,33,000 (Adverse)

Direct Material Usage Variance:

= Std. Price (Std. Quantity – Actual Quantity)

= ₹350 (30,000 kg. – 37,200 kg.) = ₹25,20,000 (Adverse)

(ii) Direct Labour Rate Variance:

= Actual hours (Std. Rate – Actual Rate)

= 5,300 hours (₹80 – ₹82) = ₹10,600 (Adverse)

Direct Labour Efficiency Variance:

= Std. Rate (Std. hours – Actual hours)

= ₹80 (1,000 units × 5 hours – 5,300 hours) = ₹24,000 (Adverse)

11. (i) Contribution = ₹375 - ₹175 = ₹200 per unit.

$$\text{Break even Sales Quantity} = \frac{\text{Fixed cost}}{\text{Contribution margin per unit}} = \frac{₹\ 65,00,000}{₹\ 200} = 32,500 \text{ units}$$

$$\text{Cash Break even Sales Qty} = \frac{\text{Cash Fixed Cost}}{\text{Contribution margin per unit}} = \frac{₹50,00,000}{₹200} = 25,000 \text{ units.}$$

(ii) $\text{P/V ratio} = \frac{\text{Contribution/unit}}{\text{Selling Price/unit}} \times 100 = \frac{₹200}{₹375} \times 100 = 53.33\%$

(iii) No. of units that must be sold to earn an Income (EBIT) of ₹5,00,000

$$\frac{\text{Fixed cost + Desired EBIT level}}{\text{Contribution margin per unit}} = \frac{65,00,000 + 5,00,000}{200} = 35,000 \text{ units}$$

(iv) After Tax Income (PAT) = ₹5,00,000

Tax rate = 40%

$$\text{Desired level of Profit before tax} = \frac{₹5,00,000}{60} \times 100 = ₹8,33,333$$

$$\text{Estimate Sales Level} = \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{P/V ratio}}$$

$$\text{Or, } \left(\frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Contribution per unit}} \times \text{Selling Price per unit} \right)$$

$$= \frac{₹65,00,000 + ₹8,33,333}{53.33\%} = ₹1,37,50,859$$

12. Expense Budget of KLM Ltd.

Particulars	50,000 Units (₹)	35,000 Units (₹)	70,000 Units (₹)
Direct Material	62,50,000 (50,000 x 125)	43,75,000 (35,000 x 125)	87,50,000 (70,000 x 125)
Direct Labour	25,00,000 (50,000 x 50)	17,50,000 (35,000 x 50)	35,00,000 (70,000 x 50)
Variable Overhead	20,00,000 (50,000 x 40)	14,00,000 (35,000 x 40)	28,00,000 (70,000 x 40)
Direct Expenses	7,50,000 (50,000 x 15)	5,25,000 (35,000 x 15)	10,50,000 (70,000 x 15)
Selling Expenses (Variable)*	10,00,000 (50,000 x 20)	7,00,000 (35,000 x 20)	14,00,000 (70,000 x 20)
Selling Expenses (Fixed)* (5 x 50,000)	2,50,000	2,50,000	2,50,000
Factory Expenses (Fixed) (15 x 50,000)	7,50,000	7,50,000	7,50,000
Administration Expenses (Fixed) (8 x 50,000)	4,00,000	4,00,000	4,00,000
Distribution Expenses (Variable)**	8,50,000 (17 x 50,000)	5,95,000 (17 x 35,000)	11,90,000 (17 x 70,000)
Distribution Expenses (Fixed)** (3 x 50,000)	1,50,000	1,50,000	1,50,000
	1,49,00,000	1,08,95,000	2,02,40,000

*Selling Expenses: Fixed cost per unit = ₹25 x 20% = ₹5

Fixed Cost = ₹5 x 50,000 units = ₹2,50,000

Variable Cost Per unit = ₹25 – ₹5 = ₹20

**Distribution Expenses: Fixed cost per unit = ₹20 x 15% = ₹3

Fixed Cost = ₹3 x 50,000 units = ₹1,50,000

Variable cost per unit = ₹20 – ₹3 = ₹17

13. (i) Difference between Cost Accounting and Management Accounting

	Basis	Cost Accounting	Management Accounting
(i)	Nature	It records the quantitative aspect only.	It records both qualitative and quantitative aspect.
(ii)	Objective	It records the cost of producing a product and providing a service.	It Provides information to management for planning and co-ordination.
(iii)	Area	It only deals with cost Ascertainment.	It is wider in scope as it includes financial accounting, budgeting, taxation, planning etc.
(iv)	Recording of data	It uses both past and present figures.	It is focused with the projection of figures for future.
(v)	Development	Its development is related to industrial revolution.	It develops in accordance to the need of modern business world.
(vi)	Rules and Regulation	It follows certain principles and procedures for recording costs of different products.	It does not follow any specific rules and regulations.

(ii) Budget Manual: A budget manual is a collection of documents that contains key information for those involved in the planning process. Typical contents could include the following:

- An introductory explanation of the budgetary planning and control process, including a statement of the budgetary objective and desired results.
- A form of organisation chart to show who is responsible for the preparation of each functional budget and the way in which the budgets are interrelated.
- A timetable for the preparation of each budget. This will prevent the formation of a 'bottleneck' with the late preparation of one budget holding up the preparation of all others.
- Copies of all forms to be completed by those responsible for preparing budgets, with explanations concerning their completion.
- A list of the organization's account codes, with full explanations of how to use them.
- Information concerning key assumptions to be made by managers in their budgets, for example the rate of inflation, key exchange rates, etc.

(iii) Equivalent Units: Equivalent units or equivalent production units, means converting the incomplete production units into their equivalent completed units. Under each process, an estimate is made of the percentage completion of work-in-process with regard to different elements of costs, *viz.,* material, labour and overheads. It is important that the estimate of percentage of completion should be as accurate as possible. The formula for computing equivalent completed units is:

$$\text{Equivalent completed units} = \begin{pmatrix} \text{Actual number of units in} \\ \text{the process of manufacture} \end{pmatrix} \times \begin{pmatrix} \text{Percentage of} \\ \text{Work completed} \end{pmatrix}$$

For instance, if 25% of work has been done on the average of units still under process, then 200 such units will be equal to 50 completed units and the cost of work-in-process will be equal to the cost of 50 finished units.

PART-II: FINANCIAL MANAGEMENT

QUESTIONS

Time Value of Money

1. A is 22 years old, recently joined a new job, wants to plan a tour to Europe after the end of 5 years. The Europe tour will cost ₹ 5,00,000, for this purpose she wants to invest a annually in mutual fund which will pay an average return of 12% p.a.

   Required:

   (i) Find out the annual investment to be made in the mutual fund.

Ratio Analysis

2. The following is the Profit and loss account and Balance sheet of KLM LLP.

Trading and Profit & Loss Account

Particulars	Amount (₹)	Particulars	Amount (₹)
To Opening stock	12,46,000	By Sales	1,96,56,000
To Purchases	1,56,20,000	By Closing stock	14,28,000
To Gross profit c/d	42,18,000		
	2,10,84,000		2,10,84,000
		By Gross profit b/d	42,18,000
To Administrative expenses	18,40,000	By Interest on investment	24,600
To Selling & distribution expenses	7,56,000	By Dividend received	22,000
To Interest on loan	2,60,000		
To Net profit	14,08,600		
	42,64,600		42,64,600

Balance Sheet as on…….

Capital & Liabilities	Amount (₹)	Assets	Amount (₹)
Capital	20,00,000	Plant & machinery	24,00,000
Retained earnings	42,00,000	Building	42,00,000
General reserve	12,00,000	Furniture	12,00,000
Term loan from bank	26,00,000	Sundry receivables	13,50,000
Sundry Payables	7,20,000	Inventory	14,28,000
Other liabilities	2,80,000	Cash & Bank balance	4,22,000
	1,10,00,000		1,10,00,000

You are required to compute:

(i) Gross profit ratio	(ii) Net profit ratio	(iii) Operating cost ratio	(iv) Operating profit ratio
(v) Inventory turnover ratio	(vi) Current ratio	(vii) Quick ratio	(viii) Interest coverage ratio
(ix) Return on capital employed	(x) Debt to assets ratio.		

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	88,00,000	1,32,00,000
Reserves and Surplus	55,00,000	77,00,000
Depreciation	17,60,000	26,40,000
Bank Loan	35,20,000	17,60,000
Sundry Creditors	26,40,000	29,70,000
Proposed dividend	8,00,000	12,00,000
Provision for taxation	8,00,000	11,00,000
	2,38,20,000	3,05,70,000
Assets		
Land	66,00,000	88,00,000
Plant and Machinery	1,01,20,000	1,38,60,000
Inventories	39,60,000	44,00,000
Sundry Debtors	22,00,000	34,10,000
Cash and Bank Balances	9,40,000	1,00,000
	2,38,20,000	3,05,70,000

Additional Information:

(a) The machine which was purchased earlier for ₹ 12,00,000 was sold during the financial year 20X8-20X9 for ₹80,000. The book value of the machine was ₹ 1,20,000. A new machine was purchased during the financial year.

(b) The company had issued new shares to the extent of ₹44,00,000.

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. KM Ltd. has the following capital structure on September 30, 2019:

Sources of capital	(₹)
Equity Share Capital (40,00,000 Shares of ₹ 10 each)	4,00,00,000
Reserves & Surplus	4,00,00,000
12% Preference Shares	2,00,00,000
9% Debentures	6,00,00,000
	16,00,00,000

The market price of equity share is ₹60. It is expected that the company will pay next year a dividend of ₹6 per share, which will grow at 10% forever. Assume 40% income tax rate.

You are required to compute weighted average cost of capital using market value weights.

Capital Structure

5. The management of RT Ltd. wants to raise its funds from market to meet out the financial demands of its long-term projects. The company has various combinations of proposals to raise its funds. You are given the following proposals of the company:

Proposal	Equity shares (%)	Debts (%)	Preference shares (%)
P	100	-	-
Q	50	50	-
R	50	-	50

(i) Cost of debt and preference shares is 12% each.

(ii) Tax rate –40%

(iii) Equity shares of the face value of ₹10 each will be issued at a premium of ₹10 per share.

(iv) Total investment to be raised ₹8,00,00,000.

(v) Expected earnings before interest and tax ₹3,60,00,000.

From the above proposals the management wants to take advice from you for appropriate plan after computing the following:

- Earnings per share

- Financial break-even-point

Compute the EBIT range among the plans for indifference.

Leverage

6. The following summarises the percentage changes in operating income, percentage changes in revenues, and betas for four listed firms.

Firm	Change in revenue	Change in operating income	Beta
A Ltd.	35%	22%	1.00
B Ltd.	24%	35%	1.65
C Ltd.	29%	26%	1.15
D Ltd.	32%	30%	1.20

Required:

(i) Calculate the degree of operating leverage for each of these firms. Comment also.

(ii) Use the operating leverage to explain why these firms have different beta.

Capital Budgeting

7. MTR Limited is considering buying a new machine which would have a useful economic life of five years, at a cost of ₹25,00,000 and a scrap value of ₹3,00,000, with 80 per cent of the cost being payable at the start of the project and 20 per cent at the end of the first year. The machine would produce 75,000 units per annum of a new product with an estimated selling price of ₹300 per unit. Direct costs would be ₹285 per unit and annual fixed costs, including depreciation calculated on a straight- line basis, would be ₹8,40,000 per annum.

In the first year and the second year, special sales promotion expenditure, not included in the above costs, would be incurred, amounting to ₹1,00,000 and ₹1,50,000 respectively.

Evaluate the project using the NPV method of investment appraisal, assuming the company's cost of capital to be 15 percent.

Management of Working Capital

8. Following are cost information of KG Ltd., which has commenced a new project for an annual production of 24,000 units which is the full capacity:

	Costs per unit (₹)
Materials	80.00
Direct labour and variable expenses	40.00
Fixed manufacturing expenses	12.00
Depreciation	20.00

Fixed administration expenses	8.00
	160.00

The selling price per unit is expected to be ₹192 and the selling expenses ₹10 per unit, 80% of which is variable.

In the first two years of operations, production and sales are expected to be as follows:

Year	Production (No. of units)	Sales (No. of units)
1	12,000	10,000
2	18,000	17,000

To assess the working capital requirements, the following additional information is available:

(a)	Stock of materials	2 months' average consumption
(b)	Work-in-process	Nil
(c)	Debtors	2 month's average sales.
(d)	Cash balance	₹ 1,00,000
(e)	Creditors for supply of materials	1 month's average purchase during the year.
(f)	Creditors for expenses	1 month's average of all expenses during the year.

Prepare, for the two years:

(i) A projected statement of Profit/Loss (Ignoring taxation); and

(ii) A projected statement of working capital requirements

Management of Working Capital

9. A regular customer of your company has approached to you for extension of credit facility for purchasing of goods. On analysis of past performance and on the basis of information supplied, the following pattern of payment schedule emerges:

Pattern of Payment Schedule	
At the end of 30 days	20% of the bill
At the end of 60 days	30% of the bill.
At the end of 90 days	30% of the bill.
At the end of 100 days	18% of the bill.
Non-recovery	2% of the bill.

The customer wants to enter into a firm commitment for purchase of goods of ₹30 lakhs in 2019, deliveries to be made in equal quantities on the first day of each quarter in the

calendar year. The price per unit of commodity is ₹300 on which a profit of ₹10 per unit is expected to be made. It is anticipated that taking up of this contract would mean an extra recurring expenditure of ₹10,000 per annum. If the opportunity cost is 18% per annum, would you as the finance manager of the company recommend the grant of credit to the customer? Assume 1 year = 360 days.

Miscellaneous

10. Write short notes on the following:

(a) Write a short note on Payback Reciprocal.

(b) Write a short note on the functions of treasury department.

(c) Write short notes on Inter relationship between investment, financing and dividend decisions.

SUGGESTED HINTS/ANSWERS

1. Annual investment (A) required:

$$A = ₹5,00,000\left(\frac{0.12}{(1+0.12)^5-1}\right)$$

$$A = ₹5,00,000\left(\frac{0.12}{1.7623-1}\right) = ₹5,00,000 \times 0.1574 = ₹78,700$$

2. (i) Gross profit ratio = $\frac{\text{Gross profit}}{\text{Sales}} \times 100 = \frac{₹42,18,000}{₹1,96,56,000} \times 100 = 21.46\%$

(ii) Net profit ratio = $\frac{\text{Net profit}}{\text{Sales}} \times 100 = \frac{₹14,08,600}{₹1,96,56,000} \times 100 = 7.17\%$

(iii) Operating ratio = $\frac{\text{Operating cost}}{\text{Sales}} \times 100$

Operating cost = Cost of goods sold + Operating expenses

Cost of goods sold = Sales – Gross profit

= 1,96,56,000 - 42,18,000 = 1,54,38,000

Operating expenses = Administrative expenses + Selling & distribution expenses

= 18,40,000 + 7,56,000 = 25,96,000

Therefore, Operating ratio = $\frac{1,54,38,000+25,96,000}{1,96,56,000} \times 100$

$$= \frac{1,80,34,000}{1,96,56,000} \times 100 = 91.75\%$$

(iv) Operating profit ratio = 100 – Operating cost ratio

$$= 100 - 91.75\% = 8.25\%$$

(v) Inventory turnover ratio = $\frac{\text{Cost of goods sold}}{\text{Average stock}}$

$$= \frac{1,54,38,000}{(14,28,000 + 12,46,000)/2}$$

$$= \frac{1,54,38,000}{13,37,000} = 11.55 \text{ times}$$

(vi) Current ratio = $\frac{\text{Current assets}}{\text{Current liablities}}$

Current assets = Sundry receivables + Inventory + Cash & Bank balance

= 13,50,000 + 14,28,000 + 4,22,000 = 32,00,000

Current liabilities = Sundry Payables + Other liabilities

= 7,20,000 + 2,80,000 = 10,00,000

Current ratio = $\frac{32,00,000}{10,00,000}$ = 3.2 times

(vii) Quick Ratio = $\frac{\text{Current assets} - \text{Inventories}}{\text{Current liablities}}$

$$= \frac{32,00,000 - 14,28,000}{10,00,000} = 1.77 \text{ times}$$

(viii) Interest coverage ratio = $\frac{\text{EBIDT}}{\text{Interest}} = \frac{\text{Net profit} + \text{Interest}}{\text{Interest}}$

$$= \frac{14,08,600 + 2,60,000}{2,60,000} = 6.42 \text{ times}$$

(ix) Return on capital employed (ROCE) = $\frac{\text{EBIT}}{\text{Capital employed}} \times 100$

Capital employed = Capital + Retained earnings + General reserve + Term loan

= 20,00,000 + 42,00,000 + 12,00,000 + 26,00,000

$$= 1,00,00,000$$

$$\text{Therefore, ROCE} = \frac{16,68,600}{1,00,00,000} \times 100 = 16.69\%$$

(x) $$\text{Debt to assets ratio} = \frac{\text{Debts}}{\text{Total assets}} \times 100 = \frac{26,00,000}{1,10,00,000} \times 100 = 23.64\%$$

3. (1) Schedule of Changes in Working Capital

Particulars		31st March		Working Capital	
		20X8 (₹)	20X9 (₹)	Increase (₹)	Decrease (₹)
A.	**Current Assets:**				
	Inventories	39,60,000	44,00,000	4,40,000	--
	Sundry Debtors	22,00,000	34,10,000	12,10,000	--
	Cash and Bank	9,40,000	1,00,000	--	8,40,000
	Total (A)	71,00,000	79,10,000		
B.	**Current Liabilities:**				
	Sundry Creditors	26,40,000	29,70,000	--	3,30,000
	Provision for Taxation	8,00,000	11,00,000	--	3,00,000
	Total (B)	34,40,000	40,70,000		
	Working Capital (A – B)	36,60,000	38,40,000		
	Increase in Working Capital	1,80,000			1,80,000
	Total	38,40,000	38,40,000	16,50,000	16,50,000

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

		(₹)
A.	**Sources of Funds:**	
	(i) Fund from Business Operations	54,00,000
	(ii) Proceeds from issue of shares	44,00,000
	(iii) Proceeds from sale of machinery	80,000
	Total sources	98,80,000
B.	**Application of Funds:**	
	(i) Payment of dividend	8,00,000
	(ii) Repayment of bank loan	17,60,000

(iii) Purchase of land	22,00,000
(iv) Purchase of machinery	49,40,000
Total uses	97,00,000
Net Increase in Working Capital (A – B)	1,80,000

Working Notes:

1. Computation of Funds from Business Operation

		(₹)
	Reserve and surplus as on March 31, 20X9	77,00,000
Add:	Provision for depreciation	19,60,000
	Proposed dividend	12,00,000
	Loss on sale of machinery	40,000
		1,09,00,000
Less:	Profit and loss as on March 31, 20X8	55,00,000
	Fund from Operations	54,00,000

2. Provision for Depreciation A/c

	(₹)		(₹)
To Plant & Machinery A/c	10,80,000	By Balance b/d	17,60,000
To Balance c/d	26,40,000	By Profit & Loss A/c (Balancing figure)	19,60,000
	37,20,000		37,20,000

3. Plant & Machinery A/c

	(₹)		(₹)
To Balance b/d	1,01,20,000	By Prov. for Dep. A/c	10,80,000
To Bank (Purchases)	49,40,000	By Cash	80,000
		By Profit & Loss A/c (Loss on Sale)	40,000
		By Balance c/d	1,38,60,000
	1,50,60,000		1,50,60,000

4. Workings:

(i) Cost of Equity (K_e) = $\frac{D_1}{P_0} + g = \frac{₹6}{₹60} + 0.10 = 0.20 = 20\%$

(ii) Cost of Debentures (K_d) = I (1 - t) = 0.09 (1 - 0.4) = 0.054 or 5.4%

Computation of Weighted Average Cost of Capital (WACC using market value weights)

Source of capital	Market Value of capital (₹)	Weight	Cost of capital (%)	WACC (%)
9% Debentures	6,00,00,000	0.1875	5.40	1.01
12% Preference Shares	2,00,00,000	0.0625	12.00	0.75
Equity Share Capital (₹ 60 × 40,00,000 shares)	24,00,00,000	0.7500	20.00	15.00
Total	32,00,00,000	1.00		16.76

5. (i) Computation of Earnings per Share (EPS)

Plans	P (₹)	Q (₹)	R (₹)
Earnings before interest & tax (EBIT)	3,60,00,000	3,60,00,000	3,60,00,000
Less: Interest charges	--	(48,00,000)	--
Earnings before tax (EBT)	3,60,00,000	3,12,00,000	3,60,00,000
Less : Tax @ 40%	(1,44,00,000)	(1,24,80,000)	(1,44,00,000)
Earnings after tax (EAT)	2,16,00,000	1,87,20,000	2,16,00,000
Less : Preference share dividend	--	--	(48,00,000)
Earnings available for equity shareholders	2,16,00,000	1,87,20,000	1,68,00,000
No. of equity shares	40,00,000	20,00,000	20,00,000
E.P.S	5.40	9.36	8.40

(ii) Computation of Financial Break-even Points

Proposal 'P' = 0

Proposal 'Q' = ₹48,00,000 (Interest charges)

Proposal 'R' = Earnings required for payment of preference share dividend i.e. ₹48,00,000 ÷ 0.6 = ₹80,00,000

(iii) Computation of Indifference Point between the Proposals

Combination of Proposals

(a) Indifference point where EBIT of proposal "P" and proposal 'Q' is equal

$$\frac{EBIT(1-0.4)}{40,00,000\ shares} = \frac{(EBIT - ₹48,00,000)(1-0.4)}{20,00,000\ shares}$$

0.6 EBIT = 1.2 EBIT – ₹57,60,000

EBIT = ₹96,00,000

(b) Indifference point where EBIT of proposal 'P' and proposal 'R' is equal:

$$\frac{EBIT(1-0.40)}{40,00,000\ shares} = \frac{EBIT(1-0.40) - ₹48,00,000}{20,00,000\ shares}$$

$$\frac{0.6EBIT}{40,00,000\ shares} = \frac{0.6EBIT - ₹48,00,000}{20,00,000\ shares}$$

0.30 EBIT = 0.6 EBIT – ₹48,00,000

$$EBIT = \frac{₹48,00,000}{0.30} = ₹1,60,00,000$$

(c) Indifference point where EBIT of proposal 'Q' and proposal 'R' are equal

$$\frac{(EBIT - ₹48,00,000)(1-0.4)}{20,00,000\ shares} = \frac{EBIT(1-0.4) - ₹48,00,000}{20,00,000\ shares}$$

There is no indifference point between proposal 'Q' and proposal 'R'

6. (i) Degree of operating leverage $= \frac{\%\ Change\ in\ Operating\ income}{\%\ Change\ in\ Revenues}$

A Ltd.	=	0.22 / 0.35	=	0.63
B Ltd.	=	0.35 / 0.24	=	1.46
C Ltd.	=	0.26 / 0.29	=	0.90
D Ltd.	=	0.30 / 0.32	=	0.94

It is level specific.

(ii) High operating leverage leads to high beta. So when operating leverage is lowest i.e. 0.63, Beta is minimum (1) and when operating leverage is maximum i.e. 1.46, beta is highest i.e. 1.65.

7. Calculation of Net Cash flows

Contribution = (300 – 285) × 75,000 = ₹11,25,000

Fixed costs = 8,40,000 – [(25,00,000 – 3,00,000)/5] = ₹4,00,000

Year	Capital (₹)	Contribution (₹)	Fixed costs (₹)	Adverts (₹)	Net cash flow (₹)
0	(20,00,000)				(20,00,000)

1	(5,00,000)	11,25,000	(4,00,000)	(1,00,000)	1,25,000
2		11,25,000	(4,00,000)	(1,50,000)	5,75,000
3		11,25,000	(4,00,000)		7,25,000
4		11,25,000	(4,00,000)		7,25,000
5	3,00,000	11,25,000	(4,00,000)		10,25,000

Calculation of Net Present Value

Year	Net cash flow (₹)	12% discount factor	Present value (₹)
0	(20,00,000)	1.000	(20,00,000)
1	1,25,000	0.892	1,11,500
2	5,75,000	0.797	4,58,275
3	7,25,000	0.711	5,15,475
4	7,25,000	0.635	4,60,375
5	10,25,000	0.567	5,81,175
			1,26,800

The net present value of the project is ₹1,26,800.

8. (i) Projected Statement of Profit / Loss

(Ignoring Taxation)

	Year 1	Year 2
Production (Units)	12,000	18,000
Sales (Units)	10,000	17,000
	(₹)	(₹)
Sales revenue (A) (Sales unit × ₹192)	19,20,000	32,64,000
Cost of production:		
Materials cost (Units produced × ₹80)	9,60,000	14,40,000
Direct labour and variable expenses (Units produced × ₹40)	4,80,000	7,20,000
Fixed manufacturing expenses (Production Capacity: 24,000 units × ₹12)	2,88,000	2,88,000
Depreciation (Production Capacity : 24,000 units × ₹20)	4,80,000	4,80,000

Fixed administration expenses (Production Capacity : 24,000 units × ₹8)	1,92,000	1,92,000
Total Costs of Production	24,00,000	31,20,000
Add: Opening stock of finished goods (Year 1 : Nil; Year 2 : 2,000 units)	---	4,00,000
Cost of Goods available for sale (Year 1: 12,000 units; Year 2: 20,000 units)	24,00,000	35,20,000
Less: Closing stock of finished goods at average cost (year 1: 2000 units, year 2 : 3000 units) (Cost of Production × Closing stock/ units produced)	(4,00,000)	(5,28,000)
Cost of Goods Sold	20,00,000	29,92,000
Add: Selling expenses – Variable (Sales unit × ₹8)	80,000	1,36,000
Add: Selling expenses -Fixed (24,000 units × ₹2)	48,000	48,000
Cost of Sales : (B)	21,28,000	31,76,000
Profit (+) / Loss (-): (A - B)	(-) 2,08,000	(+) 88,000

Working Notes:

1. Calculation of creditors for supply of materials:

	Year 1 (₹)	Year 2 (₹)
Materials consumed during the year	9,60,000	14,40,000
Add: Closing stock (2 month's average consumption)	1,60,000	2,40,000
	11,20,000	16,80,000
Less: Opening Stock	---	1,60,000
Purchases during the year	11,20,000	15,20,000
Average purchases per month (Creditors)	93,333	1,26,667

2. Creditors for expenses:

	Year 1 (₹)	Year 2 (₹)
Direct labour and variable expenses	4,80,000	7,20,000
Fixed manufacturing expenses	2,88,000	2,88,000
Fixed administration expenses	1,92,000	1,92,000
Selling expenses (variable + fixed)	1,28,000	1,84,000
Total	10,88,000	13,84,000
Average per month	90,667	1,15,333

(ii) Projected Statement of Working Capital requirements

	Year 1 (₹)	Year 2 (₹)
Current Assets:		
Inventories:		
-Stock of materials (2 month's average consumption)	1,60,000	2,40,000
-Finished goods	4,00,000	5,28,000
Debtors (2 month's average sales) (including profit)	3,20,000	5,44,000
Cash	1,00,000	1,00,000
Total Current Assets/ Gross working capital (A)	9,80,000	14,12,000
Current Liabilities:		
Creditors for supply of materials (Refer to working note 1)	93,333	1,26,667
Creditors for expenses (Refer to working note 2)	90,667	1,15,333
Total Current Liabilities: (B)	1,84,000	2,42,000
Estimated Working Capital Requirements: (A-B)	7,96,000	11,70,000

9. Statement showing the Evaluation of credit Policies

Particulars	Proposed Policy ₹
A. Expected Profit:	
(a) Credit Sales	30,00,000
(b) Total Cost	
(i) Variable Costs	29,00,000
(ii) Recurring Costs	10,000
	29,10,000
(c) Bad Debts	60,000
(d) Expected Profit [(a) – (b) – (c)]	30,000
B. Opportunity Cost of Investments in Receivables	1,00,395
C. Net Benefits (A – B)	(70,395)

Recommendation: The Proposed Policy should not be adopted since the net benefits under this policy are negative

Working Note: Calculation of Opportunity Cost of Average Investments

$$\text{Opportunity Cost} = \text{Total Cost} \times \frac{\text{Collection period}}{360} \times \frac{\text{Rate of Return}}{100}$$

Particulars	20%	30%	30%	18%	Total
A. Total Cost	5,82,000	8,73,000	8,73,000	5,23,800	28,51,800
B. Collection period	30/360	60/360	90/360	100/360	
C. Required Rate of Return	18%	18%	18%	18%	
D. Opportunity Cost (A × B × C)	8,730	26,190	39,285	26,190	1,00,395

10. (a) As the name indicates it is the reciprocal of payback period. A major drawback of the payback period method of capital budgeting is that it does not indicate any cut off period for the purpose of investment decision. It is, however, argued that the reciprocal of the payback would be a close approximation of the Internal Rate of Return (later discussed in detail) if the life of the project is at least twice the payback period and the project generates equal amount of the annual cash inflows. In practice, the payback reciprocal is a helpful tool for quick estimation of rate of return of a project provided its life is at least twice the payback period.

The payback reciprocal can be calculated as follows:

$$\text{Payback Reciprocal} = \frac{\text{Average annual cash in flow}}{\text{Initial investment}}$$

(b) 1. Cash Management: It involves efficient cash collection process and managing payment of cash both inside the organisation and to third parties.

There may be complete centralization within a group treasury or the treasury may simply advise subsidiaries and divisions on policy matter viz., collection/payment periods, discounts, etc.

Treasury will also manage surplus funds in an investment portfolio. Investment policy will consider future needs for liquid funds and acceptable levels of risk as determined by company policy.

2. Currency Management: The treasury department manages the foreign currency risk exposure of the company. In a large multinational company (MNC) the first step will usually be to set off intra-group indebtedness. The use of matching receipts and payments in the same currency will save transaction costs. Treasury might advise on the currency to be used when invoicing overseas sales.

The treasury will manage any net exchange exposures in accordance with company policy. If risks are to be minimized then forward contracts can be used either to buy or sell currency forward.

3. **Fund Management:** Treasury department is responsible for planning and sourcing the company's short, medium and long-term cash needs. Treasury department will also participate in the decision on capital structure and forecast future interest and foreign currency rates.

4. **Banking:** It is important that a company maintains a good relationship with its bankers. Treasury department carry out negotiations with bankers and act as the initial point of contact with them. Short-term finance can come in the form of bank loans or through the sale of commercial paper in the money market.

5. **Corporate Finance:** Treasury department is involved with both acquisition and divestment activities within the group. In addition, it will often have responsibility for investor relations. The latter activity has assumed increased importance in markets where share-price performance is regarded as crucial and may affect the company's ability to undertake acquisition activity or, if the price falls drastically, render it vulnerable to a hostile bid.

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

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

Investment decision: The investment of long term funds is made after a careful assessment of the various projects through capital budgeting and uncertainty analysis. However, only that investment proposal is to be accepted which is expected

to yield at least so much return as is adequate to meet its cost of financing. This have an influence on the profitability of the company and ultimately on its wealth.

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

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

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