

Solved  
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## Appendix

CMA Inter Gr. I (New Syllabus)

(Solution of December 2014)

Paper - 8: Cost Accounting and Financial Management

Section - A : Cost Accounting

### Chapter - 1: Basic Concepts and Accounting Standards

2014 - Dec [2] (d) (ii)

**Imputed Cost:** Imputed costs are hypothetical or notional costs, not involving cash outlay computed only for the purpose of decision making. In this respect, imputed costs are similar to opportunity costs. Interest on funds generated internally, payment for which is not actually made is an example of imputed cost.

**Example:** If the owner of a company engages himself for facilitating the production or gets actively engaged in production or rendering of services, this would be an imputed cost.

Cost reported under various elements of cost will not include Imputed Costs. If it is not involved cash outlay computed only for the purpose of decision making. When alternative capital investment projects are being considered out of which one or more are to be financed from internal funds, it is necessary to take into account the imputed interest on own funds before a decision is arrived at.

### Chapter - 2: Materials

2014 - Dec [1] (a)

Material Invoice value	= ₹ 10,000
Transport cost	= ₹ 200
	<hr/>
	₹ 10,200

As per CAS – 6 material receipts is valued at purchase price including duties and taxes, freight inwards, insurance and other expenditure directly attributable to procurement of material.

Further any demurrage or detention charges or penalty levied by transport or other authority shall not form part of cost of material.

**2014 - Dec [2]** (a) (iii)

**Calculation of cost of quantity received**

<b>Particulars</b>	<b>Amount (1200Kg)</b>	<b>Per Kg</b>
Invoice price	24,000	20
Less: Trade discount @10%	<u>2,400</u>	<u>2</u>
<b>Total</b>	<b>21,600</b>	<b>18</b>
Add: Sales tax @8%	1,728	1.44
Container cost (1200/50 × 600)	<u>14,400</u>	<u>12</u>
<b>Net invoice value</b>	<b>37,728</b>	<b>31.44</b>
Add: Insurance	1,000	0.83
Delivery charges	<u>250</u>	<u>0.21</u>
<b>Cost of 24 containers</b>	<b>38,978</b>	<b>32.48</b>
Less: Cost of container returned	<u>1624</u>	<u>          </u>
<b>Cost of total quantity (1000kg) W. note</b>	<b>37,354</b>	<b>37.35</b>
Less: Credit of container returnable (19 × 400)	<u>7,600</u>	<u>7.60</u>
	<b><u>29,754</u></b>	<b><u>29.75</u></b>

**Note:**

Quantity purchased	1200 kg
Less: Returned (one container)	50 kg
Normal loss (damaged 3 containers)	<u>150 kg</u>
	<u>1000 kg</u>

**2014 - Dec [2]** (c) (i)

Quantity to be ordered when buying cost equals carrying cost,

Let the quantity ordered be x

$$\frac{90,000}{x} \times 450 = \frac{x}{2} \times 15 \times 15\%$$

X = 6,000 units

When 6,000 units are ordered at a time, buying cost will be equal to carrying cost.

**Verification:**

Buying cost =  $90,000/6000 \times 450 = ₹ 6,750$

Carrying cost =  $\frac{6,000}{2} \times 15 \times 15\% = ₹ 6,750$

**Given**

Monthly demand 7500 units

Annual demand 7500 x 12 = 90000 units

No. of orders 10 per year

**Statement of total annual cost**

Particulars	Amount ₹
Total purchase price (90,000 x 15)	13,50,000
Total buying cost (10 x 450)	4,500
Total carrying cost (90,000/10 x ½ x 15x 15%)	10,125
<b>Total cost</b>	<b>13,64,625</b>

$$EOQ = \sqrt{\frac{2 \times 90,000 \times 450}{15 \times 15\%}} = 6,000 \text{ units}$$

Total cost at EOQ = 13,50,000 + 6,750 + 6,750 = ₹ 13,63,500

When order size is 22500 units

Purchase price per unit (15 - 3% of 15) = ₹ 14.55

Total purchase price (90,000 x 14.55) = ₹ 13,09,500

Total buying cost (90,000/22,500 x 450) = ₹ 1,800

Total Carrying cost (22,500/2 x 14.55 x 15%) = ₹ 24,553

**Total Cost = ₹ 13,35,853**

Total cost is less when order size is 22,500 units. Hence, we should avail discount.

**Chapter - 3: Employee Costs**

2014 - Dec [1] (b)

**As per CAS – 7 , Principles of measurement of labour cost**

Any bonus whether payable as a statutory minimum or on a sharing of surplus shall be treated as part of employee cost.

The foreman is mainly concerned with the supervision of man and machine.

Payment made to foreman is included in works overheads.

If foreman devotes time for various machines or various departments, it should be charged off proportionately against all of them.

In the given case foreman is getting 10% of salary as bonus and supervising 5 production shops. His bonus and salary should be charged proportionately to all 5 production shops.

2014 - Dec [2] (a) (i), (ii)

(i)

Particulars	Product X	Product Y
Earning under piece rate		
Actual production	60	72
Guaranteed daily wages (8 × 5)	40	40
Earning under piece rate	$\frac{5}{6} \times 60 = 50$	$\frac{5}{6} \times 60 = 50$
Labour cost under piece work system with guaranteed weekly wages [ higher of (b) and (c)]	50	60
<b>Earnings under Rowan Plan</b>		
Actual production	60	72
Standard time allowed	$\frac{60}{6} = 10$	$\frac{72}{6} = 12$
Actual time taken	8	8
Time saved	2	4
<b>Earnings</b>		
= (time taken × hourly rate + time taken/time allowed × time saved × hourly rate)	$\frac{8 \times 5 + 8}{10 \times 2 \times 5} = 48$	$\frac{8 \times 5 + 8}{12 \times 4 \times 5} = 53.33$

(ii) **Treatment of Idle Time**

As per CAS-7, Idle Time Cost shall be assigned direct to the cost object or treated as overheads depending on the economic feasibility and specific circumstances causing such idle time.

**Treatment of different categories of Idle Time are as below:**

- Unavoidable idle time:** In Cost Accounts, this is allowed to remain merged in the Production Order or Standing Order Number on which the worker was otherwise employed.
- Normal idle time:** It is booked to factory or works overhead. For the purpose of effective control, each type of idle time, i.e., idle time classified according to the causes is allocated to a separate Standing Order Number.

- (c) **Abnormal idle time:** It would usually be heavy in amount involves longer periods and would mostly be beyond the control of the management. Payment for such idle time is not included in cost and is adjusted through the Costing Profit and Loss Account or included in Profit and Loss Account, when the accounts are integrated.
- (d) Tendency to conceal idle time should be discouraged. It is a non-effective time and the resultant loss of profit due to reduced production activity but also increases the cost per unit of production as the fixed costs continue to be incurred, irrespective of the reduced quantum of production due to loss of labour time. idle time should, therefore, be highlighted prominently so that action can be taken to remove the causes thereof. Although for obvious reasons, it is not possible to record minor details, vigilance is necessary for finding out long-term idleness among the workers.

#### Chapter - 4: Direct Expenses, Overheads and Treatment of Special Items

2014 - Dec [1] (c), (d), (f)

(c) Cost of power generated	= ₹ 1,00,000
Cost of stand by arrangement	= ₹ 25,000
Total cost	= ₹ 1,25,000

Cost of power to be charged to products A,B,C and D will be in the ratio of 1: 2 : 2 : 3

$$\text{Cost to be charged from product A} = \frac{1,25,000}{8} \times 1 = ₹ 15,625$$

$$\text{Cost to be charged from product B} = \frac{1,25,000}{8} \times 2 = ₹ 31,250$$

$$\text{Cost to be charged from product C} = \frac{1,25,000}{8} \times 2 = ₹ 31,250$$

$$\text{Cost to be charged from product D} = \frac{1,25,000}{8} \times 3 = ₹ 46,875$$

- (d) XYZ Company is manufacturing three products X, Y and Z. Permit charges of ₹ 12,00,000 are paid for product X hence will be charged from product X only. This will be added to the cost of the product X As per CAS - 10. Permit charges will be treated as direct cost. Renewal charges will also be treated as direct cost of X.

(f) Cost at the level of 50,000 units

$$50,000 \times 12 = 6,00,000$$

$$50,000 \times 6 = ₹ 3,00,000$$

$$\text{Total cost} = ₹ 9,00,000$$

$$\text{Cost at the level of 20,000 units} = 4,80,000$$

$$\begin{aligned} \text{Variable cost per unit} &= \frac{\text{Change in cost}}{\text{change in level}} \\ &= \frac{9,00,000 - 4,80,000}{50,000 - 20,000} \\ &= ₹ 14 \end{aligned}$$

$$\begin{aligned} \text{Variable cost at the level of 50,000 units} &= 50,000 \times 14 \\ &= ₹ 7,00,000 \end{aligned}$$

$$\begin{aligned} \text{Fixed cost} &= \text{total cost} - \text{variable cost} \\ &= 9,00,000 - 7,00,000 \\ &= ₹ 2,00,000 \end{aligned}$$

2014 - Dec [2] (b) (i), (ii)

(i) Statement of labour cost

Particulars	X	Y	Z	R	S	F	A	M	N
Hours worked	1440	1440	1340	1640	1640	1600	1000	600	600
Less: night shift	(20)	(20)	(20)	(150)	(150)	(170)			
Normal hrs. worked	1420	1420	1320	1490	1490	1430	1000	600	600
Wage rate/hr. (₹)	40	40	40	40	40	100	80	65	75
Normal wages (₹)	56800	56800	52800	59600	59600	143000	80000	39000	45000
Overtime hrs.				50	50	50			
Overtime rate (₹)				20	20	30			
overtime cost (₹)				1000	1000	1500			
Night shift hrs.	20	20	20	150	150	170			
Night shift rate (₹)	70	70	70	70	70	145			
Night shift cost (₹)	1400	1400	1400	10500	10500	24650			

Statement of direct wages and overheads

Particulars	Product PDT (₹)	Product RS (₹)
Direct wages	X - 56,800	R - 59,600
	Y - 56,800	S - 59,600
	Z - 56,800	
	1,70,400	1,19,200

	<b>Overheads</b>	
<b>Production Overheads</b>		
Salary of Foreman (11)	F - 71,500	F - 71,500
Overtime Premium	R - 1,000	
	S - 1,000	
	F - 1,500	
Night shift cost	X - 1,400	
	Y - 1,400	
	Z - 1,400	
	R - 10,500	
	S - 10,500	
	F - 24,650	
	1,24,850	71,500
<b>Administration overhead</b>		
Salary of accountant	A - 50,000	A - 30,000
	<b>50,000</b>	<b>30,000</b>
<b>Selling &amp; Distribution OH.</b>		
Salary of sales man	M - 39,000	N - 45,000
	<b>39,000</b>	<b>45,000</b>

**Note:** As per CAS-7

- **Overtime premium:** Normal overtime is treated as direct wages and extra amount paid (over and above normal wages per hour for overtime hours) is treated as production overheads. Overtime was done in shop P only, hence full overtime is charged from product PDT.
- **Night shift cost:** night shift is also done in shop P only, hence it is charged from product PDT only. Total night shift cost is treated as production overheads.
- **Salary of Foreman:** It is assumed that foreman has devoted equal time for both shops. Hence his salary is charged equally from both products.
- **Idle time:** As per given situation idle time is unavoidable. Unavoidable idle time for insignificant period is allowed to remain merged in the production order. Idle time cost is treated as direct wages.
- **Salary of accountant:** Salary of accountant is treated as overheads, and distributed among the product as per given ratio.

- (ii) **Defectives:** It represent the part of production that does not meet dimensional or quality specifications of a product but which can be reworked by additional application of material labour and/or processing and made it into saleable condition.

**Accounting of defectives:**

**Normal defectives:** If the defectives are of normal and within the standard limit, any of the following accounting methods are adopted:

- (i) The cost of rectification of normal defective is charged to good units.
- (ii) Where a particular department is identified and responsible for defective work, the rework costs are charged to that department.
- (iii) Where it cannot be identified from which department the defectives caused, then the rework or process costs are to be charged to the general overheads.
- (iv) If normal defectives are easily identifiable with specific jobs, the rework costs are debited to that particular job or process.

**Abnormal defectives:** If the defectives are of abnormal nature, the rework cost should be charged to the costing Profit & Loss A/c.

**2014 - Dec [2] (c) (ii)**

Material consumed	₹	3,83,000
Direct labour	₹	<u>5,74,000</u>
Prime cost	₹	9,57,000
Add factory overhead	₹	<u>2,75,760</u>
Works cost	₹	<u>12,32,760</u>
Machine hours		3,064
Labour hours		18,384

**Statement of cost for job**

Material consumed		11,000
Direct labour		<u>19,000</u>
Prime cost		30,000

**Factory overheads**

- (i) As percentage of direct material cost  $\frac{2,75,760}{3,83,000} \times 100 = 72\%$

$$\text{Factory overheads} = 11,000 \times 72\% = ₹ 7,920$$

- (ii) As percentage direct labour cost  $\frac{2,75,760}{5,74,000} \times 100 = 48\%$

$$\text{Factory overheads} = 19,000 \times 48\% = ₹ 9,120$$



(iii) As percentage of prime cost  $\frac{2,75,760}{9,57,000} \times 100 = 28.82\%$

Factory overheads =  $30,000 \times 28.82\% = ₹ 8,646$

(iv) Based on direct labour  $\frac{2,75,760}{18,384} = ₹ 15$

Factory overhead =  $540 \times 15 = ₹ 8100$

(v) Based on machine hour  $\frac{2,75,760}{3,064} = ₹ 90$

Factory overhead =  $85 \times 90 = ₹ 7650$

**2014 - Dec [2] (d) (i)**

**Cost statement of Machining process**

Input	1000 kg.
Less: Loss 5%	<u>50 kg.</u>
	950
Output	100 pcs
Direct Cost associated with machine department	
Cleaning material cost	10,000
Add: VAT @14.5%	1,450
Transport cost	1,200
Total cost	12,650
Cost per unit of output (12,650/100)	₹ 126.5
Cost per kg of output (12650/950)	₹ 13.32

**Cost statement of finishing department**

Input	950 kg	
Less: Loss 4%	<u>38 kg</u>	
	912 kg	
Output	100 pcs	
Less: Scraped 10%	<u>10 pcs</u>	
	90 pcs	
Cost of special equipment	25,000	
Less: Sale of scrap (10 x 25)	250	
	24,750	
Cost per kg of output	= $24750/912$	= ₹ 27.14
Cost per unit	= $24,750/90$	= ₹ 275

**Chapter - 5: Cost Sheet****2014 - Dec [1] (e)**

Given;

Prime Cost = 12,50,000

Works Cost = 20,00,000

Office overheads are 30% of factory overheads.

Factory overheads = works cost – prime cost  
 = 20,00,000 – 12,50,000 = 7,50,000

Office overheads = 30% of 7,50,000 = 2,25,000

Cost of production = works cost + office overheads  
 = 20,00,000 + 2,25,000 = ₹ 22,25,000

**2014 - Dec [2] (d) (iii)**

Let the sales be x

Material cost 36,000 × 4	₹ 1,44,000
Labour cost 36,000 × 0.60	₹ 21,600
Manufacturing overheads	₹ 24,000
Administration overhead	₹ 28,800
Cost of production	2,18,400
Add selling expenses	0.15 x
Cost of sales	2,18,400 + 0.15x
Profit 36,000 × 1.50	54,000
Sales	2,72,400 + 0.15x

$$x = 2,72,400 + 0.15x$$

$$x = 3,20,470$$

$$\text{Selling Price} = 3,20,470/36,000 = ₹ 8.90$$

**Section - B : Financial Management****Chapter - 1: Overview of Financial Management****2014 - Dec [1] (h)**

Discounted value at the end of year 1, Invested ₹ 30,000 now and 2,00,000 at the end of year 2.

30,000 (1 + 0.10)	₹ 33,000
2,00,000 (1/1+0.10)	₹ 1,81,818
<b>Total</b>	<b>₹ 2,14,818</b>

## Chapter - 2: Tools for Financial Analysis and Planning

### 2014 - Dec [3] (c) (i)

$$(a) \text{ Fixed assets turnover ratio} = \frac{\text{Net Sales}}{\text{Net fixed Assets}}$$

$$= \frac{4,32,000}{5,40,000} = 0.8$$

$$(b) \text{ Cash \& bank balance} = ₹ 7,94,400$$

$$(c) \text{ Current liabilities} = ₹ 6,00,000$$

$$(d) \text{ Closing inventory} = ₹ 86,400$$

$$(e) \text{ Debtors} = ₹ 19,200$$

$$(f) \text{ Cash sales} = ₹ 86,400$$

#### Workings:

$$\text{Gross profit} ₹ 1,08,000$$

$$\text{Gross profit margin} 25\%$$

$$(i) \text{ Sales} = \frac{1,08,000}{25\%} = ₹ 4,32,000$$

$$(ii) \text{ Credit Sales} = 80\% \times 4,32,000 = ₹ 3,45,600$$

$$(iii) \text{ Total Assets} = \frac{\text{Sales}}{\text{Total Assets}} = 0.3$$

$$\frac{4,32,000}{\text{Total Assets}} = 0.3$$

$$\text{Total Assets} = ₹ 14,40,000$$

$$(iv) \frac{\text{Closing inventory}}{\text{Total Assets}} = 1/5$$

$$\frac{\text{Closing inventory}}{4,32,000} = 1/5$$

$$\text{Closing inventory} = ₹ 86,400$$

$$(v) \text{ Debtors} = \text{Credit sales} \times 20/360$$

$$= 345,600 \times 20/360$$

$$= ₹ 19,200$$

$$(vi) \text{ Creditors:}$$

$$\text{Long term debt} = \frac{\text{long term debt}}{\text{Equity}} = 40\%$$

$$\text{Long term debt} = 40\% \times 6,00,000$$

$$= ₹ 2,40,000$$

$$\text{Creditors} = 14,40,000 - 6,00,000 - 2,40,000 = ₹ 6,00,000$$

$$(vii) \text{ Current ratio} = \frac{\text{Current Assets}}{\text{Current liabilities}} = 1.5$$

$$\frac{\text{debtors} + \text{inventory} + \text{cash}}{\text{creditors}} = 1.5$$

$$\frac{19,200 + 86,400 + \text{cash}}{6,00,000} = 1.5$$

$$\text{Cash} = ₹ 7,94,400$$

$$(vii) \text{ Fixed assets} = \text{total assets} - \text{current assets} \\ = 14,40,000 - 9,00,000 = ₹ 5,40,000$$

### Chapter - 3: Working Capital Management

#### 2014 - Dec [1] (i)

Proprietors fund	= ₹ 45,00,000
Fixed Assets to Proprietors Fund	= 0.75
Fixed Assets : Proprietors Fund	= 0.75
Fixed Assets: 45,00,000	= 0.75
Fixed Assets	= 33,75,000
Net Working Capital 45,00,000 - 33,75,000	= ₹ 11,25,000

#### 2014 - Dec [3] (a) (i)

##### Current assets:

Cash	2,00,000
Raw material (18,00,000/12 x 2)	3,00,000
Finished goods (34,50,000/12)	2,87,500
Debtors (60,00,000/12 x 3)	15,00,000
Sales promotion expenses (2,70,000/ 12)	22,500
<b>Total</b>	<b>₹ 23,10,000</b>

##### Current liabilities:

Creditors (18,00,000/12 x 2)	3,00,000
Wages (11,40,000/12)	95,000
Manufacturing expenses (90,000/12)	7,500
Admin. Expenses (4,20,000/12)	35,000
<b>Total</b>	<b>₹ 4,37,500</b>

$$\text{Working capital requirement} = \text{Current assets} - \text{current liabilities} \\ = 23,10,000 - 4,37,500 \\ = ₹ 18,72,500$$

**Working Note:****Cost of production**

Material used	₹ 18,00,000
Wages paid	₹ 11,40,000
Manufacturing Expenses	₹ 90,000
Admin. Expenses	₹ 4,20,000
<b>Total</b>	<b>₹ 34,50,000</b>

**Chapter - 4: Leverage Analysis**

2014 - Dec [3] (c) (ii)

**Operating leverage:**

It is the responsiveness of firm's EBIT to the changes in sales value.

$$\text{Degree of Operating Leverage} = \frac{\text{Contribution}}{\% \text{Change in EBIT}}$$

**Financial Leverage:**

It arises when a firm deploys debt funds with fixed charge to increase EPS. Higher the DFL higher will be the change in EPS for the same change in EBIT. Higher the interest burden higher is the DFL.

$$\text{Financial Leverage} = \frac{\% \text{Change in EPS}}{\% \text{Change in EBIT}}$$

**EBIT – EPS INDIFFERENCE POINT/LEVEL**

The indifference level of EBIT is one at which the EPS remains same irrespective of the debt-equity mix. While designing a capital structure, a firm may evaluate the effect of different financial plans on the level of EPS, for a given level of EBIT. Out of several available financial plans, the firm may have two or more financial plans which result in the same level of EPS for a given EBIT. Such a level of EBIT at which the firm has two or more financial plans resulting in same level of EPS, is known as indifference level of EBIT.

**Interpretation of the Indifference Point****Case I** - EBIT below Indifference Point**Option** - Option with lower debt (Interest Burden)

**Reason:** When rate of earnings and operating profits (EBIT) are low, more interest and debt burden is not advisable. A high DOL should be properly managed by low Financial Leverage.

**Case II** - EBIT equal to Indifference Point**Option** - Any alternative can be chosen.**Reason:** Same EPS due to Indifference Point.**Case III** - EBIT above Indifference Point**Option** - Option with higher debt (Interest Burden)

**Reason:** When EBIT is high, Financial Leverage works till the EPS is maximized. Low DOL should be coupled with high DFL, to maximize gain of Equity Shareholders.

### Chapter - 5: Cost of Capital and Capital Structure

#### 2014 - Dec [1] (g)

Given EBIT = ₹ 2,00,000 ,  $K_e = 12\%$  , corporate tax = 30%

$$\begin{aligned} \text{As per MM hypothesis , value of unlevered firm} &= \frac{\text{EBIT}}{K_0} (1 - t) \\ &= \frac{2,00,000}{0.12} = (1 - 0.30) \\ &= ₹ 11,66,667 \end{aligned}$$

#### 2014 - Dec [3] (a) (ii)

$$(a) K_d = 12(1-0.30) = 8.4\%$$

$$K_p = 9\%$$

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

$$\frac{2.5}{20} + 0.05 = 17.5\%$$

Sources	Amount ₹	Weights	Cost of capital	$K_o$
12% Debentures	30,00,000	0.30	8.4%	2.52
Preference shares	10,00,000	0.10	9%	0.90
Equity shares	60,00,000	0.60	17.5%	10.50
	<b>1,00,00,000</b>			<b>13.92</b>

**Weighted average cost of capital = 13.92%**

$$(b) K_e = \frac{D_1}{P_0} + g$$

$$= \frac{270}{18} + 0.05 = 20\%$$

Additional debt ₹ 25,00,000

Sources	Amount ₹	Weights	Cost of capital	$K_o$
12% Debentures	30,00,000	0.24	8.4%	2.016
14% Debentures	25,00,000	0.20	9.8%	1.96
Preference shares	10,00,000	0.08	9%	0.72
Equity shares	60,00,000	0.48	20%	9.60
	<b>1,25,00,000</b>			<b>14.30</b>

**Weighted average cost of capital = 14.30%**

**2014 - Dec 2014 [3] (b) (ii)**

**Assumptions of the MM theory on capital structure and overall cost of capital:**

1. There is a perfect capital market. Capital markets are perfect when
  - (a) Investors are free to buy and sell securities,
  - (b) They can borrow funds without restriction at the same terms as the firms do,
  - (c) They behave rationally,
  - (d) They are well informed, and
  - (e) There are no transaction costs.
2. Firms can be classified into homogeneous risk classes. All the firms in the same risk class will have the same degree of financial risk.
3. All investors have the same expectation of a firm's net operating income (EBIT).
4. The dividend payout ratio is 100%, which means there are no retained earnings.
5. There are no corporate taxes. This assumption has been removed later.

**Chapter - 7: Capital Budgeting**

**2014 - Dec [1] (j)**

**Acceptance Rule**

If the internal rate of return exceeds the required rate of return, then the project will be accepted. If the project's IRR is less than the required rate of return, it should be rejected. In case of ranking the proposals the technique of IRR is significantly used. The projects with highest rate of return will be ranked as first compared to the lowest rate of return projects.

Thus, the IRR acceptance rules are

Accept if  $IRR > k$

Reject if  $IRR < k$

May accept or reject if  $IRR = k$

Where,  $k$  is the cost of capital.

2014 - Dec [3] (b) (i)

Year	Profit before tax	Profit after tax	Cash inflows (PAT + Dep <sup>n</sup> )	Cumulative Cash inflows	Discounting factors @ 12%	Present Value	Cumulative present value
1	3,50,000	2,45,000	5,45,000	5,45,000	0.893	4,86,685	4,86,685
2	3,72,000	2,60,000	5,60,400	11,05,400	0.797	4,46,639	9,33,324
3	3,10,000	2,17,000	5,17,000	16,22,400	0.712	3,68,104	13,01,428
4	1,75,000	1,22,500	4,22,500	20,44,900	0.636	2,68,710	15,70,138
5	1,10,000	77,000	3,77,000	24,21,900	0.567	2,13,759	17,83,897

(1) Pay-back period =  $2 + 394600/517000 = 2.76$  years(2) Discounted pay-back period =  $3 + 198572/268710 = 3.74$  years

(3) Net present value = Present value of cash inflows - Present value of cash outflows

$$= 17,83,897 - 15,00,000 = ₹ 2,83,897$$

(4) Profitability index = Present value of cash inflows / Present value of cash outflows

$$= 17,83,897 / 15,00,000 = 1.19$$

**Note:**

$$\text{Depreciation} = \frac{\text{Cost} - \text{Scrap value}}{\text{Life}} = \frac{15,00,000 - 0}{5} = ₹ 3,00,000$$

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