

2023

محاضرات محاسبة التكاليف ، للمرحلة الثانية ، قسم تقنيات المحاسبة ، المعهد التقني نينوى
أهم المصطلحات المستخدمة

Absorption Costing Theory	نظرية التكاليف الكلية
Financial accounting	المحاسبة المالية
Direct cost	الكلفة المباشرة
Indirect cost	الكلفة غير المباشرة
Variable cost	الكلفة المتغيرة
Fixed cost	الكلفة الثابتة
Production	الإنتاج
Financial classification	التبويب الوظيفي
Unit of sales	وحدة المبيعات
Units of production	وحدة الإنتاج
Sales Revenue	إيرادات المبيعات
Sales price	سعر البيع
Beginning inventory	مخزون اول المدة
Ending inventory	مخزون اخر المدة
Production cost	الإنتاج كلفة
Total cost of unit	الكلفة الكلية للوحدة
Direct material	المواد المباشرة
Direct labor	الاجور المباشرة
Variable F.O.H	التكاليف الصناعية غير المباشرة المتغيرة
Fixed F.O.H	التكاليف الصناعية غير المباشرة الثابتة
Per unit	للوحة الواحدة
Inventory valuation	تقويم المخزون
Marketing cost	الكلفة التسويقية
Variable marketing cost	الكلفة التسويقية المتغيرة

Fixed marketing cost	الكلفة التسويقية الثابتة
(Administrative) managerial cost	الكلفة الادارية
Total cost of good sold Manufacturing	كلفة البضاعة المباعة الكلية الصناعية
Gross profit	مجمّل الربح
Net profit	صافي الربح
Income statement	كشف الدخل
Activities of the company	انشطة الشركة
Variable costing theory	نظرية التكاليف المتغيرة
Variable cost of good sold	كلفة البضاعة المباعة المتغيرة
Contribution Margin	المساهمة الحدية
Break - Even Analysis	تحليل التعادل
Volume	حجم (المبيعات او الانتاج)
Equation method	طريقة المعادلة
Contribution margin method	طرق المساهمة الحدية
Contribution Margin ratio	نسبة المساهمة الحدية
Statement method	طريقة الكشف
Graphic method	طريقة الرسم البياني

Chapter 1

LEARNIG OBJECTIVES

After studying this chapter, you should be able to ;-

1. The concept of cost Accounting & Elements of cost.
2. The classification of cost Accounting .
3. The main objectives of Cost Accounting .
4. Types of Businesses that use Cost Accounting .
5. Differences and similarities between account costs &account financial .
6. How can you distinguish between Cost , Expenses , Loss.
7. Modalities for separating mixed costs .

Concept of cost

Cost Accounting:- Is a process of collecting , analyzing, summarizing and evaluating various alternative courses of action. Its goal is to advise the management on the most appropriate course of action based on the cost efficiency and capability.

Cost Accounting:- provides the detailed information that management needs to control current operations and plan for the future. Management uses this information to decide how to allocate resources to the most efficient and profitable areas of the business.

Elements of cost

- **Direct materials:-** are the raw materials that become a part of the finished product.
- **Indirect materials:** Indirect materials cost is the cost of associated with consumables, such as lubricants, grease, and water, that are not used as raw materials.
- **Direct labor :** The direct labor cost is the cost of workers who can be easily identified with the unit of production.
- **Indirect labor:** The indirect labor cost is the cost associated with workers, such as supervisors and material handling team, who are not directly involved in the production.

- **Manufacturing overhead:** Manufacturing overhead is any manufacturing cost that is neither direct materials cost or direct labor cost. Manufacturing overhead includes all charges that provide support to manufacturing.
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The main objectives of Cost Accounting are as follows :-

- 1 - Ascertainment of cost.
- 2- Determination of selling price.
- 3- Cost control and cost reduction.
- 4- Ascertaining the profit of each activity.
- 5- Assisting management in decision-making.

Types of Businesses that use Cost Accounting:-

- 1- All types of business entities- manufacturing, merchandising, and service businesses -require cost accounting information systems to track their activities.
- 2- Manufacturers convert purchased raw materials into finished goods by using labor, technology, and facilities.
- 3- Merchandisers purchase finished goods for resale.
- 4- For profit service businesses.
- 5- Not -for-profit service agencies, such as charities, governmental agencies, and some health care facilities, provide at little or no cost the user.

Similarities and Differences between Costs accounting & Financial accounting

- The similarities:

1. Cost accounting is in fact an extension of financial accounting and complementary and complementary. The financial statements depicting the entity's financial position at the

end of the financial period are supported by detailed data. Which provides us with cost accounting, Cost accounting and finance are involved in the preparation of final accounts.

2. Cost accounting and finance are involved in the preparation of final accounts. Cost accounting provides us with information on the cost of assets, inventory, cost of finished production, production under manufacture, the last period and the amount of long-term assets.

3. Financial accounting provides us with other information related to assets and liabilities so that final accounts can be filmed. Because accounting registration documents are both documents and documents in both financial accounting and cost accounting, the results are identical

Comparison element	Accounting cost	Accounting Financial
Nature of data	This type is concerned with all detailed data and all elements	This type of accounting is concerned with the overall data without going into details
Timing	This type can provide management with information about the behavior of the elements when used	This type cannot provide management information until the end of the financial period is usually a year
Reports	Provide the management with periodic reports during the accounting period (week, month, quarter, or half year)	Total reports provide the end of the accounting period income statement and statement of financial position
Relationship	Interested in internal transactions of the project	Interested in the relationship with other external parties
Measurement	You specify the amount of items in addition to their value	This type measures financial events in monetary units only
Precision	Data of this type are not as accurate as they are based on future estimation and prediction and are flexible and fast for decision making purposes	This type of operation is characterized by a pragmatic approach to relying on what has already been achieved
Target	The aim is to determine the cost of the products and to allocate the elements to their own costs with a view to reducing	This type is intended to prepare the final accounts after recording and analyzing

	them and submitting management reports for future plans	operations
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-Differences:- between Cost , Expenses , Loss, expenditure, waste

- **Cost:** is the economic sacrifice of resources for the purpose of achieving a specific objective and can be measured in monetary units that will be paid for the benefit of a particular good or service
- **Expense:** This is the part of the cost that has been exhausted, i.e., the loss of its benefit in order to achieve the objectives of the economic unit and is transferred to the profit and loss account at the end of the year
- **Loss:** is the economic sacrifice of the resources of economic unity, which does not meet the benefit is not necessary to achieve the objectives of the Organization and occur because of sudden circumstances and events such
- **expenditure:** is the sacrifice of the economic resources of a unit which may be expected to obtain benefit or without the benefit of any combination in its content (cost or loss).
- **Waste :** Terms of waste is refers to the **disposal** of broken or obsolete components and materials.

Classified of Costs

Costs can be classified based on the following:-

- 1.By Nature** (materials, Labor, overhead).
- 2. By Functions** (Production costs, Selling costs and Administration costs).
- 3.By degree of traceability of product.** (direct cost & indirect cost).
- 4.By change in activity or volume.** (Fixed cost, Variable cost & Semi variable).

- **By Nature :-** In this type, material, labor and overheads are three costs, which can be further sub-divided into raw materials, consumables, packing materials, and spare parts etc.

- **By Functions:-** Under this category, the cost is divided by its function as follows:
Production Cost - It represents the total manufacturing or production cost.

nonproduction cost - It includes operational expenses of the business and may be sub-divided into administration cost, and selling and distribution cost.

- **By Degree of Traceability of the Product:**- Direct and indirect expenses are main types of costs come under it. Direct expenses may directly attributable to a particular product. Leather in shoe manufacturing is a direct expenses and salaries, rent of building etc. come under indirect expenses.

- **By Change in Activity or Volume:**- Under this category, the cost is divided as fixed, variable, and semi-variable costs:

- **Fixed cost:** It mainly relates to time or period. It remains unchanged irrespective of volume of production like factory rent, insurance, etc.
- **Variable cost :** Variable cost directly associates with unit. It increases or decreases according to the volume of production. Direct material and direct labor are the most common examples of variable cost. It means the variable cost per unit remains constant irrespective of production of units.
- **Semi-variable cost :** A specific portion of these costs remains fixed and the balance portion is variable, depending on their use.

Modalities for separating mixed costs:

There are several ways to separate mixed costs:-

1. High-low method
2. Small squares method
3. Scatter graph Method
4. Regression analysis Method

The method of the High-low

The upper limit method and the minimum and highest level of activity focus on two points, one of which represents the upper limit and the other the minimum level of activity an equation or function can be derived

$$Y=A+BX$$

It is possible to estimate the share of each unit according to this method according to the following equation

$$\text{Variable unit costs} = \frac{\text{Higher Activity Costs} - \text{Lower Activity Costs}}{\text{Highest activity} - \text{lowest activity}}$$

We conclude from this that First, we derive the variable costs using the above law and then extract the fixed costs using the straight line equation ($Y=A+BX$)

Example:- The following data is extracted from the records of an industrial company for maintenance costs for the first six months of 2010:

months	Value activity	maintenance costs	Cost per hour
1	4000	11000	2.75
2	3000	9000	3
3	6000	15000	2.5
4	2000	7000	3.5
5	3500	10000	2.8
6	5000	13000	2.6

Required // 1 - Separate the mixed costs in a higher and lower activity.
2- Estimated cost of maintenance expected for July if the estimated rotation hours 3500 hours.

The solution:-

1. Extract the variable cost of the unit:

Variable unit costs = $\frac{\text{Higher Activity Costs} - \text{Lower Activity Costs}}{\text{Highest activity} - \text{lowest activity}}$

Variable unit costs = $\frac{15000 - 7000}{6000 - 2000} = 2$ Dinars per hour.

2 - Find fixed costs using the higher limit

Total Costs = Fixed Costs + Variable Costs

15000 = Fixed Costs + {6000 hours * 2Dinars per hour}

Fixed Cost = 3000 Dinars

Example:- Buy Baghdad restaurant bought 100 kg of rice at 2000 dinars and the total value 200,000 dinars, During the month, the restaurant used 60 kg which was worth 1200 dinars, During the month, the restaurant was considered 10 kg damaged Because of burning at the time of use, which is worth 20,000 dinars .

Required;-Determine the cost, expense, loss and inventory of the last period

The solution:-

-Total value to considered cost 200,000 dinars.

- The depleted part is considered an expense 120,000 dinars.

- The damaged part is considered a loss 20,000 dinars.

- inventory of the last period = 200,000 – 120,000 – 20,000 = 60,000 dinars

Break – Even Analysis

Break – Even analysis provides a concise presentation of the relationship between cost and volume change and the effect of such change on profit. The break – even point is the sales volume or other appropriate base at which total revenue equals total costs, resulting in neither a profit nor a loss.

Management is interested primarily in the profit at various levels of operation.

Break – Even Analysis Methods

A- Equation Methods

This method in general use is the equation or algebraic method. It is based on income statement equation.

$$\text{Sales} - (\text{variable cost} + \text{fixed cost}) = \text{Profit}$$

$$\text{Sales} = \text{variable cost} + \text{fixed cost} + \text{Profit}$$

Note: that the profit at the break –even point will be zero.

Example 1:

Find the number of units that must be sold to break –even with fixed costs 800000 (ID) sales price 5000 (ID) with variable cost of 3000 (ID) per unit.

Unit must be sold = x

$$\text{Sales} = \text{variable cost} + \text{fixed cost} + \text{Profit}$$

$$5000x = 3000x + 800000 + 0$$

$$X = 400 \text{ units.}$$

If you find the amount in break –even point sales price multiply units in break – even point.

$$5000 * 400 = 2000000 \text{ (ID)}$$

B - Contribution Margin Methods

The contribution margin is the excess of sales price over variable costs. The break – even point under this is stated as:

$$\text{Break – even point (units)} = \frac{\text{fixed costs}}{\text{Contribution Margin}}$$

$$\text{Break – even point (amount)} = \frac{\text{fixed costs}}{\text{Contribution Margin ratio}}$$

Or:

$$\text{Break–even point (amount)} = \text{Break–even point (units)} * \text{Sales price}$$

Note:

$$\text{Contribution Margin} = \text{Sale price} - \text{variable costs.}$$

$$\text{Contribution Margin ratio} = \frac{\text{Sale price} - \text{variable costs}}{\text{Sale price}}$$

Example 2:

Use the data in Ex1 to find break – even point in units and amounts.

a. Break – even point (units) = $\frac{800000}{5000-3000} = 400$

b. Break–even point (amount) = $\frac{800000}{\frac{5000-3000}{5000}} = 2000000$ (ID)

C- Statement Method

Under this method, income summaries are set up at various level to show the break – even point and profit or loss at each level.

Example 3:

Use the same data in Ex1 to find break – even point in units and amounts.

Solution

Solution

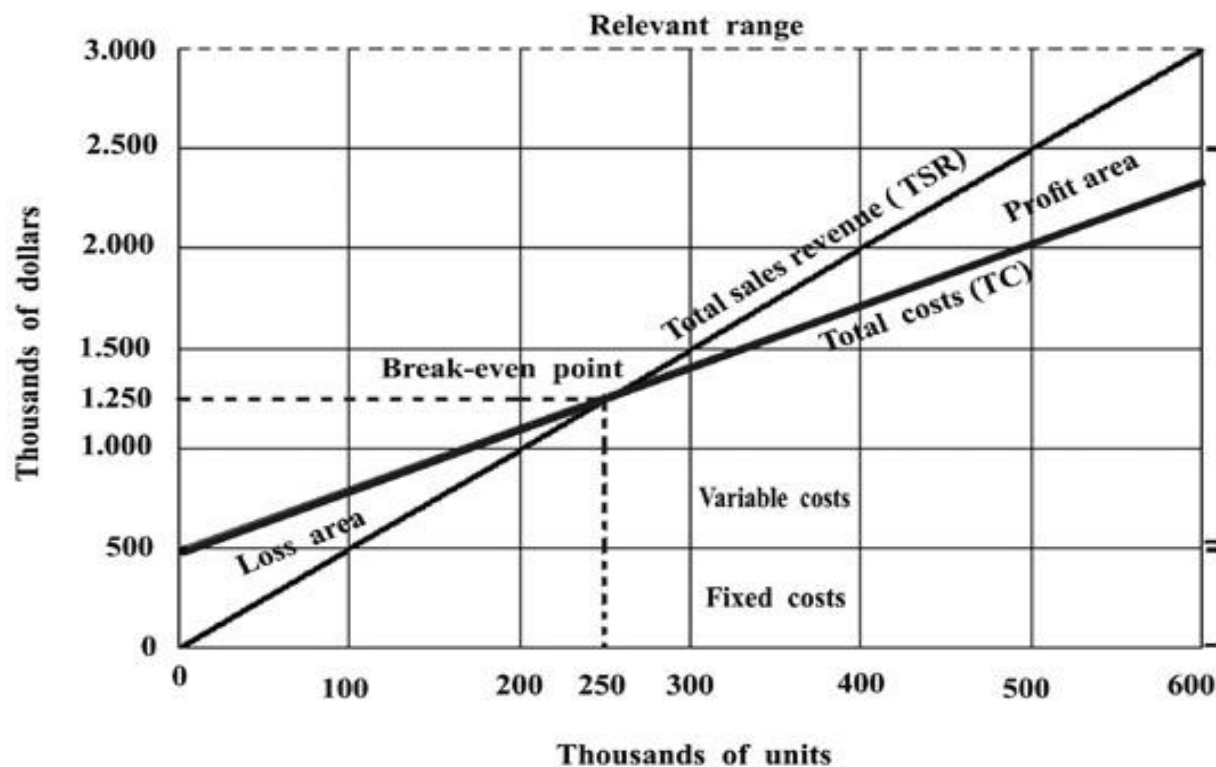
Income summary

	100 <u>Units</u>	200 <u>units</u>	300 <u>units</u>	400 <u>units</u>	500 <u>units</u>
Sales:	500000	1000000	1500000	2000000	2500000
Variable costs	300000	600000	900000	1200000	1500000
Contribution Margin	200000	400000	600000	800000	1000000
Fixed costs	800000	800000	800000	800000	800000
Net profit	600000	400000	200000	0	200000

Note: break – even point is clearly at 400 units or 2000000 (ID) in sales.

Note: break – even point is clearly at 400 units or 2000000 (ID) in sales.

D. Graphic Method



Contribution Margin Method

Example 1:

Using the following data, determine the break – even point (BEP) in (a) units and (b) dollars for the K & B Corporation:

Sale price (SP) per unit = \$10

Fixed costs (FC) = \$200000

Contribution margin (CM) = 50% of sales

Solution

$$(a) \text{ BEP (units)} = \frac{\text{FC}}{\text{CM per unit}^*} = \frac{\$200000}{\$5 \text{ per unit}} = 40000$$

$$\text{CM per unit} = \text{SP per unit} * \text{CM \%} = \$10 * 50\% = \$5.$$

$$\text{(b) BEP (dollars)} = \text{SP per unit} * \text{BEP (units)} = \$10 * 40000 \text{ units} = \$400000$$

Or

$$\text{BEP (dollars)} = \frac{\text{FC}}{\text{CM \%}} = \frac{\$200000}{50\%} = \$400000$$

Example 2 :

Break – Even point in units. Giving the following data:

	Per Units	Present
Sales Price	\$6	100%
Variable cost	<u>4</u>	<u>67%</u>
Contribution Margin	<u>\$2</u>	<u>33%</u>
Total fixed costs	\$500	

Determine the break – even point in units by (a) the Contribution– margin method and the (b) equation method.

Solution

$$\text{(a)} = \frac{\text{FC}}{\text{CM per unit}} = \frac{\$500}{\$2} = 250 \text{ units.}$$

$$\begin{aligned} \text{(b) Sales} &= \text{VC} + \text{FC} + \text{profit} \\ \$6x &= \$4x + \$500 + 0 \\ \$2x &= \$500 \\ X &= 250 \text{ units.} \end{aligned}$$

Example 3:

Break – Even point in Dollars. Giving the following data:

	Per Units	Present
Sales price	\$8	100%
Variable cost	<u>6</u>	<u>75%</u>
Contribution Margin	<u>\$2</u>	<u>25%</u>
Total fixed costs	\$800	

Determine the break – even point in dollars using (a) the Contribution– margin method and the (b) equation method.

$$\text{(a)} \frac{\text{FC}}{\text{CM \%}} = \frac{\$800}{25\%} = \$3,200$$

(b) From the percentage

$$x = 0.75x + \$800 + 0$$

$$0.25x = \$800$$

$$X = \$3,200.$$

Or:

$$\$8x = \$6x + \$800 + 0$$

$$\$2x = \$800$$

$$X = 400 \text{ units}$$

$$\text{Sales} = 400 * \$8$$

$$= \$3,200.$$

Example 4:

Find the numbers instead of question marks

Case	Sp	VC	FC	CM	CM%	BEP
1	100	?	?	40	?	25000units
2	?	120	1000000	?	40%	?
3	50	?	2000000	20	?	100000units
4	70	45	?	?	?	25000units
5	?	30	6000000	60	?	?

Questions of the first chapter

Q 1 \ What is the concept of cost accounting and what are its basic elements?

Q 2 \ What are cost accounting classifications ?

Q 3 \ The main objectives of Cost Accounting ?

Q 4 \ Differences between costs accounting & financial accounting ?

Q5 \ How to distinguish between cost and expense and loss ?

Q 6 \ What is the concept of direct and indirect cost and how to distinguish between them ?

Q7 \ Define both fixed, variable and mixed costs with examples?

Chapter 2

Control of materials

LEARNING OBJECTIVES

After studying this chapter, you will be able to answer the following questions : -

1. Explain the accounting treatment of materials.
2. Distinguish between a damage and deficit.
3. Describe the damage and natural disability.
4. Understand the treatment role the costs of damage and natural disability.
5. Explain the methods of Pricing Materials Issues.

Material is an important component of the costs. It is an important part of the process of manufacturing the products. Therefore, it is necessary to control them. There is a need to achieve comprehensive and effective control over the purchases, receipt, storage and use of materials. It is necessary to periodically inventory the materials in the stores to ensure that they meet the balance the notebook is installed in the company records and the identification of damage and disability was commissioned.

Accounting treatment of materials :

The accounting treatment of materials includes the process of recording the accounting restrictions necessary to prove the movement of materials as follows:

1. When purchasing raw materials, for this transaction is the purchase invoice.

Raw Materials Inventory control	xxxx
Accounts Payable or Cash	xxxx

deficit, the actual balance may include the presence of certain damaged materials, which are defined as substances that have lost part of their physical or chemical properties.

The amount of damage and disability is determined or calculated as follows:

Book balance = Actual Balance + Deficit

Since the actual balance in the warehouse includes the correct units in addition to the damaged units, the following law can be drafted

Book Balance = Correct Units + Damage + Disability

Damage and natural disability:

Natural damage and disability is defined as damage and impotence that occurs in materials and which cannot be controlled and is considered a requirement of the nature of matter like

1. Typical contraction in some materials
2. Typical evaporation in some materials
3. Disability due to weight differences
4. Normal breakage in some materials

The amount of damage and natural disability is normally determined and calculated on the basis of a certain percentage of the book balance. This ratio varies from one material to another and from one company to another.

Damage and abnormal disability:

Defects and unnatural incapacity are defined as damage and disability which is assumed to be non-existent. It occurs as a result of negligence or negligence by the management or the custodian of the store, which is considered a loss to the company, which is determined and processed according to the reason of default

Treatment of the cost of damage and natural disability in one of two ways:

1. **Amplification method:**

Under this method, the remaining or other units are inflated by the cost of damage and natural disability, Thus, natural depreciation and disability becomes cost-free and does not appear in accounting restrictions. The inflated unit cost is calculated as follows:

$$\text{The cost of the inflated unit} = \frac{\text{Total cost of materials (cost of book balance)}}{\text{Total quantity of materials - quantity of}}$$

damage and natural disability

Thus, the remaining units that include the correct units, damage and abnormal deficit will bear the cost of damage and natural deficit by calculating the cost according to their quantity and

According to the cost of the inflated unit calculated above .

2. Method of non-amplification:

Under this method, the cost of damage and natural deficit is calculated according to its quantity and the purchase price of the unit. It is recorded in the records and then accounted for by accounting for the actual indirect industrial costs

Accounting restrictions needed to prove and treat natural and non-natural damage and disability

1. The cost of damage and total disability is shown as follows:

Xxx \ Total damage and disability

Xxx\ Control of material stores

2. Damage and total disability are analyzed to normal and abnormal

Xxx\ Damage and natural disability

Xxx\ Damage and abnormal disability

Xxx\ Total damage and disability

3. Natural damage and disability is dealt with by closing its net cost (after deducting the selling value) in the calculation of actual indirect industrial costs and under the following entry

Xxx\ Fund (Selling Value)

Xxx\Control of indirect industrial costs

Xxx\ Damage and natural disability

4. Irregular damage and disability shall be accounted for by reason of default and as follows

A-If the reason for default is the administration is closed in the account of profits and losses

b-If the reason for default is the treasurer, he shall bear the cost thereof

d. If the reason for the default is the management and the custodian, they shall bear the cost according to certain percentages determined by the administration

Note: If there is a selling value of the damage and non-natural deficit, the net cost is treated according to the default

Xxx \ Fund (sale value if any)

Xxx\ Profits and losses (if the reason for default is management)

Xxx\ Secretary of the store (if the reason for default is the storekeeper)

Xxx\ Damage and abnormal disability

Methods Of Pricing Materials Issues

There are various methods in use of pricing issues of materials from store. The selection of suitable method is significant from the viewpoint of cost absorbed and consequently on profit. Therefore, the method should be selected in the light of probable effects on profit over a period of years.

Material is purchased specially for a job. The material issued is charged to the job at its landed cost. Landed cost include the invoice price, freight, cartage and insurance charges on materials. Issue of such items cannot be linked with a particular 'lot' and therefore, exact landed cost of the particular unit issued cannot be identified. If the purchase price for each lot is different from that of the others,

the question arises as to which purchase should be taken into consideration for pricing material issues.

Some important and mostly used methods of pricing are as follows.

1. First In First Out(FIFO) Method
2. Last In First Out(LIFO) Method
3. weight Average Method(SAM)

First in First out Method (FIFO)

Under this method materials are used in the order in which they are received. In other words, materials received first are issued first. This process is repeated throughout.

The price of the earliest consignment is taken first and when that is exhausted, the price of the next consignment is adopted and so on. This method is most suitable for use where the material is slow moving and has comparatively high unit cost. This method is also useful in times of falling prices because the issue price of material to the job will be high while the replacement cost of material will be below.

Example:

Show the Stores Ledger entries for the month of Jan, 2008 as they would appear when using FIFO method:

Jan. 1 was the balance of materials 500 units @ \$ 3 .

Jan.2 Purchased 300 units @ \$.3 per unit and paid the transportation expense \$ 300

Jan.3 Purchased 600 units @\$4 per unit and paid commission and taxes \$ 600 .

Jan.6 Issued 600 units.

Jan. 10 Purchased 700 units @ \$4 per unit and paid the transportation expense \$ 350 .

Jan. 15 Issued 850 units.

Jan.20 Purchased 300 units @ \$ 5 per unit and paid commission and transportation \$ 300.

Jan.23 Issued 100 units.

Jan. 25 return the materials issued Jan. 15 .

Jan. 31 ending inventory of materials units 900 .

Required ; 1- prepare item card

2- journalize the transactions .

Last in First Out Method: (LIFO)

This method is exactly the opposite of FIFO method. Under this method materials received last are issued first. The price of the material to be issued would be the cost price of the last lot of materials purchased.

This method is useful during a period of rising prices because materials will be issued from the latest consignment at a price which is closely related to the current

price levels. Under this method product' cost is calculated on a basis which approximates to replacement cost.

Example:

The followings transactions took place in respect of material in during the month of January, 2008. You are required to write up the Stores Ledger under LIFO meth

Jan. 1 was balance the materials 500 units @ \$ 6 .

Jan.4 Purchased 550 units @ \$.5 per unit and paid the transportation expense \$ 150

.

Jan.5 Purchased 600 units @ \$.6 per unit and paid the taxes 300 .

Jan.6 Issued 500 units.

Jan.10 Purchased 700 units @ \$7 per unit and paid the commission ,transportation expense \$350 .

Jan. 15 Issued 800 units.

Jan.20 Purchased 300 units @ \$ 5 per unit.

Jan. 22 return 250 units the purchased materials in Jan. 4 .

Jan.23 Issued 700 units.

Jan.30 The inventory stocks last period 300 units and found the cause of deference is 100 unit damage alone .

Required ; 1- prepare item card

2- journalize the transactions .

Weight Average Method

Under this method, materials issued are valued at average price. This is calculated by dividing the total of the price of the materials on the stock from which the material to be priced could be drawn by the number of prices used in that total.

A new simple average price is to be determined when a fresh receipt is made. The rate is also revised when an earlier consignment is exhausted.

The following example will illustrate this. Suppose, following are three different lots of materials in stock when materials is to be priced:

A new simple average price is to be determined when a fresh receipt is made. The rate is also revised when an earlier consignment is exhausted.

Example:. The followings transactions took place in respect of material in during the month of February , 2009. You are required to write up the Stores Ledger under weight average:

Feb.1/ was balance the materials 500 units @ \$ 5.

Feb .4/ 100 units purchased @ \$ 4.00 per unit .

Feb. 5/ issued 500 units

Feb .8 / 200 units purchased @ \$ 5.00per unit

Feb .10 / 300 units purchased @ \$ 6.00 per unit

Feb .12/ issued 250 units.

Feb. 28/ The inventory last period 300 units and found the cause of deference is 50 unit damage alone note that the percentage of damage are allowed 10% of inventory .

Required ; 1- prepare item card 2- journalize the transactions .

Exercise : The followings transactions took place in respect of material in during the month of June, 2011. You are required to write up the Stores Ledger under (weight average – fifo – lifo) for al-aswar company:

June 5/ was balance the materials 200 units @ \$ 4 .

June 8/ 500 units purchased amount \$ 2500 and paid the transportation expense \$ 500 .

June 9/ issued 250 units .

June 11/ 200 units purchased @ \$ 4 per unit and paid the commission \$ 200 .

June 12 / 300 units purchased @ \$ 6 per unit and paid the commission \$ 1 per unit.

June 15 / 550 units issued

June 19 / 50 unit return to stores from quantity issued in Jan. 15 .

June 30 / The inventory last period 500 units and found the cause of deference is 50 unit damage alone note that the percentage of damage are allowed 10% of inventory .

Solution: example FIFO

Bin card

date	Received (purchasing)			issued			balance		
	Quantity	price	amount	Quantity	price	amount	Quantity	price	amount
Jan. 1							500	3	1500
Jan. 2	300	4	1200				800	500 * 3 300 * 4	2700
Jan. 3	600	5	3000				1400	500 * 3 300 * 4 600 * 5	5700
Jan. 6				600	500*3 100*4	1900	800	200 * 4 600 * 5	3800
Jan. 10	700	4.5	3150				1500	200 * 4 600 * 5 700*4.5	6950
Jan. 15				850	200*4 600*5 50*4.5	4025	650	4.5	2925

Jan.20	300	6	1800				950	650*4.5 300*6	4725
Jan.23				100	4.5	450	850	550*4.5 300*6	4275
Jan.25				(50)	50*4.5	(225)	900	600*4.5 300*6	4500
	1900		9150	1500		6150	900		4500

Solution: example LIFO

Bin card

date	Received (purchasing)			issued			balance		
	Quantit y	pric e	amou nt	Quantit y	price	amoun t	Quantit y	price	amount
Jan. 1							500	6	3000
Jan. 4	550	5.5	3025				1050	500*6 550*5.5	6025
Jan. 5	600	6.5	3900				1650	500*6 550*5.5 600*6.5	9925
Jan. 6				500	6.5	3250	1150	500*6 550*5.5 100*6.5	6675
Jan.10	700	7.5	5250				1850	500*6 550*5.5 100*6.5 700*7.5	11925
Jan.15				800	100*6.5 700*7.5	5900	1050	500*6 550*5.5	6025
Jan.20	300	5	1500				1350	500*6 550*5.5 300*5	7525
Jan.22	(250)	5.5	(1375)				1100	500*6 300*5.5 300*5	6150

Jan.23				700	300*5 300*5.5 100*6	3750	400	400*6	2400
Jan.25	Unit damage			100	6	600	300		1800
total	1900		12300	2100		13500	300		1800

Solution: example w.a

Bin card

date	Received (purchasing)			issued			balance		
	Quantit y	pric e	amoun t	Quantit y	pric e	amount	Quantit y	pric e	amount
Feb.1							500	5	2500
Feb.4	100	4	400				600	4.83	2900
Feb.5				500	4.83	2417	100	4.83	483
Feb.8	200	5	1000				300	4.94	1483
Feb.10	300	6	1800				600	5.47	3283
Feb.12				250	5.47	1367.5	350	5.47	1915.5
Feb.28	Unit damage			50	5.47	273.5	300		1642
total	600		3200	800		4058	300		1642

Chapter 3

Control of wages

LEARNING OBJECTIVES

After studying this chapter, you will be able to answer the following questions : -

- 1- Defend the wage and components .
- 2- Methods of calculating wages.
- 3- Defend The time Normal wasted and the time not Normal wasted.
- 4- Accounting entries in the records of the financial accountant and in the records cost accountant.

Control of the cost of labor (wages)

Work: is the effort made by the employees to accomplish the tasks entrusted to them, including the conversion of raw material to a final product. Where the effort involved includes the actual effort of the workers and the intellectual effort exerted by others in the planning department and other sections.

The wage: is defined as the cost borne by the company for the effort exerted by the employees and represents wages as an essential element of costs, especially in service and industrial establishments, As mentioned earlier, the wage is divided into two types:

- 1- Direct wage :** The direct labor cost is the cost of workers who can be easily identified with the unit of production.
- 2- Indirect wage :** The indirect labor cost is the cost associated with workers, such as supervisors and material handling team, who are not directly involved in the production.

Components of wages include the following :

- 1. Cash wage :** is the wage paid to the worker directly and in cash and includes the wages of regular hours and overtime hours
- 2. In-kind** benefits include worker's clothing Restaurant services Transportation services Accommodation services

3. Contribution of enterprises to social security

Methods of calculating wages:

there are several methods of calculating the Wage, including the following

1-Determine wages according to time: Under this method the wage is calculated including the following:-

$$\text{Payable wage} = \text{Working hours} * \text{Hourly rate}$$

Note that the normal hours of work **8** hours a day and more is extra and that the average hourly wage is equivalent to 150% of the average hourly rate

2-Determine wage on Based Production : the worker's wage is calculated on the basis of the quantity of his production which is based on the piece:

$$\text{Payable wage} = \text{Production quantity} * \text{Unit rate of exchange (piece)}$$

3-Determine wage according to product/hours

4-Method of calculating the wage on the basis of production with the guarantee of a minimum daily: wage under this method is determined minimum daily wage that represents the minimum living The worker's wages are calculated on the basis of production and the largest amount is paid to the worker

5-Method of the gradual wage: According to this method, the quantities of production are calculated on the basis of categories with the determination of the wage rate for each category of production and the wage of the worker is calculated on the basis of production. The wage of the worker is calculated on the basis of his production .

The time Normal wasted:

represents the time normally supposed to be present, such as time of eating by workers, the movement of workers from one machine to another, time of entry and departure of workers: This time loss is not considered a loss because its occurrence is normal as there are two ways to treat natural lost time:

1.The method of amplification: means increasing the hourly rate of one hour and making the rest of the time the cost of natural lost time which is rare to use

2.The method of non-amplification: means the calculation of the cost of natural time lost and proved in the records and treatment, which is the usual method and commonly used

The time not normal wasted:-

The abnormal unnatural lost time represents the lost time that is supposed to not occur, such as the suspension of workers due to the rescue of raw materials or because of the interruption of one of the machines or due to power outages and other reasons and that the loss of unnatural lost time is considered a loss to be charged to the profit and loss account.

*Note The method of calculating the pay due to the worker and the method of proving the restrictions in the records of the financial accountant and the records of the cost accountant will be explained in the following various examples.

Accounting entries in the records of the financial accountant:

wages	xxx	
Deductions for the account Others		xxx
Wages payable		xxx
<hr/>		
Wages payable	xxx	
bank		xxx

Accounting entries in the records cost accountant:

wages Control	xxx	
Wages payable		xxx
<hr/>		
Direct wages Control	xxx	
indirect wages Control	xxx	
wages Control		xxx
<hr/>		
control Production under operating order (1)	xxx	
control Production under operating order (2)	xxx	
Direct wages Control		xxx
<hr/>		
xxx \ cost Fridays and holidays		
xxx \ Cost time normal wasted		
xxx \ Cost time not normal wasted		
xxx \ Reward Additional time		
xxx \ control indirect wages		
<hr/>		
xxx \ control Indirect industrial costs		
xxx \ cost Fridays and holidays		
xxx \ Cost time normal wasted		
xxx \ Reward Additional time		
<hr/>		
xxx \ profits and losses		
xxx \ Cost time not normal wasted		

Calculation of the wage based on time (hours) :

We mentioned earlier that under this method, the wage of the worker is calculated on the basis of working hours and based on the rate of the agreed hourly wage, noting the following:

- 1.The normal daily working hours are **8**hours,And more are considered Additional hours
- 2.The rate of the hourly wage is **150%** of the average hourly rate.
- 3.The worker's wages are paid for the normal times of loss of work such as the period of eating or the time of entry and departure.This is called natural or permissible lost time.

4The wage shall be paid to the worker for public holidays and weekends which occur within the working days of the worker And there is no wages are paid to the worker during the days of absence

6.The wage paid to the worker includes wages for the actual working hours of production, which is called the direct wage.It includes the wages paid for holidays and vacations during times of loss

7.Financial increase to worker for overtime,the increase is only 50%, while the other 100% represents a regular wage

8.Hourly rate is the daily wage \ 8 working hours

9.The worker's wage is calculated on the basis of the actual days of the month after excluding the absence days, if the month of February includes 28 days and becomes 29 days if the year

Q 1 \ You have the following data related to Bajour, one of the worker of an industrial company for the month of March 2011 :

Number of days Fridays and holidays 5 days .

number of Day absence's 1 day.

Number of days off 2 days

The total of Additional hours during the month was 30 hours .

Time allowed to eat 0,5 an hour a day .

The machines stopped due to power outages 8 hours , And because of the entry of raw materials 7 hours during the month

The average hourly wage is 200 dinars

The worker spent 40% of his time on the production order (1) and the remaining on the production order (2)

Required

1-Determine the total wage due to the worker and the analysis of the wage to its components

2- Record of the accounting entries in the records of the financial accountant and the cost accountant if he learned that deductions for the purpose of retirement are 10%

Solution:-

Total Wages = Ordinary Wages + Additional Wage

$$= (30 \text{ days} * 8 \text{ hour} * 200 \text{ dinars}) + (30 \text{ hours} * 200 \text{ dinars} * 150\%) \\ = 48000 + 9000 = 57000 \text{ dinars}$$

Indirect wage analysis :

time Fridays and holidays = 5 + 2 = 7 days * 8 hours = 56 hours

cost Fridays and holidays = 56 hours * 200 dinars = 11200 dinars

The time normal wasted = 23 days * 0.5 hours = 11.5 hours

Cost the time normal wasted = 11.5 hours * 200 dinars = 2300 dinars

The time not normal wasted = 8 hours + 7 hours = 15 hours

Cost The time not normal wasted = 15 hours * 200 dinars = 3000 dinars

Reward Additional time = 30 hours * 200 dinars * 50% = 3000 dinars
Total Indirect wage = 11200 + 2300 + 3000 + 3000 = 19500 dinars

Direct wages = total wages - indirect wages

Direct wages = 57000 – 19500 = 37500 dinars

- Share of the production order (1) of direct wages = 37500 * 40% = 15000 dinars

- Share of the production order (2) of direct wages = 37500 * 60% = 22500 dinars

Accounting entries in the records of the financial accountant:

57000 \ wages

5700 \ Deductions for the account Others

51300 \ Wages payable

51300 \ Wages payable

51300 \ bank

Accounting entries in the records cost accountant:

57000 \ Control wages

57000 \ Wages payable

37500 \ control Direct wages

19500 \ control indirect wages

57000 \ Control wages

15000 \ control Production under operating order (1)

22500 \ control Production under operating order (2)

37500 \ control Direct wages

11200 \ cost Fridays and holidays

2300 \ Cost time normal wasted

3000 \ Cost time not normal wasted

3000 \ Reward Additional time

19500 \ control indirect wages

16500 \ control Indirect industrial costs

11200 \ cost Fridays and holidays

2300 \ Cost time normal wasted

3000 \ Reward Additional time جميع مبالغ القيود المحاسبية توضع بعد اسم الحساب

3000 \ profits and losses

3000 \ Cost The time not normal wasted

Q 2 \ You have the following data related to Bajour, one of the worker of an industrial company for the month of January 2010 :

Number of days Fridays and holidays 6 days .

number of Day Vacations 2 day.

The total of Additional hours during the month was 40 hours .

Time allowed to eat 0,5 an hour a day .

The machines stopped due to power outages 12 hours , And because of the entry of raw materials 8 hours during the month

The worker spent 40% of his time on the production order (65) and the remaining on the production order (66)

Total wage paid to worker end of month 77000 dinars

Required

1-Determine Average hourly wage and the analysis of the wage to its components

2- Record of the Accounting entries in the records of the financial accountant and the cost accountant if he learned that deductions for the purpose of retirement are 10%

Solution:-

Total Wages = Ordinary Wages + Additional Wage

$$77000 = (31 \text{ days} * 8 \text{ hours} * X) + (40 \text{ hours} * X * 150\%)$$

$$77000 = 248X + 60X$$

$$X = 250 \text{ dinar \setminus hours}$$

Indirect wage analysis:

time Fridays and holidays = 6 + 2 = 8 days * 8 hours = 64 hours

cost Fridays and holidays = 64 hours * 250 dinars = 16000 dinars

The time normal wasted = 23 days * 0.5 hours = 11.5 hours

Cost time normal wasted = 11.5 hours * 250 dinars = 2875 dinars

The time not normal wasted = 12 hours + 8 hours = 20 hours

Cost The time not normal wasted = 20 hours * 250 dinars = 5000 dinars

Reward Additional time = 40 hours * 250 dinars * 50% = 5000 dinars

Total Indirect wage = 16000 + 2875 + 5000 + 5000 = 28875 dinars

Direct wages = total wages - indirect wages

Direct wages = 77000 – 28875 = 48125 dinars

- Share of the production order (65) of direct wages 48125 * 40% = 19250 dinars

- Share of the production order (66) of direct wages = 48125 * 60% = 28875 dinars

Accounting entries in the records of the financial accountant

77000 \ wages

7700 \ Deductions for the account Others

69300 \ Wages payable

69300 \ Wages payable

69300 \ bank

Accounting entries in the records cost accountant:

77000 \ Control wages

77000 \ Wages payable

37500 \ control Direct wages

19500 \ control indirect wages

57000 \ Control wages

19250 \ control Production under operating order (65)

28875 \ control Production under operating order (66)

48125 \ control Direct wages

16000 \ cost Fridays and holidays

2875 \ Cost time normal wasted

5000 \ Cost The time not normal wasted

5000 \ Reward Additional time

28875 \ control indirect wages

23875 \ control Indirect industrial costs

16000 \ cost Fridays and holidays

2875 \ Cost time normal wasted

5000 \ Reward Additional time

5000 \ profits and losses

5000 \ Cost The time not normal wasted

Questions of the thirdchapter

Q 1 \ What is the wage and what are its types?

Q 2 \ What are the methods of calculating the wage?

Q 3 \ What is the difference between direct and indirect wages?

Q4 \ What is the difference between the time normal wasted and The time not normal wasted

Q 5 \ Ahmed Jassim works in Smartindustrial company shall receive a monthly salary of \$600 and follows the details of his work during the month of April for the year 2010:

3 days of absence from work

During the month, the work of Ahmed four additional hours for normal work note that the company additional hour wage rate is calculated at a rate of 150% of normal hour.

Note that month, 30 days by 8 hours daily punctuated hour break and that the actual working days during the month is 22 days.

Required:

1. calculating the worker's wage payable

2.wage analysis

3.recording journal entries

Q 6 \RiadKassem works in Sniper industrial company that piece tracking system in the payment of wages and follows the details of units produced by him vinegar month of October, 2013, note that the piece rate wage is \$ 5:

-The first week, including 113 pieces of 8 defective pieces

-The second week of 121 pieces, including 11 pieces in process

-The third week of 126 pieces, including a damaged piece 6000

-The fourth week 130 pieces

required :

1. calculating the worker's wage payable

2. recording journal entries

Chapter 4

Control of expenses (Indirect industrial costs)

After completion of your course , you will be able to answer the following question :

1. The concept of indirect industrial costs .
2. Control of expenses and types.
3. The concept of special and shared costs.
4. Methods of cost distribution.

Control of expenses

The third component of the cost after the two items of materials and wages is the expense element. It refers to all types of expenses incurred by the establishment in order to obtain services or benefits other than materials and work. Expenses are divided into two types in relation to the unit of the product, and they are direct expenses and indirect expenses

Direct expenses : are the expenses that can be easily allocated to the unit of the product and the share of the unit produced can be easily determined, such as the wages of inspecting the units produced in case of completion by the other company.

Indirect expenses : which are expenses that cannot be allocated to the unit of the product easily and thus cannot determine the share of the unit produced from the accuracy of fresh because they represent common or common costs of more than one product

Indirect industrial costs: are those costs that occur within production centers or service centers and which do not directly involve in the production of a product but their existence is necessary to complete the production process

Steps to bailed indirect industrial costs

First : determine the special and common costs :

-Private costs : are a set of costs that occur in the cost centers, whether these centers are productive or service and are allocated directly to those centers, although they are indirect to the product, such as salaries of workers and there is no difficulty in allocating this type of costs.

-Common costs: are those costs that cannot be directly allocated to the cost center for the participation of all or more centers to benefit from the service and therefore must be allocated benefit or service of those costs to the beneficiary center **Cost allocation** is intended to determine the share of each cost center for each of these costs.

1. The laboratory light cost is distributed according to the number of lamps.
2. The destruction of buildings is distributed on the basis of area.
3. Electricity fees are distributed based on operating hours

Second: the distribution of the costs of the service centers to the production centers

There are several ways to distribute service center costs

1. Total Distribution Method.
2. Solitary distribution method (**The single method**).
3. Descending distribution method (**Step Down**).
4. Distribution of **reciprocal Method** .

- Total Distribution Method:

This method is based on the distribution of the total indirect industrial costs of the service centers in the economic unit at once (or once) to the production centers only, using an appropriate basis for direct working hours or hours of machine rotation and wages. This method is easy and suitable in small-scale enterprises

-Solitary distribution method :

According to this method, the costs of the production centers are distributed only as much as they benefit from the services of the service centers, provided that the distribution basis is chosen according to the nature of the service performed by the service center

-Descending of distribution method:

is considered one of the most common methods of use and the distribution of costs to the centers services on the centers of production not arbitrarily, but according to a certain sequence governed by the universality of the service and therefore the center, which is a broader services and the wider distribution of costs and so on

Calculating loading rates for production centers:

After the completion of the redistribution of the cost of service centers on the production centers using one of the previous distribution methods (total, unilateral, descending, exchange) The appropriate loading basis is determined for each production center, Where the basis of the loading point of contact between the center of production and product and determine the basis of loading suitable for each production center where the basis of loading point of contact between the production centers and distributed and determine the basis of loading for each center depending on the nature of work in that section may be the basis of loading as follows:

1. Direct working hours
2. Machine rotation hour's chine rotation hours.
3. Cost of direct materials
4. Cost of direct wages
5. Number of units produced
6. Initial Cost

And other bases where a load basis is selected for each production center and the indirect industrial cost loading rate for that section is calculated as follows:

$$\text{Load rate of production center} = \frac{\text{Total estimated indirect industrial costs}}{\text{The basis of the estimated load}}$$

Treatment of deviations between indirect industrial costs and estimated

After determining the share of each product or production order of the indirect industrial costs estimated according to the steps mentioned above and after being installed in the records and loaded on the units produced according to the following

Xxx \ Control production under operation of the order (x)

Xxx \ Control production under operation of the order (x)

Xxx \ Control indirect industrial costs Loaded

After the actual expenditure of the indirect industrial costs represented by indirect materials, indirect wages and other industrial expenses, the following restriction is:

Xxx/Indirect industrial cost actual s

Xxx/Control of material stores

Xxx/control wages

Xxx/Maintenance

Thereafter, a comparison is made between the actual and loaded industrial costs and often do not match any deviation between the two. When indirect industrial costs are loaded more than the indirect industrial costs and always, If indirect industrial costs are

more than indirect industrial costs, the deviation is not appropriate and is debit, then the indirect industrial costs actually charged with the following restriction

Xxx/Indirect industrial cost loaded

Xxx \ Deviation is not appropriate

Xxx \ Indirect industrial cost actual

Xxx/Indirect industrial cost loaded

Xxx \ Adverse deviation

Xxx \ Indirect industrial cost actual

The causes of the deviation should be studied, whether appropriate or inappropriate, because the appropriate may be appropriate for a certain period, but it is not suitable for the coming period, such as the use of indirect materials of low specifications, as well as study the causes of the deviation is not appropriate and take measures to reduce it

As a result of the deviation, its occurrence is due to one of the following reasons :

1.A mistake in estimating indirect industrial costs In this case, the cost of units or production orders shall be adjusted by their share in this deviation, especially if the company produces more than one product and determines the share of the product according to the following :

$$\text{Product share} = \frac{\text{Indirect industrial costs loaded for product (x)}}{\text{Indirect industrial costs loaded}} * \text{deviation}$$

The cost of the product is adjusted according to its nature, if it is complete and sold, closing the deviation in the cost of sales. If the product is under operation, the deviation in the production account is closed

2.The reason for the default management is closed in the calculation of profits and losses.

Some of the proposed distribution bases can be used to distribute the common cost items to the beneficiary center :

	Common cost items	The basis of the proposed distribution
1	Building consumption	The value of each building or area is square meters
2	Factory rent	area is square meters
3	Machine consumption	Machine rotation hours
4	Costs of driving forces	Machine rotation hours
5	Machine maintenance costs	Machine rotation hours
6	Wages of supervision	Number of employees or working hours

7	Manager's salary	Number of employees or working hours
8	In-kind benefits	Number of working hours
9	Expenses Transfer of employees	Number of working hours
10	Lighting	Number of bulbs

Example: The following data is extracted from the records of Adam Industrial Company in 2012

details	Production Centers		Service Centers			Total
	spinning	Fabric	Maintenance	Stores	Transportation	
Cost Indirect materials	9000	11000	6000			26000
Cost Indirect wages	8000	12000	7500	6500	5000	39000
wages of supervision						15000
Machine extinction						12000
Factory rent						20,000
Area	600	500	200	600	100	2000
Number of Workers	25	10	7	2	6	50
Number of units produced	6000	4000				10,000
Direct working hours	3000	1000				4000
Machine rotation hours	4000	4000		2000		10,000
The nature of the production process	Handy	mechanis				

If you know me :

- The department stores provides its services to the production centers only on the basis of the number of units produced.
- The maintenance department provides its services to the production centers and the stores department on the basis of machine rotation hours.
- The Department of Transport provides its services to all production and service centers based on the number of workers.

Required:

1-Preparing a list to allocate and distribute indirect industrial costs to the logistics and service centers .

2- Preparing a statement to redistribute the cost of the service centers to the production centers.

3- Determine loading rates for production centers.

The solution

First requirement

**Indicate the allocation and distribution of indirect industrial
Costs estimated at the production and service centers**

details	Production Centers		Service Centers			Total
	spinning	Fabric	Maintenance	Stores	Transportation	
<u>allocated costs:</u>						
Cost Indirect materials	9000	11000	6000			26000
Cost Indirect wages	<u>8000</u>	<u>12000</u>	<u>7500</u>	<u>6500</u>	<u>5000</u>	<u>39000</u>
Total allocated costs	17000	23000	13500	6500	5000	65000
<u>Common costs :</u>						
wages of supervision	7500	3000	2100	600	1800	15000
Machine extinction	4800	4800	0	2400	0	12000
Factory rent	<u>6000</u>	<u>5000</u>	<u>2000</u>	<u>6000</u>	<u>1000</u>	<u>20,000</u>
Total combined costs	18300	12800	4100	9000	2800	47000
Total Indirect and Shared Indirect Industrial Costs	35300	35800	17600	15500	7800	112000

The second requirement

Reveal the redistribution of the cost of service centers on the production centers (descending distribution)

details	Production Centers		Service Centers			Total
	spinning	Fabric	Stores	Maintenance	Transportation	
Total Indirect and Shared Indirect Industrial Costs	35300	35800	15500	17600	7800	112000
Distribution of cost of service center (transport)	4432	1772	355	1241	(7800)	0
Distribution of service center cost (maintenance)	7536	7536	3769	(18841)	0	0
Distribution of the cost of the service center (stores)	11774	7850	(19624)	0	0	0
Total estimated indirect industrial costs	59042	52958	0	0	0	112000

--	--	--	--	--	--	--

Third requirement

Download rate of spinning center = $59042 \div 3000$
= **19.680 dinars**

Download rate for texture center = $52958 \div 4000$
= **13.240 dinars**

Example: Acer company has two production center and two service center , the relating to a period are as under

SERVICE center PRODUCTION center

	Maintenance	PERSONNEL	MOULDING	FINISHING
Direct department costs	\$126,000	\$24,000	\$130,000	\$120,000
Square meters	15,000	3,000		
Number of employees	20	10	40	30
Machine-hours	30,000	20,000		

Required: - prepare statement the distribution of expenses in the total method and single method

The Totalmethod:

- Maintenance+ PERSONNEL
= $(\$126,000 + \$24,000) \rightarrow \$150,000$
- TotalMachine-hours in production departments:
 $30,000 + 20,000 = 50,000$ hours
- service centercost allocated to moulding
 $30000 / 50000 * 150000 = \90000
- service centercost allocated to finishing
 $(20,000 \div 50,000) * \$150,000 = \$60,000 =$

SERVICE centerPRODUCTIONcenter

	Maintenance	PERSONNEL	MOULDING	FINISHING
Direct department costs	\$126,000	\$24,000	\$130,000	\$120,000
Distribution service center	<u>(126,000)</u>	<u>(24,000)</u>	<u>90,000</u>	<u>60,000</u>
	0	0	220000	180000

The singlemethod

- Maintenance \$126,000
- Total Machine-hours in production departments:

$$30,000 + 20,000 = 50,000$$

•Maintenancecenter cost allocated to moulding
 $= (30,000 / 50,000) * \$126,000 = \$75,000$

•Maintenancecenter cost allocated to finishing
 $= (20,000 / 50,000) * \$126,000 = \$50,400$

PERSONNEL \$ 24,000

Total Number of employees (40 + 30)= 70

PERSONNELcenter cost allocated to moulding
 $= (40 / 70) * \$ 24,000 = \$13,714$

PERSONNELcenter cost allocated to finishing
 $= (30 / 70) * \$ 24,000 = \$10,286$

	SERVICE center		PRODUCTION center		
	Maintenance	PERSONNEL	MOULDING	FINISHING	
Direct center costs	\$126,000	\$24,000	\$130,000	\$120,000	
Distribution Maintenance center	(126,000)		0	75,600	50,400
Distribution PERSONNELcenter		(24,000)	13,714	10,286	
	0	0	219,314	180,686	

Questions of the fourth chapter

Q 1\ What are indirect industrial costs?

Q 2 \ What types of expenses ?

Q 3 \ What is the difference between total, solitary and descending distribution ?

Q 4 \ Below please factory for the manufacture of cloth data during the year ending on 31/12/2011

	Service center			Production center	
	maintenance	storage	Restaurant	Spinning الغزل	Fabric نسيج القماش
Area square meters	200	400	200	800	400
The number of workers	100	60	40	200	600
Value machines				60000	40000
Number of bills of exchange of materials	72			100	76
Working hours direct				8000	20000
Hours machines turnover				4000	6000
T. Work indirectly	5000	5000	4000	16000	10000
T. Materials indirectly	8000	7000	8000	7400	19600

If you know that industrial and other indirect costs were as follows:

The supervision of \$ 30,000 expenses, rent \$50,000.

. maintenance \$4000 lighting, insurance on the machines 10% of their value.

the required :

Procedure revealed the distribution of factory overhead costs using the Step-Down method.

Q 5 \ SERVICE_Centers PRODUCTION

Centersmanagement maintenance cutting summation

Direct Center costs	\$126,000	\$24,000	\$100,000	\$160,000
Number of employees	30	90	150	30
Direct labor hours		2,100	10,000	
Machine-hours		20,000	30,000	

Required: prepare statement the distribution of service centers costs in the Step-Down method.

Chapter 5

EOQ (Economic Order Quantity)

After completion of your course, you will be able to answer the following question :-

1. What is the concept Economic Order Quantity(EOQ).
2. ***Concept And Meaning Of Minimum Stock Level.***
3. Concept And Meaning Of Maximum Level.
4. Calculation Of Economic Order Quantity(EOQ).
5. **Calculation OF Minimum Level Or Safety Stock.**

Concept And Meaning Of Economic Order Quantity(EOQ)

Economic order quantity is also known as reorder quantity. Economic order quantity (EOQ) is a level of inventory where the total cost of holding inventory is at minimum. Economic order quantity is the level of quantity at which the cost of ordering will be equal with the storage cost of materials. In other words, the quantity of materials which is economical to be ordered at one time is known as economic order quantity. The total costs of materials consists of the ordering cost and carrying cost. While determining the economic order quantity, the ordering cost and carrying cost should be considered.

Ordering Cost

The ordering cost is the repurchase cost and is repeated in nature. Purchasing of large quantities of materials helps reduce the ordering cost. The following costs are included in the ordering cost.

- * Cost of staff appointed in the purchasing, inspection and payment departments.
- * Cost of stationary purchases, telephone charge, email charge, fax charge etc.

Ordering costs also includes the cost of floating tenders, the cost of making comparison among quotations, cost of paper work, cost of transpiration etc.

Carrying Cost

Carrying cost is concerned with the storage of materials. It suggests purchasing in small quantities. If small quantities of material purchased, the storing cost will be below.

The following costs are included in carrying costs.

- * Cost of storage (warehousing, salaries, rent etc.)
- * Cost of spoilage in stores and handling
- * Insurance cost of materials
- * Interest on capital blocked on materials or opportunity cost
- * Cost of maintaining the materials to avoid deterioration
- * Cost of obsolescence due to a change in the process or product.

Calculation Of Economic Order Quantity(EOQ)

The economic order quantity can be determined in the following ways.

1. Formula Method
2. Graphical Method
3. Trial And Error Method

1. Formula Method

With the help of following formula, the economic order quantity can be calculated.

$$EOQ = \sqrt{\frac{2(\text{Annual usage in units})(\text{Order cost})}{(\text{Annual carrying cost per unit})}}$$

Example : ubnt firm for internet receiver maker . Annual demand for the smi is 16,000. The annual holding cost per unit is \$2.50 and the cost to place an order is \$50. **What is the economic order quantity?**

$$\sqrt{\frac{2 * 16,000 * \$50}{\$2.50}} = 800 \text{ units per order}$$

Concept And Meaning Of Minimum Stock Level

Minimum level or safety stock level is the level of inventory, below which the stock of materials should not be fall. If the stock goes below minimum level, there is a possibility that the production may be interrupted due to shortage of materials. In other words, the minimum level represents the minimum quantity of the stock that should be held at all times.

The minimum level is determined by using the following formula

Minimum Level = Re-order level -(Normal consumption x Normal Re-order Point)

Calculation OF Minimum Level Or Safety Stock

1. Re-order Level = Maximum consumption x Maximum Re-order Point.
2. Normal consumption = (Maximum Consumption + Minimum Consumption)/2
3. normal Re-order Period = (Maximum Re-order Period + Minimum Re-order Period)/2

Example :

Re-order Period = 8 to 12 days

Daily consumption = 400 to 600 units

Minimum Level = ?

Re-order Level = ?

Solution,

Minimum Level = Re-order Level - (Normal Consumption x Normal Re-order Point)

= 7200 - (500 x 10)

= 2200 units.

Working Notes:

1. Re-order Level = Maximum consumption x Maximum Re-order Point

= 600 x 12 = 7200 units

2. Normal consumption = (Maximum Consumption + Minimum Consumption)/2

$$= (600+400)/2 = 1000/2 = 500 \text{ units}$$

3. *Normal Re-order Period = (Maximum Re-order Period + Minimum Re-order Period)/2*

$$= (12+8)/2 = 10 \text{ days}$$

Maximum Level And Its Calculation

Concept And Meaning Of Maximum Level : Maximum level is that level of stock, which is not normally allowed to be exceeded. Beyond the maximum stock level, a blockage of capital should be exercised to check unnecessary stock. The factory should not keep materials more than the maximum stock level. It increases the carrying cost of holding unnecessary inventory level. It is the opportunity cost of holding inventory.

The maximum stock level can be calculated by using the following formula:

Maximum Level = Re-order Level + Re-order quantity - (Minimum consumption x Minimum Delivery Time)

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Example :

Re-order quantity = 1000 units

Re-order Level = 1500 units

Re-ordering period = 4 to 6 days

Daily consumption = 150 to 250 units

Maximum Level =

Solution

Maximum Level = Re-order level + Re-order quantity - (Minimum consumption x Minimum Re-ordering period)

$$= 1500 + 1000 - (250 \times 4) = 1900 \text{ units.}$$

Questions of the chapter

Q 1 \ What is (EOQ)?

Q 2 \ what is Calculation Of Economic Order Quantity ?

Q 3 \ what is Ordering Cost and Carrying Cost ?

Q 4 \The following data concerning industrial FINE company related to the movement of materials inventory for the month of May 2014:

Re-order Period = 22 to 30 days

Daily consumption = 800 to 1200 units

Re-order quantity = 20000 units

Re-order Level = 36000 units

Annual demand = 20000 units

The annual holding cost per unit is = \$ 3

the cost to place an order is \$ 50

Require :calculate the following

1- Economic order quantity

2- Minimum Level

3- Maximum Level